Elements of Control

by

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ABSTRACT

How many different types of control relations exist? Is the classical distinction between Obligatory Control (OC) and Non-Obligatory Control (NOC) well-founded? What semantic and syntactic properties of infinitives determine their place in the control typology? How is the "understood subject" PRO linked to the controller?

This thesis investigates these questions in two steps: First, we establish a *typology* of control and characterize the empirical profile of each type; second, we propose *mechanisms* of derivation and interpretation to account for the different types .

The OC category is shown to consist of two subtypes, Exhaustive Control (EC) and Partial Control (PC). Tense in EC complements is null, and PRO must be referentially identical to the controller; Tense in PC complements is contentful, and PRO need only include the controller (although matching in syntactic number is still required). OC establishes an Agree relation between a matrix functional head and either PRO (in EC) or the infinitival Agr (in PC). The latter is parasitic on T-to-C movement occurring in tensed complements. Control via Agr blocks the transmission of semantic number from the controller to PRO, giving rise to the PC effect.

The OC/NOC distinction is traced to the position of the infinitive: VP-internal clauses fall under OC, extraposed and intraposed clauses under NOC - a corollary of the CED, which constrains Agree. Extraposed clauses may be interpreted and pronounced in different positions - a claim that is supported by asymmetries between psych and non-psych predicates in Super-Equi constructions. Converging evidence from extraction confirms that infinitives displaying OC and those displaying NOC occupy different positions at LF although the same position at PF.

As for the interpretation of OC, the choice of controller is subject to complex semantic/pragmatic considerations, rather than some syntactic locality principle. We also argue that OC cannot be reduced to predication, at least in the domain of adjectival complementation. Systematic contrasts between subject-gap and object-gap infinitives show that the former may denote either propositions (when occurring as arguments) or predicates (when occurring as modifiers). Thus, two sources exist for subject gaps - PRO (universally available) or A-bar trace (language-particular).

Thesis Supervisors: Noam Chomsky, Institute Professor

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Acknowledgments

Few places can offer intellectual stimulation of the quality and intensity that MIT does, as a matter of daily routine. It is only at MIT that I learned, first hand, that relentless criticism is the best service one can give to, and receive from, one's peers and colleagues; it is only at MIT that I first felt the power of ideas, triumphant or fallen, as a constant presence in my life. This kind of lesson, never taught in class or read in text, somehow permeates the intellectual atmosphere in the linguistics program. Sooner than you know it, you are part of it, and it is part of you. When I entered the program, I knew very little about how to identify a meaningful problem in linguistics, how to pursue interesting solutions, how to argue for or against a particular position, and so forth. What is worse, I was not even aware of the magnitude of my ignorance. Four years later - I *cannot help* doing all those things when I do linguistics. The model of intellectual creativity and scientific rigor that I had found at MIT is no doubt the most significant asset I take with me when I leave.

This experience was delivered to me by wonderful people - teachers, colleagues, students - to whom I am very grateful. The members of my committee, who have accompanied this thesis from its very inception, with constant feedback and encouragement, deserve my full gratitude. Meetings with Noam Chomsky were always stimulating and thought-provoking, and I have never left them short of new ideas to think about. Noam's peculiar combination of skepticism and conviction has often made me rethink my most fundamental assumptions (including the one concerning my prospects as a linguist). Chapter 4 of this thesis grew out of a casual remark Noam made to me; his direct and indirect influence is visible in innumerable other places.

I learned a lot about methodology and reasoning in linguistics from Alec Marantz. Alec is also a well-known skeptic, and conversations with him frequently led me to consider broader issues that arose from my work. From David Pesetsky I learned to be "syntactically innovative" and always look for unexpected links between seemingly disparate ideas. David's own work on infinitives has also inspired large parts of this thesis, especially chapter 2. My fierce arguments with Sabine Iatridou have ultimately sharpened many ideas that were too fuzzy in my head; Sabine's meticulous feedback on my sloppy

semantics has greatly improved chapters 4 and 5 of this thesis. Finally, Irene Heim, although not on my committee, read parts of this thesis and contributed important comments on chapters 2 and 4.

Scholars outside of MIT have also contributed to my continuous research throughout those years. I am especially indebted to Hagit Borer, for generous and engaging discussions, both in person and over e-mail, on many issues investigated in this thesis. Hagit's own work on control inspired the central idea in chapter 2 of this thesis; her incisive comments greatly improved chapter 3. I would also like to thank the following professors/visitors/ex-students/postdocs of the "extended" MIT family for helpful meetings and discussions: Howard Lasnik, Esther Torrego, Alan Munn, Danny Fox, Martha McGinnis, Miriam Engelhardt, Maya Arad, Andres Holmberg, Rajesh Bhatt and David Embick. Special thanks to Susi Wurmbrand for bearing with my endless questions on control and restructuring (and for writing such a wonderful thesis).

Being part of the lively, international student community at MIT was a rare experience. It is through discussions with my fellow students that I learned most about linguistics (as well as about bizarre habits around the globe). Many of those students were not only good friends, but also great informants on their native tongues, and in general, fun to talk with. For all this and more, thanks to: Karlos Arregui-Urbina, Sveva Besana, Marie Claude Boivin, Ben Bruening, Marie-Hélène Côté, Paul Elbourne, Elissa Flagg, Martin Hackl, Michela Ippolito, Yoonjung Kang, Meltem Kelepir, Connie Krause, Vivian Lin, Jon Nissenbaum, Isabel Oltra-Massuet, Liina Pylkkanen, Andrea Rackowsky, Jay Rifkin, Philippe Schlenker and Luciana Storto.

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I have been working on control incessantly for the last two years, and by now I am quite sick of the ease with which this topic lends itself to banal puns. With a sense of relief, then, let me conclude by saying that at the beginning I was very eager to get things under control, soon I was almost in control, then I lost control, then regained it, and now I am quite happy to be finally out of control.

Table of Contents

Abbreviations:

OC - Obligatory Control
NOC - Non-Obligatory Control
EC - Exhaustive Control
PC - Partial Control

Chapter 1: Introduction

1 The Fundamental Questions of Control

Imagine you are a child faced with the daunting task of acquiring the grammar of control in your language. You toddle around buoyantly (you should be past 3 by now), occasionally bumping into acoustic signals that miraculously map to "linguistic input". Some of them sound like this:

(1) a. Robin, do you want __ to play with Kittie together?
b. Come on, let me show you how ___ to feed her.
c. No Robin, Kittie doesn't like ___ to be smacked.
d. Robin, look what you've done! Bad boy! Time ___ to go to bed.

From your shelter under the kitchen table, you may draw the following conclusions:
i) Mommy is very mad now; ii) Kittens make rotten toys; iii) My name must be Robin.

Apart from the lesson in parental control, you also ought to learn something about grammatical control. In each of the sentences above, an element is missing (from the underlined position) that is nonetheless "filled-in" by your target grammar. This is what linguists term the "understood subject" of the infinitive. In order to be able to understand such sentences and produce similar ones yourself, you have to figure out the reference of the understood subject in every case. Thus, unless you are after some big trouble with Mommy, you had better conclude that the understood subject is Robin and Mommy in (1a), Robin in (1b), Kittie in (1c) and everyone (especially Robin!) in (1d).

Those referential inferences are neither arbitrary nor fully deterministic; by and large, they are determined by your grammar, which also specifies where and how much room for indeterminacy exists. *Control* is the relation between some antecedent and the understood subject, or, to use current terminology, between the controller and PRO. Mastering the properties of this relation is the task of acquiring the grammar of control.

What does the child need to know about the control relation? Minimally, it seems that the following questions must be answered:

(2) a. What elements/positions can control?
b. What elements/positions can be controlled?
c. What is the typology of control? (how many different types are there?)
d. Can the typology be deduced from principles of UG?
e. How is the controlled position (PRO) interpreted?
f. How is a controller picked up in a given structure?

All these issues must be resolved in order for the child to acquire full competence in the grammar of control. Quite literally, these are also the fundamental challenges the linguist faces in the study of control. Let us consider how this thesis addresses those challenges.

Question (2a) leads to an investigation of the syntactic underpinnings of control. In a substantial class of cases, the controller must stand in a certain structural relation to PRO (or the containing infinitive). Chapter 3 of this thesis analyses this relation and shows how it differentiates among various types of control. The issue of implicit arguments qua controllers also falls under this question; it is discussed in chapter 5.

Question (2b) concerns the distribution of PRO, and the answer to it is familiar - most probably, PRO occurs only in the subject position of infinitives (and in some languages, subjunctives). This thesis has virtually nothing to add to this observation. The history of this problem, from the PRO-theorem (Chomsky 1981) until the null case analysis (Chomsky & Lasnik 1993), has never succeeded in deriving this fact without recourse to special stipulations; perhaps the distribution of PRO is an irreducible fact of UG.

Question (2c) is a major research question and has been at the center of lively debates within various grammatical frameworks. It also forms the methodological backbone of this thesis. One of my central claims is that the traditional typologies of control must be rethought and revised. Very broadly, the proposal is twofold: i) The category of Obligatory Control (OC) is not homogenous but rather consists of two subtypes - Exhaustive and Partial Control (EC and PC); ii) The line between OC and Non-Obligatory Control (NOC) is not located where previous accounts hold, and the key to the right line is the proper analysis of the Super-Equi construction. Chapters 2 and 3 of this thesis explore the typology of control in detail, and attempt to deduce it from general properties of syntactic relations (based on Agree), the projection of Tense and phi-features, the structure of VP-shells and interface conditions, approaching the goal set in (2d).

This thesis provides a partial answer to (2e), in various domains. As discussed in chapter 2, PRO in OC may be interpreted as either identical to or inclusive of the controller, an option related to the interaction of semantic number with control. In chapter 5 we argue that in both cases, OC is *not* interpreted via a predication mechanism, so that PRO does not function as a lambda-variable; and chapter 3 shows that PRO in NOC is interpreted as a logophor.

Finally, controller choice, the subject matter of question (2f), lies at the crossroads of syntax, semantics and pragmatics. As regards OC, syntax delineates the search domain but does not force a particular choice within that domain. Chapter 5 discusses the various

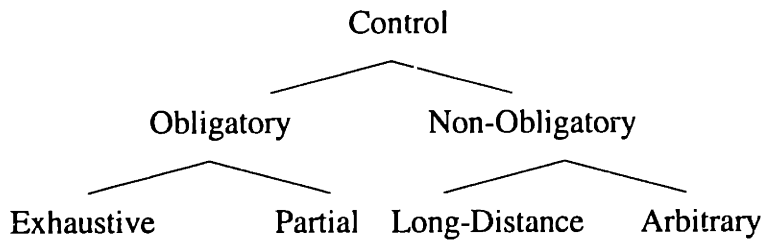
semantic and pragmatic considerations affecting the choice (and/or shifting) of the controller, a complex topic with as yet many unsolved problems.

Let us turn now to brief description of the major proposals of this thesis.

2 A Typology of Control

The general typology I will advance is the following:

(3)



The nodes in this diagram are labeled according to standard practice, whereby the referential properties of PRO define the relevant type of control. The terminology itself does not carry any theoretical commitment; however, the partition it represents incorporates a substantial empirical hypothesis. That is, we demonstrate that the empirical data cluster neatly under the nodes in this typology, however one chooses to label them.

As a point of departure, I will assume the following definitions:

(4) a. *Obligatory Control* (OC): The controller and the infinitive must be clausemates.
b. *Exhaustive Control* (EC): PRO must be identical to the controller.
c. *Partial Control* (PC): PRO must include the controller.
d. *Split Control*: Two matrix arguments jointly control (a plural) PRO.
e. *Non-Obligatory Control* (NOC): The infinitive need not have a clausemate controller.
f. *LD-control*: The controller and the infinitive are not clausemates.
g. *Arbitrary Control*: PRO has no argumental controller.
h. *Implicit Control*: The controller is not syntactically expressed.

Notice that the above terms apply to *types* of constructions, not to *tokens*, and there are some overlaps. In PC PRO must include the controller, but need not properly include it; thus some tokens of PC show identity between PRO and the controller, just like all tokens of EC do. Similarly, some tokens of NOC show local control, just like all tokens of OC do; and finally, in some tokens of OC or NOC the controller may be implicit.

The next question to ask is what constructions actually fall under each type; that is, how does the typology in (3) cut the pie of control constructions. Here real empirical issues arise; the boundary between OC and NOC, for example, is a topic of much controversy, and classificatory choices often depend on which grammatical properties are taken to be criterial and which peripheral. We will first take a look at this question in the domain of OC, and then proceed to NOC constructions.

3 EC and PC (Chapter 2)

It is a common observation that not all complement infinitivals are alike as far as control is concerned. The classical view, in fact, holds that cases like (5a) are fundamentally different from cases like (5b,c):

(5) a. John tried (*for Mary) to win the game.
b. John wanted (for Mary) to win the game.
c. John wondered how to win the game.

According to the classical view, (5a) is an instance of OC whereas (5b,c) are instances of NOC (Williams 1980, Chomsky 1981, Bresnan 1982, Manzini 1983, Bouchard 1984, Koster 1984, Martin 1996, Manzini & Roussou 1998, Wurmbrand 1998b, Hornstein 1999).[1] The basis for this distinction is the possibility of a *for*-complement in (5b) and the apparent arbitrary control in (5c), both of which are impossible in (5a).

There are good reasons to reject the classical view. Both (5b,c) display all the core properties of OC - barring LD-control, strict reading of PRO under ellipsis and *de re* interpretations (see discussion in chapter 2, section 3.2). As for the *for*-complement criterion, Manzini (1983) already observed that it does not reliably correlate with any other NOC property; selection for *for*-complement is governed by subtle lexical factors, not fully systematic, related to *emotivity* (see Kiparsky & Kiparsky 1970).

The notion that interrogative infinitival complements, as in (5c), license arbitrary control, also does not survive closer scrutiny. Notice that truly arbitrary PRO need not be linked to any grammatical antecedent:

(6) a. $John_1$ thought that it was wrong [PRO_{arb} to introduce him_1 to the dean].
b. Sue_1 said that [PRO_{arb} to buy her_1 nothing in Rome] would be unacceptable.

[1] Not all of these authors treat (5b) and (5c) on a par, but they all classify at least one of them under NOC.

In contrast, PRO in a complement interrogative clause must always include a matrix controller; hence, the examples in (7) violate Condition B:[2]

(7) a. * John$_1$ wondered [who PRO$_{1+}$ to introduce him$_1$ to].
b. * Sue$_1$ asked [what PRO$_{1+}$ to buy her$_1$ in Rome].

Our first conclusion, then, is that both (5b,c) belong to the OC category. More generally: *All* complement infinitives fall under OC. Why that must be so is taken up in chapter 3.

Nevertheless, there is something to the classical intuition that control in (5b,c) is somewhat more flexible than in (5a). This intuition is reconstructed in the present study through the distinction between EC and PC. Interrogative and *want*-type complements fall under PC, hence do not impose strict identity between the controller and PRO.

3.1 Properties of PC

Chapter 2 studies the EC/PC distinction across the whole range of infinitival complements, and reaches some non-trivial generalizations, possibly universal, about the distribution of each type. Before we state those generalizations, consider a few representative cases:

(8) *Exhaustive Control*

a. The chair$_1$ managed [PRO$_1$ to gather the committee at 6].
b. * The chair$_1$ managed [PRO$_{1+}$ to gather at 6].
c. Mary knew that John$_1$ began [PRO$_1$ to work (*together) on the project].

(9) *Partial Control*

a. The chair$_1$ preferred [PRO$_{1+}$ to gather at 6].
b. * The chair$_1$ preferred [PRO$_{1+}$ to gather without him$_1$].
c. Mary$_1$ thought that John$_2$ didn't know [where PRO$_{1+2}$ to go together].

Manage and *begin* are EC verbs, while *prefer* and *know* are PC verbs. Consider the minimal pair in (8a-b): The transitive *gather* is a distributive verb compatible with a singular

[2] I use the notation [DP$_1$... [PRO$_{1+}$ ...]] to indicate partial control.

subject, whereas the intransitive *gather* is a collective verb requiring a plural subject. Since *manage* is an EC verb, and the controller of PRO is singular, (8b) is ruled out. By contrast, the PC verb *prefer* can appear in exactly the same environment (9a).[3] That the latter is an instance of PC rather than NOC is witnessed in (9b), where Condition B imposes complete disjointness between PRO and the controller. The contrast between (8c) and (9c) illustrates the same point, this time with the item *together* that requires a plural subject. Notice that no semantic anomaly is involved in the ungrammatical examples; the intended interpretations are always clear enough, yet the syntax makes them available only for a subclass of cases.

We break the domain of infinitival complements into seven subclasses, according to the semantic properties of the control verb: Aspectual (*begin, continue...*), modal (*need, able...*), implicative (*manage, dare...*), desiderative (*want, prefer...*), factive (*hate, regret...*), propositional (*claim, believe...*), interrogative (*wonder, ask...*). The partition is universal, although membership in each class is subject to language particular factors. For example, propositional infinitives are quite common in Romance but in English are only found with the verb *claim* (and maybe *pretend*). Likewise many aspectual and factive verbs in English appear with gerundive complements, although their control properties are unaffected.

Testing all those verb classes in environments similar to (8)-(9) (see discussion in chapter 2, section 3.3), we arrive at the following dichotomy:

(10) a. EC verbs are *implicative, aspectual* or *modal.*
b. PC verbs are *factive, propositional, desiderative* or *interrogative.*

Generalizing yet to a higher level, one can observe that the feature distinguishing the EC type from the PC type is the presence of *tense* in the infinitive. Only PC complements may denote events that do not coincide with the matrix event (see chapter 2, section 4, for extensive discussion):

(11) a. * Yesterday, John managed to solve the problem tomorrow.
b. Yesterday, John wanted to solve the problem tomorrow.

Following Stowell (1982) and Pesetsky (1991) we assume that infinitives have their own tense; however, unlike those authors, we maintain that this only applies to the PC class, the

[3] Some contextual salience of the group about to gather is needed to make (9a) felicitous, however no context can redeem (8b).

EC class (which is much smaller) consisting of tenseless infinitives. (10) then boils down to the generalization that an infinitival complement belongs to the PC class iff it is tensed.

Partial control has another interesting property which must be accounted for: It only induces *semantic* plurality on PRO, not *syntactic* plurality. This contrast is independent of control, as the following examples illustrate:

(12) a. I saw the committee gathering/dispersing.
b. I approve of the population acting together against the new regulations.
c. * The government cleared themselves / each other of any responsibility.
d. * I consider the delegation (to be) idiots.

Collective predicates and *together* can appear with subjects that are semantically plural but syntactically singular (12a,b); however, plural morphology on a predicate or an anaphor normally requires a syntactically plural subject (12c,d). Exactly what kind of plurality is required in specific contexts is subject to some lexical and dialectal differences; (12c,d), for example, are acceptable in British English. Limiting ourselves to those dialects of English where the distinction between semantic and syntactic plurality is robust, it is striking to see it at work in PC environments as well:

(13) a. John told Mary that he preferred to meet at 6 today.
b. * John told Mary that he preferred to meet each other at 6 today.

(14) a. John told Mary that he didn't know which club to join together.
b. * John told Mary that he didn't know which club to become members of.

As shown in chapter 2, section 3.4, this property of PC constructions is universal and purely morphological: Thus, languages in which *together* inflects for syntactic plurality disallow examples like (14a) while still allowing examples like (13a).

The empirical profile of PC is summarized in the generalization below:

(15) *The PC-Generalization*
Syntactic number, person and gender on PRO in tensed infinitival complements are inherited from the controller, but semantic number is not.

3.2 The Theory in a Nutshell

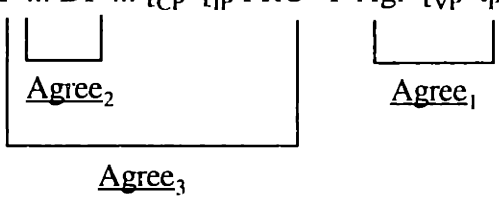
Our account makes certain assumptions about the grammatical expression of tense and phi-features (for the full analysis, see chapter 2, section 5). Following much work in generative grammar (for a recent formulation, see Rizzi 1997), I assume that the C(omp) head contains some tense information that has to be matched with the embedded T(ense) head. Following Pesetsky & Torrego (1999), I take this relation to be mediated by head movement; specifically, in tensed clauses T raises to C to check off an uninterpretable T-feature residing in C. I assume that T-to-C is unmotivated, hence blocked by economy, in untensed clauses.

Next, consider the status of semantic number. Unlike normal phi-features, semantic number is intrinsic to lexical nouns (e.g., *chair* is singular, *committee* is plural). The question is whether PRO should be similarly treated (implying two distinct entries of PRO) or should it be unspecified for semantic number. Simplicity considerations favor the latter option. PRO may then acquire semantic number by a syntactic operation (like agreement) or contextually (where some group reference is salient).

As for normal phi-features, assume that PRO is no different than any other noun, except for being an "anaphor" in the traditional sense: It freely picks phi-features before entering the derivation. In the case of PRO those features are anaphoric, but valued (like the phi-features of *himself*). Following Borer (1989), we also assume that the infinitival Agr is anaphoric and needs to be "identified", although we implement "identification" not via Binding Theory but rather via Agree, as formalized in Chomsky (1998).[4]

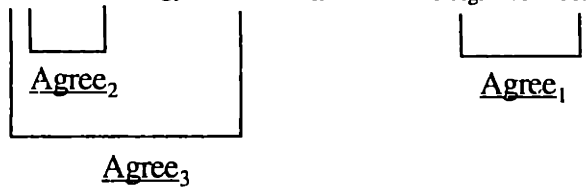
We now take OC to be an instance of Agree. The *probe* (i.e., attractor) is the matrix functional head that agrees with the controller: T for subject, small v for object and perhaps "applicative" v (Marantz 1993) for datives/obliques. The *goal* (i.e., attractee) is PRO or the infinitival Agr, the former activated in EC, the latter in PC. Schematic derivations are illustrated below (where DP is the controller and F is the matrix head that agrees with it):

(16) a. [...F ... DP ... [$_{CP}$ [$_{IP}$ PRO T-Agr [$_{VP}$ t_{PRO} ...]]]] *Exhaustive Control*



[4] For arguments against reducing OC to Condition A of the binding theory, see chapter 3, section 5.2.

b. [...F ... DP ... [$_{CP}$ T-Agr [$_{IP}$ PRO $t_{T\text{-}Agr}$ [$_{VP}$ t_{PRO} ...]]]] *Partial Control*



In (16a) the complement is untensed, so T-Agr remains in-situ. $Agree_1$ matches the phi-features of T-Agr and PRO (followed by raising of the latter to [Spec,TP]). The matrix head F enters two Agree relations - with the controller and with PRO. In virtue of $Agree_2$, F inherits the semantic number of DP_1; in virtue of $Agree_3$, PRO inherits it too, and we obtain the EC effect.

In (16b) the complement is tensed, so T-Agr raises to C, after $Agree_1$ took place. Being at the head of the CP phase, T-Agr escapes the "Phase Impenetrability Condition" (PIC) of Chomsky (1998), which makes elements below the head of a phase invisible to operations from outside. $Agree_3$ can then target T-Agr as a goal. Crucially, though, even if F transmits to T-Agr the semantic number it inherited from DP, there is no way for T-Agr to pass on that feature to PRO. This is because the operation that established feature matching between T-Agr and PRO - namely, $Agree_1$ - did *not* include semantic number; recall that PRO enters the derivation without that feature. In a derivational system, a late operation cannot overwrite an early one. PRO ends up inheriting all phi-features from the controller, but not semantic number; this is the PC effect.

Importantly, Agree cannot target T-Agr as a goal in (16a), since it is too low to be visible, by the PIC. Hence, PC is impossible in an untensed complement, where T-Agr remains in-situ. The fact that PRO in (16a) *is* visible implies the PIC should be relaxed to grant greater visibility to interpretable features - say, anywhere within the embedded phase, not just at its head/edge. The phi-features on PRO, although anaphoric, are valued, hence interpretable; those on T-Agr are uninterpretable (whether valued or not). This modification of the PIC seems plausible and inconsequential for standard cases of successive cyclicity. Notice that we assume, with Chomsky (1998), that uninterpretable features persist until the end of the phase before they erase. This allows the phi-features of F in (16) to enter two checking relations.

We thus derive the generalization in (15) and explain the internal patterns of control in the OC category. An important implication is that OC is established *derivationally*. In particular, in a substantial number of cases (i.e., in PC) semantic interpretation is affected by an uninterpretable element that does not survive to the LF interface, namely the

infinitival Agr. A natural way to understand this is to make semantic interpretation cyclic, just like syntactic and phonological structure-building operations.[5]

4 OC and NOC (Chapter 3)

Moving one layer up in the typology (3), and pursuing the same methodology as before, we now pose the following questions:

(17) a. Distribution: *Where* do OC and NOC obtain?
b. Explanation: *Why* do OC and NOC obtain where they do?

Again, establishing the distributional generalizations is not a trivial matter. The debate over the proper demarcation of OC vs. NOC is tightly linked to the debate over the proper analysis of the so-called "Super-Equi" construction. Therefore, we will focus our attention on the latter, and by doing so will come to consider the interaction of control with extraposition and argument structure.

4.1 Super-Equi

Super-Equi comes in two varieties - extraposition or intraposition (sentential subject). For a long time, since Grinder (1970), it was known that the choice of controller in these constructions is relatively free, although locality does govern a subclass of cases. The question was: which cases exactly? Grinder thought that a local controller (clausemate with the infinitive) can be skipped in intraposition (18a) but not in extraposition (18b):[6]

(18) a. John said that making a fool of himself in public disturbed Sue.
b. * John said that it disturbed Sue to make a fool of himself in public.

This position went unchallenged until Manzini (1983), who produced the following example of LD-control across an intervener in extraposition:

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[5] Further questions arise concerning the compatibility of subject control across an object with the Minimal Link Condition. In chapter 2, section 5.2, I argue that this phenomenon can be understood in terms of Richards's (1997) Principle of Minimal Compliance.

[6] Actually, Grinder (1970) argued that even control of intraposed clauses is subject to his "Intervention Constraint", however that constraint was formulated in a way which distinguished between (18a-b); see chapter 3, section 6 for discussion.

(19) Mary knows that it would help Bill to behave herself in public.

Grinder's analysis cannot account for (19), nor can Manzini's account for (18b). In fact, no existing account of Super-Equi has ever resolved this empirical paradox (for an historical survey, see chapter 3, section 6).

The starting point of our discussion is the hypothesis that the crucial factor distinguishing (18b) from (19) is the *psychological* nature of the predicate governing the infinitive in the former (*disturb*), versus the non-psychological predicate in the latter (*help*). By that we simply mean that statements like "X disturbs Y" carry certain psychological entailments with respect to the mental state of Y, whereas statements like "X helps Y" carry no such entailments.

A minimal paradigm to illustrate this effect is the following:

(20) a. Mary knew that it disturbed John [PRO to perjure himself / *herself].
b. Mary knew that it damaged John [PRO to perjure himself / herself].
c. Mary knew that [PRO to perjure himself / herself] would disturb John.
d. Mary knew that [PRO to perjure himself / herself] would damage John.

The relevant generalizations are stated in (21):

(21) a. In a structure [... X ... [it Aux Pred Y [$_S$ PRO to VP]], where Y and S are arguments of Pred:
i) If Pred is psychological, Y must control PRO.
ii) If Pred is non-psychological, either X or Y may control PRO.
b. In a structure [... X ... [$_S$ [$_S$ PRO to VP] Pred... Y]], either X or Y may control PRO.

In short, LD-control is susceptible to intervention only in extraposition, and only when the intervener bears an EXPERIENCER θ-role. The implication for question (17a) is that among Super-Equi constructions, only extraposition under a psychological predicate falls under OC; all other cases fall under NOC. In chapter 2, section 1.2, I show that this generalization holds not only in English but also in German, Italian, Spanish, Swedish and Hebrew.

This remarkable state of affairs calls for explanation, an explanation that will, inevitably, hinge on both the argument structure of the matrix predicate and the syntactic position of the infinitive. Let us sketch the analysis we develop in chapter 3, section 2.

The first and most important ingredient is a structural constraint on the operation of OC:

(22) *The OC Generalization*

In a configuration [... DP_I ... Pred ... [$_S$ PRO_I ...] ...], where DP controls PRO:
If, at LF, S occupies a complement/specifier position in the VP-shell of Pred, then DP (or its trace) also occupies a complement/specifier position in that VP-shell.

(22) is the present analogue of the distinction between open and closed grammatical functions in Bresnan (1982), or that between governed and ungoverned positions in Manzini (1983). (22) amounts to the claim than any VP-internal infinitive must find a VP-internal controller, where VP is understood in the broad sense as the projection hosting all arguments (including the external one). It follows that all VP-external infinitives fall under NOC. Notice that *which* argument inside VP is selected as the controller is not governed by (22): In chapter 5 we present extensive evidence that controller choice in OC is a semantic/pragmatic issue.

The second ingredient is a PF-constraint on extraposition:

(23) *Extraposition*

VP-internal clauses must be peripheral at PF.

(23) corresponds to the crosslinguistic observation that embedded clauses are typically peripheral to the VP and seldom intervene between a predicate and other internal arguments. Where this does not obtain in base-structure (because of thematic mapping), the embedded clause must extrapose. I assume that extraposition in this case is adjunction to VP, and (as is standardly assumed) an adjunct is not dominated by its host category.

The third ingredient concerns the interpretation of chains:

(24) *Chain Interpretation*

Any link in a chain may be the LF-visible link.

(24) is the null hypothesis under the view that traces of movement are full copies of the element moved (Chomsky 1995). Reconstruction effects that track the path of movement suggest that in principle, any link along that path can be the one feeding the interpretive component (Fox 1999, Bobaljik 1999), at least for A-bar movement. Assuming that adjunction falls under that type, extraposition yields two copies (base and extraposed). The

extraposed copy must feed PF to satisfy (23), however either copy may feed LF. "Reconstruction" is a name for the situation where the higher copy is pronounced and the base copy is interpreted. Since the base position is VP-internal and the extraposed one is VP-external, interpreting the former results in OC, while interpreting the latter results in NOC, assuming (22).

The final ingredient concerns the hierarchical projection of arguments:

(25) *Argument Projection*

a. EXPERIENCER is generated above CAUSER.

b. CAUSER is generated above GOAL/PATIENT/THEME.

(25a) has been invoked to explain several unaccusative properties of psych-verbs (Belletti & Rizzi 1988), as well as certain scope reversal properties they display (Pesetsky 1995, Stroik 1996). (25b) is a standard assumption that needs no further comment. Notice that the two clauses of (25) never apply jointly; no predicate selects EXPERIENCER, CAUSER and GOAL/PATIENT at the same time.

This system derives the desired results, under the assumption that movement is constrained by economy. Consider the following partial representations (abstracting away from V-movement), where the subscript "1" indicates local control and the subscript "2" non-local (LD or arbitrary) control:

(26) a. ... $[_{VP}$ John$_1$ $[_{V'}$ please $[_S$ PRO$_{1/*2}$ to work late$]_{PF/LF}]]$

b. * ... $[[_{VP}$ John$_1$ $[_{V'}$ please $[_S$ PRO$_{1/*2}$ to work late$]$ $]]$ $[_S$ PRO$_{1/*2}$ to work late$]$ $]$

(27) a. ... $[[_{VP}$ $[_S$ PRO$_{1/*2}$ to work late$]_{LF}$ $[_{V'}$ help John$_1]]$ $[_S$ PRO$_{1/*2}$ to work late$]_{PF}]$

b. ... $[[_{VP}$ $[_S$ ~~PRO$_{1/*2}$ to work late~~$]$ $[_{V'}$ help John$_1]]$ $[_S$ PRO$_{1/2}$ to work late$]_{PF/LF}]$

(28) a. $[_{IP}[_S$ PRO$_{1/2}$ to work late$]_{PF/LF}$ would $[_{VP}$ John$_1[_{V'}$ please $[_S$ ~~PRO$_{1/*2}$ to work late~~$]]]]$

b. $[_{IP}[_S$ PRO$_{1/2}$ to work late$]_{PF/LF}$ would $[_{VP}[_S$ ~~PRO$_{1/*2}$ to work late~~$]$ $[_{V'}$ help John$_1]]]$

Under a psychological predicate, the CAUSER infinitive is VP-peripheral to begin with (26a). Extraposition is unmotivated, regardless of PF/LF-copy resolution, hence blocked by economy (26b). Since the infinitive stays in-situ, OC applies and control must be local.

Under a non-psychological predicate, the CAUSER infinitive is generated above the other object, hence is not VP-peripheral (27). Extraposition applies, and LF may interpret

either the base copy (27a) or the higher one (27b); the latter option gives rise to NOC, since the infinitive occupies a VP-external position at LF.

In intraposition (28), the infinitive raises to [Spec,IP] to satisfy EPP. This is an instance of A-movement, and we may assume (following Chomsky 1995) that unless special circumstances demand otherwise, it is the higher link of the chain that gets interpreted. Again the infinitive escapes the domain of OC, this time regardless of the semantic class of the matrix predicate.

We thus derive the generalizations in (21), resolving the empirical paradox raised by (18b) and (19). We must still explain the OC Generalization (22), which is doing the right work for us but is so far no more than a distributional statement. Before we do so, let us turn to some striking confirmation for the analysis just sketched.

The interaction of our assumptions about OC and extraposition yields the following consequence: Whenever the infinitive is (syntactically) in situ, control is local; and whenever control is non-local (arbitrary or long-distance), the infinitive is extraposed to a position adjoined to VP. Assuming that adjuncts are islands to extraction, we expect a correlation between non-local control and failure of extraction.

The prediction is borne out, both for arbitrary and for LD-control (for more evidence, see chapter 3, section 3):

(29) a. It would kill the workers$_1$ [PRO$_1$ to build this dam].
b. What$_2$ would it kill the workers$_1$ [PRO$_1$ to build t_2 ?]
c. It would kill the forest [PRO$_{arb}$ to build this dam].
d. * What$_2$ would it kill the forest [PRO$_{arb}$ to build t_2 ?]

(30) a. Hillary thinks it damaged Bill$_1$ [PRO$_1$ to talk about himself on the Dave Letterman show].
b. That's the talk show$_2$ that Hillary thinks it damaged Bill$_1$ [PRO$_1$ to talk about himself on t_2] .
c. Hillary$_1$ thinks it damaged Bill [PRO$_1$ to talk about herself on the Dave Letterman show].
d. * That's the talk show$_2$ that Hillary$_1$ thinks it damaged Bill [PRO$_1$ to talk about herself on t_2] .

Notice that both *kill* and *damage* are non-psychological predicates, allowing either OC (the (a) examples) or NOC (the (c) examples). However, when extraction takes place from the infinitive, NOC is no longer available ((b) versus (d)). This is because extraction requires

the LF-copy of the infinitive to be the base one, whereas NOC requires it to be the extraposed one; those conflicting demands cannot be simultaneously satisfied.

Evidence from Weak Crossover converges on the conclusion that OC and NOC in extraposition, although string-identical at PF, involve different structures:

(31) a. It would ruin this tune$_i$ [PRO$_{arb}$ to play it$_i$ on a flute].
b. ?? What tune$_i$ would it ruin t$_i$ [PRO$_{arb}$ to play it$_i$ on a flute]?
c. What tune$_i$ would it ruin t$_i$ [PRO$_{arb}$ to play e$_i$ on a flute]?

Since the matrix object does not c-command the infinitive when arbitrary control obtains, the configuration in (31b) violates Weak Crossover. Predictably, the sentence becomes acceptable if the pronoun is replaced by an empty category, as in (31c); this involves a parasitic gap strategy, which is licensed precisely because the "anti c-command" condition is satisfied.

4.2 Anaphors and Logophors

The rationale behind the OC Generalization (22) is already implicit in the proposal, made in chapter 2, that OC involves an Agree relation between the matrix functional head F that agrees with the controller and PRO/T-Agr. Agree, which underlies standard chain formation, has certain locality properties, which are indeed observed in OC. In particular, it obeys the "Phase Impenetrability Condition" (see above); thus the head F (and its specifier, the controller) must be found within the phase immediately dominating the infinitival CP phase. The locality of OC follows. The fact that the controller must be a complement or specifier in the matrix VP-shell reflects the fact that only those positions enter into Agree relations with the functional heads that head the layers of the shell.

The last ingredient of (22) to explain is why the locality conditions only apply when the infinitive is VP-internal (complement or specifier):

(32) a. Infinitive is VP-complement/VP-specifier $\Rightarrow$ OC
b. Infinitive is IP-subject / adjunct $\Rightarrow$ NOC

We have already seen that this partitioning is supported by extraction asymmetries: OC infinitives are transparent to extraction, whereas NOC infinitives - like subjects and adjuncts in general - are islands. I argue that the *same* structural distinction is responsible

for whether an infinitive displays OC or NOC: It is *because* VP-complements and specifiers are transparent that Agree can apply to the anaphoric Agr inside them, and it is *because* (IP-)subjects and adjuncts are islands that Agree fails to penetrate them, resulting in NOC. Thus, the distributional distinction between OC and NOC ultimately reduces to reduces the well-established CED of Huang (1982).

How is PRO interpreted in an island environment, that is, when it can enter no syntactic relation with elements outside the island? Following Reinhart & Reuland (1993), I suggest that an anaphoric element which fails to be syntactically licensed is interpreted as a *logophor*. Logophors are licensed by discourse factors such as focus, perspective and center of consciousness or communication. Indeed, it is an old insight in generative grammar that LD-control in Super-Equi has a lot in common with "picture-anaphora" (Grinder 1970, Kuno 1975, Lebeaux 1985). This view contrasts with an alternative view, by which PRO in LD-control is pronominal (Bouchard 1984, Hornstein 1999). Since logophors are subject to more stringent antecedence conditions than pronouns, the two views make different predictions.

Environments in which the remote antecedent is not a logophoric center allow a pronoun but disallow PRO in the subject position of the infinitive:

(33) a. [*(his$_1$) having shaved already] shows that Mary arrived more than 5 minutes after John$_1$ did.

[Lebeaux 1984]

b. John's$_1$ friends think it is illegal [*(for him) to feed himself].

[Chomsky 1986a: 125]

We conclude that PRO in NOC is a logophor rather than a (silent) pronoun. This property emerges in island environments, where the infinitival Agr fails to enter an Agree relation with an element outside the island and cannot be syntactically identified.

5 Control and Predication (Chapter 4)

So far we have concentrated on questions (2a,c,d) - those that establish the typology of control. I now turn to the subject matter of question (2e), the interpretation of PRO. There are many aspects to this question, some of which we leave untouched (e.g., the *de relde se* distinction, deictic or generic PRO etc.). The contribution of this thesis to the semantics of control is in providing some new arguments which bear on the classical debate between the *predicational* and the *propositional* approaches to OC.

The predicational approach holds that infinitives in OC denote unsaturated predicates (properties). The open position corresponds to the subject of the infinitive, which under some versions is projected as PRO and under others is completely missing from the syntax (the latter take controlled infinitives to be bare VP's). If PRO is present, then it is merely a lambda-variable. The semantic procedure associates the controller with the infinitive by predicating the latter of the former (see Bach 1979, 1982; Williams 1980; Dowty 1985; Lebeaux 1985; Chierchia 1984, 1989, 1990; Clark 1990).

The propositional approach holds that infinitives in OC denote closed propositions, just like finite clauses do. PRO is projected in the syntax and saturates the subject position of the infinitive. The semantic procedure associates the controller with PRO via an anaphoric relation of sorts (see Chomsky 1980, 1981; Koster & May 1982; Manzini 1983; Bouchard 1984; Koster 1984; Borer 1989).

Notice that the issue under debate is not the existence of PRO; both approaches are compatible with a syntactic PRO. Rather, at stake is the manner in which PRO composes with the infinitival VP. This determines the semantic type of the infinitive, and the question is: Is the infinitive a predicate or a proposition? I will argue that there are good reasons to adopt the propositional approach. We will see that within a particular empirical domain - adjectival complementation - that approach can express natural generalizations that the predicational approach fails to.

The starting point to our discussion is an observation made by Faraci (1974), which can be generalized and stated in the following way:[7]

(34) Given a predicate P that takes an infinitival complement C:
  a. If P is psychological, C contains at most one bound gap - in subject position.
  b. If P is non-psychological, C contains exactly one bound gap (subject or object).

(34) points to a double asymmetry between complements to psych-adjectives and complements to non-psych adjectives - both in the *necessity* and in the *position* of the gap. The following paradigm illustrates these asymmetries ($ready_P$ stands for the psychological sense of *ready*, $ready_M$ stands for its non-psychological, "material" sense):

(35) a. The patient is $ready_P$/anxious/eager for the doctor to operate on him.
  b. * The patient is $ready_P$/anxious/eager for the doctor to operate on ___.

[7] *Tough*-adjectives, although mostly psychological, do not fall under (34a); see chapter 4, section 4.2 for discussion.

c. The tumor is ready$_M$ for the doctor to operate on ___.

d. * The tumor is ready$_M$ for the doctor to operate on it.

[Faraci 1974: 80-82]

(36) a. Mary$_1$ was happy [e$_1$ to assist anyone].

b. Mary$_1$ was happy [e$_1$ to be assisted].

c. * Mary$_1$ was happy [e$_{arb}$ to assist e$_1$].

(37) a. The book$_1$ is available [e$_1$ to be read].

b. * The book$_1$ is available [e$_{arb}$ to read it$_1$].

c. The book$_1$ is available [e$_{arb}$ to read e$_1$].

I propose that a psych-adjective denotes a two place relation between an individual (*experiencer*) and an eventuality (*target/subject-matter*). The eventuality is of a propositional type, and may be expressed by a gapless infinitive (35a) or a subject-gap one (36a,b). A non-psych adjective, by contrast, denotes a one place property of an individual (*theme*). That property, in turn, can be modified by a *predicative* infinitival. The unsaturated position of that infinitive may be either the object (35c)/(37c) or the subject (37a).

In other words, we assume that the syntax-semantics mapping makes available three types of infinitives that are mapped onto two semantic types:

(38) *Semantic Typology of Infinitival Clauses*

a. [$_{CP}$ Op$_1$[$_{IP}$ DP/PRO$_{arb}$...[$_{VP}$ ... t$_1$]]] ⇒ CP denotes a predicate (<e,<s,t>>)

b. [$_{CP}$ Op$_1$[$_{IP}$ t$_1$... [$_{VP}$ ...]]] ⇒ CP denotes a predicate (<e,<s,t>>)

c. [$_{CP}$ [$_{IP}$ DP/PRO...[$_{VP}$ ...] ⇒ CP denotes a proposition (<s,t>)

Since a psych-adjective combines with a propositional infinitive, which can only be formed as in (38c) - we derive (34a); since a non-psych adjective combines with (i.e., is modified by) a predicative infinitive, which can be formed either as in (38a) or (38b) - we derive (34b).

The non-trivial part of this analysis is the distinction between (38b-c); that is, we claim that a subject-gap infinitive may be propositional or predicative, depending on context; moreover, in the former case it is an *argument* of the (psych) adjective, whereas in the latter it is a *modifier* of the (non-psych) adjective.

This distinction receives independent support from familiar argument/modifier asymmetries. We give a sample of them here (see chapter 4, section 3 for discussion).

A psych adjective may occur without an infinitival complement only if the latter is explicit in the context (i.e., ellipsis), whereas a non-psych adjective allows free complement omission:

(39) a. A: Someone should do the laundry, you know.
B: Well, I'm willing (to do the laundry).
b. A: The laundry is really dirty, you know.
B: Well, I'm willing *(to do the laundry).
B': Well, the washing machine is available (to do the laundry).

This contrast is explained if the infinitive is an argument of the psych-adjective but a modifier of the non-psych adjective.

Second, it is well-known that arguments are transparent to extraction but non-arguments - namely, adjuncts and modifiers - are opaque. Indeed, extraction is possible from a complement of a psych-adjective but not from that of a non-psych-adjective (concentrate below on the downstairs reading of the *wh*-word):

(40) a. When$_1$ is John ready$_P$ to test the car t_1? (answer: tomorrow)
b. How$_1$ is John ready$_P$ to eat the dish t_1? (answer: without chopsticks)

(41) a. * When$_1$ is the car ready$_M$ to test t_1? (answer: tomorrow)
b. * When$_1$ is the car ready$_M$ to be tested t_1? (answer: tomorrow)
c. * How$_1$ is the dish ready$_M$ to eat t_1? (answer: with chopsticks)
d. * How$_1$ is the dish ready$_M$ to be eaten t_1? (answer: with chopsticks)

Third, in VP-fronting configuration, the infinitive must be adjacent to a non-psych-adjective but not to a psych-adjective:

(42) a. Ready$_P$/anxious/willing to serve (his country) though I'm sure John is,
I doubt that he is anxious to be posted in Bosnia.
b. Ready$_P$/anxious/willing though I'm sure John is to serve (his country),
I doubt that he is anxious to be posted in Bosnia.

(43) a. Ready$_M$ to serve (be served) though I'm sure the soup is,
I doubt that the guests will want it on such a hot day.

b. ?? Ready$_M$ though I'm sure the soup is to serve (be served),
I doubt that the guests will want it on such a hot day.

Fourth, arguments but not modifiers can strand prepositions. Notice that both psych and non-psych adjectives can freely take *for*-PP's:

(44) a. John is ready$_P$ for the exam.
b. The soup is ready$_M$ for dinner.

However, a *what*-question can be answered with an infinitive only in the psych-variant; the non-psych variant is marginal at best:

(45) a. John is ready$_P$ to take the exam.
b. What is John is ready$_P$ for? To take the exam.
c. The soup is ready$_M$ to eat / be eaten.
b. ?? What is the soup ready$_M$ for? To eat / be eaten.

All these tests demonstrate that the infinitival complement of a psych-adjective functions as an argument, whereas that of a non-psych adjective functions as a modifier.

Recall that the modifier infinitive is semantically a predicate, formed by null operator movement (46a); in this respect, it is formally equivalent to another type of predicative subject-gap infinitive - namely, a relative clause of the sort in (46b):

(46) a. The book$_1$ is available [$_{CP}$ Op$_1$ [t$_1$ to be read]].
b. The right person$_1$ [$_{CP}$ Op$_1$ [t$_1$ to fix the sink]] could not be found.

Following Clark (1990), I assume that null operator chains are subject to certain case requirements. Whether these requirement are met in the subject position of infinitives is a language-specific matter. Nevertheless, given the formal equivalence of the infinitives in (46a,b), other things being equal, our analysis makes the following non-trivial crosslinguistic prediction:

(47) *A Crosslinguistic Correlation*
A language has subject infinitival relatives iff it has subject-gap infinitival complements to non-psych adjectives.

I have tested 11 languages for this striking prediction (see chapter 4, section 5). Languages that have both constructions are English, Italian, Québec French, Brazilian Portuguese, Spanish, Swedish and the German dialect of Itzgründisch. Languages that lack both constructions are Upper Austrian, Russian, Hebrew and Hindi. I have not found a language that has one of the two constructions mentioned in (47) but not the other. This is quite remarkable, given the superficial disparity between them.

To conclude, we have constructed three arguments for the propositional approach to control and against the predicational one. The first argument concerns the account for the generalizations in (34). The clausal typology offered in (38) treats PRO-infinitivals and *for*-infinitivals on a par, both being propositional; we thus understand why both fall under a unitary statement, namely (34a). The predicational approach would be hard-pressed to explain why subject gap infinitives figure in (34a) but object gap infinitives do not; if both are always predicative, the subject-object asymmetry is a mystery.

Second, the predicational approach would have to stipulate, in light of the argument/modifier asymmetries noted above, that a predicative infinitival can be either an argument or a modifier; whether that distinction is semantically meaningful is not obvious under this view, since the infinitive itself has the same denotation. That would fail to capture the observation that at least some argumenthood tests (e.g., extraposition and preposition stranding) *are* sensitive to semantic interpretation. By contrast, the propositional approach preserves a tight mapping between the status of an infinitive as an argument or an adjunct and its semantic type.

Third, the crosslinguistic correlation in (47) is fully consistent with the propositional view but quite puzzling under the predicational view. If both control and relativization involve predicating an infinitive of an NP, why is the former (apparently) a universal option whereas the latter is parametric? Moreover, we saw that the availability of subject gap complements to non-psych adjectives does *not* correlate with that of subject gap complements to psych adjectives; again, if the same mechanism underlies both constructions, this disparity is mysterious. However, if the licensing of PRO and the licensing of an A-bar variable in the subject of an infinitive are subject to different conditions, then the empirical pattern is not surprising.

6 Implicit Control and Control Shift (Chapter 5)

Finally, we turn to the subject matter of question (2f) - the choice of controller. This topic is quite complex; despite the impressive literature on it, basic issues are still unresolved. This state of affairs is partly due to the quality of the data, which is often not sharp enough

to decide between competing analyses. My purpose in chapter 5 of this thesis is not to advance any novel account of the data, but rather to sort them out in a way which will hopefully be useful for future research. That is, we are after the empirical generalizations that underlie the phenomena of implicit control and control shift.

6.1 Implicit Control

We most frequently find implicit control with agents of passives and with datives. That implicit datives/benefactives can control is an old observation, going back to Kimball (1971). Bresnan (1982) cites (48a); Epstein (1984) argues that (48b) is not a case of arbitrary control but rather OC by an implicit argument, itself bound by a universal quantifier (48c); and Koster (1984) similarly argues that the apparent LD-control in (48d) is in fact OC by an implicit experiencer, as witnessed by the intervention effect in (48e):

(48) a. Louise gestured/said/signaled (to Tom_1) [PRO_1 to follow her].
b. It is fun [PRO to eat ice-cream].
c. $\forall x$ [it is fun **for x** [for x to eat ice-cream]]
d. $Mary_1$ said it was difficult [PRO_1 to take another topic].
e. Mary said it was difficult for $Bill_1$ [PRO_1 to take another topic].

At times it has been suggested that the *type* of control exerted by implicit arguments is different than the type of control exerted by overt ones (Bresnan 1982, Bouchard 1984, Huang 1989, Chierchia 1989), perhaps even falling under NOC. In fact, there is no reason to believe that implicit control (by internal arguments) is any different than normal OC (see chapter 5, section 1.2, for extensive discussion).

An independent issue which is sometimes conflated with implicit control is the question of the syntactic expression of arguments. Which arguments must be expressed and which may be left implicit is an interesting question; both lexical information and language particular factors seem to affect that decision. For example, it appears that direct objects are rarely omissible, whereas dative arguments can drop to varying degrees across languages (in English, only with communication verbs; in Hebrew, also with *recommend*, *permit*, etc.). Crucially, though, the issue is orthogonal to control; arguments that are (not) omissible in non-control contexts are also (not) omissible as controllers:

(49) a. John convinced *(Mary) of his innocence.
b. John convinced *(Mary) [PRO to believe him].

c. Mary forced the song *(on John).
d. Mary forced *(John) [PRO to sing].

(50) a. John said the secret (to Mary).
b. John said (to Mary) [PRO to listen to him].
c. Mary helped (John) with the dishes.
d. Mary helped (John) [PRO (to) do the dishes].

Although some datives can drop, not all oblique controllers can drop (e.g., *Tom pleaded *(with Anne) to understand his situation*). This suggests that the line between OC and NOC is not sensitive to (unrestricted vs. restricted) grammatical functions, contra Bresnan (1982).

Turning to control by implicit agents, the picture becomes considerably more complex. Implicit agents can control into complements of impersonal passive constructions and into adjuncts:

(51) a. It was decided to leave.
b. Er werd geprobeerd [(om) PRO Bill te bezoeken].
there was tried (Comp) PRO Bill to visit
Lit: 'It was tried to visit Bill'

[Dutch: Koster 1984]

(52) a. The game was played wearing no shoes.
b. The president was elected without considering his competence.

[Roeper 1987]

The adjunct case seems to involve certain restrictions on the animacy and "topichood" of the implicit agent (see Kawasaki 1993). Consider the following paradigm:

(53) a. [Before PRO entering the basement], the rain washed the stairs.
b. [Before PRO entering the basement], the stairs were washed.
c. [Before PRO entering the basement], Mary was washed.

Those speakers who accept (53b) construe the implicit controller as human - even though nothing about the pragmatics of the situation requires that (cf. (53a)). Still, a human

subject, as in (53c), overrides the implicit agent and must be the controller itself. When the antecedent of PRO is salient enough, it need not be grammatically represented:

(54) After pitching the tents, darkness fell quickly. [Kawasaki 1993]

The only case where an implicit agent is blocked from controlling is in the passive of *promise*:

(55) * John was promised (by Mary) to leave.

This case was claimed to illustrate "Visser's Generalization" - subject control verbs do not passivize. In fact, as I show in chapter 5, section 2, it is not clear that the "generalization" covers more than this single case. Two basic questions arise: i) Why is an implicit agent different than an implicit dative as an OC controller? ii) Why can the implicit agent control in impersonal passives and adjuncts, but not in (55)? There have been quite a few attempts to explain Visser's Generalization, but as far as I know, none of them provide satisfactory answers to those two questions (see Bach 1979, Chomsky 1980, Williams 1980, Bresnan 1982, Růžička 1983, Koster 1984, Farkas 1988, Larson 1991).

Another conundrum associated with implicit agent control is the behavior of rationale clauses. Consider the following paradigm:[8]

(56) a. The boat was sunk [PRO to collect the insurance].
b. * The boat sank [PRO to collect the insurance].
c. * The ship sank (in order) for the owner to collect the insurance.
d. * The ship was sunk to become a hero.
e. Grass is green to promote photosynthesis.
f. The shopwindow has a big sale sign in it (in order) to attract customers.
g. * Marijuana was smoked to become illegal in the 1930s.

There are three major proposals in the literature as to the identity of the controller of PRO in rationale clauses:

(57) a. The controller is the matrix (possibly implicit) agent.

[8] The examples in (56) are collected from Williams (1974, 1985), Manzini (1986), Roeper (1987), Lasnik (1988), Farkas (1988), Clark (1990) and Kawasaki (1993).

b. The controller is the purposeful causer of the matrix event.

c. The controller is the matrix event.

In favor of (57a) is the familiar contrast between the passive and the unaccusative cases (56a-b). However, the ungrammaticality of (56c), without PRO, suggests that the unaccusative case (56b) is ruled out independently of control. Moreover, if a matrix agent is all that is necessary, then (56d) is also expected to be acceptable, contrary to fact. Finally, examples like (56e,f), where there is no matrix agent, argue conclusively against (57a). One then might take (56e,f) as evidence for (57b). However, a purposeful causer should be available in (56d) as well. Option (57c) seems to correctly rule in (56e,f) and rule out (56d) (events cannot become heroes); but it cannot extend to (56a) (events cannot collect insurance), nor can it readily rule out (56g) (smoking marijuana can become illegal).

Overall, then, it seems that none of the options in (57) is fully explanatory, although (I suspect) (57b) is essentially correct, with an unexplained residue, namely that rationale clauses under matrix passives must be agentive.

6.2 Control Shift

Control shift refers to a situation where the controller shifts from one matrix argument (the unmarked controller) to another (the marked controller). Two types of shifts are usually attested: Agent --> Goal and Goal/Theme --> Agent. They are illustrated in (58) and (59), respectively:

(58) a. John$_1$ was promised [PRO$_1$ to be allowed to leave].

b. Grandpa promised the children$_1$ [PRO$_1$ to be able to stay up for the late show].

(59) a. Susie$_1$ persuaded the teacher [PRO$_1$ to be allowed to leave early].

b. John$_1$ begged Mary [PRO$_1$ to be allowed to consult a doctor].

Judgments vary as to the degree of acceptability of specific examples, and pragmatic factors are relevant as well. Thus, with a verb like *ask*, all that is needed to shift the controller is some indication of the authority relations:

(60) a. The pupil asked the teacher to leave early.

b. The guard asked the prisoner to leave the room.

[Farkas 1988]

Normally, some modal force, explicit or not, is present in the infinitive under control shift. In English, *be allowed to* complements achieve that goal. In other languages, like Hebrew, a modal reading is not necessary, and embedded copular/passive predicates can trigger the shift from agent to goal control:

(61) ha-menahel hivtiax li [PRO_i lihiyot ha-/lehitmanot la- ozer šelo].
the-manager promised to-me PRO to be the-/to be appointed to-the assistant his
'The manager promised me_i [PRO_i to be (appointed as) his assistant]'

A common insight in the literature is that these examples involve not just a shift in the controller but also a more global shift in the event structure of the clause. The analyses pursued invoke notions like thematic binding (Melvold 1985), intentional causer (Farkas 1988), semantic coercion (Sag & Pollard 1991) and deontic authority (Petter 1998) to capture the semantic relation persisting between the *unmarked* controller and the infinitive even after the shift to the marked controller. In chapter 5, section 3.2, I try to assess the merits and faults of those proposals, concluding that the semantic relation implicated in these constructions is quite abstract and not grammaticalized in any unique way.

This discussion bears directly on the status of theories attempting to deduce the identity of the controller solely on the basis of syntactic locality. Those descendants of the Minimal Distance Principle (MDP), due to Rosenbaum (1967), include Larson (1991), Martin (1996), Manzini & Roussou (1998) and Hornstein (1999). Analyzing Larson's proposal in detail, I show in chapter 5, section 4, that it fails to capture the real generalization governing subject control. In particular, I show that the analysis based on dative shift fails to extend beyond the single verb *promise* (*vow* and *threaten* are immediate counterexamples), while making incorrect predictions w.r.t. double object verbs that exhibit *object* control (e.g., *allow*). Overall, the MDP is untenable, and the question of controller choice (inside the OC domain) is best handed over to semantic/pragmatic considerations.

7 The Overall Picture and Open Issues

Putting together the different types and mechanisms of control discussed in this thesis, we arrive at the following picture:

(62) A Typology of Control

Obligatory Control		**Non-Obligatory Control**	
Distribution: VP-internal infinitives		*Distribution*: VP-external infinitives	
Mechanism: Agree		**LD-Control**	**Arb-Control**
Exhaustive Control	**Partial Control**	*Mechanism*:	*Mechanism*:
Distribution: Tenseless infinitives	*Distribution*: Tensed infinitives	PRO is a logophor	PRO bound by a generic operator
Mechanism: Agree (F,PRO)	*Mechanism*: Agree (F,T-Agr)		

Looking at this table, one may conclude that there is no such thing as "the theory of control". Instead, there is a cluster of subtheories, each explaining a particular aspect of control phenomena, in particular contexts. This may seem a rather dispiriting conclusion for a thesis aiming to decompose control into its elements; decomposition went so far that nothing was "left" that is intrinsic to our subject matter. An uplifting perspective, however, is also available: We now understand control better precisely because so much of it reduces to well-understood principles operating elsewhere in the grammar. I leave it to the reader to choose between those alternative conclusions.

For the sake of completeness, it should be noted that some control constructions are left out of the table in (62). These include control into adjuncts - rationale/purpose clauses, temporal adverbials, absolutive adjuncts etc.; "VP-external infinitives" in the NOC rubric of table (62) are restricted to extraposed and intraposed (argumental) clauses. We also offer virtually no discussion of control into nominals. As to adjunct control, in all likelihood this is not a homogeneous phenomenon, e.g., rationale clauses and temporal adverbials have radically different control properties, some of which lie outside sentence grammar. Part of the complexity that arises in this domain is discussed in chapter 5, section 2; however, a full, systematic treatment of these cases is beyond the scope of this thesis. As far as I know, the present analysis is not inconsistent with the facts we have left outside, and may have natural extensions to account for them as well.

Chapter 2: Exhaustive and Partial Control

Introduction: Categories of Control

How complex is the empirical picture presented by control constructions? How many theoretical types must be posited? A fundamental insight, going back to early discussions in generative grammar, is the distinction between two types of control, termed Obligatory Control (OC) and Non-Obligatory Control (NOC) by Williams (1980). Each type is characterized by a cluster of properties absent from the other type. The dichotomy runs through virtually all subsequent studies of control, in one form or another, specific implementations differing on the precise empirical scope they assign to each category.

On the two extremes we find "pure" cases: Complement control with verbs like *try* is uniformly assigned to OC, while Super-Equi control with sentential subjects is uniformly assigned to NOC. In between, we approach the more controversial cases. In particular, the status of desiderative infinitival complements (to verbs like *want*, which can take *for*-complements) and interrogative infinitival complements is less clear. Desiderative infinitival complements are usually classified with NOC, the primary reason being their ability to host a lexical subject (Chomsky & Lasnik 1977, Williams 1980, Bresnan 1982, Bouchard 1984, Koster 1984, Martin 1996, Wurmbrand 1998b). Chomsky (1981) and Manzini (1983), however, treat desiderative complements as any other case of OC. All of the above authors (with the exception of Chomsky & Lasnik 1977) classify interrogative complements with NOC, the primary reason being their apparent compatibility with arbitrary control.

The main claim of this chapter is that all these treatments are empirically inadequate, insofar as the real boundaries between the different categories of control lie elsewhere. I argue that all complement infinitivals fall under OC, NOC being limited to subject and adjunct infinitivals. Furthermore, the OC category comprises of two types, largely overlapping in properties but crucially not identical. The first type I call *Exhaustive Control* (EC); it refers to constructions where the reference of PRO must be exhausted by the reference of the controller. The second type I call *Partial Control* (PC); it refers to constructions where the reference of PRO includes but need not be identical to the reference of the controller.

In most contexts, PC is indistinguishable from EC. Environments that force PC and are incompatible with EC involve collective predicates. These predicates, as shown in (1), are incompatible with a singular subject. Similarly, they are ruled out in EC environments with a singular controller (2). Interestingly, they are allowed in PC environments (3):[1]

[1] Sentences like in (3), which figure extensively in this chapter, require some contextual setting. They presuppose that the hearer can fill in the extra participants in the reference of PRO, other than the controller

(1) a. * John met at 6.
b. * The chair gathered during the strike.
c. * Mary applied together for the grant.

(2) a. * John managed [PRO to meet at 6].
b. * The chair dared [PRO to gather during the strike].
c. * Mary forgot [PRO to apply together for the grant].

(3) a. John wanted [PRO to meet at 6].
b. The chair was afraid [PRO to gather during the strike].
c. Mary wondered whether [PRO to apply together for the grant].

The bulk of this chapter is dedicated to an investigation of the scope and properties of PC. This class has received very little attention in the literature; following a single example in Williams (1980), only three studies discussed it - Martin (1996), Petter (1998) and Wurmbrand (1998b) - of which only the first offers an explicit account. In fact, as I argue below, this scarcity of attention is disproportionate to the actual scope of the phenomenon. Most control verbs *are* PC verbs, and only a small minority are EC verbs. In particular, the PC class comprises of desiderative, interrogative, factive and propositional verbs; the EC class comprises of implicative verbs and a few modal and aspectual verbs. In a sense, then, studies of control have focused on EC for the wrong reasons: Not because most control *verbs* are EC verbs, but simply because most control *contexts* involve (embedded) distributive predicates, which do not force partial control.

PC is thus not an exotic peculiarity but an option widely available, even if not widely instantiated. An adequate theory of control must provide a principled account for this phenomenon, to the extent that systematic regularities are discovered. This will be done in the following sections.

This chapter is organized as follows: Section 1 illustrates some immediate corollaries of PC, which bear on the certain semantic conceptions of control; section 2 reviews the classic OC/NOC distinction in terms of four criterial properties associated with each type; sections 3.1-3.2 demonstrate that PC patterns with EC with respect to all four criteria, establishing PC as a subtype of OC; section 3.3 concentrates on the phenomenon of PC

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itself. Once this context is supplied, the contrast with (2) is sharp and clear. In most examples below the linguistic context will provide the necessary participants, but in case it does not, the reader should bear in mind that such a context can be easily constructed.

and presents extensive crosslinguistic evidence for its occurrence in various complement types; section 3.4 establishes the observation that PC involves semantic but not syntactic plurality on PRO; section 3.5 discusses the related but somewhat different phenomenon of split control; section 3.6 summarizes the properties of EC, PC and NOC. In section 4 I discuss the relevance of Tense to PC: It is shown that PC occurs in all and only tensed infinitival complements.

In section 5 I develop the analysis, drawing on some recent ideas within minimalism. Section 5.1 characterizes the difference between semantic number and other phi-features. I argue that while PRO enters the derivation with (arbitrarily selected) phi-features, it lacks semantic number, which can only be assigned via agreement or by semantic/pragmatic context. It is also maintained that the head of a tensed CP bears an uninterpretable T-feature which triggers T-to-C movement. Section 5.2 develops the idea that OC is an instance of the general relation Agree; In PC this relation applies to an anaphoric infinitival Agr, which raises in C (parasitic on T-to-C); in EC it applies directly to PRO. The operation is licensed by uninterpretable phi-features of the matrix functional head that agrees with the controller. The analysis fits well with a strongly derivational view of control, crucially utilizing the notion of the *phase*. Section 5.3 further explores the implications of Agr-in-C, especially in relation to the original proposal of "Anaphoric Agr" by Borer (1989).

In section 6 I return to the status of implicative complements in more detail, and argue that they must be treated as untensed CP's, rather than bare VP's. This has the implication that the phenomenon of restructuring should be kept distinct from that of EC (the former entails the latter, but not vice versa). Crosslinguistic evidence supports this conclusion. Section 7 deals with some consequences of the theory: In section 7.1 I discuss what appears to be an overt lexical item with the main properties of PRO in PC - the German impersonal pronoun *man*; and section 7.2 discusses a still unsolved puzzle concerning the behavior of French reflexive predicates in PC environments. Section 8 illustrates the empirical advantages of the present proposal over Martin (1996), where partial control is assimilated to NOC.[2]

1 Some Immediate Corollaries of Partial Control

Consider again our examples of PC, where the notation [DP_1... PRO_{1+}...] indicates the partial control reading:

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[2] I would like to thank the following people for providing me with valuable data: Karlos Arregui-Urbina (Spanish), Michela Ippolito and Sveva Besana (Italian), Marie-Claude Boivin, Marie-Hélène Côté and Cedric Boeckx (French), Isabel Oltra-Massuet (Catalan), Susi Wurmbrand and Irene Heim (German).

(4) a. *John*$_1$ wanted [PRO$_{1+}$ to meet at 6].
b. *The chair*$_1$ was afraid [PRO$_{1+}$ to gather during the strike].
c. *Mary*$_1$ wondered [whether PRO$_{1+}$ to apply together for the grant].

As we have seen in (1), the collective predicates in (4) are incompatible with singular subjects. The contrast between (1) and (4) has dramatic consequences for the proper semantic treatment of control. On minimal assumptions, it implies (5a), paraphraseable as (5b):

(5) a. Complement control cannot be (always) reduced to predication or variable binding.
b. PRO exists, and it is not (always) a lambda-variable.

The argument is quite simple. In the semantic tradition, controlled complement infinitivals are treated as properties rather than propositions. These analyses either deny the existence of PRO altogether, or construe it as merely a lambda-variable (Bach 1979, Williams 1980, Chierchia 1984, 1989, 1990, Lebeaux 1985, Dowty 1985, Clark 1990). The semantics of control, that is, coreference between the controller and the understood subject of the infinitive, is achieved via two alternative mechanisms: Direct predication (as in Williams 1980, Lebeaux 1985, Clark 1990), or meaning postulates lexically associated with the control predicate (Chierchia 1984, 1989, 1990; Dowty 1985). Applied to (4a), both options incorporate at some level the formula in (6a), where *x* stands for the controller:

(6) a. **meet at 6'**(x)
b. λx.x want x to meet at 6

However, quite clearly, (6a) is undefined, given that singular individuals are outside the domain of collective predicates. Of course, meaning postulates being unrestricted as they are, one can always modify them so as to pick a group as the "subject" of the embedded predicate, with the requirement that this group properly include the controller explicitly built into the meaning postulate. This would defeat the rationale of analyses like Chierchia's, where the controller must be a co-argument of the infinitive, selected by a θ-function. Notice that in (4a) the value of PRO is *not* an argument of the matrix predicate.

The analysis of Manzini & Roussou (1998), which completely dispenses with PRO, is incapable of expressing any control relation other than identity. The analysis of Hornstein (1999), which creates a compound monadic predicate as in (6b), fares no better:

It requires the two occurrences of x to denote distinct entities, a logical impossibility. In fact, formulae like (6b) do not even do the work that Hornstein designs them to do, which is to explain the obligatory *de se* reading of PRO in OC. As Chierchia (1990) and Higginbotham (1992) observe, the mechanism of variable binding does not distinguish *de se* from *de re* interpretations. Thus, both (7a), under Hornstein's account, and (7b), under anyone's account, contain at LF the abstract in (7c) (modulo tense distinctions); yet (7b) supports a *de re* reading, whereas (7a) does not (we return below to the relevance of the *de se/de re* distinction to control):

(7) a. John hopes to win.
b. Everyone$_i$ hopes that he$_i$ will win.
c. λx.x hopes that x will win

Furthermore, PC effects never occur in raising constructions, undermining Hornstein's reduction of OC to raising:

(8) a. * John is likely to meet tomorrow.
b. * The chair appeared to be gathering once a week.
c. The chair claimed to be gathering once a week.

Notice that propositional complements *do* support PC (see discussion in section 3.3.3); thus the contrast between (8a-b) and (8c) cannot be related to the semantic type of the infinitive, which is propositional throughout. Rather, it is the control vs. raising distinction which is crucial here.[3]

Notice that given the existence of partial control, (5) follows on virtually minimal assumptions concerning the logic of predication and variable binding. No syntactic assumption about PRO is needed; rather, PC constructions are simply uninterpretable if complement infinitivals must always denote properties.[4] The fact that this knock-down

[3] Hornstein's analysis faces many other serious problems (lack of account for implicit OC, lack of account for **John was hoped to win*, systematic violations of the Minimal Distance Principle, exclusion of NOC without c-command), which we do not discuss here.

[4] Of all the authors mentioned above, Williams (1980) is the only one who treats certain complement infinitivals as instances of NOC. However, as shown in section 2.1, his criterion (taking a *for*-complement) has undesirable consequences. Furthermore, as far as I can tell, the *interpretation* of NOC in his system boils down to the same predication mechanism offered for OC, the sole difference being that the former is established at LF (after the *arb*-rewriting rule applies), whereas the latter at P(redication) S(tructure). Therefore, the logical paradox of PC afflicts his theory as well.

argument has never been appreciated (but see Wurmbrand 1998b: 190), let alone countered, indicates how little attention PC phenomena received in the literature.

Before we can offer any theoretical analysis of PC, there is a lot of empirical ground to cover. The proper generalizations have to be motivated and the specific properties of the PC category, as opposed to EC and NOC, need to be established. Sections 2-4 are dedicated to this task.

2 Basic Properties of Control

2.1 Criteria for OC and NOC

I take the following criteria to (jointly) define the categories of OC and NOC:

(9) The OC/NOC Categories

a. *Arbitrary Control* is impossible with OC, possible with NOC.
b. *Long-distance Control* is impossible with OC, possible with NOC.
c. *Strict reading of PRO* is impossible with OC, possible with NOC.
d. *De re* reading of PRO is impossible with OC (only *de se*), possible with NOC.

There are familiar properties commonly associated with OC that I have intentionally left out. It has been claimed by many authors (e.g., Williams 1980, Bouchard 1984, Koster 1984, Hornstein 1999) that the controller in OC must c-command PRO and furthermore, cannot be split. The data in (10)-(11) argue against both claims, respectively:

(10) a. Yesterday, it spoiled Mary's$_i$ mood [PRO$_{i/*arb}$ to listen to the news].
b. [PRO$_i$/*Bill's/his$_{i/*j}$ making that comment] was very rude of John$_i$.

(11) a. John$_i$ promised his son$_j$ [PRO$_{i+j}$ to go to the movies together].
b. John$_i$ persuaded Mary$_j$ [PRO$_{i+j}$ to kiss in the library].

The obligatory controller in (10a) is embedded inside the matrix object, thus failing to c-command PRO. In (10b), a configuration which normally allows NOC, the object of the matrix predicate in fact obligatorily controls PRO (or, indeed, an overt pronoun subject) in the sentential subject. There are interesting things to be said about these constructions,

which for reasons of space I will put aside (see discussion in chapter 3, section 4). The point is simply that c-command is not a necessary condition on OC.

By all accounts, the verbs *promise* and *persuade* are prototypical OC verbs, yet both allow split control (11) quite freely. Where split control is impossible with certain OC verbs (e.g., *encourage*), there seem to be plausible pragmatic reasons for that. In itself, the availability of split control does not systematically correlate with any other property of control. The point is not that every OC context allows split control, but that some do, hence this cannot be considered an exclusive feature of NOC.

Another property conspicuously missing from (9) is whether or not PRO can alternate with a lexical subject. Most studies of control follow Williams (1980) in assuming this to be *the* property that distinguishes OC from NOC. What about it then?

I think there are good empirical reasons to reject the biconditional "lexical subject is possible ⇔ NOC". Crosslinguistic evidence suggests that OC can govern the reference of lexical subjects no less than null subjects (Yang 1985, Borer 1989). In particular, languages like Korean, Chinese and Japanese allow pronominal subjects in infinitives, and those subjects display exactly the same control properties that PRO does. Borer's theory of anaphoric Agr, as well as the theory developed in this chapter, account for these cases.

In fact, even for English, whether or not a verb takes a *for*-complement does not correlate systematically with other properties in (9). Consider Williams' (1980) system. Williams claims that some NOC verbs occur in passives where no controller is present (12a), and when one is, it need not c-command PRO (12b):

(12) a. It was arranged/preferred to have dinner at 6.
b. It was decided by the committee to have dinner at 6.

However, notice that the controller in (12a) is not truly arbitrary - rather, it corresponds to an implicit argument (the benefactive of *arrange*, the agent of *prefer*). Given Williams' later arguments (1985, 1987) that implicit arguments participate in OC, the data in (12) fail to classify desiderative complements under NOC. Manzini (1983) points out further problems. First, the verb *decide*, although allowing in the passive "arbitrary" control in Williams' sense, is incompatible with a lexical subject (**John decided for Bill to shave himself*). Second, since both sentential subjects and complements of *want*-type verbs are considered cases of NOC by Williams, he cannot account for the fact that arbitrary or long-distance control is possible in the former but not in the latter case:

(13) a. To behave oneself in public would help John.
b. * John wanted to shave oneself.
c. Mary knows that to behave herself in public would help Bill.
d. * Mary knows that John wanted to behave herself.
[Manzini 1983, ex. 26,62,28,63]

Third, control under verbs which can take *for*-complements seems to be sensitive to the semantics of the matrix verb no less than control under verbs which cannot take *for*-complements. Manzini notes that a NOC analysis of *signal*, based on (14a), would fail to rule out (14b), since controller choice is allegedly free in NOC:

(14) a. John signaled to Mary for Bill to shave himself.
b. * John signaled to Mary to shave himself. [Manzini 1983, ex. 66, 67]

Chomsky & Lasnik (1977) and Pesetsky (1991) note that there is significant speaker variability on the acceptability of *for*-complements. Furthermore, adjacency factors interfere, requiring some material between the matrix verb and *for* (judgments by Pesetsky):

(15) a. %? Bill wants for Sue to leave.
b. Bill wants very much for Sue to leave.
c. * Bill tried for Sue to get elected.
d. % Bill tried very hard for Sue to get elected.

Actually, even the presence of a complementizer by itself is not a signal of NOC. As is well known, the Belfast English dialect lacks the [*for-to*] filter (Henry 1992), allowing standard OC verbs to show up with a *for*-complementizer; the same is true of the *di/de* complementizers in Romance. Petter (1998) argues that the presence of the complementizer *om* in Dutch is orthogonal to the OC/NOC distinction. Some verbs that do not select *om*-complements, and therefore predicted by Koster (1984) to fall under OC, allow variable control for PRO (16) - a property of NOC; and some verbs that do select *om*-complements nevertheless disallow strict readings for PRO under ellipsis (17) - a property of OC, according to Bouchard (1985) (examples are from Petter 1998: 60, 64):

(16) Jan_i zei (tegen) $Piet_j$ [(*om) $PRO_{i/j}$ direct te vertekken].
Jan said (to) Piet (*for) PRO immediately to leave

'Jan said to Piet that he (Jan) would leave immediately' /
'Jan said to Piet that he (Piet) should leave immediately'

(17) Jan beloofde Marie [om PRO meteen naar huis te komen], en dat deed Bill ook.
Jan promised Marie for PRO at once to house to come, and that did Bill too
'Jan promised Marie to come home at once, and so did Bill' [sloppy only]

I conclude that the potential licensing of a lexical subject in the infinitive (a rare option across languages) or of an overt complementizer does not qualify as a criterion for NOC. All the evidence at hand suggests that these options, which are subject to idiosyncratic variations, distinguish among various verbs *within* the OC category.

2.2 EC vs. NOC

In this section I demonstrate how the criteria in (9) distinguish between exhaustive control (attested in complements) and non-obligatory control (attested in subject and extraposed infinitives). Most of the data appear in the literature cited below; I have little to add to these observations beyond methodological clarifications.

Criterion (9a): Arbitrary control is impossible in EC, possible in NOC.

In "arbitrary control" we refer to cases where no argument in the sentence, either overt or implicit, is understood as the controller of PRO.[5] Various examples are given below:

(18) a. * John tried [PRO_{arb} to be quiet].
b. * John remembered [PRO_{arb} not to smoke around the babies].

(19) a. It is dangerous for babies [PRO_{arb} to smoke around them]. [Kawasaki 1993]
b. [PRO_{arb} to behave oneself in public] would help John. [Manzini 1983]

[5] Thus the notions arbitrary PRO and arbitrary control should be kept apart. Many alleged cases of arbitrary control mentioned in the literature in fact reduce to obligatory control by an implicit argument, itself bound by a generic operator (Epstein 1984, Lebeaux 1984, Borer 1985, Roeper 1987). These cases typically involve implicit dative arguments; notice that PRO_{arb} here is incompatible with an overt controller:

i. It is fun (*for Bill) [PRO_{arb} to play baseball].
ii. John shouted (*to me) [PRO_{arb} to arrest Bill].

c. [PRO_{arb} making a large profit] requires [PRO_{arb} exploiting the tenants].
[Lebeaux 1984]

Criterion (9b): LD-control is impossible in EC, possible in NOC.

In LD-control we refer to cases where the controller is not an argument of the clause immediately containing the infinitive. Notice that an LD-controller need not be higher in the structure than PRO (21a). Typically, LD-control shows up in Super-Equi constructions, where a close antecedent for PRO can be skipped in favor of a remote one (21b). As argued in chapter 3, whether the predicate governing the infinitive is psychological or not affects the possibility of LD-control in extraposition (20b) vs. (21c).

(20) a. * $Mary_i$ knew that John dared [PRO_i to perjure herself].
b. * $Mary_i$ knew that it disturbed John [PRO_i to perjure herself].

(21) a. [PRO_i storming out of the room that way after losing the game] convinced everyone that $John_i$ is very immature. [Richardson 1986]
b. $John_i$ said that Mary thought that [PRO_i shaving himself] would bother Sue.
[Chierchia & Jacobson 1986]
c. $Mary_i$ knew that it damaged John [PRO_i to perjure herself].

Criterion (9c): Strict reading of PRO is impossible in EC, possible in NOC.

(22) a. John tried [PRO to leave early], and Bill did too.
b. Only Bill expects [PRO to win].

(23) a. John thinks that [PRO feeding himself] will be difficult, and Bill does too.
b. Only Bill expects that it will make a strong impression on Mary
[PRO to read her the play].

These data, taken from Bouchard (1985), show that in EC contexts PRO behaves like an anaphor, and in NOC contexts like a pronoun. In (22a), PRO in the reconstructed VP of the second conjunct must be controlled by Bill. (22b) implies that for no x, x different from Bill, x expects him-/herself to win. These are the sloppy readings. In contrast, (23a) could be ascribing to Bill the thought that John's feeding himself will be difficult; and (23b) could

imply that for no x, x different from Bill, x expects that Bill's reading Mary the play will make a strong impression on her. These are the strict readings.[6]

Criterion (9d): De re *reading of PRO is impossible with EC (only* de se*), possible with NOC.*

The *de se / de re* contrast emerges in situations where a subject of an attitude verb is misinformed about his/her own identity. A typical example involves a war hero who suffers from amnesia and remembers nothing of his wartime experiences. Suppose this person (hereafter, "the unfortunate") sees a TV program describing his own exploits, and is impressed with the courage exhibited by that person, who he does not know is himself. Consider now the following statements ((24b,c) are taken from Hornstein 1999):

(24) a. The unfortunate expects that he will get a medal.
b. The unfortunate believes that getting a medal would be boring.
c. The unfortunate expects to get a medal.

Under the above scenario, (24a,b) are true but (24c) is false. This is because the former can be satisfied by *de re* beliefs about a certain individual (denoted by "the unfortunate"), but the latter can only be satisfied by *de se* beliefs about the "self".[7] Important to our point is the fact that OC (24c) and NOC (24b) contrast with respect to this test.

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[6] Though Bouchard's observation is valid, the correct account may require an even more abstract characterization of anaphors and pronouns than his "functional determination". Consider these examples:

i. John expects himself to win, and Bill does too.
ii. Only John changed his mind.

In spite of being determined as an anaphor, *himself* in (i) allows a strict interpretation; and in spite of being determined as a pronoun, *his* in (ii) requires a sloppy interpretation.

Chierchia & Jacobson (1986) argue that gerundive complements fall under OC, since they only show sloppy readings for *it*-anaphora:

i. Ed liked playing poker. But John didn't like it.

However, it is not clear that this is a reliable test, given the availability of a strict reading in (ii):

ii. Sam enjoyed being a nuisance, but his family hated it.

[7] See Chierchia (1990) and Higginbotham (1992) for discussion; see Schlenker (1999) for an analysis of *de se* beliefs in terms of concealed indexicals.

3 Distinguishing PC from EC

As already argued in section 2.1, there are good reasons to believe that complement control is never an instance of NOC. In particular, it was shown that control under verbs that select *for*-complements is far more restricted than normal NOC. Below I show the same for interrogative complements. PC is much more similar to EC, yet is different from it precisely in that it allows the controller to be a proper subpart of PRO. The properties of PC are summarized below:

(25) The PC Category
- a. *Arbitrary Control* is impossible.
- b. *Long-distance Control* is impossible.
- c. *Strict reading of PRO* is impossible.
- d. *De re* reading of PRO is impossible.
- e. *Partial Control* is possible.

3.1 Complement Types of EC and PC

It is a major claim of this thesis that PC is a phenomenon which has both syntactic and semantic aspects. An explanatory theory of PC is thus required to link those aspects in a principled manner. The first stage is to demarcate the empirical domain of PC, as opposed to EC: What types of infinitival complements fall under each category? In this section I show that one can give a semantically coherent answer to this question. This is a promising result, since it provides potential grounds for exploring the syntactic consequences of the semantic classes that we come up with.

Let us first state the generalizations and then turn to the relevant evidence:

(26) a. EC verbs are *implicative, aspectual* or *modal.*
- b. PC verbs are *factive, propositional, desiderative* or *interrogative.*

The following sample illustrates each verb class:

(27) EC
- a. *Implicative*: John managed to solve the problem.
- b. *Aspectual*: John began to solve the problem.
- c. *Modal*: John had to solve the problem.

(28) PC

a. *Factive*: John hated to solve the problem.

b. *Propositional*: John claimed to have solved the problem.

c. *Desiderative*: John hoped to solve the problem.

d. *Interrogative*: John wondered how to solve the problem.

Implicative verbs assert (or deny) the truth of their complements. According to Karttunen (1971), this follows from the fact that these verbs presuppose that the truth of the entire sentence is a necessary and sufficient condition for the truth (or falsity) of the complement. Thus, (27a) entails that John solved the problem, and its negation entails that he did not. By contrast, factive verbs presuppose the truth (or falsity) of their complements. Thus, both (28a) and its negation entail that John solved the problem.

Propositional verbs (28b) are epistemic or declarative; they are diagnosed by the possibility of predicating truth/falsity of their complements (e.g., *John claimed to have solved the problem, which was true/false*). In English, this class is typically found with raising/ECM constructions, *claim* being the single propositional control verb in the language. Desiderative (28c) and interrogative (28d) complements, like propositional ones, are intensional. Desiderative complements express (positive or negative) desires, intentions and commands, all of which are "non-objective" descriptions of reality.

Non-exhaustive lists of predicates from each class are given below:

(29) a. Implicatives

dare, manage, make sure, bother, remember, get, see fit, condescend, avoid, forget, fail, refrain, decline, neglect, force, compel.

b. Aspectual

begin, start, continue, finish, stop, resume.

c. Modal

have, need, may, should, is able, must.

d. Factives

glad, sad, regret, like, dislike, hate, loath, surprised, shocked, sorry.

e. Propositional

believe, think, suppose, imagine, say, claim, assert, affirm, declare, deny.

f. Desideratives

want, prefer, yearn, arrange, hope, afraid, refuse, agree, plan, aspire, decide, mean, intend, resolve, strive, demand, promise, choose, offer, eager, ready.

g. Interrogatives
wonder, ask, find out, interrogate, inquire, contemplate, deliberate, guess, grasp, understand, know, unclear.

In English, all desiderative predicates can take *for*-complements, but the converse is not true: Factive predicates also select *for*-complements. Kiparsky & Kiparsky (1970) term the class of predicates taking *for*-complements *emotives*: "...those [predicates] to which the speaker expresses a subjective, emotional or evaluative reaction... [it] includes in general all predicates which express the subjective value of a proposition rather than knowledge about it or its truth value" (p.169). Desideratives are a proper subset of emotives, and factives merely overlap with the latter. We will see below that the semantic factor defining the PC class is unrelated to emotivity.

3.2 Where PC and EC are Alike

I will now show that the PC category shares with the EC category the four criteria in (25a-d). This will consist in substituting desiderative/interrogative verbs for the implicative verbs in each of the examples (18), (20), (22) and (24).[8] As we will see, the behavior of PC verbs is identical to that of EC verbs in these contexts.

(30) *Arbitrary Control* is impossible.

a. * John wanted [PRO_{arb} to be quiet].
b. * John guessed [where PRO_{arb} not to smoke].

The status of (30b) calls for some comment. It is practically an axiom of the field that interrogative infinitivals *do* allow arbitrary control (Williams 1980, Chomsky 1981, Bresnan 1982, Manzini 1983, Bouchard 1984, Koster 1984, Kawasaki 1993, Hornstein 1999, Manzini & Roussou 1998).[9] However, it seems to me that what the evidence shows is that these cases allow *partial* control, where the controller is understood as part of a larger, unspecified group. Thus, (30b) is possible only under the reading where *John* is included in the reference of PRO, a reading which I take to be distinct from truly arbitrary

[8] Example (24) already contains a PC verb, but does not involve partial control. As to factive and propositional verbs, they display the same OC properties as desiderative/interrogative ones. Since it is the latter cases that are frequently alleged to instantiate NOC, I concentrate on them.
[9] As far as I know, Chomsky & Lasnik (1977) is the single study that assigns interrogative infinitivals to the OC category.

control. This intuition is not immediately transparent, due to an additional factor involved in interrogative infinitivals, namely their modal (deontic) character. Fortunately, we can give independent arguments to that effect.

There is in fact decisive evidence against the traditional assumption that interrogative infinitivals allow arbitrary control. The evidence comes from disjoint reference effects imposed by Binding Condition B. Consider the following examples:

(31) a. * John$_1$ wondered [who PRO to introduce him$_1$ to].
b. * Mary$_1$ didn't know [where PRO to hide her$_1$].
c. * We$_1$ contemplated [how to promote us$_1$].
d. * Sue$_1$ asked [what to buy her$_1$ in Rome].

That Condition B is responsible for this effect is witnessed by the grammaticality of (32):

(32) a. John$_1$ wondered [who PRO to introduce himself$_1$/his$_1$ fiancee to].
b. Mary$_1$ didn't know [where PRO to hide herself$_1$/her$_1$ diary].
c. We$_1$ contemplated [how to promote ourselves$_1$/our$_1$ friend].
d. Sue$_1$ asked [what to buy herself$_1$/her$_1$ sister in Rome].

As Reinhart & Reuland (1993) show, Condition B applies to semantic representations rather than syntactic ones. Thus, the impossibility of **We voted for me* stems from the fact that at the relevant interpretive level, *we* is decomposed into *I+others*, yielding two propositions, one of which is **I*$_1$ *voted for me*$_1$. Local binding between *I* and *me* rules out the sentence as a Condition B violation. Similarly in (31), PRO must either co-refer with the matrix subject or include it. The former option licenses an anaphoric argument in the infinitive; the latter one excludes a pronominal argument, since it would be locally bound by a sub-referent of PRO.

Notice that no semantic anomaly is involved in (31). Once the complements are made finite and PRO is replaced by the indefinite pronoun *one*, pronominal coreference is fine:

(33) a. John$_1$ wondered who one should introduce him$_1$ to.
b. Mary$_1$ didn't know where one should hide her$_1$.
c. We$_1$ contemplated how one should promote us$_1$.
d. Sue$_1$ asked what one should buy her$_1$ in Rome.

This clearly indicates that PRO in (31) is not truly arbitrary in reference, since PRO_{arb} in all NOC contexts is virtually synonymous with *one* (Lebeaux 1984, Borer 1985, Chomsky 1986: 117, Kawasaki 1993: 49). In fact, even when the overt indefinite anaphor *oneself* appears in the infinitive, Condition B cannot be bypassed:

(34) a. John wondered [how PRO to talk to Mary about oneself].
b. Mary wasn't sure [when PRO to introduce oneself to John].

(35) a. * $John_i$ wondered [how PRO to talk to him_i about oneself].
b. * Mary wasn't sure [when PRO to introduce oneself to her_i]

The sentences in (35) minimally differ from those in (34) in containing an argumental pronoun coreferent with the matrix subject. By themselves, the sentences in (34) may lead one to the conclusion that interrogative infinitivals license arbitrary control. The ungrammaticality of (35) proves this to be wrong. If I am correct, the *oneself*-test has been misused in the past as a diagnostic for arbitrary control, where in fact it merely indicates that the reference of the antecedent in not fully specified.[10] A related case that comes to mind is the Japanese inclusive anaphor *jibun-tachi*. Kawasaki (1989) shows that this anaphor shares all the properties of the simple anaphor *jibun*, except for the inclusive interpretation:

(36) John-wa jibun-tachi-ni tsuite hanashi-ta.
John-Top jibun-tachi-about talk-Past
'John talked about the group that includes him'

It might be objected that examples like (37) represent genuine cases of arbitrary control in interrogative infinitivals:

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[10] This may be one reason why speakers' judgments about *oneself* tend to be insecure and non-uniform. Consider a sentence when uttered out of the blue (i), or in the context (ii):

i. He wondered what to buy oneself in Rome.
ii. John arrived in Rome a week ago, and has already bought everything he needed. His shopping-obsessed friends are landing today. * He wondered what to buy oneself in Rome.

Partial control implies that *John* is one of those who are going to buy themselves something in Rome. This implication is innocuous in (i), but clashes with the context in (ii), which requires the set of buyers to exclude *John*. Hence the contrastive judgments. Depending on the context they have in mind, hearers of (i) may differ on the extent to which they accept it. An open question that remains in why *oneself* is generally unacceptable in desiderative complements (cf. (13b)).

(37) a. John$_1$ said where to leave him$_1$ a message.
b. It is unclear what to do with him.
c. Mary was asked what to do with him.

However, this is again a case of local control by implicit arguments (see fn.5). A more elaborate representation of (37) is the following:

(38) a. John$_1$ said *to-x* [where PRO$_{x+}$ to leave him$_1$ a message].
b. It is unclear *to-x* [what PRO$_{x+}$ to do with him$_{*x}$].
c. Mary was asked *by-x* [what PRO$_{x+}$ to do with him$_{*x}$].

The implicit Goal/Experiencer/Agent partially controls PRO in (38a-c), respectively. Since PRO does not include *John* in (38a), Condition B is not violated. Since PRO includes the implicit controller in (38b,c), the pronoun *him* must be disjoint from that controller, a correct prediction.

I conclude that true arbitrary control, of the kind attested in NOC, is unavailable in interrogative complements, just as it is in all other infinitival complements. Apparent counterexamples are all cases of partial control by a local argument, where the "uncontrolled" remainder of PRO is left unspecified.[11]

(39) *Long-distance Control* is impossible.

a. * Mary$_1$ knew that John hoped [PRO$_1$ to perjure herself].
b. * Mary$_1$ knew that it wasn't clear to John [how PRO$_1$ to perjure herself].

---

[11] Some speakers find examples like (i), where Condition B is supposed to be violated, marginal but not impossible:

i. Mary took the month off and flew to Siberia. I wanted to forward her mail, but she$_1$ didn't know how to reach her$_1$.
ii. ... but she$_1$ couldn't tell (me) how to reach her$_1$.

If possible at all, (i) has a different flavor than the cases discussed in the text. Notice that the verb *didn't know* does not report an epistemic state of Mary's, but rather describes a speech act, along the lines of (ii). This suggests that the "salvaging" reading of (i) involves an implicit addressee argument, falling together with other cases of "pseudo-arbitrary" control (cf.(38); this idea was suggested to me by D. Pesetsky).

As in EC (cf. (20)), LD-control is impossible across a potential controller in a PC context.[12]

(40) *Strict reading of PRO* (under ellipsis) is impossible.

a. $John_1$ preferred [PRO_{1+} to leave early], and Bill did too.
b. Only $Bill_1$ wondered [who PRO_{1+} to invite].
c. $John_1$ remembered when [PRO_{1+} to leave], and Bill did too.
d. Only $Bill_1$ agreed [PRO_{1+} to invite Mary].

We should be clear about what it means for partial control not to allow strict readings. Obviously, in (40a), *John* could be accidentally included in the reference of the reconstructed PRO of the second conjunct, specifically in its "uncontrolled" part. This would give rise to a reading where Bill preferred that John be among the people who should leave early. That should not count as a strict reading, since the reconstructed PRO must, at the same time, include the local controller *Bill* as well. The sloppy reading of (40a) consists in the fact that the overt PRO and the reconstructed PRO must include non-identical members, each controlled by its local matrix subject, even if the two PRO's accidentally overlap.

As for (40b), suppose the relevant context set is Bill, Mary and Sue. It is possible that Mary did not wonder who Bill should invite. Again, this should not count as a strict reading, since, at the same time, it must also be the case that Mary did not wonder who *she* should invite (the exclusiveness implication of *only*). The sloppy reading of (40b) consists in the fact that the reference of PRO in each alternative of the comparison set must include a member distinct from *Bill*, even if it accidentally includes *Bill* as well. The examples in (40c,d) illustrate the same point, this time pairing a desiderative complement with ellipsis and an interrogative one with *only*. As far as I can tell, all the interpretations in (40) conform to our expectations.

(41) *De re* reading of PRO is impossible.

a. The unfortunate$_1$ expected that he$_1$ and the secretary of defense would meet soon.

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[12] This was already noted by Chomsky (1986a: 127), who cites the following contrast:

i. I thought they wondered how PRO to feed themselves/*myself.

b. The secretary of defense$_2$ finally arrived. The unfortunate$_1$ expected PRO$_{1+2}$ to meet soon.

Imagine that the unfortunate watches on TV the preparations for the ceremony in which the secretary of defense is supposed to meet him and give him a medal. Then (41a) is true but the second sentence of (41b), which forces a *de se* attitude on the unfortunate's part, is false. The fact that PRO includes but is not identical to the unfortunate seems orthogonal to the issue of self-ascriptivity (to borrow Chierchia's term) as revealed in control contexts.

Higginbotham (1992), in arguing against the "attributive" account of control and *de se* attitudes by Chierchia (1990), notes an interesting ambiguity in the following sentence:

(42) John and Mary expect [PRO to learn the same language].

Abstracting away from the *de re/de dicto* ambiguity of *the same language*, (42) presents another ambiguity, w.r.t. the antecedent of *same*. If we construe *same* with the matrix subject, we get the reading: Each of John and Mary expects to learn the language that the other expects to learn. If we construe *same* with PRO, we get the reading: Each of John and Mary expects to learn the language that the other will learn.

On the latter reading Higginbotham writes: "The abstract [λx(x learn the same language)] corresponding to the complement of *expect* according to the attributive account, is not one that applies truly to John, or Mary, or any other individual: It could not, since *same* is construed within it, and the predicate is essentially plural. Conceivably, we could advance that the predicate applies to John and Mary together, as one object. But the predicate *expect* would appear to be *distributive*, applying to a plural just in case it applies to each element... We would then have to conclude either that *expect* is not after all distributive, or that each of John and Mary has a *de se* expectation expressed with a predicate that does not apply to either of them. The former is extremely implausible, and the latter absurd" (p.99-100).

What Higginbotham calls "absurd" is, in truth, a fact about natural language - indeed, a robust fact, as shown in (44)-(51) below. The phenomenon of partial control is precisely attested when the matrix predicate is distributive, allowing the controller to be singular, and the embedded predicate is collective, requiring PRO to be (semantically) plural. Moreover, all the verbs in the PC-class not only can, but *must* express *de se* attitudes, just as EC verbs do.

3.3 Where PC and EC Differ: Syntactic vs. Semantic Plurality

3.3.1 Desiderative & Interrogative Complements

We now come to the distinctive property of PC constructions, in which they diverge from EC constructions - namely, the possibility of partial control:

(43) a. $John_1$ wanted/decided/refused [PRO_{1+} to meet at 6].
b. The $chair_1$ contemplated/wondered/didn't know [whether PRO_{1+} to gather without a concrete plan].

As this property of PC is hardly discussed in the literature, it deserves some attention. The following paradigm establishes the generality of this distinction between EC and PC. In most of the examples below, *John* or the pronoun *he* (coindexed with *John*) is the local controller of PRO; *Mary* is mentioned in a higher clause so as to supply a salient member in the group reference of PRO, other than *John* himself. The (a) examples illustrate EC (implicative, aspectual and modal verbs), the (b)-(c) examples illustrate PC - desideratives and interrogatives, respectively.

Collective Predicates

(44) a. * John told Mary that he managed to meet at 6 today.
b. John told Mary that he preferred to meet at 6 today.
c. John told Mary that he didn't know whether to meet at 6 or at 8.

(45) a. * The chair dared to convene during the strike.
b. The chair decided to convene during the strike.
c. The chair has not decided yet whether to convene during the strike.

(46) a. * John told Mary that he had to separate before it's too late.
b. John told Mary that he intended to separate before it's too late.
c. John told Mary that he wonders how to separate before it's too late.

(47) a. * Mary said that John began to debate this question quite recently.
b. Mary said that John wished to debate this question very soon.
c. Mary said that John finally realized when to debate this question.

Predicates with 'together'

(48) a. * Mary asked John if he dared to dance together at the party.
b. Mary asked John if he planned to dance together at the party.
c. John said that Mary wasn't certain whether to dance together at the party.

(49) a. * Mary learned that John condescended to fight together.
b. Mary learned that John was ready to fight together.
c. Mary learned that John didn't know whom to fight together.

(50) a. * John told Mary that he was able to win the game together.
b. John told Mary that he was eager to win the game together.
c. John told Mary that he found out how to win the game together.

(51) a. * Mary said that John continued to tackle their problems together.
b. John told Mary that he resolved to tackle their problems together.
c. John told Mary that he knows which problems to tackle together.

This set of data establishes a clear contrast between EC-verbs - implicative, aspectual verbs and modals - and PC-verbs - desiderative and interrogative. Only the latter permit an embedded collective predicate to occur with a controller in the singular. Another class of control verbs which display PC are factives, to which we now turn.

3.3.2 Factive Complements

Factive predicates in English normally take finite complements; only a few factive verbs select non-finite complements. The latter are most naturally gerunds, which allow PC:[13]

(52) a. The chair hated gathering without a concrete agenda.
b. Mary said that John regretted working together on the presentation.

[13] That (52) is an instance of PC rather than arbitrary control (which is possible with gerunds in other environments) is shown by (i)

i. * The chair$_1$ hated/regretted PRO$_{arb}$ gathering without him$_1$.

In other languages, like German, Spanish and Italian, infinitival factive complements are quite common. In general, partial control in those contexts is not as natural as with desiderative/interrogative complements, but for all speakers much closer in acceptability to these cases than to the implicative case (the English translations given below are literal):

German[14]

(53) a. Hans sagte der Maria dass er es bedauerte letzte Nacht gemeinsam
Hans told the Mary that he it regretted last night together
gearbeitet zu haben.
worked to have
'Hans told Mary that he regretted to have worked together last night'

b. Der Verteidigungsminister vergass sich schon zweimal im Schloß
the defense-minister forgot SELF already twice in-the castle
versammelt zu haben.
gathered to have
'The defense minister forgot to have already gathered twice in the castle'

Spanish

(54) a. Juan le dijo a María que lamentaba haberse encontrado tan temprano.
John cl told Mary that he-regretted to-have-SE met so early
'John told Mary that he regretted to have met so early'

b. Juan le dijo a María que olvidó haberse encontrado antes.
John cl told Mary that he-forgot to-have-SE met before
'John told Mary that he forgot to have met before'

[14] The sense of *forget* in (53b) is unambiguously factive; German also has a negative implicative *forget*, which cannot take a complement in the past tense (with the auxiliary *haben*). See Wurmbrand (1998b) for discussion. The same remark applies to the Italian example (55a).

Italian

(55) a. Maria pensava che Gianni avesse dimenticato di essersi baciarti alla festa.
Mary thought that John had forgotten to-be-SI kissed at-the party
'Mary thought that John had forgotten to have kissed at the party'

b. Maria pensava che Gianni si fosse pentito di essersi baciarti alla festa.
Mary thought that John had regretted to-be-SI kissed at-the party
'Mary thought that John had regretted to have kissed at the party'

3.3.3 Propositional Complements

Another type of infinitives that allow partial control is propositional complements. This type, consisting of complements to epistemic and declarative verbs, is not exemplified by any control verb in English (except *claim*), but only by ECM/raising verbs. However, many other languages have propositional control infinitivals; the examples below are taken from German, French and Italian. As with factives, partial control in propositional complements is not as natural as with desiderative/interrogative complements, but for all speakers much closer in acceptability to these cases than to the implicative case (the English translations given below are literal).

German

(56) a. Maria hat gehört dass Hans überall herumerzählte die letzte Nacht
Mary has heard that John everywhere around-told the last night
gemeinsam verbracht zu haben
together spent to have
'Mary heard that John had said everywhere to have spent last night together'

b. Maria hat gehört dass Hans behauptet hat die Lösung gemeinsam
Mary has heard that John claimed has the solution togehter
gefunden zu haben
found to have
'Mary heard that John had claimed to have found the solution together'

c. Der Verteidigungsminister glaubte wirklich sich noch nie im Schloß
the defense-minister SELF believed really SELF yet never in-the castle
versammelt zu haben
gathered to have
'The defense minister really believed to have never gathered in the castle'

French

(57) a. Marie a dit à Jean qu'elle croyait avoir débattu de cette question
Mary told to John that-she believed to-have debated of this question
pendant 2 heures.
for 2 hours
'Mary told John that she believed to have debated this question for 2 hours'

b. Marie a dit à Jean qu'elle doutait avoir convergés sur cette question.
Mary told to John that-she doubted to-have converged on this question
'Mary told John that she doubted to have converged on this question'

c. Marie a dit à Jean qu'elle estimait correspondre trop peu.
Mary told to John that-she estimated to-correspond too little
'Mary told John that she estimated to correspond too little'

Italian

(58) a. Il presidente crede di essersi riuniti inutilmente la notte scorsa.
the chair believes to-be-SI gathered in vain the night last
'The chair believes to have gathered in vain last night'

b. Maria sospettava che Gianni avesse dichiarato di avere lavorato insieme
Mary suspected that John had declared to-have worked together
la notte scorsa.
the night last
'Mary suspected that John had declared to have worked together last night'

c. Maria sospettava che Gianni avesse dichiarato di lavorare insieme
Mary suspected that John had declared to-work together
troppo frequentemente.
too frequently
'Mary suspected that John had declared to work together too frequently'

3.4 Semantic *vs.* Syntactic Plurality

The preceding discussion may give the impression that PRO in PC contexts may be plural even if the controller is singular. However, it turns out that this characterization is too coarse. A closer examination of PC reveals a crucial restriction.

As opposed to predicates that are lexically collective or contain the collectivizer *together*, predicates that are inflected for plural/dual or contain plural anaphors are *excluded* from PC. This is illustrated below:[15]

(59) a. * John told Mary that he preferred to meet each other at 6 today.
b. * John told Mary that he wondered whether to meet each other at 6 or at 8.

(60) a. * John told Mary that he regretted having talked about themselves.
b. * John told Mary that he wasn't sure how to talk about themselves.

(61) a. * John told his friends that he intended to each donate at least $100.
b. * John told his friends that he could guess how much to each donate.

(62) a. * John knew that Mary hoped to become members of the new club.
b. * John told Mary that he didn't know which club to become members of.

This state of affairs is summarized in (63):

(63) *The PC-Generalization* (Version I of III)
In a PC construction with a controller in the singular, the embedded predicate can be lexically collective or contain *together*, but cannot be inflected for plural, or contain a non-singular anaphor/floating quantifier.

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[15] Speakers of British English (and some speakers of Canadian English) find many of the examples in (59)-(62) grammatical. Some speakers of American English judge (59) as better than (60). There is a principled reason for these dialectal contrasts, to which I return below.

(63) is a genuine generalization about the category of PC. Notice that it only applies when the controller is in the singular; there is nothing intrinsic to the semantics of PC complements that makes them incompatible with a plural PRO:

(64) a. John and Mary preferred to meet each other at 6 today.
b. John and Mary regretted having talked about themselves.
c. We hoped to become members of that club.
b. We didn't know which club to become members of.

Furthermore, (63) does not extend to instances of NOC:

(65) a. Mary thought that John said that [PRO helping each other] is crucial.
b. Mary realized that John too considered the possibility of [PRO applying both to the same job].
c. Mary made it clear to John that [PRO to become members of the new club] is no simple matter.

What is the grammatical rationale behind (63)? What makes predicates that are lexically collective or contain *together* one class, and predicates that are inflected for plural, or contain a plural anaphor/floating quantifier another class? The relevant distinction seems to be that between *semantic* and *syntactic* plurality (Munn 1998). Thus, predicates of the first kind can be predicated of syntactically singular entities, which are nevertheless semantically plural - essentially, group names. In contrast, predicates of the second kind must be licensed by a syntactically plural subject:[16]

(66) a. I saw the committee gathering/dispersing.
b. I approve of the population acting together against the new regulations.
c. * It is impossible for the government to clear themselves / each other of any responsibility.
d. * The class each submitted a different paper.
e. * I consider the delegation (to be) idiots.

[16] Again, (66c,e) are grammatical in British English; see fn. 15.

Notice that the crucial factor is the grammatical number of the subject, rather than Infl; the examples (66c-e) are ungrammatical despite the fact that there is no singular morphology on the verb. Generalizing to the PC case, we can restate (63) as follows:

(67) *The PC-Generalization* (Version II of III)
Syntactic number on PRO in PC-complements is inherited from the controller, but semantic number is not.

As emphasized by Munn (1998), whether a certain morpheme agrees with syntactic or semantic plurality is often a lexical property which is subject to crosslinguistic, and sometimes cross-speaker variability. It was already mentioned that for certain American English speakers, *each other* is not as bad as *themselves* in a PC-complement (68b-c); interestingly, and just as we expect given (67), those speakers find a correlated contrast in the ability of the two anaphors to be bound by a syntactically singular but semantically plural lexical subject (68d-e):

(68) a. John told Mary that he wanted to accept their differences together.
b. ?? John told Mary that he wanted to accept each other with more maturity.
c. * John told Mary that he wanted to accept themselves with more maturity.
d. ?? That couple accepted each other with maturity.
e. * That couple accepted themselves with maturity.

Thus, when testing the predictions of (67) via the licensing of "plural" morphemes in PC-complements, one should be careful to establish *independently* the specific agreement requirements of every relevant morpheme. Plausibly, the weaker requirement of *each other* w.r.t. *themselves* has to do with the overt plural morphology present only in the latter.

A general implication of the preceding discussion is the following: PRO in PC contexts is essentially a group name - being semantically plural but syntactically singular. It should therefore exhibit the same behavior as nouns like *committee*, *government* etc.. This expectation is largely fulfilled. It is well-known that in British English, semantic plurality can license syntactic plurality in a variety of contexts (see Elbourne 1999 for discussion). Thus (69a) is grammatical in British English. Our analysis predicts that the PC construction (69b) will also be grammatical - for exactly the same reason, and indeed it is:

(69) a. The committee consulted each other before the vote.
b. The chair preferred to consult each other before the vote.

In fact, the examples in (59), (60) and (62), all ungrammatical in American English, are acceptable in British English.[17] This provides striking confirmation for our hypothesis that what underlies the phenomenon of PC is indeed the agreement properties of semantic plurality, on which the two dialects differ. More generally, we predict that languages in which semantic plurality is "inert" will pattern with American English, and languages in which it is syntactically active, with British English. Intermediate cases (like Canadian English) are expected insofar as the dependence of different anaphoric elements on semantic vs. syntactic number is subject to lexical variation.

Further support for this line of reasoning comes from the behavior of floating quantifiers. In English, the non-agreeing *all* can be associated with semantic plurality that is not syntactically manifest (70a); arguably, that is why it is licensed in PC environments (70b), at least significantly more than in EC environments (71c); In contrast, the Hebrew *kol* is an agreeing floating quantifier (72a). Accordingly, it is excluded from PC constructions (72b), which are otherwise perfectly grammatical in the language:

(70) a. The class all left.
b. ? We thought that John wanted to all leave before midnight.
b. * We thought that John managed to all leave before midnight.

(72) a. ha-kita azva kula/*kulam.
the-class left all.Sg/*Pl.
b. * xašavnu še-Gil raca la'azov kulanu/kulam lifney xatsot.
we-thought that-Gil raca to-leave all.1Pl/3Pl. before midnight

Even more striking is the behavior of the lexical item *together* across languages. In English, this is a non-agreeing element, hence compatible with PC (see (48)-(51)). In other languages, like Catalan, *together* must agree with its subject in gender and number (which is always plural). Predictably, PC is ruled out in these cases:

(73) a. * L'Anna li va dir a la Maria que prefereix treballar juntes.
the-Ann Cl told to the Mary that prefers to-work together (Fm.Pl)
('Ann told Mary that she prefers to work together')

[17] Example (61) is still excluded, since a floated *each* requires a syntactically plural antecedent even in British English. (60) is somewhat worse than (59) for reasons that I do not understand (judgments by P. Elbourne, p.c.).

b. L'Anna li va dir a la Maria que prefereix trobar-se a les sis.
the-Ann Cl told to the Mary that prefers to-meet at six
'Ann told Mary that she prefers to meet at 6'

(74) a. * L'Anna li va dir a la Maria que va preguntar on viatjar juntes.
the-Ann Cl told to the Mary that inquired where to-travel together (Fm.Pl)
('Ann told Mary that she inquired where to travel together')

b. L'Anna li va dir a la Maria que va preguntar on trobar-se.
the-Ann Cl told to the Mary that inquired where to-meet
'Ann told Mary that she inquired where to meet'

Notice that Catalan *does* allow PC with inherently collective predicates (73b)/(74b). It is only when the agreeing *juntes* appears that PC becomes unavailable. Given that the English translations of (73a)/(74a) are grammatical, this strongly suggests that PC contexts license semantic but not syntactic plurality (under a singular controller).[18]

Finally, consider the difference between simple and complex reflexives. The Italian reflexive clitic *si* is unspecified for syntactic number, as opposed to the emphatic reflexive *se stessi* which is marked for plural. Although either one is compatible with a plural subject (75), only the former is compatible with a PRO subject controlled by a singular DP (76). This is precisely what we predict, given that only the complex reflexive requires a syntactically plural antecedent:

(75) a. Gianni e Maria si sono baciati.
John and Mary SI were kissed
'John and Mary have kissed'

b. Gianni e Maria hanno baciato se stessi.
John and Mary have kissed each other
'John and Mary have kissed each other'

[18] Spanish behaves like Catalan in this regard. The examples (73a)/(74a) improve if the controller (and consequently *together*) is masculine. This is presumably because the masculine/plural is the default form (recall that there is no singular form of *together*).

(76) a. Gianni ha detto a Maria che preferiva baciarsi in cucina.
John has told to Mary that preferred to-kiss in the kitchen
'John told Mary that he preferred to kiss in the kitchen'

b. * Gianni ha detto a Maria che preferiva baciare se stessi in cucina.
John has told to Mary that preferred to-kiss each other in the kitchen
('John told Mary that he preferred to kiss each other in the kitchen')

Thus, there is considerable crosslinguistic evidence that the plurality of PRO in PC contexts is semantic rather than syntactic. The striking feature of all the ungrammatical cases discussed above is the fact that no semantic anomaly seems to be involved in any of them. Indeed, in many cases we observe minimal pairs, identical (or nearly identical) in meaning, one being grammatical and the other not, solely because one depends only on the semantics of plurality but the other depends, in addition, on its syntactic manifestation.

3.5 Excursion: Split Control

It is quite common in the literature to view both partial and split control as two facets of the same property, namely, that of NOC (Williams 1980, Martin 1996, Wurmbrand 1998b, Petter 1998). As I have argued at length above, PC should be seen as a subtype of OC rather than NOC; the same arguments can be made about split control. Still, the two cases might be unified as one subtype of OC, as opposed to the EC subtype.

Although it may well be the case that PC and split OC can be unified at some level of abstraction, the current investigation yields one interesting difference that any attempt of unification must cope with. The restriction in (67) appears to apply to PC but not to split OC. Consider the minimal pairs below:

(77) a. * John told Mary that he preferred to meet each other at 6.
b. John proposed to Mary to meet each other at 6.

(78) a. * John told Mary that he wondered whether to get themselves a new car.
b. John asked Mary whether to get themselves a new car.

(79) a. * John told Mary that he didn't know which club to become members of.
b. John discussed with Mary which club to become members of.

These contrasts suggest that the notion of PC must be kept apart from both OC, NOC and split control. It is evident that the peculiar restriction in (67) only emerges when the clause containing the infinitive provides a single controller, which is in the singular. In fact, the restriction is equally void if the second controller is left implicit but is sufficiently salient in the context:[19]

(80) a. Mary couldn't believe it. John had just proposed to cooperate with each other.
b. Mary was clueless. John had just asked how to introduce themselves to the new boss.

Thus, while their semantics classifies double-object verbs like *propose, ask* etc. with PC verbs, the fact that they allow split control masks this property. Still, given the appropriate context, one can see that they too conform to (67):

(81) a. Mary needed an appointment with $John_1$, but didn't know his schedule. The secretary proposed to her_2 [PRO_{1+2} to meet (*each $other_{1+2}$) at 6].
b. Mary was after some social activity for her and $John_1$, but didn't know how to go about it. She_2 asked me [which club PRO_{1+2} to join/*become members of].

In (81a), PRO includes both the controller *her* and the remote participant *John*, excluding the local subject *the secretary*. This is possible, as long as the infinitive does not contain a plural anaphor. In (81b), PRO includes both the controller *she* and the remote participant *John*, excluding the local object *me*. This is possible, as long as the embedded predicate is not inflected for plural. Thus, the PC class also contains double-object verbs. This finding argues against Martin's (1996) proposal that PC is governed by the matrix agreement (predicting only subject PC); we return to this proposal in section 8.

Notice again that partial control and split control cut the data differently; whereas the former is entirely predictable from (26b), the latter is determined by the semantics of particular verbs:

(82) a. $Mary_1$ recommended to/?ordered $John_2$ [PRO_{2+} to convene without her_1].
b. * $Mary_1$ recommended to/ordered $John_2$ [PRO_{1+2} to cooperate with each other].

[19] An implicit controller can also be deictically identified, leading to the same appearance of a syntactically plural PRO. Higginbotham (1992) suggests that the example in (i), given by Bach (1977), involves an implicit benefactive:

i. Here's a book to read to each other (A handing a book to B and C).

Like *propose* and *ask*, *recommend* and *order* allow partial control by their object; note that the outer coreference in (82a) ensures that PRO excludes the matrix subject. Unlike *propose* and *ask*, *recommend* and *order* do not allow split control (82b) - for obvious reasons, given that in order to engage in some action, one does not recommend to/order other people to do it. These facts suggest once again that the category of partial control should be kept apart from the idiosyncratic property of split control.

3.6 Intermediate Summary: The Typology of Control

Before we move on to the theoretical analysis, it would be useful to summarize the major properties of EC, PC and NOC, that have been established so far:

(83) Categories of Control and their Properties

	OC		NOC
	EC	PC	
Syntactic Context	complement	complement	subject, adjunct
Complement-Type	modal, aspectual, implicative	desiderative, interrogative, factive, propositional	I/A
Arbitrary Control	–	–	+
LD-Control	–	–	+
Partial Control	–	+	+
De-re Reading	–	–	+
Strict Reading	–	–	+

4 PC-Complements as a Natural Class: The Role of Tense

Generalization (67), repeated below, is a novel generalization in the study of control. The obvious question to ask is whether it is derivable from independent principles.

(84) *The PC-Generalization* (Version II of III)

Syntactic number on PRO in PC-complements is inherited from the controller, but semantic number is not.

We have seen that given a controller in the singular, the predicates allowed in PC-complements form a natural class: Namely, they are all syntactically singular (though possibly semantically plural). What we now need to establish is what makes these particular environments a natural class too. Once we identify the feature that is shared by factive, propositional, desiderative and interrogative complements, but not by modal, aspectual and implicative complements, we will be in a position to offer an account of generalization (84).

In this section I propose that the crucial factor distinguishing the two classes is Tense. More specifically, PC complements are specified for their own tense, whereas EC complements contain no independent tense and are therefore interpreted as simultaneous with the matrix event.[20]

(85) PC-complements are tensed; EC-complements are untensed.

The idea that infinitives have their own tense can be traced back to Bresnan (1972), who observed that infinitivals typically describe "hypothetical or unrealized" events. This idea was taken up by Stowell (1982), who argued that all control (non-subject) infinitives have "irrealis" tense w.r.t. the matrix tense. Pesetsky (1991) (partly following Karttunen 1971) showed that this is not true of implicative and factive complements, whose tense is clearly "realis". Pesetsky's study thus separates the notion of infinitival tense from the notion of irrealis, allowing the former to cover more possibilities than the latter.

Martin (1996) and Bošković (1997) follow Pesetsky (1991) in assuming that factive and implicative complements are tensed. Both authors take this property to be crucial for control: In their account, only [-Finite,+Tense] T can assign null case, which determines the distribution of PRO. ECM/raising complements, in contrast, are said to contain [-Finite,-Tense] T, which cannot assign null case and license PRO. Finally, Wurmbrand (1998b) argues that the only truly tenseless infinitives are complements to aspectual and

[20] To be clear on terminology: I use "untensed" as a semantic term and "tenseless" as a syntactic term. We presently restrict attention to semantic interpretation. Whether "semantically untensed" entails "syntactically tenseless" is an issue to be taken up in section 6. In referring to the tense of PC complements, I will use the term "contentful" rather than "independent". Unlike finite (indicative) complements, whose tense is entirely independent of that of the matrix, infinitival tense is constrained (e.g., realis or irrealis). Still, it is contentful insofar as it need not be identical with the matrix tense.

modal verbs; implicative complements are ambiguous, being tenseless or (markedly) tensed when in restructuring or non-restructuring contexts, respectively.

There are important differences between these proposals and the present approach, to which I return below. Let us begin by considering again our sample of complement types:

(86) EC

Implicative:	John managed to solve the problem.
Aspectual:	John began to solve the problem.
Modal:	John had to solve the problem.

(87) PC

Factive:	John hated to solve the problem.
Propositional:	John claimed to have solved the problem.
Desiderative:	John hoped to solve the problem.
Interrogative:	John wondered how to solve the problem.

Following the authors cited above, I take the possibility of conflicting temporal modifiers between the matrix clause and the infinitive clause to indicate the presence of two distinct tense operators.[21] Under this test, modal/aspectual complements are untensed:

(88) a. * Yesterday, John began to solve the problem tomorrow.
b. * Yesterday, John had to solve the problem tomorrow.

Notice that the simultaneity restriction holds in (88a,b) even though the complements are in some sense "irrealis": The time of the beginning and the time of the obligation are conceptually prior to the time of the solving. Yet this intuition is not part of the grammar of these constructions: They involve a singular event located in a singular point in time.[22]

By contrast, desiderative and interrogative complements are tensed - specifically, specified for irrealis tense:

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[21] An alternative conception is that the tense operator is built into the semantics of (overt or covert) temporal adverbials, and tense morphology is merely a concord effect, semantically vacuous (Anderson 1973, Cresswell 1973, Vlach 1993). Although this view cannot be ruled out a priori, it is not clear how it would reconstruct tense-dependencies between matrix and subordinate clauses, given that adverbials normally do not enter selection relations.

[22] Notice that aspectual verbs do not allow shifts into the past either:

i. * Today, John finished solving the problem yesterday.

(89) a. Yesterday, John hoped to solve the problem tomorrow.
b. Yesterday, John wondered how to solve the problem tomorrow.

One might suspect that the irrealis interpretation of (89b) is an artifact of the hidden deontic modal present in *wh*-infinitivals, roughly analogous to *should*. Under this alternative, the future adverbial in (89b) does not detect a distinct tense operator any more than the one in (90) does; it is simply licensed by the semantics of the modal.

(90) John should solve the problem tomorrow.

This is a legitimate worry; however, it is possible to show that the infinitive in (89b) contains an irrealis tense operator - on top of the hidden modal. Observe that the modal *should* can occur with past tense, whereas its counterpart in a *wh*-infinitive cannot:

(91) a. John wonders what problem he should have solved yesterday.
b. * John wonders what problem to have solved yesterday.

One could speculate that the hidden modal in infinitival interrogatives is different from *should*, in that it must be future-oriented. However, this complication receives no independent support. Rather, the natural interpretation of the facts in (91) is that the hidden modal is semantically identical to *should*, only it is embedded under an irrealis tense operator. Notice that the latter is independently known to exist, e.g. in desiderative infinitivals. Thus is seems that modality alone cannot account for the irrealis interpretation of interrogative infinitivals, and they must be taken to contain their own tense.

Turning to factive and propositional complements, we note that they typically involve a realis tense preceding the matrix tense:

(92) a. Today, John regretted having kissed his aunt last week.
b. Today, John claimed to have lost his car keys last week.
c. Oggi Gianni crede di avere offeso Maria la notte scorsa. [Italian]
today John believes to have offended Mary the night last
'Today, John believes to have offended Mary last night'

Finally, consider implicative complements. It has already been observed by Karttunen (1971) that these verbs do not tolerate tense mismatches between the matrix and the infinitive:[23]

(93) a. * John remembered to lock his door tomorrow.
b. * John managed to solve the problem next week.
c. * John saw fit to arrive the day after tomorrow.

(94) a. * John will remember to lock his door yesterday.
b. * John will manage to solve the problem last week.
c. * John will see fit to arrive the day before yesterday.

[Karttunen 1971: ex.20-21]

Sentences like (95) may cast doubt on the claim that implicative complements cannot differ in tense from the matrix clause:

(95) John managed to have finished his duties on time.

However, notice that the occurrence of the auxiliary *have* in infinitives is always ambiguous between past tense and present perfect interpretations. It is only the former that indicates the presence of real tense in the infinitive. Indeed, when the perfective interpretation is ruled out (96a), such examples become ungrammatical (compare with the factive example (96b)):

(96) a. * Today, John managed to have finished his duties yesterday.
b. Today, John was glad to have finished his duties yesterday.

I take these observations to indicate that implicative complements are untensed. Wurmbrand (1998b), reaching the same conclusion, points out that if we assume that implicative verbs are lexically specified to select untensed complements, we understand why they cannot take finite complements; by assumption, the feature combination [+Finite, -Tense] is excluded by UG:

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[23] In fact, Karttunen (1971: ex.28] observed that even spatial mismatches are excluded with implicatives:

i. * On the sofa, John managed to sleep in the bed.
ii. On the sofa, John decided to sleep in the bed.

(97) a. * John dared that he climb(ed) the mountain.
b. John regretted that he had climbed the mountain.
c. John decided that he would climb the mountain.
d. John wondered which mountain he should climb.

The question to address at this point is how the [±Tense] distinction is represented in the syntax. Most importantly - what is the categorial status of (un)tensed infinitives?

In the literature on control it has frequently been maintained that different kinds of infinitival complements are associated with different maximal projections - VP, IP or CP (see, among others, Bouchard 1984, Koster 1984, Rochette 1988, Wurmbrand 1998b). It is unclear whether all the distinctions discussed by these authors are best captured at the level of the *category* of the infinitive. Here, I would like to keep to the null hypothesis that in the general case, non-finite clauses, just like finite clauses, are CP's. Following Rizzi (1997), I assume that Finiteness is specified in the C-system, imposing certain selectional restrictions on Tense. As far as I know, except for ECM and raising, departures from the null hypothesis are only required to account for the phenomenon of restructuring; I return to the interaction between partial control and restructuring in section 6.3.

Unproblematically, we may assume that factive, propositional, desiderative and interrogative infinitival complements are full CP's, dominating a TP projection containing the tense specification. In the case of interrogatives there is little reason to doubt that, given that the question operator is located in [Spec,CP] (or in C, in *if*-questions). In the case of factive, propositional and desiderative complements, we have already shown that they are tensed, hence minimally TP's; the Force distinction among these types is encoded in C. In many languages (e.g., Romance) they are introduced by overt complementizers. Moreover, these complements never allow restructuring (with very few exceptions, like *want* and *prefer*). Uniformity and parsimony considerations then suggest that all PC complements are CP's.

As for implicative complements, there are two options: Either they are bare VP's, lacking any Tense projection; or they are full CP's, embedding a semantically null Tense. There are several arguments, both conceptual and empirical, in favor of the latter view and against the former one. However, articulating these arguments will require quite an elaborate detour, so I defer this discussion until after the analysis has been presented. Let us assume, then, that implicative complements are untensed CP's, returning to the relevant motivations in section 6.

Turning to complements of modal and aspectual verbs, it has frequently been suggested that these are bare VP's. Aspectual verbs can take gerundive complements, suggesting they may appear with projections smaller than CP. In English, at least "defective" modal verbs also select bare VP's, so it may very well be the case that the infinitival marker is not a Tense marker in complements to other modals like *have* and *is able*. Alternatively, epistemic and deontic (but not dynamic) modals may be raising predicates, in which case the issue of PC does not arise. I would like to put all these issues aside and remain neutral on the categorial status of the complements to modal and aspectual verbs. The reason for this is that any treatment of implicative verbs would extend to modals and aspectuals. If implicative infinitivals are clausal, then our account of the EC class must in any event accommodate untensed CP's; if complements to modal/aspectual verbs are bare VP's, then the analysis to be developed for untensed CP's will trivially extend to tenseless projections as well.

In conclusion, the factor that distinguishes the PC class from the EC class is whether or not the infinitive is tensed. We can now state the final version of the PC generalization:

(98) *The PC-Generalization* (Version III of III)
Syntactic number, person and gender on PRO in tensed infinitival complements are inherited from the controller, but semantic number is not.

The next section develops an explanation of (98).

5 An Analysis

Our analysis has to articulate the syntax underlying three major distinctions: Exhaustive/ partial control, tensed/untensed infinitives and syntactic/semantic number. The pieces of the story should work together so as to guarantee that some special property of semantic number renders it "invisible" to the mechanism of partial control (to allow mismatch between the controller and PRO), an option that should be made available only in the presence of contentful tense. We begin by considering the syntactic realization of semantic number and tense.

5.1 Semantic Number and Contentful Tense: Syntactic Assumptions

What is the special property of semantic number, distinguishing it from syntactic number? It seems that semantic number is an *intrinsic* feature of DP's, whereas syntactic number is

arbitrary. It is part of the lexical meaning of *committee* that it is semantically plural, but the plurality of *boys* is not part of its lexical meaning; rather, it is a compositional meaning in the latter case, resulting from the combination of the stem *boy* with the plural morpheme *-s*. Unlike formal phi-features, semantic number is not accessible to the computational system in isolation; one cannot arbitrarily attach it to nouns or pronouns the way one attaches phi-features. Let us assume, then, that semantic number is determined in the lexical entry, as opposed to formal phi-features, which are freely selected before nouns enter a derivation.[24]

What about PRO? As for formal phi-features, the null hypothesis is that PRO picks them up when it enters a derivation, just like lexical nouns do. Notice that those features can be valued and also "anaphoric" in the traditional sense, just like the phi-features of *himself* are valued and anaphoric. Thus, they require external identification (i.e., coindexing) but not valuation. Next, consider semantic number on PRO. Is PRO, like lexical nouns, intrinsically specified for semantic number, or does it acquire that feature later on? The first option would force us to assume that PRO is lexically ambiguous between $PRO_{[SEM: +pl]}$ and $PRO_{[SEM: -pl]}$; furthermore, it opens up the possibility that there are many other entries for PRO, distinguished by other intrinsic semantic features (mass/count, animate/inanimate etc.). No evidence supports this multiplicity. Instead, we may assume, quite simply, that controlled PRO is not intrinsically specified for any semantic feature.[25] Formal features are selected from a free "pool", however, semantic number, not being accessible in isolation, is acquired differently. The question is how.

A priori, there are two options: Either some syntactic operation provides PRO with semantic number, or semantic/pragmatic context does so. In fact, I will shortly argue that both options are available, the former utilized in EC and the latter in PC. Specifically, semantic number on PRO is determined by *agreement* with a matrix element in EC, and by context in PC.[26] Before we explain why the system works this way, we need to consider the interaction of semantic number with other elements, in particular, functional heads.

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[24] I am ignoring rare and familiar exceptions like *scissors* and *proceedings*. To illustrate the point in in the text: The reflexive anaphor enters the derivation as [D+self], where D picks an arbitrary combination of person, number and gender features.

[25] Arbitrary PRO is different, being intrinsically animate; see Chomsky (1981).

[26] Linguistic context, as in (i), can force PRO to be semantically plural. Discourse context, as in (ii), may favor that option:

i. The chair preferred [PRO to gather at 6].

ii. We were all in a hurry, but John wanted [PRO to play one more game], so we did.

We assume, following Chomsky (1998), that uninterpretable phi-features enter the derivation unvalued. Therefore, semantic plurality on PRO in (i) does *not* result from agreement with the infinitival T-Agr. Rather, it is determined by context (here, the collective predicate), much like PRO's animacy value.

Can heads like T-Agr or small v bear semantic number? Notice that in this case, interpretability makes no distinction between semantic number and other phi-features: Neither is interpretable on functional heads. The general rule for uninterpretable features should be observed here as well: An element may bear such features but must get rid of them (by checking) before the LF interface. Again, the question arises - how can a functional head F acquire semantic number? Clearly, not from the lexicon. I suggest, again, that agreement with a lexical noun can achieve that goal.[27] In fact, since Agree is an unselective operation, F must agree with the lexical noun on all features, semantic number included. Notice that the same agreement mechanism is responsible for erasing this feature from F, however there may be a "period of grace" where the feature is present on F, available to the derivation, before it ultimately erases.

In particular, if we adopt Chomsky's (1998) notion of the *phase*, the latter result is inevitable. Chomsky suggests that checked features do not erase right away when they are checked, but are accessible until the end of the phase, where the phase is the smallest containing vP or CP. This formulation is designed to reconcile the tension between the need to make those features accessible to spell-out after checking, and at the same time guarantee that they are invisible to later cycles.

Let us summarize the discussion so far:

(99) a. PRO enters the derivation with valued phi-features, but no semantic number.
b. Functional heads enter the derivation with unvalued phi-features, but no semantic number.
c. PRO and functional heads can acquire semantic number by agreement with (an element that agrees with) a lexical noun.
d. PRO can acquire semantic number by context.

Notice that the only special assumption invoked is that PRO has no intrinsic semantic number; as mentioned, simplicity and lexical economy favor that assumption. Coupled with standard properties of agreement processes, the set of propositions in (99) follows.

We can already see where (99) leads us. If somehow control in PC is mediated by a functional element that does not bear semantic number, then that feature will not be transmitted to PRO; instead, the semantic number of PRO will be determined contextually.

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[27] This is manifested overtly in British English, where collective nouns can trigger plural agreement, e.g. *The committee is/are here* (see Munn 1998 and Elbourne 1999). The difference between standard and British English would then be one of spell-out choices: The former (almost) never spells-out semantic number on Infl, the latter does.

The functional element at stake is the infinitival Agr, and we currently entertain the possibility (to be explicitly spelled out below) that in PC, Agr is the "controlled" element and PRO is merely "parasitic".[28] Why should Agr, rather than PRO, be the element under control? If, for some reason, Agr is high enough to be visible to the controller, that possibility is opened up. This scenario, I argue, is precisely implemented in tensed contexts.

Following Pesetsky & Torrego (1999), let us make the following assumption:

(100) In tensed clauses, C contains an uninterpretable T-feature.

(100) spells out an idea that goes back to Stowell (1982) and den Besten (1982): C marks the tense domain of its clause. In minimalist terms, this means that it is associated with some Tense feature. Since we assume that the semantics of Tense comes from the T head itself, it is natural to assume that the counterpart feature on C is uninterpretable.[29]

Observationally, languages provide ample evidence for this kind of approach. Thus, complementizers in various languages encode mood distinctions, tense and (subject) agreement. Rizzi (1997) proposes to represent these C-T correlations in terms of *selection*: The lowest head in the C-system - Fin(iteness) - selects for certain T-heads but not others. Another way to capture this (compatible with Rizzi's) is by *head movement*: T raises to C to check off an uninterpretable feature on the latter.

Indeed, overt T-to-C is quite common across languages (auxiliary inversion, V2 effects, and inversion in conditionals, subjunctives and counterfactuals). Recently, Pesetsky & Torrego (1999) even extended this mechanism to simple *that*-clauses, to account for various ECP and Comp-deletion effects. Pesetsky & Torrego argue that the complementizer *that* is really generated under T and raises to C, to satisfy an uninterpretable T-feature on C.[30]

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[28] This idea goes back to Borer (1989). The phenomenon of partial control provides striking support for Borer's original insight, not envisioned in her paper. I return below to some subtle differences.

[29] Thus, untensed clauses differ from tensed ones both in having null tense and in lacking any T-feature on C. Notice that convergence considerations will ensure that a contentful T will never co-occur with an "untensed" C and a null T will never co-occur with a "tensed" C.

[30] Pesetsky & Torrego (1998) restrict T-to-C in infinitives to irrealis clauses. Internal to their analysis, this accounts for the irrealis interpretation of subject infinitivals and object-gap infinitival relatives. However, P&T do not explain why T-to-C is associated with irrealis interpretation, why this effect does not extend to finite clauses, and how (100) is satisfied in realis infinitives (which are tensed, as shown above). In fact, T-to-C arguably *does* occur in realis infinitives: Raposo (1987) shows that factive infinitival complements in Portuguese display Aux-to-Comp movement. I will therefore assume that T-to-C uniformly applies in all tensed complements, and that P&T's effects are to be explained in terms of the properties of the raised T rather than its position.

The claim in (100) is that only *tensed* clauses mark their head with a T-feature; untensed clauses do not determine a Tense domain, hence are headed by C with no T-feature. Adopting the standard version of Last Resort, we conclude that T-to-C is blocked in untensed clauses, since it is unmotivated (no uninterpretable feature is erased). Given our earlier claim (85) that PC-complements but not EC-complements are tensed, we derive the following result:[31]

(101)T-to-C applies in PC-complements but not in EC-complements.

Following Chomsky (1995, 1998), I assume that there is no independent AgrP projection. Rather, phi-features are located on T. Given (101), Agr reaches C as a "free rider" in PC complements. This is just the result we need to derive the effect of partial control. In fact, as I discuss below, this "parasitic" behavior of Agr provides a strong argument *against* the projection of an independent AgrP (at least in infinitives). I now turn to an explicit characterization of both variants of OC within a minimalist framework.

5.2 Agree with Agr (PC) or PRO (EC)

I propose that OC is an instantiation of the general operation Agree of Chomsky (1998). Agree is the classic transformational dependency, minus phonological displacement: It is a relation between two lexical items, triggered by uninterpretable features. In particular, Agree (α,β) is established between a *probe* α and a *goal* β in the domain (=sister) of α, in virtue of some uninterpretable feature of α ("suicidal Greed") and some feature of β that makes it "visible", or "active". The operation Move consists of Agree (α,β), generalized pied-piping that determines the size of the phrase P(β) to be moved, and Merge (P(β),αP)), where P(β) is (normally) merged as the specifier of α.

In the case of normal A-movement, it is assumed that uninterpretable Agr on T is the probe, and structural case is what makes the goal DP "active"; the same goes for expletive constructions, where Agree alone, not followed by Merge, is established. What would be the features that drive Agree in OC? What is the probe? I suggest that the probe is the uninterpretable phi-features of the matrix functional head that agrees with the controller.

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[31] An alternative to (101), without movement, is to assume that C contains inherent Agr features, which trigger Agree (C,T-Agr) if T is contentful but not if T is null (N. Chomskky, p.c.). The effect would be equivalent to that of (101) as far as my analysis is concerned. I adopt (101) mainly because there seems to be independent evidence for T-to-C (and T in C) elsewhere, but nothing crucial hinges on this choice.

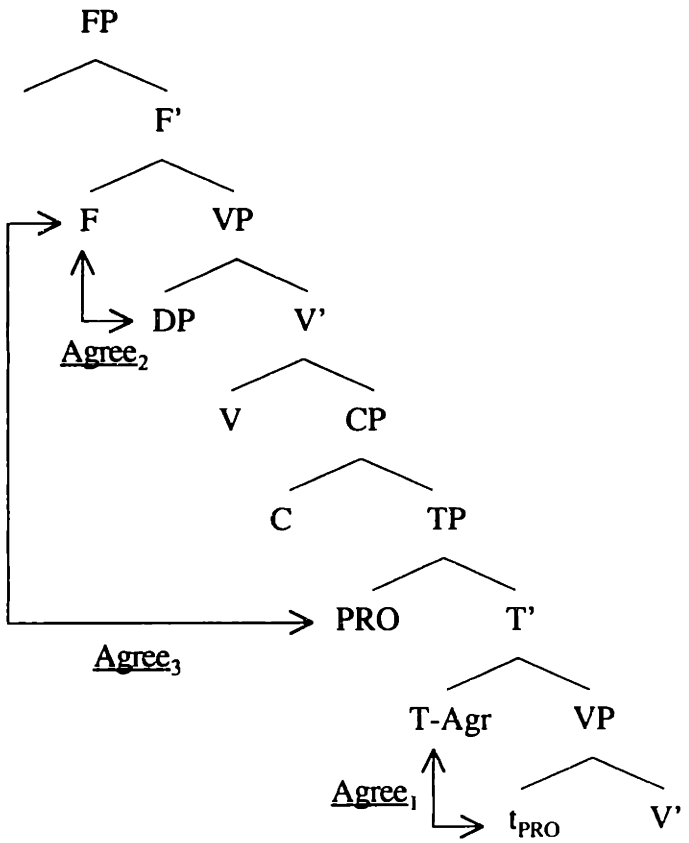
In the case of subject control, the probe is T; in the case of object control, it is small v. For dative and oblique controllers, I assume that they too are licensed as specifiers of suitable functional heads. The latter could be the "applicative" v of Marantz (1993), the prepositional cascade heads of Pesetsky (1995), the Asp heads of Borer (1998), or any other analogue that suits the reader's taste. All we need is that every matrix DP be associated with some functional head that agrees with it in phi-features (and checks its case).

Turning to the goal of Agree in OC, I suggest it is either PRO or the infinitival Agr, made "active" precisely because of their anaphoric nature. We now reconstruct the traditional intuition that PRO in OC is anaphoric by taking this property to constitute its visibility as a goal for Agree. Following Borer (1989), we extend this property to the infinitival Agr. Notice that PRO is visible as a goal in a very specific sense; its (null) case already being checked, it cannot move any further, presumably because Move, unlike Agree, requires the goal to bear an uninterpretable case feature (for A-movement). Yet the anaphoric nature of PRO does make it a possible goal for Agree.

The representation of EC will be as follows (F stands for either T, v or oblique head; I am abstracting away from the movement of PRO itself within the infinitive):[32]

[32] I return below to the issue of locality and subject-control.

(102)EC = PRO-Control

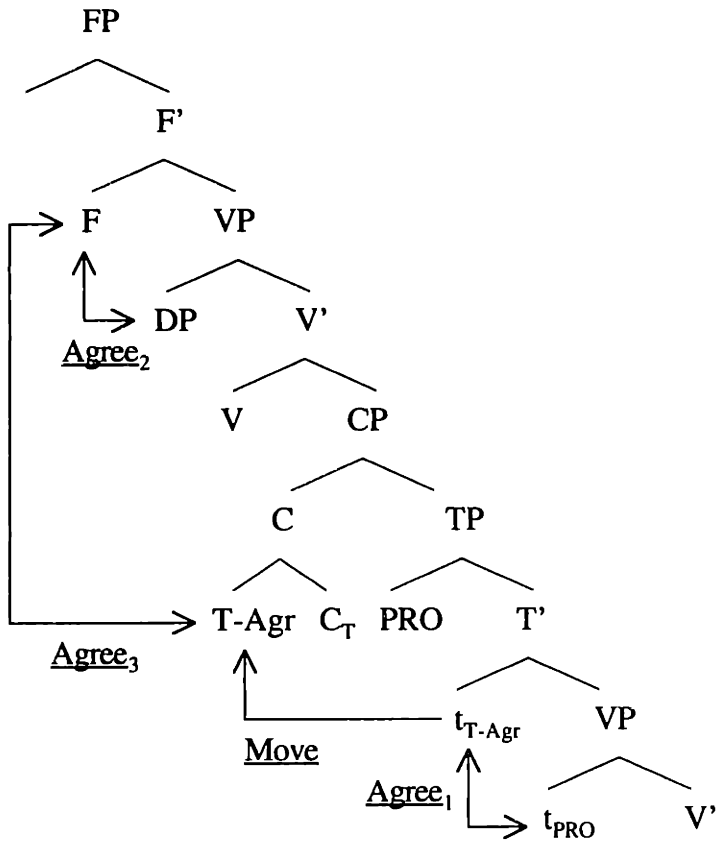


Agree$_1$ (T-Agr,PRO) matches the phi-features of Agr and PRO (followed by raising of PRO to [Spec,TP]). Crucially, this operation does not apply to semantic number, since neither PRO nor Agr has this feature at this stage (see (99a,b)). By assumption (101), T-Agr remains in situ, since the infinitive is untensed. Next, Agree$_2$ (F,DP) matches the features of F and the controller DP. By assumption (99c), F inherits the semantic number of the controller DP. Finally, Agree$_3$ (F,PRO) matches all the phi-features of F and PRO, and crucially, assigns PRO semantic number, by (99c). The question of interest, to recall, was why PRO must agree in semantic number with the controller in EC. Given (102), the answer is trivial: Because it has no other choice. Agree is a "maximizing", unselective operation, matching as many features of the probe it can with the goal. Since semantic number is one of F's features, PRO inherits it.

Notice that F mediates coindexing between the controller and PRO by virtue of establishing Agree relations with both. The interpretive component effectively interprets PRO as a variable bound by the controller, although, strictly speaking, neither a chain nor a binding-theoretic relation is established between the two.

Consider now the representation of PC:

(103) PC = Agr-Control



Again, Agree$_1$ (T-Agr,PRO) matches the phi-features of Agr and PRO, both of which still lack semantic number. The infinitive is tensed, so its head (marked as C_T) bears an uninterpretable T-feature. T-to-C applies, to check this feature, carrying Agr along with it (see (101)). Next, Agree$_2$ (F,DP) applies, matching the features of the controller DP and F, which inherits semantic number from it (by (99c)). We now take the goal of the third Agree operation to be Agr (in C), rather than PRO (we return to this locality effect below). The operation Agree$_3$ (F,T-Agr) matches the phi-features of F and Agr, and by transitivity of agreement, PRO gets to match the controller in all phi-features.

Crucially, however, semantic number cannot be transmitted to PRO. The reason is simple: PRO can inherit from Agr all and only the features that were implicated in Agree$_1$. Those features, to recall, did *not* include semantic number. Even if semantic number is assigned later to Agr by Agree$_3$, there is no way to "overwrite" the earlier effects of Agree$_1$; this is impossible in the derivational framework we are assuming here.

Thus, PRO ends up inheriting the values of all phi-features of the controller, except semantic number, which is assigned contextually. This is the partial control effect.

A number of technical questions arise at this point; I list them in (104):

(104)a. How can F enter two Agree relations?
b. How can Agr survive in (103) after having been checked off by PRO?
c. What blocks Agree (F,T-Agr) across PRO in (102)?
d. How can Agree "see" PRO in (102)?
e. Why does subject control across an object (e.g., with *promise*) not violate locality?

Question (104a) receives an immediate answer under the notion of the phase. Recall that checked features do not erase right away when they are checked, but persist until the end of the phase. The two Agree operations that F triggers occur both in the matrix phase, hence the phi-features of F do not erase between them. The answers to questions (104b,c) invoke the "Phase Impenetrability Condition" (PIC) of Chomsky's (1998). The PIC states that only the head of a phase and its edge (= Spec(s)) are visible to operations outside the phase. This is permissive enough to let Agr enter an Agree relation with a matrix element in (103), where Agr is in C, but crucially not in (102), where Agr is in T. The latter result explains the obligatory exhaustivity of control into untensed clauses: Since Agr is invisible to F, PRO must be the controlled element, and semantic number is preserved.

However, if Agr is invisible to F in (102), how can PRO be visible? After all, neither is at C or its edge. This is question (104d), and in order to answer it we must restrict the scope of the PIC as stated above. In particular, the following modification will suffice:

(105)*Modified PIC*

In a structure [... X ... [$_{YP}$ ... Z ...], where YP is the only phase boundary between X and Z, Z is visible to X:

i) Only at the head or edge of YP, if Z is uninterpretable.
ii) Anywhere in the YP phase, if Z is interpretable.

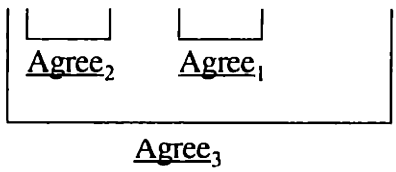
This seems a reasonable move: Interpretable features should be able to enter semantic relations with higher elements even when occurring below the CP level. As standard cases of successive cyclicity all involve uninterpretable features, they fall under (105-i), the original PIC. (105) makes the right distinction between Agr and PRO: Agr is uninterpretable, hence must be CP-peripheral to be visible, PRO is interpretable, hence

need not be so.[33] Notice that under (105-ii), interpretable features are not entirely exempt from cyclicity, but rather are subject to a weaker form of this constraint; X can "see" an interpretable Z only one phase downwards. This guarantees the locality of OC, a fundamental property recognized in all studies of control.

The resulting picture commits us to a derivational view of control: The possibility of partial control is effected by a "transitory vehicle", namely the infinitival Agr, which does not survive to the semantic interface. Still, its derivational effects *are* visible at the interface. I see no inherent problem with this view, rather an interesting if unexpected consequence of a central claim of minimalism, which deserves further investigation.[34]

Left to be accounted for is (105e) - the lack of MLC violation in subject control across an object. Here we seem to face a serious problem. Consider the relevant structure (these cases all involve desiderative/interrogative complements, hence fall under PC):

(106) Subject Control: $[T_1 \ldots DP_1 \ldots v_2 \ldots DP_2\ [_{CP}\ T\text{-}Agr_1\ [_{IP}\ PRO_1\ t_{T\text{-}Agr}\ VP\ ]\ ]\ ]$



The offending operation is Agree$_3$. Both v_2 and DP_2 should count as interveners (the latter perhaps a "defective" one, since it is case-marked): They bear phi-features and are closer to T_1 than T-Agr$_1$ is, by standard c-command measures. The MLC should rule out this derivation just like it rules out **Many people$_1$ seemed there to be t_1 in the garden.*

In fact, both Manzini & Roussou (1998) and Hornstein (1999) claim that subject control across an object *does* violate the MLC. To handle that, Hornstein redefines the MLC to be a markedness condition, while Manzini & Roussou adopt the dative-shift solution of Larson (1991). Both proposals, I believe, are empirically untenable. Although subject control across an object is not very common, it is too robust to dismiss. In chapter 5 I show in detail why attempts to impose some locality condition - within the matrix clause - on the choice of controller in OC are inadequate. Extensive evidence from control shift phenomena suggests that controller choice is responsive to a complex combination of

[33] Recall that we assume that PRO enters the derivation with valued phi-features, like any other noun. It is important to stress that "(un)interpretable", within minimalist analyses, is a technical term, distinct from "(in)comprehensible". Anaphors, including PRO, consist of interpretable features, even if incomprehensible out of context. Thus, the embedded clause in *John thinks [that pictures of himself are gross]* converges at the phase level, even though the anaphor it contains is not bound at that level.

[34] Epstein, Groat, Kawashima and Kitahara (1998) advance a radical derivational approach, whereby uninterpretable features are expunged as soon as they are checked. The present proposal, crucially relying on the "delay" granted by the phase, is incompatible with such a view.

semantic and pragmatic factors; no syntactic account can fully explain it. I take this to be an irrevocable empirical condition on any theoretical account of control, whether it suits one's taste or not. Here, theory should adapt to the facts, and not the other way round.

Consider the derivation in (106) more closely. A notable feature of that derivation is the fact that the MLC-violating operation, Agree$_3$, follows an MLC-obeying operation triggered by the same head, namely Agree$_2$. This bears remarkable resemblance to the class of cases falling under the Principle of Minimal Compliance (PMC) of Richards (1997). Richards shows that for a broad range of cases (subjacency, superiority, WCO, VP-ellipsis, connectedness, binding) a grammatical principle can be obeyed once in a given construction and then ignored for the rest of the derivation within an appropriate domain. In particular, Richards shows that the PMC can obviate violations of the MLC:

(107)a. * [wh_2-H... wh_1... t_2]

b. [wh_1-wh_3-wh_2-C... t_1... t_2... t_3]

c. ?* Kakavo kogo e pital Ivan?
what whom AUX asked Ivan
'What did Ivan ask whom?'

d. Koj kakavo kogo e pital?
who what whom AUX ask
'Who asked whom what?' (Bošković 1995)

In (107a) C is an attractor for wh_1 and wh_2. Since wh_1 is closer to C, moving wh_2 to C violates the MLC. Compare (107b), where wh_1, wh_2 and wh_3 are targets for attraction. Once wh_1 has been attracted, wh_2 can be skipped and wh_3 can be the target of a second attraction by C. The first operation, which obeys the MLC, exempts the second one from it, thanks to the PMC. Relevant examples from multiple *wh*-questions in Bulgarian are given in (107c,d).[35]

Notice that the configuration in (107b) is formally equivalent to the one in (106): In each case we have a head with uninterpretable features (T or C) which first attracts (or in more recent terminology, Agrees with) the closest target (DP_1 or wh_1) and then a remote target (T-Agr_1 or wh_3), across an intervener (v_2/DP_2 or wh_2). I propose that the same principle licenses these cases: Both the "3rd-*wh*" effect and subject control across an object

[35] Richards independently shows that the surface order of the moved *wh*-phrases is indicative of the order in which they were moved (by "tucking-in").

are possible thanks to the PMC.[36] Again, let me stress that this is the desired result, given the (commonly ignored) characteristics of subject control across an object. The acceptability of these cases varies across languages, speakers and particular choices of verbs. A theory in which these cases are freely generated by syntax and later on filtered by semantic/pragmatic considerations (as discussed in chapter 5) is more adequate than one which blocks them all already in the syntax.

5.3 On Agr in C

The idea that Agr can show up in C is not novel. The existence of inflected complementizers in V2 languages like West Flemish (Haegeman 1986, 1992, Shlonsky 1994) and Bavarian (Bayer 1984) has been taken as evidence for the presence of agreement features - specifically, subject agreement - in C. This phenomenon is correlated with the presence of a lexical subject, presumably because Agr is implicated in nominative case assignment (see Rizzi 1982 and Raposo 1987 on Aux-to-Comp movement). For this reason, inflected complementizers never co-occur with PRO. Yet the lack of overt agreement morphology on C in control infinitives cannot rule out the possibility we presently entertain, namely that *non-lexical* infinitival Agr does raise to C.

In fact, this idea lies at the core of Borer's (1989) theory of anaphoric Agr, which should be seen as the historical ancestor of the present study. In Borer's system, an anaphoric Agr must be identified (bound). The null subject, possessing no inherent phi-features, cannot serve as an antecedent. Agr raises to C, where it may be bound by a matrix argument in accordance with the standard Condition A of the binding theory. Since the null subject is coindexed with Agr, it indirectly inherits the reference of Agr's antecedent. Thus "control of PRO" reduces to "binding of Agr".

There are various problems with the idea that control reduces to binding, which we discuss in chapter 3 (see Mohanan 1985, Rizzi 1986, Lasnik 1992). However, modulo this caveat, notice that the mechanism of PC proposed above shares a lot with Borer's account, both in spirit and in execution. Thus, both accounts assume that Agr is anaphoric, and furthermore, both identify C as the locus of control. In fact, the very existence of partial

[36] To prevent overgeneration, we must assume that the unlike the MLC, the PIC cannot be obviated by the PMC. In other words, cyclicity is an absolute constraint, and one cyclic operation does not license subsequent non-cyclic operations. This is independently needed to exclude standard *wh*-island violations (e.g., **Who did John wonder where to look for?*), where the embedded cyclic *wh*-movement does not exempt the long *wh*-movement from an intermediate step. Given that, the PIC precludes an association of the matrix T/v in (106) with PRO/T-Agr two (or more) clauses below. The leeway provided by the PMC is thus limited to the choice of controller within the clause immediately dominating the infinitive.

control is a clear indication that Borer's insight was correct. As already mentioned before, it is hard to see how PC can be captured in treatments which bind PRO directly to the controller.

An important departure from Borer's proposal is that in our analysis, there is no independent operation of Agr-to-C. Rather, Agr is a free-rider on T-to-C, which is motivated by tense features, independently of control. In Borer's analysis, in fact, there are two different sources of Agr-to-C: In some cases it is simply motivated by PRO's need to be "identified" (by a set of phi-features); since Agr is anaphoric (and PRO itself unspecified for phi-features) it must acquire the requisite features from an external binder. In other cases (where the subject of the infinitive is a lexical pronoun), Agr-to-C is motivated by the ECP, on the assumption that an empty C violates this constraint.

One can question this account on various points. First, the notion of an operation driven by "look-ahead" considerations is dubious under minimalist assumptions. Second, it is unclear why an abstract Agr can satisfy the ECP any more than an abstract C can. Third, it seems that lexical complementizers do not block OC in a manner expected under Borer's analysis (e.g., *di/de* in Romance, *om* in Dutch, etc.). Finally, it is somewhat inelegant for Agr-to-C to stem from two unrelated motivations, with the possible redundancy between them.

These conceptual and empirical problems disappear under the present approach. T-to-C is uniformly driven by an uninterpretable T-feature on C, present only in tensed infinitivals. Thus, Agr plays a mediating role only in PC; EC is implemented via direct control of PRO.

As noted, some empirical benefits are gained by this shift. Are there any empirical losses? Presently, it is hard to tell. Borer's main, and most compelling, argument for anchoring control to Agr rather than to PRO was that it enables one to express some crosslinguistic generalizations that are otherwise mysterious. These were: i) If an anaphoric Agr can occur in a finite Infl, one expects to find control into finite clauses; ii) If overt pronouns can occur as subjects of infinitives, one expects to find control of overt pronouns. Both cases are crosslinguistically attested (see also Suñer (1984), Farkas (1985) and Yang (1985)). The present analysis has no problem with (i), given that finite complements are tensed and hence involve T-to-C. As to (ii), we predict, more narrowly, that it will be attested only in tensed infinitivals - basically, the PC class. Unfortunately, I do not know in which direction the facts go, but the prediction seems clear enough.[37]

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[37] The present proposal also differs from Borer's in maintaining the traditional distinction between PRO and *pro*; for Borer, there is only one empty category, *pro*, its anaphoric properties in control constructions being parasitic on Agr, not intrinsic. For us, the anaphoric nature of PRO is crucial in explaining control in EC.

A major result of our account is that infinitives contain Agr, albeit an abstract one. The very possibility of PC, we argued, crucially relies on the presence of anaphoric phi-features in the infinitival Tense node. However, it seems that for the analysis to work, Agr cannot head its own projection. The PC effect is parasitic on the infinitival tense; if the latter is null, PC is blocked. If Agr headed its own projection, it would be expected to be able to raise to C regardless of the content of T, and we would lose the basic correlation between T and PC. The fact that the effects of Agr are so tightly linked to the position of T suggest that they indeed reside in the same head. This provides strong empirical support for the conceptual arguments in Chomsky (1995) against AgrP, as well as for Pollock's (1997) elimination of AgrP from infinitives.

6 Varieties of EC: CP Complements and VP Complements

In this section I show that the effect of EC - that is, the exclusion of partial control - obtains in two structural environments: Untensed CP's and bare VP's. The reasons why partial control is impossible in both environments were discussed in the previous section. T-to-C movement, the key to PC, does not apply when T is null, and obviously cannot apply when T is absent. Thus the analysis explains why complements of different categorial "size" are grouped together in the EC class.

Notice that if a case can be made that implicative complements are bare VP's like those of modal/aspectual verbs, then the EC category will reduce to restructuring. In fact, this is the position essentially taken by Wurmbrand (1998b). Wurmbrand claims that all the cases of "variable control" - shifts between object and subject control, split control and partial control - involve non-restructuring infinitives, which are CP's containing a syntactic PRO; whereas fixed, or "semantic" control is a property of restructuring infinitives, which are bare VP's directly predicated of the controller (see Chierchia 1984). In contrast, Pesetsky (1991), Martin (1996) and Bošković (1997) assume that implicative complements are tensed CP's, containing a phonetically (but not semantically) null tense morpheme, roughly analogous to *should*.

My own position is somewhere in between: Following Wurmbrand, I assume that implicative complements are semantically untensed. Therefore, they do not contain any [+Tense] specification or a null modal element. However, following Psestsky, I think that

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It is quite hard to find independent distinguishing evidence. A potential case is discussed by Munn (1991), who notes that controlled *pro* (in Greek, Portuguese and Chinese) can be interpreted either *de se* or *de re*, unlike controlled PRO, which can only be understood *de se*. Borer's theory cannot distinguish those two cases. The precise interpretation of Munn's data, however, is not entirely clear.

there are good reasons to believe that implicative complements are nonetheless CP's. Therefore, the categorial status of the infinitive will not be able to distinguish between the EC and the PC classes, and in particular, EC is not reducible to restructuring.

In short, we make the following claims about implicative complements:

(108)a. There is no tense morpheme in implicative complements.
b. Implicative complements are CP's.

In section 6.1 I discuss the make-up of implicative complements and argue that contrary to earlier claims in the literature, they do not contain any Tense information, not even "anaphoric tense". In section 6.2 I counterpose the VP-approach with the CP-approach. I show that there is considerable evidence in favor of the latter option, so that EC does not entail restructuring. In section 6.3 I show that nevertheless, restructuring does entail EC, predictably under our analysis, since restructuring truncates the TP layer required for PC.

6.1 Implicatives: Null or Contentful Tense?

Consider the arguments raised *against* (108a) by Pesetsky (1991), Martin (1996) and Bošković (1997). Pesetsky (1991: 114-115) argues that implicative verbs can marginally take finite complements, and when they do, the modal *should* appears in those complements:

(109)a. ?? Bill somehow managed that Mary should get the prize.
b. ?? Sue was careful that Bill should remain safe.
c. ? Mary saw fit that he should speak French.

However, even granting the acceptability of these examples (given with Pesetsky's judgments), the analogy between implicative tense and *should* is not without problems. First, as noted by Wurmbrand (1998b: 69), the sense of *manage* in (109a) is somewhat different than the one in infinitival environments (e.g., in (86)). Whereas the latter means something like *succeed*, the former means *make arrangements*. In fact, it seems that the normal *manage* is preferably non-agentive, whereas the marked one in (109a) is understood agentively; cf. ?? *John deliberately managed to escape the police*. In German, *manage* takes no external argument, the controller being marked dative; in Italian it selects the auxiliary *essere*, an unaccusative diagnostic.

Even if the same matrix verb is involved in the finite and the non-finite cases, it seems that the embedded tense is different. Thus, to the extent that (109a) is acceptable, (110) is too:

(110)?? Bill somehow managed yesterday that Mary should get the prize tomorrow.

As we have seen in (93)-(94), such tense mismatch is impossible with the infinitival variant. This indicates that contrary to Pesetsky's suggestion, implicative tense is not the null analogue of *should*. Whatever interpretation *should* has in contexts like (109) - it is clearly not semantically null. Yet implicative tense shows no trace of independent semantic content.

A second argument for implicative tense given by Pesetsky (1991) (and repeated in Martin (1996) and Bošković (1997)), draws on the analysis of English present tense by Enç (1991). Enç argues that the lack of eventive simple present tense in English follows from the absence of a true present tense morpheme. Eventive predicates contain a temporal argument which must be bound, and since no tense morpheme is available to bind it, it can only be licensed by other binders such as generic or modal operators.[38]

Pesetsky (followed by Martin and Bošković) notes that ECM/raising infinitival display the same restrictions as the present tense: Namely, eventive predicates in those contexts must be embedded under progressive *be*, perfective *have*, or a generic operator:

(111)a. Bill believes Mary to sing the Marseillaise (*right now).
b. Bill believes Mary to be singing the Marseillaise.
c. Bill believes Mary to have sung the Marseillaise.

From that these authors conclude that propositional complements (in English) are tenseless. They note, however, that no such restriction applies to implicative verbs, which can freely take eventive complements:

[38] There are non-trivial problems in Enç's analysis which I will only mention briefly here. The most serious one is the confusion between stative and individual-level predicates. Enç heavily relies on Kratzer's (1988) tests for the presence of an event variable, however these tests do not coincide with the present tense test. In particular, stage-level statives (e.g., *is sick*) have no free variable by the present tense test (*Mary is sick*), but do have one by Kratzer's tests (*When Mary is sick, she is obnoxious*). Moreover, individual level predicates must have some free variable in order to appear in past tense (*Mary knew French*), even though they fail Kratzer's tests. Enç thus replaces one mystery - the eventive/stative contrast in English present tense - with another - the (non-)optionality of binding of the temporal variable.

(112) John managed/dared to sing the Marseillaise last night.

Therefore, the argument goes, these complements contain a tense operator that binds the temporal argument of the eventive predicate, just like any other tense operator (say, [+Past]) does.

Ignoring the problematic aspects of Enç's proposal (fn.38), it seems that even on the same assumptions the conclusion does not follow. Suppose that the presence of an embedded eventive predicate in (112) signals the presence of a tense operator. Notice that it may well be that the relevant operator is the *matrix* tense. Indeed, under the null tense proposal, implicative complements contain no tense operator, hence the closest tense operator is the matrix one. Therefore, the mere acceptability of an eventive predicate in the infinitive tells us nothing about *where* the tense operator is located. Assuming that the temporal variable of the predicate must be bound by the closest tense operator, both alternatives correctly predict (112) to be grammatical. On the contrary, simplicity and economy considerations prefer the null tense proposal over the "copy tense" one; given that sentences with implicative verbs are interpreted under the scope of a single tense operator, the null hypothesis should be that there *is* only one tense operator.

Should we therefore conclude that implicative complements are bare VP's? My answer, given in (108b), is negative. As I show in the next section, there is evidence that implicative complements do project TP (in fact the whole CP), even if T does not carry any tense information.

6.2 Implicative Complements Are CP's

The evidence for the CP status of implicative complements comes from three sources: First, they contain CP elements. Second, some of them resist restructuring. Third, they contain PRO. We discuss each property in turn.

The most immediate observation is the fact that implicative complements are typically introduced by complementizers in Romance. For example, in French some implicative verbs select *de* (*oublier* 'forget', *éviter/s'empêcher* 'avoid', *négliger/omettre* 'neglect', *s'assurer* 'make sure') and some *à* (*reussir* 'manage', *condescendre* 'condescend', *forcer* 'force'). Notice that most of these verbs never take PP complements, hence it is hard to view these complementizers as prepositions (see Rizzi (1982) for similar facts in Italian).

Next, consider the behavior of implicative verbs in languages with restructuring. As Wurmbrand (1998b) convincingly shows, infinitives in restructuring contexts (e.g., clitic-climbing, long-distance passivization) lack all the properties associated with the functional

categories C, T and v: They disallow complementizers, lack any contentful tense, lack PRO, and cannot assign accusative case.

As is well-known, the class of restructuring verbs varies across languages. Yet this variation is quite restricted, as the semantic types of restructuring verbs are not arbitrary. Although some implicatives allow restructuring, normally some do not. Thus, in German, the verbs *avoid*, *decline* and *neglect* do not allow restructuring. Consequently, the infinitival complements of (at least) these verbs must be analysed as CP's.

More generally, it appears that "weak implicatives" systematically resist restructuring. Weak implicatives (a term due to Pesetsky 1991) only entail their complements in the affirmative, but when negated, do not entail the negation of the complement:

(113) John forced/assisted/compelled/induced Mary to leave the room

With these verbs, the matrix proposition is only a sufficient condition for the embedded proposition, not a necessary one; hence the negation of (113) does not imply that Mary didn't leave the room. All these verbs are excluded from the restructuring class.[39]

Crucially for our purposes, weak implicatives, just like strong ones, are incompatible with PC:

(114)a. * John forced the chair to gather without further due.

b. * We thought that John compelled Mary to play together as a team.

Thus, we must reject Wurmbrand's claim that partial control (in her terminology, "imperfect" control) is licensed by the presence of a syntactic PRO. Under Wurmbrand's analysis, failure of restructuring entails a full CP structure for the infinitive, including PRO. Yet (114) shows that failure of restructuring does not automatically guarantee the possibility of PC. In other words, PC cannot be correlated with the presence of either a CP projection or PRO.

The present account, by contrast, predicts that PC is correlated with contentful infinitival tense. This prediction is indeed borne out: The infinitival complements in (114) (and complements to weak implicatives in general) are untensed, strongly resisting a tense mismatch:

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[39] Susi Wurmbrand (p.c.) suggests that *avoid*, *decline* and *neglect* are also negative weak implicatives (e.g., *He didn't avoid meeting her, he just didn't happen to be in the department at the time*). If so, there is an interesting and unexplained generalization, namely that among the implicative verbs, all and only the strong ones allow restructuring.

(115)a. ?? Yesterday, John forced the chair to leave tomorrow.

b. ?? Yesterday, John compelled Mary to quit next week.

The third piece of evidence for (minimally) a TP projection in implicative complements comes from an interesting interaction between binding and restructuring discussed by Wurmbrand (1998b: 178-180). The data yield a theoretical paradox under Wurmbrand's assumptions, which is resolved under the present proposal.

Wurmbrand constructs the following argument:

(116)a. Dative DP's cannot bind anaphors in German.

b. When the controller is dative, an anaphor is licensed in a non-restructuring infinitive but not in a restructuring infinitive (e.g., with LD-passivization).

c. Therefore, a non-restructuring infinitive contains PRO (the binder of the anaphor) but a restructuring infinitive does not (being a bare VP).

(117a) establishes (116a), and (117b,c) establish (116b):

(117)a. weil der Hans der Maria $sich_{1/*2}$ auf dem Photo zeigte.
since the John-NOM Mary-DAT SELF in the picture showed
'since John showed Mary himself/*herself in the picture'

b. Es ist dem $Hans_1$ gelungen [PRO_1 $sich_1$ den Fisch mit streifen vorzustellen].
it is John-DAT managed PRO SELF the fish with stripes to-imagine
'John managed to imagine what the fish would look like with stripes'

c. * weil der Fisch dem $Hans_1$ [$sich_1$ mit streifen vorzustellen] gelungen ist.
since the fish-NOM John-DAT SELF with stripes to-imagine managed is
'John managed to imagine what the fish would look like with stripes'

These facts seem to indicate that restructuring verbs like *manage* can optionally take either a CP or a VP complement; when required to take a VP complement (to allow for LD-passivization), there is no PRO, and the binding facts follow.

Although nicely accounting for the paradigm in (117), Wurmbrand's analysis runs into a paradox when faced with the PC facts. As Wurmbrand (1998b: 191) points out, PC is excluded even when no material is moved out of the implicative complement:

(118) * weil es dem Bürgermeister gelang [sich im Schloβ zu versammeln].
since it the mayor managed SELF in the castle to gather
'since the mayor managed to gather in the castle'

This is unexpected, since the lack of any movement would seem to allow an embedded PRO subject; but in Wurmbrand's system, a syntactic PRO is all that PC demands, EC being forced only with bare VP complements. Thus, (117b) *requires* there to be a PRO subject in non-restructuring implicative complements, whereas (118) *forbids* it.

The present approach provides a way out of this paradox. Restructuring indeed implies a VP-complement, and a VP-complement implies EC; but EC (or no PC) does not imply a VP-complement. Specifically, there are CP complements that exclude partial control, owing to their untensed character. Once the PC facts are attributed to the lack of tense rather than the lack of PRO, the German facts fall into place.

6.3 Restructuring with Desideratives

The discussion in the previous section has already suggested that EC and restructuring (or PC and non-restructuring) should be kept apart. The argument was based on the observation that implicative complements exhibit EC even in non-restructuring environments. The same conclusion receives even stronger support from the inverse case: The behavior of (typically) PC-verbs, namely desideratives, in restructuring environments.

Recall that we have argued that desiderative complements are normally tensed CP's. This property is overridden in restructuring contexts, where the infinitival complement must be a bare VP to allow the formation of "long-distance" A-chains. In these cases, all the properties associated with C and T are eliminated. Since PC relies on the presence of T, we expect it to be blocked in such contexts. This prediction is indeed correct.

Martin (1996: 197-8) notes that the verb *want* in Spanish bars PC in obligatory restructuring environments (119a), but allows it in non-restructuring environments, as in pseudoclefts (119b):

(119)a. * Quiero ir al cine juntos.
I-want to-go to the-movies together
b. Lo que quiero es ir al cine juntos.
it what I-want is to-go to the-movies together

In Italian, the verb *prefer* can trigger clitic-climbing (at least for some speakers), a diagnostic of restructuring (120a); however, clitic-climbing is incompatible with PC, as the contrast (120b-c) shows:

(120)a. Gianni ha detto a Maria che *si* preferiva lavare di mattina.
John has told to Mary that SI preferred to-wash in the morning
'John told Mary that he preferred to wash in the morning'

b. Gianni ha detto a Maria che preferiva incontrar*si* di mattina.
John has told to Mary that SI preferred to-meet in the morning

c. * Gianni ha detto a Maria che *si* preferiva incontrare di mattina.
'John told Mary that he preferred to meet in the morning'

Another typical restructuring verb is *try*. In fact, this may even be the case in English. Consider the following examples:

(121)a. * John told Mary that he tried to meet at 6.

b. * Yesterday, John tried to solve the problem tomorrow.

Although *try* may look, at first sight, like a desiderative verb, unlike *want*-type verbs it is incompatible with PC (121a). Moreover, it also excludes a tense mismatch (121b). Our analysis reduces both facts to one factor: Namely, the complement of *try* is untensed.

In some languages *try* has a marked variant which allows true irrealis tense interpretation for the infinitive. Interestingly, Wurmbrand (1998a: ex. 7,8) shows that this interpretation in German never co-occurs with restructuring properties like scrambling:

(122)a. weil der Hans versuchte [die Maria zum Bhf zu bringen]
since the John tried the Mary to-the station to take

b. weil [die Maria]$_{SCR}$ der hans versuchte [t_{SCR} zum Bhf zu bringen]
since the Mary the John tried to-the station to take
'since John tried to take Mary to the station'

(123)a. # weil der Hans versuchte [die Maria zur Party am nächsten
since the John tried the Mary to-the party on-the next
Samstag mitzubringen
Saturday along-to-bring

b. * weil [die Maria]$_{SCR}$ der Hans versuchte [t_{SCR} zur Party am nächsten
since the Mary the John tried to-the party on-the next
Samstag mitzubringen
Saturday along-to-bring
'since John tried to bring along Mary to the party next Saturday'

Even more to our point, partial control is marginally possible with *try* - but not if LD-scrambling occurs (Wurmbrand 1998a: ex. 38-9):

(124)a. # weil der Bürgermeister versuchte [sich im Schloβ zu versammeln].
since the mayor tried SELF in the castle to gather

b. * weil der Bürgermeister [im Schloβ]$_{SCR}$ versuchte [sich t_{SCR} zu versammeln].
since the mayor in the castle tried SELF to gather
'since the mayor tried to gather in the castle'

As failure of LD-scrambling in German indicates the presence of independent tense in the infinitive, these facts strongly suggest that partial control is linked to the same factor. Thus the behavior of *try*, once examined closely, is not only unproblematic to our analysis but in fact supports it.

These facts suggest that the restructuring property is "superimposed" on the basic EC/PC distinction, sometimes "reclassifying" desiderative verbs under the EC category. As is well-known, particular languages draw the restructuring line in different places. Overall, the core class includes the verb *want*, modals and aspectual verbs; the inner periphery includes *try, manage, dare, fail, forget* (implicative); and the outer periphery includes a few double object verbs like *promise, order* and *recommend* (Wurmbrand observes that *propose* in German is a PC verb but *order* is not, since the latter, but not the former, is a restructuring verb).

The emerging picture is the following: Most restructuring verbs are modals, aspectual and (strong) implicative verbs, and some are desiderative.[40] As for members of the latter group, although normally in the PC class, they resist PC in restructuring environments. This is unsurprising, given that the PC category is general and systematic, whereas the restructuring category is quite small and its exact boundaries unpredicted. As in other places in the grammar, a more idiosyncratic specification overrides a less idiosyncratic one.

[40] According to Wurmbrand (1998b), there are no restructuring verbs among the factive, the propositional and the interrogative classes.

7 Some Consequences and Problems

7.1 An Overt Relative: German Inclusive *Man*

The discussion of PC assumes that the grammar makes available an entity, call it PRO_{PC}, with the following properties:

(125) Properties of PRO_{PC}

a. It is an inclusive pronoun.
b. It is a logophor (i.e., interpreted *de se* in intensional contexts).
c. It is syntactically singular.
d. It is semantically plural.

It is reasonable to ask whether similar entities are found elsewhere; to the extent that they are, the cluster of properties in (125) may seem less exotic. In particular, it would be interesting to find an element just like PRO_{PC} but *with* phonetic content. According to Kratzer (1995/1997), the impersonal inclusive pronoun *man* in German is just such an element. I briefly review Kratzer's observations below.

There are two variants of *man* in German - exclusive and inclusive. The former is interpreted as a group that excludes the speaker, the latter as a group that includes the speaker. That inclusive *man* has the property (125a) is illustrated in (126):

(126) Als ich klein war, wurde *man* nur am Freitag gedabet.
when I little was, got *man* only on Friday bathed
'When I was little, we only had a bath on Fridays'

Kratzer shows that the two usages are also distinguished in terms of feature specification: Exclusive *man* lacks gender and has only a nominative form. The feature-deficiency of the exclusive variant makes it unable to license a predicative nominal, which must agree in gender with its subject. Consider now the following paradigm:

(127)a. Als Hütter des Gesetzes war *man* verplichtet, die Einhaltung aller
as guardian(Nom.Sg/Pl.) the law was *man* obliged, the observance all
Bestimmungen zu überwachen.
regulations to watch-over
'As guardians of the law, we were obliged to watch over the observance of all regulations'

b. * Als Hütter des Gesetzes hat *man* mir erklärt, ich könne hier nicht wohnen.
as guardian(Nom.Sg/Pl.) the law has *man* me explained, I could here not live
('As guardians of the law, they explained to me that I could not live here')

c. *Man* erklärte mir, *man* habe als Staatsbeamter die Verplichtung, mich üben
man explained me, *man* have as public employee(Nom.Sg.) the duty, me about
diesen Vorfall zu informieren.
this incident to inform
'They explained to me that, as public employees, they were obliged to inform me about this incident'

In (127a) the presence of a predicative nominal related to the subject *man* eliminates the exclusive reading. In (127b) the exclusive reading is unavailable for the same reason, and the inclusive reading is unavailable because of Condition B; the result is ungrammatical. What is interesting from the present perspective is the grammaticality of (127c). Prima facie, it should be ruled out on a par with (127b), given that the second *man* is exclusive and occurs with a predicative nominal. However, unlike in (127a-b), *man* in (127c) occurs in an intensional context. Although exclusive with respect to the utterance speaker, it is *inclusive* with respect to the matrix subject (itself an exclusive *man*), by which it is bound. Kratzer concludes that inclusive *man* is sensitive to contextual shifts of perspective, referring in general to the group including the current speaker or source of mental attitude. Thus, inclusive *man* displays the property (109b) as well.

Turning to properties (109c-d), it is easy to see that inclusive *man* is syntactically singular but semantically plural. First, it always triggers singular verbal agreement, even when it is the subject of a collective predicate. It is compatible with items that require semantic plurality, like the reciprocal *miteinander* (128a) and the reflexive *sich* (129a), but not with syntactically plural predicate nominals (128b) or plural possessive pronouns (129b):

(128)a. Ich habe gesagt, daβ *man* nach der Scheidung immer noch miteinander
I have said, that *man* after the divorce still with-one-another
auskommen würde.
get-along would (Sg.)
'I have said that we would still get along after the divorce'

b. * Ich habe gesagt, daβ *man* nach der Scheidung gute Freunde bleiben würde.
I have said, that *man* after the divorce good friends remain would (Sg.)
'I have said that we would remain good friends after the divorce'

(129)a. Ich will, daβ *man* sich bald versammelt.
I want, that *man* refl. soon gather (Sg.)
'I want us to gather soon'

b. Ich hoffe, daβ *man* bald seine / *unsere Schäfchen im Trockenen haben wird.
I hope, that *man* soon one's/ *our little-sheep in the dry have will (Sg.)
'I hope that one will soon be out of danger' [idiomatic]

Of course, there are differences between PRO_{PC} and inclusive *man*, which we do not discuss here; for example, the latter is not restricted to embedded clauses, nor to subject positions. Yet the parallelism indicated in (109) is by itself quite intriguing, and certainly deserves further investigation.

7.2 A Puzzle: French *Se*-Predicates

The PC generalization (98) is arguably universal. The evidence at hand suggests that it is true of a number of languages, including English, Spanish, Italian, Catalan. Hebrew, German and French. However, a peculiar puzzle emerges in French, for which I have so far not found a satisfactory account. I present it in this section with some sketchy speculations as to possible ways to approach it.

As is well-known, collective predicates in Romance are often morphologically reflexive, constructed with the clitic *se/si*. Some examples of PC with the verb *meet* are given below:

(130) *Italian*

a. Gianni ha detto a Maria che aveva deciso di incontrarsi di mattina.
John has told to Mary that had decided to-meet-SI in the morning
'John told Mary that he decided to meet in the morning'

Spanish

b. Juan le dijo a María que lamentaba haberse encontrado tan temprano.
John cl told Mary that he-regretted to-have-SE met so early
'John told Mary that he regretted to have met so early'

Catalan

c. En Joan li va dir a la Maria que insisteix en trobar-se un altre cop.
the John Cl said to the Mary that insists in to-meet-SE one other time
'John told Mary that he insisted on meeting one more time'

It is somewhat of a surprise, then, that parallel examples in French are ungrammatical:

(131)a. * Jean a dit à Marie qu'il veut se rencontrer à 6 heures.
('John told Mary that he wanted to meet at 6')

b. * Jean a dit à Marie qu'il est prêt à s'embrasser au carrefour.
('John told Mary that he is ready to kiss at the crossroads')

Crucially, French *does* allow PC under the same matrix (desiderative) predicates with other collective predicates in the infinitive:

(132)a. Jean a dit à Marie qu'il veut correspondre plus souvent.
'John told Mary that he wanted to correspond more often'

b. Jean a dit à Marie qu'il est prêt à converger au carrefour.
'John told Mary that he is ready to converge at the crossroads'

The relevant distinction between the collective predicates in (131) and those in (132) appears to be that the former are constructed with *se* whereas the latter are not. More minimal pairs, with interrogative infinitivals, are given below:

(133)a. Jean se demandait où converger / *se rencontrer.
'John wondered where to converge / *meet'.

b. Jean ne savait pas comment débattre / *s'embrasser.
'John didn't know how to debate / *kiss'

Two questions arise: i) What is it about *se*-predicates in French that excludes them from PC environments?; ii) What is it about French *se* that distinguishes it from its cognates in other Romance languages (which show no similar restriction, cf. (130))?

At present I can offer no satisfactory answers to these questions. However, given other properties of PC constructions, one might speculate where the answers should be sought. Recall that the fundamental property of PC complements (with a singular controller) is the fact that they license semantic plurality on PRO but not syntactic plurality. Prima facie, it is hard to attribute the ungrammaticality of (131) to a syntactic plural marking on French *se*, since this clitic freely appears with singular subjects, indeed even with semantically plural ones:

(134) Le comité s'est réuni.
'The committee has gathered'

However, it is also known that the distribution of French *se* is far more restricted than that of its Romance cognates (cf. Cinque 1988), in ways which are poorly understood. It is conceivable that French *se* is in fact ambiguous between a singular and a plural form, whereas its Romance cognates are underspecified. If collective predicates select for the plural *se*, then they will be excluded from PC environments in French. In finite clauses like (134), the singular number marking on the verb, to which *se* cliticizes, will somehow override or "mask" that of *se*, preventing a similar mismatch. These comments are inevitably sketchy, and the issue should be studied in greater detail to evaluate their merit.[41]

8 An Alternative Proposal: Martin (1996)

The phenomenon of partial control has received very little attention in the literature. In the few cases it has, authors normally pile it together with NOC (Williams 1980, Wurmbrand 1998b, Petter 1998), ignoring its autonomous status. As far as I am aware, the only attempt (prior to the present one) to systematically describe the facts, and construct a theoretical account, is found in Martin (1996). Therefore, it is important and instructive to

[41] An alternative line might attempt to correlate the exceptionality of French in this context with another property that sets it apart from other Romance languages, namely the fact the infinitival verb in French does not raise past the clitic position (Kayne 1991).

compare the above analysis with Martin's. As both are couched in the minimalist framework, such a comparison can be actually carried out with sufficient detail, yielding insights that bear on prominent issues within minimalism.

Martin argues that PRO is the null counterpart of the Romance reflexive clitic SE. OC in his system involves clitic-climbing of PRO to the controller, resulting in "chain-fusion". This movement is subject to the Minimal Link Condition. In NOC, PRO adjoins to an abstract head F, internal to the infinitive, which encodes "point of view" (I return to this proposal below). Following Williams (1980), Martin takes NOC to subsume complements to verbs that can be introduced by *for*. In particular, ditransitive subject control verbs, which marginally take *for*-complements, and violate the Minimal Distance Principle of Rosenbaum (1967), belong to the NOC category.

I have argued above in detail why NOC is a misnomer for this class of complements; see section 3.2. However, Martin presents another argument to this effect, based on *wh*-questions and pseudoclefts. The argument deserves some comment, as it perpetuates an error already made in Rosenbaum (1967), Huang (1989) and Larson (1991).

The basic claim is that object control and subject control (with ditransitive verbs) involve different structures, since only in the former can the infinitive be questioned or pseudoclefted:

(135)a. What did John promise Mary? To leave early.
b. * What did John persuade Mary? To leave early.

(136)a. What John promised Mary was to leave early.
b. * What John persuaded Mary was to leave early.

It is unfortunate that almost all the examples given in the literature are restricted to English, and moreover, to the verbs *promise* and *persuade*. An alternative analysis of these facts, which makes no reference to control whatsoever, is based on the case properties of the relevant verbs. Since *wh*-chains must be case marked, the constructions above are expected to be grammatical just in case the matrix object does not exhaust the case resources of the matrix verb. Given that *promise* is a double object verb and *persuade* is not, the contrasts in (135)-(136) are no more surprising than the one in (137):

(137)a. John promised Mary a reward.
b. * John persuaded Mary the importance of the project.

That nothing more than case is involved can be seen in (138), which only differs from (135b) in having the *wh*-trace case marked by *of*:

(138) What John persuaded Mary of was to leave early.

More generally, once the case factor is separated from the control factor, the confound disappears: Subject control verbs which assign no case to the *wh*-chain pattern with *persuade*, and object control verbs which do assign case to the *wh*-chain pattern with *promise*:

(139)a. Mary petitioned her congressman to meet with him.
b. * What did Mary petition her congressman? To meet with him.
c. * What Mary petitioned her congressman was to meet with him.

(140)a. John signaled to Mary to approach him.
b. What did John signal to Mary? To approach him.
c. What John signaled to Mary was to approach him.

In other languages (e.g., Hebrew), where oblique object control is much more common than in English, accusative case is always available to license constructions like (140b,c); the claim that object control is incompatible with questioning or pseudoclefting of the infinitive is simply untenable.[42] Notice that even if it were an empirically valid generalization, Martin (1996) provides no explanation of how it follows from his analysis. How is the presence of an *internal* "point of view" projection - the defining feature of NOC in Martin's system - supposed to govern the *external* distribution of the infinitive in *wh*-constructions? A pattern that is theoretically unexpected, or alternatively, expected no more than the opposite pattern, cannot argue one way or the other. The case analysis does not only do justice to more facts, but is consonant with the position that the distinction between subject and object control is not encoded in the syntax, and that controller choice within the OC domain is determined in the semantics/pragmatics (see chapter 5, section 3 for discussion).

A closer comparison between the mechanics of Martin's proposal and the present one reveals other empirical differences. Recall that in Martin's analysis, it is PRO itself which is argued to raise to the controller, creating a "fused" chain. Martin assumes that the null case

[42] The case analysis also explains why certain infinitives, but not others, can be passivized or clefted.

of PRO is "minimal", in the sense that it is non-distinct from any other structural case (this case non-distinctness is tied in his system to the referential non-distinctness of PRO). This predicts that in languages which indirectly signal the case of PRO, one would see "case concord" effects between the controller and PRO. Icelandic, Martin argues, is such a language.

According to Martin's description (but see an alternative description below), in Icelandic, the case of PRO in OC, detectable on agreeing predicates, can either match that of the controller or be (the default) nominative. Although the first option is compatible with Martin's analysis, the second one is not: Given that a chain may bear only a single case, the fact that PRO and its controller may bear distinct cases undermines the chain-fusion analysis. Moreover, Martin's description is at odds with Sigurðsson's (1991) detailed study of case marked PRO in Icelandic. Sigurðsson goes at length to demonstrate that nominative case on PRO is not a default case (as it governs agreement on participles), nor is it inherited from the controller (which need not be nominative). Sigurðsson concludes that the case on PRO, whether structural nominative or quirky, is uniformly assigned internal to the infinitive, by mechanisms exactly parallel to those operating in finite clauses. The case-independence of PRO thus argues against the chain-fusion account of OC.

Consider, by contrast, the present analysis. We have claimed that PRO remains in [Spec,TP] in both types of OC. Therefore, we predict that PRO will bear whatever case is assigned/checked by T. This allows for the finite/nonfinite parallelism in case marking, with no further stipulations.[43]

Let us turn now to Martin's treatment of NOC. Following Uriagereka (1995), Martin assumes that a functional category F, above T, encodes the matrix point of view. F contains a [person] feature, and can thus host and license the anaphoric clitic PRO. The value of F, in turn, is determined by the value of [person] on the matrix agreement. An F-containing infinitival is "quasi-personal" if it only allows a PRO subject and "personal" if it allows either PRO or a lexical subject. Both variants comprise the NOC category.

There is some formal resemblance between Martin's proposal and the present one. Thus, both assume that certain infinitivals are subject to "incomplete" control, and offer specific mechanisms to implement this relation. This attempt sets those two proposals apart from any other treatment in the literature. However, the details of my analysis and Martin's are quite different: Whereas for him, partial control consists in [person]-control by the

[43] Notice that the present analysis does not *exclude* case-concord (which is attested in subject-control constructions in Russian), but simply does not require it. Languages vary on the extent to which they treat case features on a par with other phi-features, and case concord may reflect the fact that the controller and PRO form an anaphoric chain (see Engelhardt 1998).

matrix agreement (mediated by F), for me it consists in [all but semantic number]-control by any matrix functional head. Thus, the present proposal makes a *stronger* claim than Martin's regarding the feature overlap between the controller and PRO, but a *weaker* claim regarding the range of potential controllers. On both fronts, empirical evidence favors the present analysis.

The first point involves an apparent factual disagreement. Martin cites the following example as evidence for lack of [number] control in complements that can optionally appear with *for*:

(141) I prefer [PRO to meet each other at 12:00]. [Martin 1996: 192]

Most speakers I have consulted reject (141), and have to drop the reciprocal to obtain a grammatical sentence. Few speakers find it marginal at best, but as discussed in connection with (68), this is probably due to their independent tendency to license the reciprocal by semantic plurality alone. In general, only semantic number is exempt from PC, not syntactic number. We have already seen several examples to that effect in section 3.3, like the ones below:

(142)a. The chair was afraid to convene during the strike.
b. Mary told John that she hated staying apart for so long.
c. John told Mary that he didn't know which club to join together.

(143)a. * John told Mary that he was afraid to get bored with themselves.
b. * John told Mary that he intended to both avoid such silly quarrels in the future.
c. * John told Mary that he didn't know which club to become members of.

The same point can be made with gender agreement. The examples below illustrate that gender matching is obligatory between the controller and PRO even in PC complements:

(144)a. * The chair preferred PRO_1 to gather by $itself_1$.
b. * The chair wondered whether to PRO_1 to discuss together its_1 agenda.

As we have seen, PRO in the environments of (144) can be interpreted as a group (e.g., the committee). Although groups bear neuter gender in English, the gender of PRO in these

contexts cannot be neuter, explaining the impossible coindexing in (144).[44] Contrary to Martin's claim, then, we see that not only the [person] feature of PRO, but also [number] and [gender] are controlled in PC.

Turning to the second point of comparison, recall that for Martin "point of view" is established by the matrix agreement, and derivatively, by the matrix subject. It is to this element that the F category, which endows PRO with reference, is linked. Therefore, it is predicted that partial control effects will only be possible with subject controllers; the only way object control is instantiated in Martin's system is via clitic-climbing of PRO to a matrix "causative" head, yielding strict anaphoric OC. This prediction, too, is false; as we have seen in (81)-(82), repeated below, partial object control is perfectly possible. This seriously undermines Martin's motivation for an F-category encoding "point of view", which is somehow implicated in control.

(145)a. Mary needed an appointment with $John_1$, but didn't know his schedule. The secretary proposed to her_2 [PRO_{1+2} to meet at 6].

b. $Mary_1$ recommended to/?ordered $John_2$ [PRO_{2+} to convene without her_1].

To conclude, I have presented several arguments against Martin (1996), so far the only explicit account in the literature of the EC/PC distinction. First, it was shown that tests alleged to be sensitive to that distinction, like *wh*-questions and pseudoclefts, are orthogonal to control (and instead reduce to case theory). Second, it was argued that the predictions made by the chain-fusion mechanism regarding case-concord in languages like Icelandic are not borne out by the facts, favoring an account which does not conflate the case marking of PRO and the controller; third, it was shown that partial control is more than [person] control, covering [number] and [gender] as well; and fourth, partial control is not subject-oriented but can be exercised by any matrix argument, provided the infinitive is of the right type. On all these points, the present analysis provides a complete, straightforward account of the data.

[44] Notice that (144a) remains bad with the anaphor *himself*. This is ruled out on independent semantic grounds: *Himself* must be bound by a semantically singular PRO, which is incompatible with the collective predicate *gather*.

Summary

- **PC is a subtype of OC (OC = PC ∪ EC).**
- **PC-complements: Factive, propositional, desiderative and interrogative; EC-complements: Aspectual, modal and implicative.**
- **The PC Generalization: Syntactic phi-features (number, person and gender) on PRO in tensed infinitival complements are inherited from the controller, but semantic number is not.**
- **T-Agr raises to C in tensed clauses.**
- **PRO enters the derivation with valued phi-features, but no semantic number; the latter can be assigned by agreement or by context.**
- **Where F is a matrix functional head:**
  PC = Agree (F,T-Agr); EC = Agree (F,PRO).
- **Subject control across an object is exempt from the MLC thanks to the Principle of Minimal Compliance.**

Chapter 3: Obligatory and Non-Obligatory Control

Introduction

In chapter 2 we capitalized on a distinction within the category of Obligatory Control (OC), namely that between Exhaustive and Partial Control. In this chapter we turn our attention to the distinction between Obligatory and Non-Obligatory Control. Specifically, we will address the following questions:

(1) a. Distribution: *Where* do OC and NOC obtain?
b. Explanation: *Why* do OC and NOC obtain where they do?

In a nutshell, the answer to (1a) will be: OC obtains when the infinitive is in its base position (VP-internal), NOC obtains when it is displaced (VP-external). The answer to (1b) will be: Because OC creates a syntactic relation that is sensitive to islands, whereas NOC involves a logophoric relation that is indifferent to islands.

As a probe into these questions, we will consider in detail the properties of a construction with a long history in generative grammar - The Super-Equi construction. As it turns out, an in-depth investigation of Super-Equi sheds interesting light on the interaction of control with argument structure and extraposition. The investigation will yield some novel generalizations that were not captured before.

The Super-Equi construction poses a non-trivial challenge to any syntactic account of control - the challenge of locality. To appreciate the problem, consider the following paradigm:

(2) a. Mary knew that it disturbed John [PRO to perjure himself / *herself].
b. Mary knew that it damaged John [PRO to perjure himself / herself].
c. Mary knew that [PRO to perjure himself / herself] would disturb John.
d. Mary knew that [PRO to perjure himself / herself] would damage John.

In each sentence of (2), there are two potential controllers for PRO - *John* or *Mary* - the first of which is contained in the clause immediately dominating the infinitive, the second of which is higher up. A quick look at the data reveals that the choice of controller is sensitive to two parameters: The kind of predicate that governs the infinitive, and the syntactic position of the infinitive. Notice that in the structure standardly called "extraposition", *Mary* cannot control PRO in (2a), but can do so in (2b) (though local control is more natural; see section 2 for discussion). However, this contrast is neutralized when the infinitive is in subject position, as in (2c,d).

Surprising as it may seem, the paradigm in (2) has never been considered *in its entirety*; as will be shown in section 6, existing accounts of Super-Equi fail to explain at least one of its members. Explaining this paradigm is the main goal of this chapter; that is, combining the notion of control developed in chapter 2 with natural assumptions about the argument structure of different predicates and the syntax of extraposition, in a way which produces the peculiar pattern of locality in (2). By the end of the road, we will obtain a fuller picture of the variety of ways in which control interfaces with other grammatical processes.

This chapter is organized as follows: Section 1.1 states the empirical challenge facing any adequate theory of Super-Equi, in terms as neutral as possible: Two generalizations are formulated concerning the interaction of control with the semantic class of the predicate governing the infinitive and the infinitive's position. Some crosslinguistic evidence, presented in section 1.2, suggests that the above generalizations are not limited to English, and may be universal. An analysis is developed in section 2, incorporating the proposal that extraposition is driven by a PF constraint; LF, however, may interpret the copy at the base position ("reconstruction"). I further propose a characterization of obligatory control (OC) as a relation holding between an infinitive *in-situ* and a local controller. This descriptive generalization, yet to be derived, covers all the relevant cases of OC, considerably simplifying earlier statements.

In section 3 I explore some surprising configurational predictions this analysis makes: Correlations between extraction and non-local (i.e., long-distance or arbitrary) control support the idea that OC is linked to infinitives in-situ and NOC to displaced infinitives (subjects or extraposed). In section 4 I discuss some apparent problems which turn out, upon closer analysis, to be harmless to the present proposal. Section 4.1 discusses OC out of inalienably possessed nouns and section 4.2 shows that apparent OC into sentential subjects is a lexically governed phenomenon orthogonal to control.

Section 5.1 returns to the OC Generalization stated in section 2 and derives it from the theory of control developed in chapter 2 - in essence, an adaptation of Borer's (1989) "Anaphoric Agr" idea within Chomsky's (1998) theory of phases and Agree. Sections 5.2 argues that the basic distributional properties of OC cannot be reduced to the Binding Condition A; seven independent arguments are presented to this effect. In section 5.3 I turn to NOC and argue that it is a case of logophoric anaphora in the sense of Reinhart & Reuland (1993) - that is, an anaphoric Agr that fails to be syntactically licensed. Alternative theories, which take PRO in NOC to be pronominal, overgenerate structures that are correctly ruled out under the present proposal. Finally, section 6 is a critical review of the

literature on Super-Equi, pointing out where various proposals meet or fail to meet the empirical challenges posed by this phenomenon.

1 Super-Equi: The Data

1.1 The Problem

The first to note and analyse Super-Equi was Grinder (1970), who also named the construction. Grinder observed that in examples like (3), the understood subject of the bracketed nonfinite clause is coreferential with an NP (italicized below) which bears no unique syntactic relation to it, and can be indefinitely remote:

(3) a. *Eric* insisted that it would be ridiculous [to call for help].
b. That [covering themselves with mud] disturbed *Spiro* amused *Dick*.

Grinder proposed a rule of Super Equi-NP Deletion which deletes the subject of the nonfinite clause under identity with a commanding NP. He further suggested to collapse this rule with the local rule of Equi-NP Deletion (Rosenbaum 1967), applying in control of complement clauses. The empirical content of his proposal resides in the characterization of the restrictions on the application of the rule. These can be seen in the following paradigm cited by Grinder:

(4) a. John said that making a fool of herself in public disturbed Sue.
b. John said that making a fool of himself in public disturbed Sue.
c. John said that it disturbed Sue to make a fool of herself in public.
d. * John said that it disturbed Sue to make a fool of himself in public.

To facilitate discussion, let us refer to cases where the controller occurs in the clause immediately dominating the PRO-containing infinitive/gerund as *local control*, and cases where it does not *long-distance (LD) control*. Let us further refer to the nonfinite clause in (4a,b) as in *intraposition* and in (4c,d) as in *extraposition*, taking these terms as strictly descriptive labels at the moment. Then Grinder's facts amount to the observation that if a local controller is available then it is obligatory in extraposition but optional in intraposition.[1]

[1] For some speakers (4d) improves if the matrix tense is modal (*would, might*, etc.). Yet for other speakers the example remains bad (as reported by Kuno (1975, ex.33b), Clements (1975, ex.15b), and Chierchia &

For nearly 30 years now, this asymmetry was taken to constitute the fundamental empirical challenge facing any theory of Super-Equi. That is, the challenge was to formalize a locality principle that would be restrictive enough to rule out LD-control in extraposition with a potential local controller (4d) but not too stringent to rule it out in extraposition without a potential local controller (3a) or in intraposition ((3b) and (4b)). In section 6 I show that quite a few theories of control in generative grammar fail to account for Grinder's facts. However, the starting point of the present account is a critique on the generality of Grinder's own observations.

It turns out that Grinder's paradigm is misleadingly partial; and that once the full paradigm is considered, the line between LD and local control ceases to correspond to the line between intraposition and extraposition. The relevant factor is the semantic class of the predicate governing the infinitive. The following examples present the full paradigm:

(5) a. Mary knew that it was painful to John [PRO to perjure himself / *herself].
b. Mary knew that it was harmful to John [PRO to perjure himself / herself].
c. Mary knew that [PRO to perjure himself / herself] would be painful to John.
d. Mary knew that [PRO to perjure himself / herself] would be harmful to John.

(6) a. Mary thought that it pleased John [PRO to speak his / *her mind].
b. Mary thought that it helped John [PRO to speak his / her mind].
c. Mary thought that [PRO to speak his / her mind] would please John.
d. Mary thought that [PRO to speak his / her mind] would help John.

(7) a. Mary thought that it was a relief to John [PRO to take care of himself / *herself].
b. Mary thought that it was a help to John [PRO to take care of himself / herself].
c. Mary thought that [PRO to take care of himself / herself] would be a relief to John
d. Mary thought that [PRO to take care of himself / herself] would be a help to John

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Jacobson (1986, ex.21b). The latter judgment also receives crosslinguistic support in the data reported in section 1.2, hence I will assume that the modal effect is secondary. However, to avoid controversy, I will use only past tense in this kind of example. In section 5.3 I return to a possible source for this effect.

The property that *painful/please/relief* have in common but which *harmful/help/a help* lack is that of being psychological. By that we simply mean that statements like "X is painful to Y" carry certain psychological entailments with respect to the mental state of Y, whereas statements like "X is harmful to Y" carry no such entailments.

Two comments are in order: The (b) cases above trigger a residual garden-path effect, giving rise to some difficulty under the LD-control reading. There is a principled parsing source for this effect, which in fact supports the analysis developed below; I discuss it in section 3. Crucially, though, speakers easily recover from that garden-path effect, given the appropriate context, whereas LD-control remains fatally bad in the (a) cases. This suggests a real grammatical difference. Secondly, the contrast is obscured (that is, LD-control in the (a) cases improves) if an intonational pause is inserted before the infinitive; this favors a right-dislocation analysis, which is again expected to affect the status of the sentences, given the analysis below.

Bearing these comments in mind, consider the pattern above: As an object of psychological predicates, the EXPERIENCER *John* triggers an intervention effect in the (a) examples above, which involve extraposition. No comparable effect is attested in the (c) examples, which involve intraposition. As an object of non-psychological predicates, the GOAL/PATIENT *John* triggers no intervention effect either in the extraposition cases (b) or the intraposition ones (d). Notice that the pattern is identical for verbs, adjectives and nouns in the position of the predicate, hence the generalization is category-neutral.

Grinder's effect is therefore restricted to infinitives under psychological predicates. An adequate theory of Super-Equi must account for the following generalizations:[2]

(8) a. In a structure [... X ... [it Aux Pred Y [$_S$ PRO to VP]], where Y and S are arguments of Pred:
   i) If Pred is psychological, Y must control PRO.
   ii) If Pred is non-psychological, either X or Y may control PRO.

b. In a structure [... X ... [$_S$ [$_S$ PRO to VP] Pred... Y]], either X or Y may control PRO.

(8) amounts to the claim that LD-control is susceptible to intervention only in extraposition, and only when the intervener bears an EXPERIENCER θ-role.

[2] I presently disregard further conditions on X/Y as an LD-controller in (8). As noted above, these largely reduce to logophoricity (see section 5.3).

1.2 Crosslinguistic Confirmation

The generalizations in (8) refer to properties of predicates (psychological vs. non-psychological) and structure (extraposition vs. intraposition) that are attested universally. The strongest (and null) hypothesis would be that these generalizations are not language-specific; the English facts in (5)-(7) should represent a universal pattern.

This expectation seems to be on the right track, at least with respect to the five additional languages that we have checked. German, Italian, Spanish, Swedish and Hebrew all conform to the generalizations in (8):

German (Cornelia Krause, p.c.)

(9) a. Mary dachte, daβ es John schaden/*stören würde ihr Herz
Mary thought that it John damage/*annoy would her.ACC heart.ACC
seiner Freundin aus zu schütten.
his.DAT girlfriend.DAT out to-throw
'Mary thought that it would damage/*annoy John to reveal her heart to his girlfriend')

b. $Mary_1$ dachte, ihr Herz seiner Freundin auszuschütten
Mary thought her.ACC heart.ACC his.DAT girlfriend.DAT out-to-throw
würde John stören/schaden.
would John annoy/damage
'Mary thought that to reveal her heart to his girlfriend would annoy/damage John'

Italian (Sveva Besana, p.c.)

(10) a. Maria pensa che a Gianni piacerebbe parlare di se stesso / *se stessa.
Mary thinks that to-John would-please to-talk of himself / *herself
'Mary thinks that it would please John to talk about himself / *herself'

b. Maria pensa che aiuterebbe Gianni parlare di se stesso / se stessa.
Mary thinks that would-help John to-talk of himself / herself
'Mary thinks that it would help John to talk about himself / herself'

c. Maria pensa che parlare di se stessa aiuterebbe / piacerebbe a Gianni.
Mary thinks that to-talk about herself would-help / please to John
'Mary thinks that to talk about herself would help / please John'

Spanish (Karlos Arregui-Urbina)

(11) a. * A Juan$_i$ le entristecería contarle$_i$ las malas noticias.
to Juan Cl would-sadden to-tell-Cl the bad news
('It would sadden Juan$_i$ to tell him$_i$ the bad news')

b. ? A Juan$_i$ le perjudicaría contarle$_i$ las malas noticias.
to Juan Cl would-harm to-tell-Cl the bad news
'It would harm Juan$_i$ to tell him$_i$ the bad news'

c. Contarle$_i$ las malas noticias le entristecería/perjudicaría a Juan$_i$.
to-tell-Cl the bad news Cl would-sadden/harm to Juan
'To tell him$_i$ the bad news would sadden/harm Juan$_i$'

Swedish (Andres Holmberg, p.c.)

(12) a. Barnen förstod att det hjälpte/*gladde John att vara snälla.
the-children understood that it helped/*pleased John to be nice (pl.)
'The children understood that it helped/*pleased John to be nice (pl.)'

b. Barnen förstod att a vara snälla gladde John.
the-children understood that to be nice (pl.) pleased John
'The children understood that to be nice (pl.) helped/pleased John'

Hebrew

(13) a. Rina amra še-ze siyea le-/*icben et Gil$_i$ lelamed oto$_i$ nimusim.
Rina said that-it helped to-/*annoyed acc. Gil to-teach him manners
'Rina said that it helped/*annoyed Gil$_i$ to teach him$_i$ manners'

b. Rina amra še-lelamed oto$_i$ nimusim yesayea le-/yeacben et Gil$_i$.
Rina said to-teach him manners would-help to-/would-annoy acc. Gil
'Rina said that to teach him$_i$ manners would help/annoy Gil$_i$'

The theoretical problem we now face is the following: How does the configurational sensitivity of control interact with the thematic structure of the governing predicate and the position of the infinitive to produce the generalizations in (8)? The following section addresses this problem.

2 An Analysis

The analysis I propose incorporates assumptions about Obligatory Control, extraposition, the interpretation of chains and the projection of argument structure. Let us start with the first component:

(14) *The OC Generalization*

In a configuration [... DP_1 ... Pred ... [$_S$ PRO_1 ...] ...], where DP controls PRO:
If, at LF, S occupies a complement/specifier position in the VP-shell of Pred, then DP (or its trace) also occupies a complement/specifier position in that VP-shell.

(14) or some other distinction between OC and NOC is necessary in any theory of control. Thus, Bresnan (1982) attributes the distributional distinction between OC-clauses and NOC-clauses to the distinction between open and closed grammatical functions (although the latter is itself stipulated, not derived). Manzini (1983) reduces it to the distinction between governed and ungoverned positions. It is in fact not clear that anything more complicated than the simple containment condition in (14) is necessary; at least with respect to the present discussion, (14) is a sufficiently accurate descriptive generalization.

Notice that (14) makes no claims as to the *particular* choice of controller within the domain of OC; rather, it merely fixes the domain within which such a controller must be found (where "VP-shell" is understood as ranging over all arguments of a predicate, including the external one). Under this view, the choice between subject and object control is a semantic/pragmatic one. This approach to OC is in line with Chomsky (1981), Manzini (1983), Koster (1984), Comrie (1984), Melvold (1985), Farkas (1988), Sag & Pollard (1991) and others, as opposed to the MDP tradition of Rosenbaum (1967), Larson (1991), Manzini & Roussou (1998) and Hornstein (1999). Ample evidence for the former view and against the latter is surveyed in chapter 5 of this thesis.

(14) makes immediate predictions as to the classification of controlled clauses in three types of positions: complement, extraposition and intraposition. An infinitival in a complement position of a predicate X satisfies (14) w.r.t. XP; hence, it must be locally controlled, that is, within the minimal S containing XP. By contrast, an infinitival in subject or extraposed position is not contained in the maximal projection of its governing predicate; therefore, it will constitute an instance of NOC, allowing either arbitrary or LD-control. All of these predictions are borne out, as will be presently shown. Notice that the position of the infinitive relevant for "containment" in (14) is its LF position, or more

precisely, its position at the stage where control is established. This point will have immediate consequences for infinitivals in extraposition.

Next, I assume that extraposition is driven by the following motivation:

(15) *Extraposition*

VP-internal clauses must be peripheral at PF.

(15) corresponds to the crosslinguistic observation that embedded clauses are typically peripheral to the VP and seldom intervene between a predicate and other internal arguments. Where this does not obtain in base-structure (because of thematic mapping), the embedded clause must extrapose. I assume that extraposition in this case is adjunction to VP (directionality subject to parameterization); some configurational evidence for this is given below. I also adopt the standard assumption that "dominated by XP" means "dominated by every segment of XP"; thus an adjunct to VP is not dominated by VP.

The third component concerns the interpretation of chains:

(16) *Chain Interpretation*

Any link in a chain may be the LF-visible link.

(16) is the null hypothesis under the view that traces of movement are full copies of the element moved (Chomsky 1995). Reconstruction effects that track the path of movement suggest that in principle, any link along that path can be the one feeding the interpretive component (Fox 1999, Bobaljik 1999). This is uncontroversial for A-bar movement, the status of A-reconstruction being more contentious.

The relevant consequence for us is the following: We assume that extraposition is genuine movement, and furthermore, an adjunction operation. As such it falls under the A-bar rubric. LF may then choose to interpret either the clausal copy at the base position or the PF-visible copy at the extraposed position. Since the base position is VP-internal and the extraposed one is VP-external, the former option will result in OC and the latter in NOC, assuming (14).

Lastly, we mention (fairly standard) assumptions about the projection of argument structure:

(17) *Argument Projection*

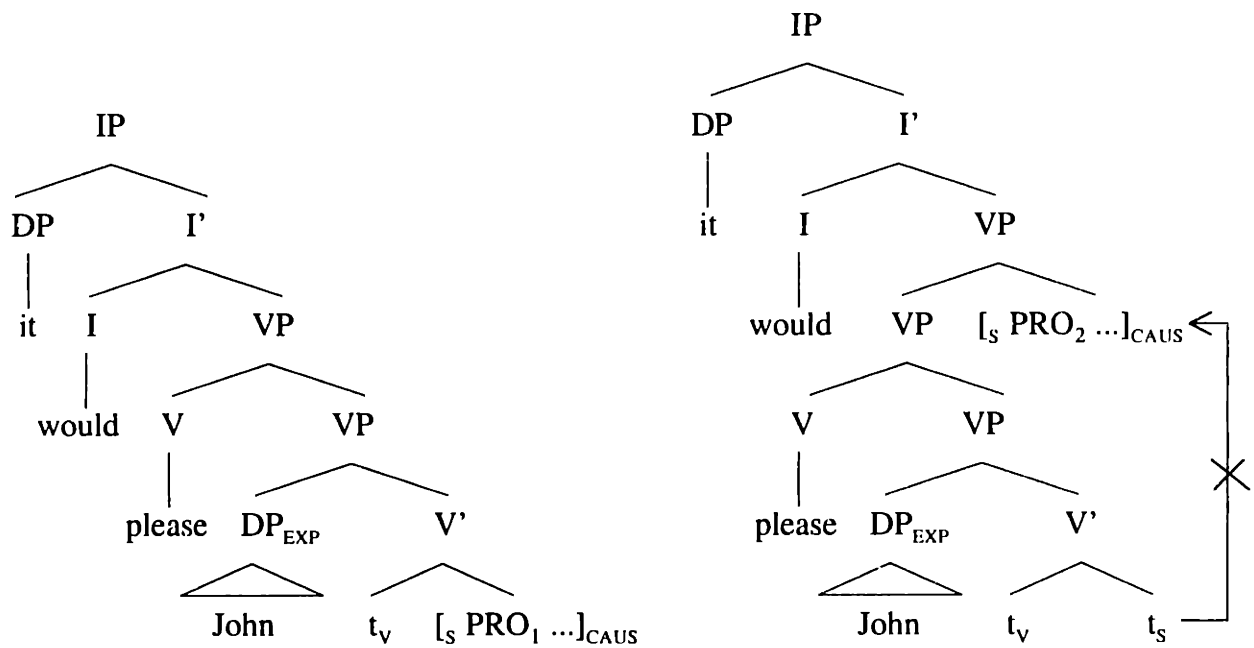
a. EXPERIENCER is generated above CAUSER.

b. CAUSER is generated above GOAL/PATIENT/THEME.

(17a) has been invoked to explain several unaccusative properties of psych-verbs (Belletti & Rizzi 1988), as well as certain scope reversal properties they display (Pesetsky 1995, Stroik 1996). (17b) is a standard assumption that needs no further comment. Notice that the two clauses of (17) never apply jointly; no predicate selects EXPERIENCER, CAUSER and GOAL/PATIENT at the same time. In what follows I will assume that thematic specifications such as (17) are neutral with respect to the categorial realization of arguments. In particular, the CAUSER argument may be either DP, IP or CP, all of which are generated in accordance with (17).

Armed with (14)-(17), we can explain all the relevant facts. Consider first the structures for extraposition with psychological predicates (the index 1 indicates local-control, 2 indicates non-local control):

(18) (a) It would please $John_1$ $[_S PRO_1 ...]$ (b) * It would please $John_1$ $[_S PRO_2 ...]$

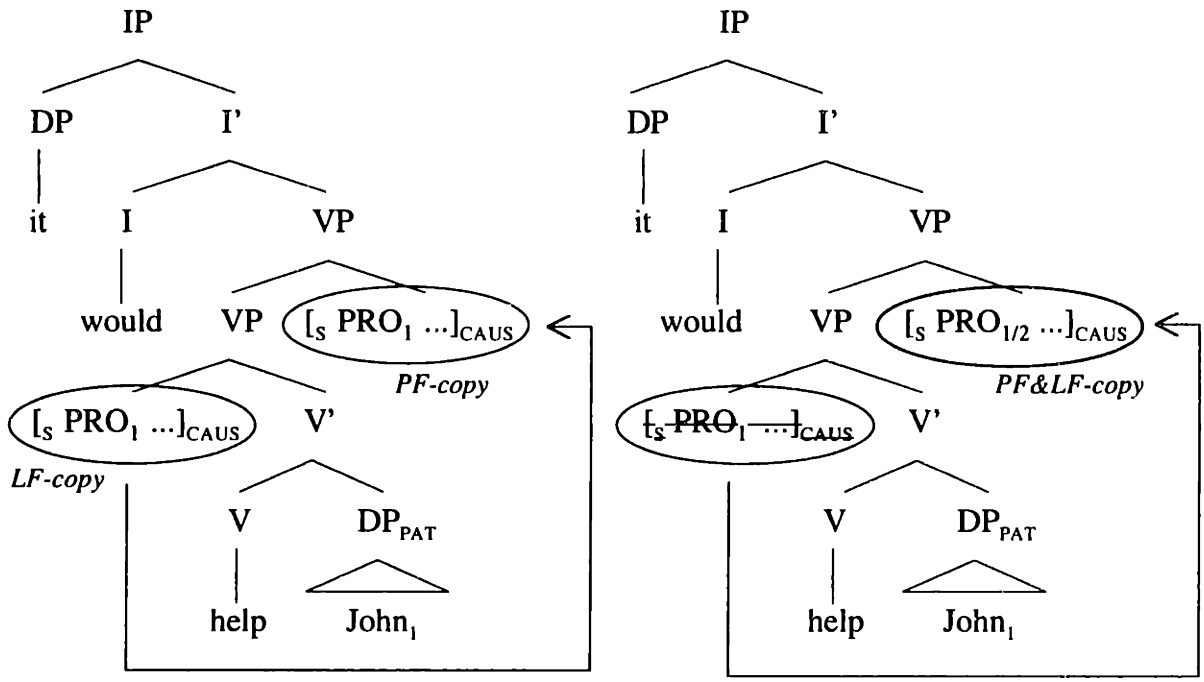


In (18a) the infinitive S is in-situ, below the direct object (by (17a)). By (14), the direct object is an obligatory controller. S is already VP-peripheral, hence extraposition, as in (18b), is unmotivated. The ungrammaticality of (18b), with non-local control, follows from economy considerations.

Next, consider extraposition with non-psychological predicates:[3]

[3] I am abstracting away from the small v analysis of causative structures or any other "functional" verbs inside the extended projection.

(19) (a) It would help John$_1$ [$_S$ PRO$_1$ ....] (b) It would help John$_1$ [$_S$ PRO$_{1/2}$ ....]



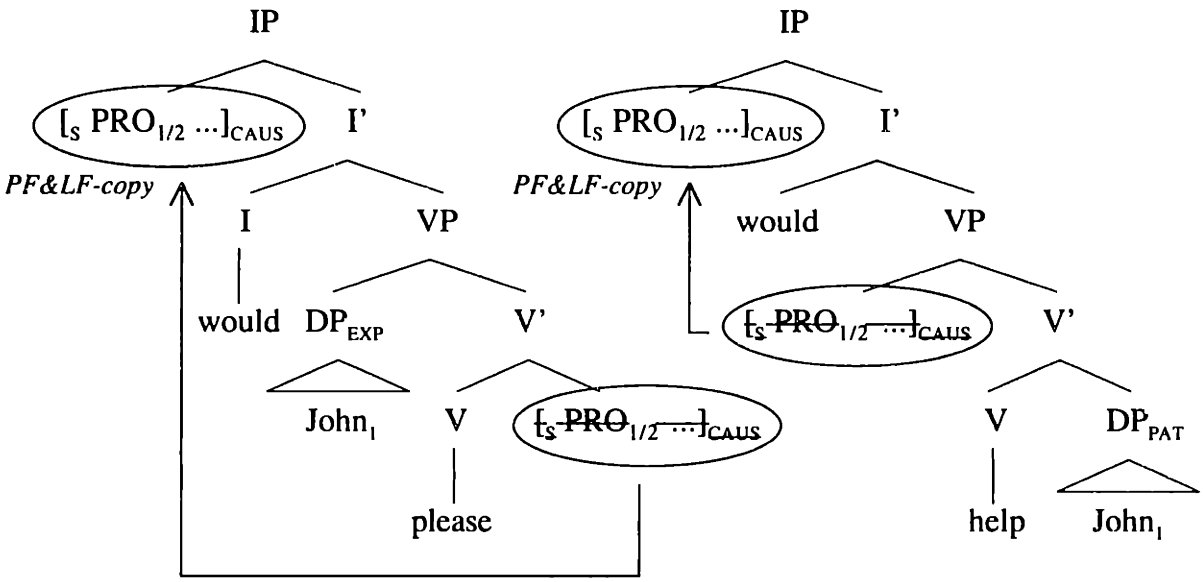
OC: Infinitive interpreted in-situ **NOC**: Infinitive interpreted extraposed

The infinitive S is generated above the direct object (by (17b)), hence not peripheral to VP. Extraposition is forced, by (15), creating a chain in which each link may be interpreted, by (16). If the base position is interpreted, as in (19a), S is VP-internal at LF, and the direct object is an obligatory controller by (14). If the extraposed position is interpreted, as in (19b), S is VP-external at LF, failing (14) and becoming an instance of NOC; hence the possibility (though not necessity) of non-local control.[4]

Finally, consider the case of intraposition, with both types of predicates:

[4] While OC *forces* a local controller, NOC *allows* an LD-controller; thus, NOC subsumes OC in the range of possible controllers. There is in fact subtle evidence for the compatibility of local control with syntactic extraposition, as I show in section 3.

(20) (a) $[_S$ $PRO_{1/2}$ ....] would please $John_1$ (b) $[_S$ $PRO_{1/2}$ ....] would help $John_1$



With either predicate, S moves to [Spec,IP] to satisfy EPP.[5] This is an instance of A-movement, and we may assume (following Chomsky 1995) that unless special circumstances demand otherwise, it is the higher link of the chain that gets interpreted. Again the infinitive escapes the domain of OC, this time regardless of the semantic class of the matrix predicate. Notice that intraposition removes the infinitive from the VP, making (15) inapplicable. Alternatively, we may rephrase (15) to require that subordinate clauses be peripheral to either VP or IP at PF. The former option will be taken when the numeration contains the expletive *it*, the latter otherwise.

Although A-movement normally does not reconstruct, it is well known that it *can* reconstruct to allow bound variable readings. This yields an interesting interaction between control and variable binding in intraposition:

(21) a. ?? I think that [PRO talking about him_1 on TV] would please every $celebrity_1$.
b. I think that [PRO talking about his_1 work on TV] would please every $celebrity_1$.

In (21a) the gerund must reconstruct to allow variable binding (or else, Weak Crossover will be violated). It is therefore interpreted VP-internally, and OC by *every celebrity* is forced (due to (14)). The result violates Condition B. In (21b), where Condition B is not at

[5] It has been suggested by various authors that the accusative case on experiencer objects is inherent (e.g., Belletti & Rizzi 1988, Arad 1998). If this is true, then raising to subject over that position violates no minimality conditions, since the experiencer object is "frozen" ("unattractable" by Tense).

stake, OC by the QP is compatible with the bound variable reading. Notice that (21a) is grammatical under a non-bound-variable reading of *him*. Under that reading, PRO may (but need not) be controlled by the local QP, suggesting that local control in itself is not diagnostic of reconstruction; it is only when the infinitive is interpreted in its base position that local control is a consequence of the OC Generalization (14). We return below to additional evidence for the partial overlap between OC and NOC.

The present account predicts that if extraposition is motivated for some reason with psychological predicates, they too should allow LD-control. This should arise in a context where the infinitive is separated from the edge of VP by other material, despite being the lowest argument. The relevant examples are hard to construct since normal adverbials can occupy specifier positions in a Larsonian shell and are thus not clear VP-edge markers. However, if some other element (e.g., a relative clause) is extraposed to the left of the infinitive, the latter must be also in extraposition:

(22) a. * $Mary_i$ thought that it pleased John [PRO_i to talk about herself].
b. ? $Mary_i$ thought that it pleased the man greatly who hired her for the job [PRO_i to talk about herself].

Admittedly awkward, (22b) nevertheless displays a weaker resistance to LD-control than (22a). This contrast follows on the assumption that LD-control is contingent on extraposition.

We thus account for the full Super-Equi paradigm. Notice that most of the ingredients of the analysis are motivated independently of the data under consideration; this is true of the assumptions on reconstruction (16) and argument structure (17), as well as on the role of economy in constraining movement. The OC Generalization (14) is a straightforward consequence of the theory developed in chapter 2, as we will show in section 5.1. This leaves the PF-constraint (15) as the only "special" assumption invoked. As noted, this constraint seems descriptively adequate, and one may speculate that it is to be ultimately explained by principles of clausal prosody.

Finally, a note on parsing. It was already observed that LD-control is harder to get when a local controller is available. The same difficulty is found with arbitrary control, which, under the present analysis, is also a variant of NOC:

(23) a. It [$_{VP}$ helped $John_i$ [PRO_i to buy $himself_i$ a new computer]].
b. It [$_{VP}$ helped $John_i$] [PRO_{arb} to buy him_i a new computer].

Given the structural difference between the two examples, the garden-path effect in (23b) comes as no surprise. It is well-known that real time processing is guided by certain parsing strategies, of which Branch Right (Phillips 1996) is a major component. Consider now the effect of this strategy on the analysis a hearer assigns to the substring "It helped John to buy...". Given no evidence to the contrary, the parser attaches the infinitive as a right-branching sister to the lowest V-projection, in compliance with Branch Right. But this immediately determines local control, for the intermediate structure falls under OC, by (14). It is only when *him* is heard in (23b) that the parser is forced to backtrack (to avoid a Condition B violation) and re-attach the infinitive outside VP. Seen that way, the presence of the garden-path effect in these cases in fact supports the structural distinction we have drawn between OC and NOC.

3 Configurational Consequences

Striking confirmation for the proposed analysis comes from the interaction of extraction and c-command effects with LD-control. It is a theorem of the set of assumptions in (14)-(17) that whenever the infinitive is (syntactically) in situ, control is local; and whenever control is non-local (arbitrary or long-distance), the infinitive is extraposed to a position adjoined to VP.[6] Assuming that adjuncts are islands to extraction, we expect a correlation between non-local control and failure of extraction.

A word of caution is needed before we turn to test this prediction. It is well known that infinitives are inherently very weak islands; indeed, arguments can be extracted from rationale clauses and NP-complements - both island environments - with no severe violation:

(24) a. ? What did John go home to look for?
b. Some people, I have no desire to meet.

Although in some positions infinitives constitute strong islands (e.g., sentential subjects), it is not obvious that the extraposition cases under discussion pattern with subjects rather than with the cases in (24). In certain cases it is possible to highlight the contrast by extraction of adjuncts, which diagnoses islands more sharply. In what follows, I will focus on *contrastive* judgments, showing that in each case, extraction out of a locally controlled infinitive is significantly better than extraction out of an ARB-/LD-controlled one.

[6] Here and below, unless specified otherwise, I use "extraposition" in the traditional sense, implying syntactic (and not just phonological) displacement.

The following paradigm confirms our prediction w.r.t. arbitrary control:

(25) a. It would help $Bill_1$ [PRO_1 to introduce himself to these professors].
b. To $whom_2$ would it help $Bill_1$ [PRO_1 to introduce himself t_2 ?]

(26) a. It would help $Bill_1$ [PRO_{arb} to introduce him_1 to these professors].
b. * To $whom_2$ would it help $Bill_1$ [PRO_{arb} to introduce him_1 t_2 ?]

The examples in (25) involve local control, and those in (26) involve arbitrary control. Notice that the latter is available in principle as the predicate *help* is non-psychological. We observe that extraction is licit from a locally controlled infinitive (25b) but not from an ARB-controlled one (26b). In both cases the infinitive is phonologically extraposed; local control in (25b) indicates that the copy feeding extraction may be in the base position, whereas non-local control in (26b) requires it to be in an adjunct position.[7]

The following paradigm demonstrates the same facts with LD-control:

(27) a. Hillary thinks it damaged $Bill_1$ [PRO_1 to talk about himself on the Dave Letterman show].
b. That's the talk $show_2$ that Hillary thinks it damaged $Bill_1$ [PRO_1 to talk about himself on t_2] .

(28) a. $Hillary_1$ thinks it damaged Bill [PRO_1 to talk about herself on the Dave Letterman show].
b. * That's the talk $show_2$ that $Hillary_1$ thinks it damaged Bill [PRO_1 to talk about herself on t_2] .

The asymmetry is perhaps sharper in cases where, for pragmatic reasons, no ambiguity is possible, not even one that is resolved later on. Such cases arise when the argument preceding the infinitive is not a potential controller:

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[7] As the CAUSER argument is in [Spec,VP], one might worry that extraction from the infinitive in (25b) violates the Left Branch Condition. However, specifiers in Larsonian shells are not subject to the LBC:

i. That's the artist that Trump bought every $picture_1$ of from its_1 owner.

Variable binding in (i) ensures that the *from*-PP is lower than the direct object, which must then be in [Spec,VP]; yet extraction is possible. Similarly, subjects that remain in VP (in languages like Italian or German) are transparent to extraction.

(29) a. It would kill the workers$_1$ [PRO$_1$ to build this dam].
b. What$_2$ would it kill the workers$_1$ [PRO$_1$ to build t_2 ?]
c. It would kill the forest [PRO$_{arb}$ to build this dam].
d. * What$_2$ would it kill the forest [PRO$_{arb}$ to build t_2 ?]

(30) a. It would benefit John$_1$ [PRO$_1$ to explain the program to the dean].
b. Who$_2$ would it benefit John$_1$ [PRO$_1$ to explain the program to t_2 ?]
c. It would benefit the program$_1$ [PRO$_{arb}$ to explain it$_1$ to the dean].
d. * Who$_2$ would it benefit the program$_1$ [PRO$_{arb}$ to explain it$_1$ to t_2 ?]

(31) a. It would delay the negotiators [PRO$_1$ to insist on technical issues].
b. That's the issue$_2$ that it would delay the negotiators [PRO$_1$ to insist on t_2].
c. It would delay the negotiations [PRO$_{arb}$ to insist on technical issues].
d. * That's the issue$_2$ that it would delay the negotiations [PRO$_{arb}$ to insist on t_2].

Adjunct extraction also brings out a clear contrast (in the following examples, matrix readings of the extracted adjunct - if possible at all - should be ignored):

(32) a. It would be useful to Bill$_1$ [PRO$_1$ to talk about himself$_1$ more modestly].
b. How$_2$ would it be useful to Bill$_1$ [PRO$_1$ to talk about himself$_1$ t_2?]
c. It would be useful to Bill$_1$ [PRO$_{arb}$ to talk to him$_1$ more gently].
d. * How$_2$ would it be useful to Bill$_1$ [PRO$_{arb}$ to talk to him$_1$ t_2]?

(33) a. It would change Oscar$_1$ completely [PRO$_1$ to paint himself green].
b. What color$_2$ would it change Oscar$_1$ completely [PRO$_1$ to paint himself t_2 ?]
c. It would change Oscar$_1$ completely [PRO$_{arb}$ to paint him$_1$ green].
d. * What color$_2$ would it change Oscar$_1$ completely [PRO$_{arb}$ to paint him$_1$ t_2 ?]

The extraction data strongly support the structural analysis proposed in section 2. Although string identical, locally and non-locally controlled infinitives occupy different positions in the syntax: The former are VP-internal, the latter are VP-external. This follows from the operation of OC within VP, and the complementary operation of NOC elsewhere. Control, which is sensitive to syntactic configurations, "sees" this contrast; pronunciation, which is sensitive to phonological configurations, does not see it, since the extraposed copy is the one sent off to PF in both cases.

It is interesting to note that a very similar correlation between control and extraction was noted by Chomsky (1986b) in the context of *tough*-constructions. Chomsky points out that sentences like (34a) are ambiguous, depending on whether or not *they* controls PRO (whether, say, *they* is the organizers or the crowds). The ambiguity, however, is resolved in favor of local control if extraction takes place from the infinitive (34b):

(34) a. They were too angry [PRO to hold the meeting].
b. Which meeting were they too angry to hold?
c. [they were [too angry [$_{CP}$ PRO to hold the meeting]]]
d. [$_{IP}$ [they were too angry] [$_{CP}$ PRO to hold the meeting]]

Chomsky suggests that the two readings of (34a) correspond to the two different structures (34c,d): Where *they* c-commands PRO it controls it (34c), and when it does not c-command PRO, we get arbitrary control (34d). Crucially, the infinitive in the latter is ungoverned, hence a barrier for extraction; therefore, only (34c) is a possible source for (34b), and we derive the desired correlation. Notice that modulo the notion of government, which is absent from the present proposal, the logic of the argument is the same: A VP-external infinitive is the common source for both arbitrary control and islandhood.

The islandhood effects suggest that a non-locally-controlled infinitive is an adjunct, however they leave open the question of the exact adjunction site. The constraint in (15a) requires adjunction to VP; we now turn to hierarchical evidence to this effect.

Given standard conceptions of English clause structure, NEG c-commands VP-adjuncts but not IP-adjuncts, while direct objects c-command neither. The following pattern of NPI-licensing shows that both infinitives in-situ and in extraposition are within the scope of NEG, but only the former are in the scope of a direct object:

(35) a. It wouldn't help Bill$_i$ [PRO$_i$ to praise himself at all].
b. It wouldn't help Bill$_i$ [PRO$_{arb}$ to praise him$_i$ at all].

(36) a. It would be useful to no one$_i$ [PRO$_i$ to ever say such things in public].
b. ?? It would be useful to no one$_i$ [PRO$_{arb}$ to ever tell him$_i$ such things in public].

These contrasts indicate that the extraposed position is in the scope of NEG but not of the direct object (namely, VP). The position of a VP-adjunct satisfies both of these conditions.

Furthermore, Condition C tests show that a direct object does not c-command an ARB-controlled infinitive (37a)[8] - but *does* c-command it if extraction takes place (37b):

(37) a. It would help him$_1$ [PRO$_{arb}$ to introduce Bill$_1$ to these professors].
b. * To whom$_2$ would it help him$_1$ [PRO$_{arb}$ to introduce Bill$_1$ t$_2$?]

This follows again on the assumption that extraction is only possible from a VP-internal position, placing the infinitive within the control domain of the direct object.

Finally, observe the following Weak Crossover effect:

(38) a. It would ruin this tune$_1$ [PRO$_{arb}$ to play it$_1$ on a flute].
b. ?? What tune$_1$ would it ruin t$_1$ [PRO$_{arb}$ to play it$_1$ on a flute]?
c. What tune$_1$ would it ruin t$_1$ [PRO$_{arb}$ to play e$_1$ on a flute]?

Since the matrix object does not c-command the infinitive when arbitrary control obtains, the configuration in (38b) violates Weak Crossover. Predictably, the sentence becomes acceptable if the pronoun is replaced by an empty category, as in (38c); this involves a parasitic gap strategy, which is licensed precisely because the "anti c-command" condition is satisfied.

There is some redundancy between OC and NOC, as characterized above. To recall, the criterion distinguishing the two categories was not the locality of the controller, but rather the (syntactic) position of the infinitive: VP-internal infinitives fall under OC and all the others under NOC. Nothing in our system rules out choice of a local controller for an extraposed infinitive. One might wonder whether there is actual evidence for this situation, which should be properly called *local NOC*. This would indicate that the above redundancy is in fact an advantage of the present proposal.

There is an obvious empirical difficulty in finding cases of local NOC: The configurational diagnostics test for c-command between the controller and some phrase embedded inside the infinitive; however, if control is local, the controller is coindexed with PRO, which c-commands everything inside its clause, masking the hierarchical relation between the controller and that clause. To overcome this difficulty, one needs to separate the c-command test from the controller; in other words, one should look for structures where the matrix VP contains two NP's, one of which serves as a controller and the other as an anchor for the c-command test.

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[8] It is easier to get coreference in (37a) when the pronoun *him* is destressed.

Examples that satisfy these conditions are not too common; however the following case plausibly illustrates our point:

(39) It will remind Sue_1 of him_2 [PRO_1 to read Richard's$_2$ poems to her daughters].

In this case control is local, yet the infinitive is interpreted in extraposition, as witnessed by the lack of Condition C violation between the NP's subscripted "2". This follows if local control is compatible with syntactic extraposition: Obviously, local control does not *require* the LF-copy of the infinitive to be the extraposed one, but may exploit this option if interpreting the base copy violates some independent principle (like Condition C).[9]

We further predict that if syntactic extraposition is followed by extraction, the example in (39) will yield an ungrammatical sentence. This prediction is borne out:

(40) a. ?? [Which of her daughters]$_3$ will it remind Sue_1 of him_2 [PRO_1 to read Richard's$_2$ poems to t_3] ?

b. [Which of her daughters]$_3$ will it remind Sue_1 of $Richard_2$ [PRO_1 to read his_2 poems to t_3] ?

In (40a) extraction requires the infinitive to be in-situ, but to escape a Condition C violation it must extrapose; these conflicting demands result in ungrammaticality. (40b) shows that when Condition C is not at stake, syntactic extraposition is not forced and extraction is possible from the base copy. The judgments are somewhat subtle, yet the contrast appears to be real.

4 Some Problems and Solutions

4.1 Logophoric Extension / Inalienable Possession

There are cases noted in the literature where the controller is not a direct argument of the matrix predicate, but rather embedded in that argument. Consider the following examples:

(41) a. It would help Bill's$_1$ development [PRO_1 to behave himself in public].
[Manzini 1983, ex.42]

[9] In accordance with (17b), I assume that the infinitive (CAUSER) in (39) is generated above the *of*-object (THEME), hence subject to extraposition.

b. PRO_1 finishing his work on time is important to John's$_1$ development.

c. PRO_1 finishing his work on time is important to John's friends$_1$.

[Chomsky 1981, Ch.2 ex.19]

(42) a. * It would help Bill's$_1$ friends [PRO_1 to behave himself in public].

b. It would help Bill's confidence [PRO to plan his itinerary in advance].

c. * It would help Bill's car [PRO to plan his itinerary in advance].

d. [PRO causing an uproar] is important for John's career.

Manzini (1983) cites (41a) to show that extraposition falls under NOC, where the choice of controller is free of structural constraints. This view, however, fails to account for Grinder's intervention effect. Furthermore, notice that the minimally different (42a) is ungrammatical, showing that extraposition does not generally allow free controller choice. Regarding the contrast in (41b,c), Chomsky (1981: 77) comments: "While PRO may have a non c-commanding antecedent, the latter may not be contained within an NP that is a possible controller". This formulation needs some refinement in view of (42b,c): Although the intended interpretation of (42c) is perfectly plausible (Bill's planning his itinerary in advance would help his car), control by *Bill* fails here. Yet the car is not a possible controller of PRO in this context, for semantic reasons. Something must distinguish between *Bill's car* and *Bill's confidence*, to allow control from within the latter but not the former. Finally, in (42d) (N. Chomsky, p.c.), *John* can control PRO even though it is embedded in an NP which is a possible controller (careers can cause uproars).

The class of nouns that may contain the controller of PRO in these configurations is in fact quite small and coherent. Its members all denote abstract notions that reflect the individuality of the controller, via actions, character traits or social attributes. A number of such nouns are listed below:

(43) career, status, confidence, performance, development, image, reputation, behavior...

Let us call *X's NP*, where X denotes an individual and NP is a member of (43) - a *logophoric extension* of X. Then we may capture the transparency of such nouns to control via the following convention:

(44) For the purpose of control, a logophoric extension [X's NP] is non-distinct from X:
[X's$_1$ NP] $\Rightarrow$ [X's NP]$_1$.

(44) expresses the intuition that a logophoric extension of an individual-denoting noun does not introduce a new individual in the discourse. Thus, there is a clear sense in which *Bill* and *Bill's car* denote two distinct individuals in a given discourse domain, however *Bill's development* merely extends or rather focuses attention on some aspect of the denotation of *Bill* alone. Admittedly sketchy, this distinction suffices for the present purposes.

It is important to note that the cases under discussion are genuine instances of OC, patterning with normal cases of OC in extraposition and not with NOC in intraposition. Thus, they license extraction:

(45) a. It is crucial for Bill's$_1$ success [PRO$_1$ to teach himself Japanese].
b. Which language is it crucial for Bill's$_1$ success [PRO$_1$ to teach himself] ?

Given the preceding discussion, this suggests that the interpreted copy of the infinitive in (45) is the base copy, and control is governed by the OC generalization (14), via the convention (44).

Looking at the sample in (43), it is tempting to assimilate the class of logophoric extensions to the class of inalienably possessed nouns. Notice that many members of the former class denote inalienable attributes. Indeed, both abstract and concrete inalienably possessed nouns constitute logophoric extensions for control:

(46) It would ruin Steve's figure/career [PRO to eat so much ice-cream].

Grammatically, they display distributional parallels:

(47) a. John's hand, *the hand of John
b. John's confidence/career, *the confidence/career of John

More tellingly, even those members of (43) that are compatible with an *of*-genitive, resist it in the context of control:

(48) a. Self discipline benefited John's development / the development of John.
b. It benefited John's development / *the development of John
[PRO to discipline himself].

If these observations are on the right track, then the rationale of (44) is straightforward: An inalienably possessed noun is referentially dependent on its possessor, hence "inherits" (or

does not block) its index. Under these assumptions, one can maintain the condition that the controller in OC is an argument of the control predicate.

4.2 Apparent OC in Intraposition

Occasionally it has been claimed that (8b) is incorrect in that some cases of intraposition resist LD-control just as their extraposition counterparts do. Chierchia & Jacobson (1986) cite (49a) and Brody & Manzini (1987) cite (49b) (where only *Peter* is a possible controller) as cases of OC:

(49) a. John told me that [making a fool of herself/*himself] was rude of Mary.
b. Mary thought that [PRO to behave well] would be easy for Peter.

Chierchia and Jacobson (1986) call such cases "semi-obligatory control", which simply refers to OC where the controller may remain implicit. In contrast, they classify the classical intervention cases - e.g., (4d) - as NOC, which displays locality effects because the controller "minimally f-commands" PRO.

This way of cutting the pie is exactly the opposite of the way advocated above. I have argued that cases like (4d) are no different than any other variety of OC (i.e., complement control), rather than a case of NOC to which a designated locality condition should be tailored. More importantly, as will be shown in section 6, the "minimal f-command" condition is empirically incorrect. Still, the question remains: Even if Chierchia and Jacobson are wrong about the status of (4d), the failure of LD-control in (49) looks very much like a property of OC. Does that not undermine the present analysis?

I would like to suggest instead that the apparent OC in (49) is really quite different from genuine OC. In fact, I would argue that (49) does not tell us anything about the theory of control, but rather something about the semantics of a special class of predicates.

Notice that the facts in (49) remain unchanged even when the null subject of the infinitival is replaced by a overt pronoun, or indeed, when the infinitive is replaced by a finite clause:

(50) a. * John told me that [him/his making a fool of himself] was rude of Mary.
b. * Mary thought that [for her to behave well] would be easy for Peter.
c. * That John made a fool of himself was rude of / easy for Mary.

This is by no means a general property of control in intraposition, even with psychological predicates, as demonstrated by (51):

(51) a. John told me that [him/his making a fool of himself] disturbed Mary.
b. Mary thought that [for her to behave well] would be surprising for Peter.

It therefore seems that predicates like *easy* and *rude of* are lexically restricted in a way that "reflexively" links their two arguments; e.g., for an event x to be rude of a person y, y has to be the agent of x. Agenthood seems to be necessary; cf. **Weighing 350 pounds was rude of Mary.* For Chierchia and Jacobson, OC in (49) is achieved like any other kind of OC in their theory - namely, through a lexical entailment associated with *rude of*. This entailment is based on the assumption that the infinitive selected by *rude of* unambiguously denotes a property. However, (50) shows that the relevant entailment holds even when *rude of* selects a propositional infinitive, hence it cannot be a consequence of the predicational analysis of OC.

That the phenomenon at hand is orthogonal to control is already suggested by (50), where no control is involved. Further evidence is provided by the following contrast:

(52) a. Those comments by John were rude of him.
b. * Those comments by John were rude of Mary.

Notice that one cannot assume a PRO NP-subject here, for then (52a) would violate Condition C. I therefore agree with both Chierchia and Jacobson (1986) and Brody and Manzini (1987) that there is something special about predicates like *easy* and *rude of*, setting them apart from predicates like *disturb* and *useful to*; yet I maintain that the special feature is not to be encoded in the theory of control, as it shows up in non-control contexts as well. The distinction drawn in (8) between extraposition and intraposition remains valid; apparent cases of OC in intraposition involve predicates that are intrinsically "reflexive" in a way that rules out LD-control on interpretability grounds.

5 Deriving The Distribution of OC and NOC

The present analysis heavily relies on a new generalization, given in (14) and repeated below, concerning the distribution of obligatory control:

(53) *The OC Generalization*

In a configuration [... DP_1 ... Pred ... [$_S$ PRO_1 ...] ...], where DP controls PRO:
If, at LF, S occupies a complement/specifier position in the VP-shell of Pred, then DP (or its trace) also occupies a complement/specifier position in that VP-shell.

What (53) amounts to is the claim that an infinitive in-situ must find a clausemate controller, whereas a displaced infinitive is not similarly restricted, where the relevant positions are those occupied at LF. This view of OC is distinguished from various alternatives in being fairly theory-independent, appealing to no problematic notions (open grammatical function, government, etc.). It was argued above that it is not only conceptually simpler but also empirically adequate to handle all the properties of Super-Equi (and, of course, standard complement control). Nonetheless, (53) is merely a generalization, and one wants to know whether it can be derived from deeper principles of the grammar.

The task of this section is to derive the OC generalization in this sense; that is, I will show that (53) can be deduced from the theory of OC developed in chapter 2, which is a minimalist adaptation of Borer (1989). It will also be argued that the major alternative, by which OC reduces to the Binding Condition A, is empirically untenable. Finally, I will show that the category of NOC corresponds to a remarkable degree to the category of logophors in the sense of Reinhart & Reuland (1993); that is, anaphors that fail to be syntactically licensed.

5.1 OC and Agree

Let us briefly summarize the analysis of OC developed in chapter 2. Following traditional treatments, we take PRO to be an anaphoric element of sorts. Following Borer (1989), we extend this characterization to infinitival Agr as well. Recall that partial control is mediated by the anaphoric infinitival Agr. In what follows the distinction between exhaustive and partial control plays no role, yet independent evidence suggests that control in extraposition can be partial;[10] therefore, we will restrict attention to control of Agr.

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[10] For example:

i. It annoyed the chair to gather with no concrete agenda.

That extraposition allows PC is unsurprising, given that PC is contingent on the presence of a contentful infinitival tense. Extraposed infinitives indeed do not have to match the matrix clause in tense:

ii. It still annoys John to have missed the last train to New York yesterday.

The functional head F that agrees with the matrix controller (T or some functional small v) enters a second Agree relation, this time with the infinitival Agr. The latter has raised (with the infinitival T) to C. Its anaphoric nature makes it an "active" goal, its peripheral position in the infinitival CP makes it visible to the matrix F. Agree (F,T-Agr) identifies the phi-features of Agr, and by inheritance, of PRO. This relation induces coindexing, interpreted as variable binding (see chapter 2 for detailed discussion).

Importantly, Agree obeys the "Phase Impenetrability Condition" of Chomsky (1998), according to which only the head of a phase and its edge (= Spec(s)) are visible to operations outside the phase. Thus the head F (and its specifier, the controller) must be found within the phase immediately dominating the infinitival CP phase.[11] This is how we derive the locality of OC in (53). The fact that the controller must be a complement or specifier in the matrix VP-shell follows from the fact that only those positions enter into Agree relations with the functional heads that head the layers of the shell. Those heads, to recall, are the potential probes of Agree. In line with the analysis of chapter 2, I assume that for every argument there is a functional head that agrees with it, whether the argument occupies the specifier position of that head overtly or covertly.[12]

So far we have accounted for the locality of the controller w.r.t. the infinitive in OC. What is still missing is an explanation for why the locality conditions only apply when the infinitive is VP-internal (complement or specifier). In fact, we already have all the pieces of the answer - all we need to do is to put them together.

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[11] For subject control, anchored to the matrix T, one needs to assume that the matrix vP is not a phase, or alternatively, can always be bypassed (e.g., by adjunction). This seems independently needed for simple raising constructions.

[12] A technical question arises as to how the infinitive is to be placed in the domain of a verbal head when it occupies the topmost specifier in the VP-shell. Consider the following example:

i. It would help John$_i$ [PRO$_i$ to loosen up].

ii. It would [$_{vP}$[$_{vP}$[*PRO$_i$ to loosen up*]$_{LF}$ v [$_{VP}$ help John$_i$]] [PRO$_i$ to loosen up]$_{PF}$]

The infinitive, being a CAUSER co-occurring with a THEME, is generated in [Spec,vP]. Extraposition attaches a phonological copy of the infinitive to the right edge of the vP, while the LF copy is the one occupying the base position (see section 3 for empirical motivation for this derivation). Notice that the latter is not in the domain of v, the functional head that agrees with the object controller *John* (assuming covert object shift). A possible solution is to allow (or require) v-to-T raising. Standard definitions of c-command would then let the adjoined v c-command the infinitive (and the infinitival Agr in its head), allowing Agree to apply.

One implication is that the controller and PRO in OC do not obey strict c-command, as opposed to binders and reflexives (see Barss & Lasnik (1986), Larson (1988) and Pesetsky (1995)). This is in fact a positive result, as it converges on the conclusions drawn from several independent arguments. The full case against the view that OC reduces to Condition A is presented in the next section.

Consider again the distributional consequences of the OC Generalization (53). The four major positions an infinitive may occupy fall under the following two categories:

(54) a. VP-complement/VP-specifier ⇒ OC
b. IP-subject / adjunct ⇒ NOC

We have already seen that this partitioning is supported by extraction asymmetries: OC infinitives are transparent to extraction, whereas NOC infinitives - like subjects and adjuncts in general - are islands. The claim I now make is that the *same* structural distinction is responsible for whether an infinitive displays OC or NOC: It is *because* VP-complements and specifiers are transparent that Agree can apply to the anaphoric Agr inside them, and it is *because* (IP-)subjects and adjuncts are islands that Agree fails to penetrate them, resulting in NOC.[13] The latter option, as will be shortly demonstrated, corresponds to logophors - namely, anaphoric elements that are not syntactically licensed. It should be noted that the literature offers numerous diagnostics for the OC/NOC distinction, but very few *explanations* for why certain infinitival positions are subject to OC and others to NOC (see section 6). The conception of control as an Agree relation is a genuine explanation in that it reduces the distinction to the well-established CED of Huang (1982).

5.2 OC ≠ Condition A

A major line of research holds that PRO in complement infinitivals is an anaphor, and that OC reduces to Condition A of the binding theory, requiring an anaphor to be bound by an antecedent in some local domain. This idea is common to Manzini (1983, 1986), Bouchard (1984), Koster (1984), Lebeaux (1984, 1985), Borer (1989), Clark (1990), Sag & Pollard (1991) and Kawasaki (1993).

In principle, two questions might be raised in response to this proposal:

(55) a. Is the distribution of PRO parallel to the distribution of lexical anaphors?
b. Is the distribution of controllers parallel to the distribution of binders?

As is well-known, neither question receives a straightforward positive answer. As for (55a), most authors consider it independent of binding theory; special properties of PRO

[13] Recall that Agree underlies syntactic movement, hence is subject to all the familiar constraints on movement.

(or of infinitives) are said to govern its distribution. As for (55b), apparent discrepancies between the distribution of controllers and binders are standardly handled by some modifications of the notion of "domain" figuring in Condition A. Executions differ at this point, and whether particular data disconfirm a given theory largely depends on the technical details of the execution.

I will not consider these proposals individually. In fact, I will not consider arguments that depend on any particular version of Condition A. This will no doubt weaken the argument, as many problems, specific to certain proposals, will be ignored. Nevertheless, I believe that there is enough evidence at hand arguing against *any* theory of the "OC=Condition A" variety. The evidence mainly pertains to question (55b); specifically, we will see that: i) Some potential binders cannot control; ii) Some potential controllers cannot bind.[14]

Most of the arguments fall under case (ii). One argument that falls under case (i) is the familiar observation (e.g., Lasnik 1992) that controllers are designated arguments, whereas binders (in English-type languages) are not:

(56) a. John told Mary about himself / herself.
b. $John_1$ told $Mary_2$ [$PRO_{*1/2}$ to leave].

The standard response (e.g., in Manzini (1983)), that controller choice is sensitive to semantic/pragmatic factors, is no doubt correct, but begs the question: If OC *is* binding, the fact that OC alone but not binding is subject to these conditions is unexplained.

There are quite a few examples of case (ii). Perhaps universally, implicit arguments can control but not bind, a contrast first discussed by Rizzi (1986). Rizzi distinguishes between generic contexts, where a dative *pro* may be projected, and non-generic contexts, where it may not. Nonetheless, an implicit dative argument in the latter context can still control, but not bind (57); similar facts obtain in English (58):

(57) a. Lo psichiatra (gli) ha detto [di PRO parlare di se stessi].
'The psychiatrist said (to him) to speak about himself'

b. Lo psichiatra *(gli) ha restituito se stessi.
'The psychiatrist gave *(him) back himself'

[14] Unless specified otherwise, "controller" in this section refers to a controller in an OC configuration.

(58) a. Mary$_1$ thought that John said (to her$_1$) [PRO$_1$ to wash herself].
b. Mary$_1$ thought that John talked *(to her$_1$) about herself$_1$.
c. John admitted that it was quite dishonest (of him$_1$) [PRO$_1$ to clear himself of any responsibility].
d. John admitted that Mary was quite dishonest *(to him$_1$) about himself.

It is not obvious why binding, or at least Condition A, is so restricted (especially in view of the fact that implicit arguments of nominals *can* bind; see Williams 1985). Yet implicit control is a robust phenomenon, which we further discuss in chapter 5. Whatever way one chooses to represent implicit arguments, some mechanism is needed to make them visible to control but invisible to binding, undermining the reduction of the former to the latter.

Second, an anaphor in an argument position cannot have a split antecedent, whereas PRO, in most OC environments, can (see also Petter 1998):

(59) a. * John$_1$ showed Mary$_2$ to themselves$_{1+2}$.
b. * John$_1$ suggested Mary$_2$ to themselves$_{1+2}$.

(60) a. John$_1$ persuaded Mary$_2$ [PRO$_{1+2}$ to get themselves a new car].
b. John$_1$ suggested to Mary$_2$ [PRO$_{1+2}$ to get themselves a new car].

Third, it is well-known that in certain languages (e.g., Polish, Icelandic, Korean, Japanese) some or all anaphors are subject-oriented. Yet in none of these languages, nor in any other languages we know of, is PRO strictly subject-oriented in all environments. This systematic discrepancy is an accident under the view that PRO is an anaphor.

Fourth, in some languages case marking interferes with binding but not with control. In German, dative DP's can control but not bind (data from Wurmbrand (1998b: 169,178):

(61) a. weil der Hans der Maria sich$_{1/*2}$ auf dem Photo zeigte.
since the John-NOM Mary-DAT SELF in the picture showed
'since John showed Mary himself/*herself in the picture'

b. Ich$_1$ habe ihm$_2$ vorgeschlagen [PRO$_2$ mich zu erschießen].
I have him-DAT proposed PRO me to shoot
'I proposed to him to shoot me'

Fifth, as we have seen in section 4.1, a controller can be the inalienable possessor of a "logophoric extension"; this is impossible for binders:[15]

(62) a. It harmed John's$_i$ image [PRO$_i$ to expose himself in public].
b. * John's$_i$ image harmed himself$_i$.

Sixth, in VP-ellipsis contexts, a subject anaphor allows a strict reading, whereas PRO forces a sloppy reading:

(63) a. John believes [himself to be intelligent], but no one else does.
b. John claims [PRO to be intelligent], but no one else does.

The second conjunct in (63a) can be understood as "no one else believes John to be intelligent", but the second conjunct in (63b) can only be understood as "no one else$_i$ claims that he$_i$/she$_i$ is intelligent".

Seventh, as discussed in the preceding section, binding obeys c-command whereas OC obeys the weaker condition of "containment in the same VP-shell".

To conclude, there seems to be a substantial convergence of arguments showing that OC and Condition A have different distributional properties. It is conceivable that a binding-theoretic account of OC could appeal, for each of the seven contrasts cited above, to some special property distinguishing PRO from anaphors that accounts for that contrast. The question is one of gain and cost: If so many special assumptions must be made in order to defend the reduction of OC to binding, perhaps there is not much of a reduction worth defending. Although the alternative, which separates OC from binding, cannot claim to explain all of the above contrasts, it bears no comparable burden of explanation.

5.3 NOC and Logophoricity

The original insight of Borer (1989) was that "defective Agr" features come in two varieties: They may be either missing altogether (as in certain participial constructions) or anaphoric, that is, dependent on some antecedent (typically, the case of infinitivals). I argued above against the assimilation of control to binding. As a consequence, condition A

[15] Recall that examples like (62a) are genuine cases of OC, e.g. they are transparent to extraction (cf. (45)). D. Pesetsky (p.c.) observes that backwards binding does allow the binder to be embedded in an inalienably possessed noun:

i. Pictures of himself make John's hair stand on end.

does not apply to anaphoric Agr, but the operation Agree does instead. One may wonder at this point what is gained by viewing the infinitival Agr as "anaphoric", beyond the general property of being referentially defective.

The answer to this question comes from the reflexivity theory of Reinhart & Reuland (1993). Under this theory, reflexives are distinguished by a certain formal feature, [-R], which reflects their referential dependence. Reflexives that are syntactically licensed (by Condition A) are *anaphors*, and all the rest are *logophors*. The dividing line is purely syntactic: Only reflexives occupying positions that qualify as "syntactic arguments" fall under Condition A. Logophors are licensed by discourse factors such as focus, perspective and center of consciousness or communication. Although these factors are quite diverse, the class itself is well-defined, being the complement to the class of reflexives occupying syntactic argument positions.

Suppose this division applies to all anaphoric elements. The we expect anaphoric Agr and PRO to be logophoric precisely in those environments where they are not syntactically licensed - namely, where they cannot enter a syntactic relation with an antecedent. These environments should display LD-control, subject to logophoricity constraints. The prediction is strikingly confirmed across a wide array of constructions, to which we now turn.

Consider first the Super-Equi cases analysed in detail above:

(64) a. $Mary_1$ thought that it $[_{VP}$ $[_{VP}$ helped John] $[_{IP}$ PRO_1 to speak her mind]].
b. $Mary_1$ thought that $[_{IP}$ [PRO_1 to speak her mind] would help John].

Whether in adjunct or in subject position, the infinitive is an island; Agr is unable to be identified by an Agree relation with an element external to the infinitive. Consequently, it can only be licensed as a logophor.

That LD-control in Super-Equi has a lot in common with logophoric anaphora is an old insight in generative grammar (Grinder 1970, Kuno 1975, Lebeaux 1985). Kuno observes the following parallels:

(65) a. John said to Mary that it would be easy to prepare herself for the exam.
b. John said to Mary that there was a picture of herself with a Mafia figure in the newspaper.

(66) a. * John said about Mary that it would be easy to prepare herself for the exam.

b. * John said about Mary that there was a picture of herself with a Mafia figure in the newspaper.

(67) John sued Mary for divorce because it was no longer possible to support her/*him.

Kuno's "Direct Discourse" analysis, by which the anaphoric element must refer to a discourse participant, is readily understood as the restriction that logophors refer to the center of consciousness or communication in the discourse.[16] Notice that the failure of LD-control in (67), despite the fact that *Mary* is an argument of the matrix verb, shows that the problem with (66) is not the grammatical function of *Mary*. Under the present proposal, the logophoric nature of picture-anaphora and the parallel nature of displaced infinitives are the very same fact.

The idea that PRO in NOC (or, more precisely, the infinitival Agr) is logophoric should be contrasted with an alternative view that takes it to be *pronominal* (Bouchard 1984, Hornstein 1999). Whereas for us the anaphoric nature of Agr/PRO is stable - the *mechanism* of licensing being different in OC and NOC - for Bouchard and Hornstein PRO is an anaphor in OC but a pronoun in NOC. Given that logophors are subject to more stringent antecedence conditions than pronouns, the two views make different empirical predictions.

For a (non-deictic) pronoun to be felicitous, its antecedent merely needs be familiar in the discourse. A logophor, however, can only refer to antecedents that are sources or targets of mental/communicative reports. Kuno's examples (66a) and (67) clearly follow the latter pattern; they tolerate an overt pronoun but not PRO as the subject of the infinitive:

(68) a. John said about Mary that it would be easy [*(for her) to prepare herself for the exam].
b. John sued Mary for divorce because it was no longer possible [*(for her) to support him].

The following contrasts further illustrate the same point:

(69) a. John's wife thought that [*(for him) to indulge himself in drinking] is inappropriate.

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[16] According to Sells (1987: 445), an antecedent for a logophor can be "the source of the report, the person with respect to whose consciousness (or 'self') the report is made, and the person from whose point of view the report is made".

b. Mary discussed with friends of John$_i$ the possibility of [him$_i$/*PRO$_i$ divorcing her].

(70) John's$_i$ friends think it is illegal [*(for him) to feed himself].

[Chomsky 1986a: 125]

(71) a. [(him) having been away for so long], nothing really matters to John.
b. [*(him) having been away for so long], nothing really bears on John.

(72) [*(his$_i$) having shaved already] shows that Mary arrived more than 5 minutes after John$_i$ did. [Lebeaux 1984]

Thus, one cannot conclude from the mere possibility of LD-control that PRO in NOC is a pronoun; a more careful analysis reveals that the referential properties of PRO in these environments are constrained by logophoricity. For Bouchard (1984), the pronominal nature of PRO in NOC follows from the contextual definitions of empty categories - definitions which make no room for logophors. Hence the facts above cannot be accommodated in his system. For Hornstein (1999), the pronominal nature of PRO in NOC in fact does not follow from anything; it is rather stipulated that base-generated empty categories are pronominal. Thus, it could just as well be stipulated that PRO in NOC is a silent logophor. However, this would still leave Hornstein's system with no obvious relation between PRO in OC (an NP-trace) and PRO in NOC (a silent logophor); whereas in the present analysis there is just one anaphoric element (nonfinite Agr) which falls under different licensing principles in different environments, as nominal anaphors do.

Finally, the linking of NOC to islandhood may provide an answer to a problem raised in footnote 1. It was noted there that for some speakers, Grinder's intervention effect goes away - even with psychological verbs - when the infinitive is embedded under a modal tense. These speakers find (73b) better than (73a):

(73) a. * John said that it disturbed Sue to make a fool of himself in public.
b. ? John said that it would disturb Sue to make a fool of himself in public.

Suppose that for the speakers under consideration, the infinitive in (73a) occupies a VP-internal position but the one in (73b) is adjoined to VP. Then the control facts will follow from the CED. But why should the adjunct option be available here? A possible answer is provided by Pesetsky's (1991) observation that sentences like (73b) have a conditional

semantics, roughly paraphraseable as *John said that it would disturb Sue if he made a fool of himself in public*. Suppose that the speakers who accept LD-control in (73b) actually project the infinitival as an *if*-clause. *If*-clauses being adjuncts, the infinitive will behave just like an extraposed clause under a non-psychological predicate; in particular, it will allow NOC. Notice that the conditional semantics alone does not *necessitate* such a syntax-semantics mapping; the infinitive could equally well be a genuine argument in the syntax, being copied later on in the semantics onto an abstract *if*-clause. Hence we expect to find speakers for whom (73b) is not better than (73a), as seems to be the case.

To sum up, we see that the various instantiations of NOC all display logophoricity. This property emerges in island environments, where the infinitival Agr cannot enter an Agree relation with a matrix functional head and consequently fails to be syntactically identified. This state of affairs mirrors the pattern of nominal anaphora to a remarkable degree, suggesting that the conception of control as a manifestation of anaphoric Agr captures a deep property of anaphora in natural language.

6 A Critical History of Super-Equi

The history of the Super-Equi construction in generative grammar is very rich in detail and analysis. Starting with Grinder's (1970) pioneering study, linguists in the '70s developed accounts in terms of deletion rules (Kimball 1971, Grinder 1971, Jacobson and Neubauer 1976), interpretive rules (Clements 1975) and discourse-governed procedures (Kuno 1975). During the '80s, numerous analyses were developed within GB theory (Williams 1980, Manzini 1983, Bouchard 1984, Epstein 1984, Lebeaux 1984, 1985, Roeper 1987, Borer 1989), as well as HPSG (Chierchia and Jacobson 1986) and LFG (Bresnan 1982, Mohanan 1983, Richardson 1986). Recently the phenomenon was investigated within the minimalist program (Manzini & Roussou 1998, Hornstein 1999).

It is impossible to compare the present analysis with every predecessor in every respect. Instead, I would like to return to the two major challenges mentioned at the outset, and discuss the alternatives in light of these issues. The two challenges were the following:

(74) *Challenges for a Theory of Control*:
   a. Distribution: *Where* do OC and NOC obtain?
   b. Explanation: *Why* do OC and NOC obtain where they do?

Starting with (74a), we will use the generic paradigm in (75) as a point of departure:

(75) a. * Mary knew that it disturbed John [PRO to perjure herself].
b. Mary knew that it damaged John [PRO to perjure herself].
c. Mary knew that [PRO to perjure herself] would disturb/damage John.

The pair (75a,b) cannot be explained by any single theory that was mentioned above - either both members of the pair are predicted to be grammatical, or both ungrammatical.

Consider first the class of proposals that rule out both (75a,b). Grinder's original account invokes the Intervention Constraint.[17] This constraint correctly rules out (75a), but fails to distinguish it from (75b). Moreover, as noted by several authors, it makes two false predictions: i) intraposed clauses are subject to intervention effects no less than extraposed ones; ii) the intervener for extraposed clauses can be any NP, not just the potential local controller. Yet sentences like (76a) are perfectly grammatical, and sentences like (76b), although not immediately transparent, are far better than (75a):

(76) a. John was upset that Mary insisted that perjuring himself would be immoral.
b. John knew that Mary insisted that it would be immoral to perjure himself.

Kimball (1971) argued that Super-Equi in extraposition can, and in fact must, be decomposed into two distinct deletion rules: The first one is a standard Equi-NP deletion rule, applying between the "dative" argument of a predicate and the embedded subject; the second one is a long-distance rule, deleting the dative controller under identity with a commanding NP. In a reply to Kimball's arguments, Grinder (1971) noted that there are cases of Super-Equi that cannot be assimilated to the Dative Deletion rule (e.g., (75c)).

Kuno (1975) claimed that the facts in (75) instantiate a general sensitivity of deletion and reflexivization operations to discourse factors such as empathy and point of view. According to this "Direct Discourse" analysis, verbs of communication or mental acts take deep structure complements whose subject are 1st or 2nd person. Thus there is no Super-Equi rule which deletes one NP under identity with another; rather, there is a "logophoric" rule which deletes (underlying) 1st/2nd person pronouns. Kuno derived the complement of

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[17] "The Intervention Constraint:
Super Equi-NP deletion between NP^a and NP^b is blocked if there exists a possible controller NP^c in the deletion path.
Deletion Path
An element e_i is said to be in the deletion path of a deletion transformation T_i involving a controller C_i and a term to be deleted t_i, if at the time of application of T_i:
(a) e_i bears more primacy relations with respect to t_i than does C_i, or
(b) C_i and e_i bear the same primacy relation(s) with respect to t_i, and e_i lies between C_i and t_i in the linear order specified by precedence, and C_i and e_i are not clause mates". [Grinder 1970: 302, 307]

(77a) from (77b) and that of (77c) from (77d). Since subject deletion in (77b) is grammatical, so is (77a), and since it is ungrammatical in (77d), so is (77c):

(77) a. John said that [washing himself in public would disturb Sue].
b. "(Me) washing myself in public would disturb Sue".
c. * John said that [it would disturb Sue to wash himself in public].
d. "It would disturb Sue *(for me) to wash myself in public".

Notice that Kuno's account reduces Grinder's mystery to a new mystery; namely, *why* is it that subject deletion of *for me* is impossible in (77d)? This crucial fact does not follow from the direct discourse analysis, whatever other merits it may have. Furthermore, Kuno incorrectly predicts that since (78a) is ungrammatical, so should be (78b):

(78) a. * "Washing himself in public would disturb Sue".
b. All the people around John thought that washing himself in public would disturb Sue.

Williams (1980) takes control to be a relation between the controller and the entire infinitive whose subject is coreferential with it. In NOC, the infinitive is not directly predicated of the controller, so it is assigned the index *arb*. If nothing further happens, we get arbitrary interpretation for PRO. However two rules guarantee specific reference under certain structural conditions: "Arb rewriting rule I" obligatorily rewrites *arb* as coindexed with an NP which commands and is commanded by it; "Arb rewriting rule II" optionally rewrites *arb* as coindexed with an NP which commands it. Rule I is disjunctively ordered before rule II, so we get "free" control in (79a) but obligatory local control in (79b):

(79) a. John told Mary that it would be important [to leave early].
b. John told Mary that it would be important to Fred [to leave early].

Rules I and II jointly derive the main effect of the intervention constraint of Grinder (1970). Furthermore, the optionality of rule II correctly allows for arbitrary control in the absence of any local controller. However, Williams incorrectly predicts, as Grinder did, that (75b) should be ungrammatical, because *John* is commanded by the infinitive, triggering Rule I. Moreover, Williams' examples in (79) disguise an ambiguity in the predicate *important*: "X is important to Y" can be taken to mean that Y deems X important to Y, or that someone else deems X important to Y, in which case Y's mental state is not involved. Notice that the

first reading is psychological, whereas the second one is not - a crucial distinction in our account. In fact, LD-control *is* possible across a non-psychological *important*, but not across a psychological one, precisely what we predict:

(80) a. Mary knew it would be important to John [PRO to behave herself].
b. ?? Knowing his obsession with manners, Mary was certain it would be important to John [PRO to behave herself].

Notice that only the non-psychological reading is available in (80a); in (80b), where the initial context sets a bias towards the psychological reading, LD-control is very marginal.

Koster (1984) maintains that "apart from some marginal exceptions", all apparent cases of LD-control involve local control by an implicit argument. Koster's proposal is that the controller of PRO is a (lexically) designated argument of the minimal argument structure containing the control complement. This view accounts for OC, but disregards all the intraposition cases like (75c), where LD-control undeniably skips interveners. Furthermore, it incorrectly rules out LD-control in (75b).[18]

Lebeaux (1984, 1985), like Manzini (1983), argues that PRO is unambiguously an anaphor. However, unlike Manzini, Lebeaux claims that PRO is always bound, even in NOC contexts, the binder there being an empty operator. Lebeaux's main point is that the cluster of properties associated with local binding - unique antecedent, c-command and sloppy readings under VP-ellipsis - result from the *mechanism* instantiating local binding, not from anything inherent to anaphors. That mechanism he takes to be predication, in the sense of Williams (1980). In contrast, non-local binding is realized through operator insertion. If the operator is contextually unrestricted, one gets the arbitrary reading for PRO; if it is linked to a grammatical antecedent, one gets long-distance binding. The problem with Lebeaux's analysis is his claim that operator insertion (hence, the option of NOC) is a default operation which applies *only* in the absence of a local controller. This precludes (75b) (and (81) below), contrary to fact.

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[18] An even more restrictive approach is taken by Culicover and Wilkins (1986), who reject examples like (79a). They claim that (i) can only have arbitrary interpretation for the infinitive, since the "antecedent" is a non-referential expletive:

i. Bill believes that it is a drag [to tell the truth].

This judgment is dubious, plausibly biased by the generic nature of the embedded predicate (cf. *Bill believes that it is a drag to wash himself*). Surely the consequence of Culicover and Wilkins' theory, that Super-Equi in extraposition is impossible - is empirically untenable. This might be an accidental flaw of this theory, which does allow implicit control in other contexts.

Manzini & Roussou (1998) conceive control as an abstract relation between a single DP and two predicates (normally, the matrix one and the embedded one); the relation is labeled ATTRACT, although it involves no feature movement in the sense of Chomsky (1995). ATTRACT is subject to a variant of the M(inimal) L(ink C(ondition), requiring the controller to be the closest available DP. If no local DP is available, the predicates are ATTRACTed to C, which hosts an empty operator, yielding arbitrary or LD-control. It is a major theorem of M&R's appeal to the MLC that "an arbitrary PRO can only surface if there is no DP argument in the clause that immediately contains the control clause" (p.33). However, this prediction is false, as shown below:

(81) a. It would help Bill [PRO_{arb} to behave oneself in public]. [Manzini 1983]
b. It is dangerous for babies [PRO_{arb} to smoke around them]. [Kawasaki 1993]
c. It is crucial for the success of this conference [PRO_{arb} to limit oneself to 20 minutes].

By the same logic, M&R predict that LD-control is impossible in the presence of a local DP argument. Therefore they incorrectly exclude (75b) as well. In chapter 5, section 4, we discuss further problems with the suggestion that OC is governed by the MLC.

Next, consider the class of proposals that allow (75b) but fail to rule out (75a). In Bresnan (1982) Super-Equi is treated as an instance of *anaphoric* control (to be distinguished from *functional* control, the counterpart of OC). PRO is a functional element that can be assigned reference either by discourse or by a grammatical antecedent. The choice of antecedent in anaphoric control is subject to the f-command condition; this condition states that every f-structure that contains the controller must contain PRO too, where f-structure is the set of grammatical functions associated with a given predicate (subject, object and indirect object). Bresnan cites (82) in support of this condition:

(82) a. People who know John often discuss [working too hard].
b. * Contradicting himself will demonstrate that Mr. Jones is a liar.
c. Contradicting himself will discredit Mr. Jones.

However, it is far from obvious that Super-Equi in intraposition obeys any such structural condition.[19] It is a well known fact that complicated semantic and pragmatic factors affect the acceptability of these sentences (see Kuno 1975, Williams 1992), however a structural

[19] In fact, some speakers accept examples like (82b).

statement is probably too strong. Richardson (1986) provides the following counterexamples to the f-command condition:

(83) a. Perjuring himself like that proves that Mr. Jones is an unreliable witness.
b. Storming out of the room that way after losing the game convinced everyone that John is very immature.

More important, Bresnan fails to account for Grinder's original intervention effect: *Mary* in (75a) f-commands PRO but still cannot control it. Further problems with Bresnan's theory of functional control are discussed in Chapter 5.

Manzini (1983) restates the problem of OC versus NOC in the framework of GB binding theory. According to Manzini, PRO is uniformly an anaphor, hence falls under Condition A of the binding theory. In OC contexts - prototypically complement control - there is a "domain governing category", namely the matrix clause, within which a controller must be found. In NOC contexts - prototypically Super-Equi - there is no "domain governing category", hence PRO can refer freely.

As pointed out in section 5.2, there are non-trivial empirical difficulties with the attempt to reduce control to the binding theory. More relevant to the present discussion is Manzini's prediction that no locality effects will be observed in extraposition. For Manzini, PRO in (75b) has no domain governing category because it has no accessible subject (the infinitive being co-superscripted with the expletive *it*, violating i-within-i). This fails to exclude (75a). Nonetheless, it should be said that Manzini (1983) was the first study of control to discuss cases of extraposition that violate Grinder's generalization, which has misled the field for many years.

Bouchard (1984) argues that PRO is an anaphor in OC environments and a pronoun in NOC environments, this being functionally determined by whether or not PRO is governed by its controller. Bouchard's idea is that S'-deletion is blocked in both intraposition and extraposition (the latter being derived from the former), so that PRO is protected by the S' projection from external government. This proposal, like Manzini's, fails to account for Grinder's intervention effect, since it predicts (75a), with a pronominal PRO, to be as good as (84):

(84) Mary knew that it would disturb John [for her to perjure herself].

Moreover, as shown in section 5.3, PRO in NOC behaves like a logophor rather than a pronoun.

Epstein (1984) applies Kimball's (1971) original insight about control by implicit datives to the so-called arbitrary control cases. Thus, according to Epstein, a sentence like (85a) contains a *pro*-argument selected by the adjective, which undergoes QR at LF, binding its own trace and PRO, as in (85b):

(85) a. Josh said it is fun to play baseball.

b. Josh said $[_{S'}$ $(\forall x_1)$ $[_S$ it is fun (for) x_1 $[_{S'}$ (for) $[_S$ x_1 to play baseball]]]]

Epstein's analysis nicely captures the scope properties of arbitrary control, however the interpretation of these constructions is more accurately captured by generic quantification (see Lebeaux 1984, Kawasaki 1993). Epstein has to account for the peculiar fact that *pro* in English is restricted to the benefactive position in adjectives and no other position. Furthermore, there are cases of arbitrary control that cannot be reduced to implicit dative control, like intraposition or the cases in (81).[20]

Williams (1992) reconstructs his own distinction between OC and NOC in terms of direct predication vs. logophoric control. The latter subsumes Super-Equi and certain absolutive adjuncts. Williams' observation is highly reminiscent of Kuno's (1975) "direct discourse" analysis, and I agree with both authors that logophoricity plays a role in LD-control. The problem with Williams' analysis is that it too fails to distinguish intraposition from extraposition, subsuming the latter also under logophoric control. Thus (75a) remains unexplained in this analysis.

Hornstein (1999) reduces OC to NP-movement (PRO=NP-trace), and consequently the M(inimal) D(istance) P(rinciple) of control to the M(inimal) L(ink) C(ondition) on movement. There are non-trivial problems with this endeavor which we discuss in chapter 5. Hornstein further claims that PRO in NOC is really small *pro*, inserted as a last resort strategy in island environments (e.g., sentential subjects). Thus, like Bouchard (1984), he fails to account for the logophoric nature of PRO in NOC. Hornstein does not directly discuss extraposition, but it is hard to see how his analysis can distinguish between (75a-b). To the extent that extraposition displays NOC, his proposal incorrectly permits (75a); to the extent that postverbal infinitives are not islands, (75b) is incorrectly ruled out.

Turning to (74b), the challenge of explaining the OC/NOC distinction, it seems that theories in the GB tradition fare better than alternative, mostly lexical theories of control. Thus, in Williams (1980) the notion of *command* plays a crucial role in explaining why infinitives display OC in certain environments and NOC in others. For Manzini (1983), it is

[20] Roeper (1987) also entertains the view that arbitrary control is control by an implicit "benefactive" (although unlike Epstein, he does not posit QR). Similar comments apply to his analysis.

the notion of *government* that distinguishes complement from subject infinitives; and for Hornstein (1999) it is the notion of *islandhood* which determines which infinitives will display OC and which NOC. The present analysis agrees with Hornstein's on this point, reducing the distributional OC/NOC contrast to the CED.

Common to all these approaches is the idea that certain structural positions, quite independently of control, have properties that yield the OC/NOC distinction once an infinitive occurs in them. By contrast, lexical approaches to control, although aware of the contingency of the OC/NOC distinction on the structural position of the infinitive, have no means to *explain* it. Thus, in LFG (Bresnan 1982) complement infinitives are "open grammatical functions" but subject and adjunct ones are "closed grammatical functions", and only the former are subject to functional control (OC). However, it is not explained what is it about the subject/adjunct position that makes it a "closed function". Likewise, in HPSG (Chierchia and Jacobson 1986) it is stipulated that complement infinitives denote properties and subject ones denote propositions; yet it is not explained why this is so (and not, say, the other way round). In that respect, it seems that an explicit syntactic analysis is an indispensable ingredient in any adequate theory of control.

Summary

- **Extraposition constructions: OC under psychological predicates, NOC elsewhere.**
- **Intraposition constructions: NOC in all contexts.**
- ***The OC Generalization***

  In a configuration [... DP_1 ... Pred ... [$_S$ PRO_1 ...] ...], where DP controls PRO: If, at LF, S occupies a complement/specifier position in the VP-shell of Pred, then DP (or its trace) also occupies a complement/specifier position in that VP-shell.
- ***Extraposition***

  VP-internal clauses must be peripheral at PF.
- ***Chain Interpretation***

  Any link in a chain may be the LF-visible link.
- ***Argument Projection***

  a. EXPERIENCER is generated above CAUSER.

  b. CAUSER is generated above GOAL/PATIENT/THEME.
- **Distribution: OC - in transparent infinitives; NOC - in islands.**
- **PRO in NOC is a logophor.**

Chapter 4: Control and Predication

Introduction

A question that is central to the study of control is how controlled infinitives are interpreted. Specifically, what is the semantic procedure associating the infinitive, or PRO, with the controller. Indeed, whether the significant relation is controller-infinitive or controller-PRO is already a contentious issue. There are two major schools of thought on these matters, which I will term the *predicational* and the *propositional* approaches.

The predicational approach holds that infinitives in OC denote unsaturated predicates (properties). The open position corresponds to the subject of the infinitive, which under some versions is projected as PRO and under others is completely missing from the syntax (the latter take controlled infinitives to be bare VP's). If PRO is present, then it is merely a lambda-variable. The semantic procedure associates the controller with the infinitive - by predicating the latter of the former; some versions take this predication to apply in the course of the semantic composition of the sentence, others take it to be induced by a lexical entailment of the control predicate ("meaning postulates"). This cluster of theories is represented in Bach (1979, 1982), Williams (1980), Dowty (1985), Lebeaux (1985), Chierchia (1984, 1989, 1990) and Clark (1990).

The propositional approach holds that infinitives in OC denote closed propositions, just like finite clauses do. PRO is projected in the syntax and saturates the subject position of the infinitive. The semantic procedure associates the controller with PRO via an anaphoric relation of sorts. Theories which assume some version of this story are Chomsky (1980, 1981), Koster & May (1982), Manzini (1983), Bouchard (1984), Koster (1984) and Borer (1989). The present thesis is situated within this camp as well.

Notice that the issue under debate is not the existence of PRO; both approaches are compatible with a syntactic PRO (a point to which we return below). Rather, at stake is the manner in which PRO composes with the infinitival VP. This determines the semantic type of the infinitive, and the question is: Is the infinitive a predicate or a proposition?

This chapter brings to bear some novel arguments on this question. I will show that within a particular empirical domain - adjectival complementation - the propositional approach can express natural generalizations that the predicational approach fails to. In particular, we will see that some subject-gap infinitives pattern with gapless infinitives while others pattern with object-gap infinitives. The former type of subject-gap infinitives will be shown to exemplify control, whereas the latter will be shown to exemplify predication. Distributionally, the former are found under psych-adjectives, the latter under non-psych adjectives. This clear division is expected if control in fact involves a different mechanism than predication.

This chapter is organized as follows: Section 1 presents the empirical puzzle, partly noted by Faraci (1974); psych-adjectives *tolerate* at most a subject gap in their complement whereas non-psych adjectives *require* exactly one gap. Section 2 proposes an analysis which groups the former type with control constructions and the latter with complex-predicate constructions. It is further argued that psych-adjectives denote a binary relation between an experiencer and a (propositional) subject-matter argument, while non-psych adjectives only select a theme argument. An infinitive appearing with the latter kind of adjective is a predicate-modifier.

Section 3 establishes the argument-modifier distinction between the two kinds of infinitives under four diffferent tests (ellipsis, extraction, extraposition and preposition stranding). In section 4 I discuss two apparent problems to the present analysis - the distribution of arbitrary PRO and the *easy*-class of adjectives - and show that their properties are orthogonal to the cases at hand. Section 5 derives a surprising crosslinguistic correlation between subject-gap complements to non-psych adjectives and subject infinitival relatives; it is shown that this correlation follows from the propositional approach to control but not from the predicational one. In section 6 we spell out the full implications of this study to the general debate between the two approaches to control.

1 Adjectives and Infinitival Complements: The Puzzle

Faraci (1974) made the observation that the possibility of "object deletion" in a *for*-infinitival complement of a predicate correlates with the semantic properties of the predicate:

(1) a. The patient is ready/anxious/eager for the doctor to operate on him.
b. * The patient is ready/anxious/eager for the doctor to operate on ___.
c. The tumor is ready for the doctor to operate on ___.
d. * The tumor is ready for the doctor to operate on it.

[Faraci 1974: 80-82]

Faraci's generalization was that "psychological predicates do not take complements with deleted objects" (p.81). Notice that the predicate *ready* is ambiguous between a psychological reading, as in (1a,b), and a "material", non-psychological reading, as in (1c,d). We will notate those as $ready_P$ and $ready_M$, respectively.

To avoid confusion, let us give a precise definition of "psychological". The definition merely spells out intuitive semantic entailments:

(2) Let P be an n-place predicate. P is psychological iff:

$P(<x_1...,x_i, ...,x_n>)=1 \Rightarrow \exists x_i \exists s(x_i \text{ is in } s)$ [s=some mental state]

That is, a predicate is psychological if and only if it follows from the truth of the minimal proposition in which it occurs that some argument of the predicate is an *experiencer*, i.e., an individual in a certain mental state. For example, if *John is afraid* is true, then John is necessarily in a certain mental state, namely fright. However, if *John is quiet* is true, then nothing follows with respect to John's mental state; he *could* be quiet in virtue of being in a variety of mental states, but his being in any one of them is not necessary.[1] I take it that native speakers have direct, pre-theoretical access to intuitions of this sort (a useful test is to ask yourself whether the predicate can be true of an unconscious person). Therefore, whether or not a particular predicate is psychological can be established independently of any grammatical process which is alleged to be sensitive to this distinction.

Faraci's generalization, to the best of my knowledge, has never been explained. Before we attempt to explain it, we should determine its actual scope. It turns out that related facts, not discussed by Faraci, obtain when the subject of the infinitival complement is null. Thus, consider the following cases with psychological adjectives:

(3) a. $John_1$ is $ready_P$ [e_1 to serve his country].
b. $John_1$ is $ready_P$ [e_1 to be served].
c. * $John_1$ is $ready_P$ [e_{arb} to serve e_1].

(4) a. $Mary_1$ was happy [e_1 to assist anyone].
b. $Mary_1$ was happy [e_1 to be assisted].
c. * $Mary_1$ was happy [e_{arb} to assist e_1].

(5) a. $Bill_1$ is afraid [e_1 to tell the truth].
b. $Bill_1$ is afraid [e_1 to be told the truth].
c. * $Bill_1$ is afraid [e_{arb} to tell the truth to e_1].

In these examples, the matrix subject (the *experiencer*) can be associated with a subject gap but not with an object gap in its complement. Compare the following examples with non-psychological adjectives, where the matrix subject (the *theme*) can - in fact *must* - be associated with either a subject or an object gap:

[1] The discussion is limited to stage level properties, which unlike individual level properties, can be reliably deduced from episodic statements.

(6) a. The soup$_1$ will be ready$_M$ [e$_1$ to be served in 5 minutes].
b. * The soup$_1$ will be ready$_M$ [e$_{arb}$ to serve it$_1$ in 5 minutes].
c. The soup$_1$ will be ready$_M$ [e$_{arb}$ to serve e$_1$ in 5 minutes].

(7) a. The book$_1$ is available [e$_1$ to be read].
b. * The book$_1$ is available [e$_{arb}$ to read it$_1$].
c. The book$_1$ is available [e$_{arb}$ to read e$_1$].

(8) a. This story$_1$ is not fit [e$_1$ to be printed].
b. * This story$_1$ is not fit [e$_{arb}$ to print it$_1$].
c. This story$_1$ is not fit [e$_{arb}$ to print e$_1$].

The contrast is nicely illustrated by the famous ambiguity of (9a):

(9) a. The chicken is ready to eat.
b. The chicken$_1$ is ready$_P$ [e$_1$ to eat].
c. The chicken$_1$ is ready$_M$ [e$_1$ to eat].
d. * The chicken$_1$ is ready$_P$ [e$_{arb}$ to eat e$_1$].
e. The chicken$_1$ is ready$_M$ [e$_{arb}$ to eat e$_1$].
f. The chicken$_1$ is ready [e$_1$ to be eaten].

On top of the familiar "active-passive" ambiguity of (9a) there is an additional ambiguity in the sense of *ready*. Interestingly, we do not get all four logically possible combinations: When the bound gap is in the subject position, both senses of *ready* are available (9b,c).[2] However, in an object gap construction, *ready* cannot be interpreted psychologically; thus, (9e) is a possible reading of (9a), but (9d) is not. Notice that there is nothing intrinsically anomalous in the interpretation (9d); indeed, the subject gap construction (9f) *does* admit that reading, whereby the chicken is in a suicidal state of mind. So contrary to common belief, (9f) and the "passive" reading of (9a) are *not* synonymous, as the former admits a psychological reading absent from the latter.

[2] The reading in (9c) is accessible, although pragmatically odd, given the animacy of the matrix subject; it requires one to view the chicken as some kind of a "machine". This reading becomes natural with inanimate subjects, e.g., *The computer is ready to work.* I am grateful to Noam Chomsky for bringing the paradigm in (9) to my attention. Chomsky's observation launched my investigation into complex predicates.

A parallel paradigm is exhibited by the predicate *need*, which is sometimes ambiguous between a psych reading and a non-psych, modal reading, and sometimes not (D. Pesetsky, p.c.):

(10) a. John needs [for us to talk to Mary].
b. $John_1$ needs [e_1 to talk to Mary].
c. $John_1$ needs [e_{arb} talking to e_1].
d. $John_1$ needs [e_1 to be talked to].

(10a) only has the psych reading: John is in a "needy" state of mind, consisting in our talking to Mary. (10b) is ambiguous between that reading and a deontic modal reading - John has to talk to Mary.[3] Interestingly, (10c), with the object gap, only has the latter reading; it cannot mean that John is in a "needy" state of mind consisting in someone's talking to him, although that is a perfectly sensible reading, available in (10d).[4]

All of the facts in (1)-(10) can be captured by two simple statements. The following generalization subsumes Faraci's cases as well as the cases with null subjects:

(11) *Generalization of Infinitival Complementation* (Version I)

Given a predicate P that takes an infinitival complement C:
a. If P is psychological, C contains at most one bound gap - in subject position.
b. If P is non-psychological, C contains exactly one bound gap (subject or object).

It is the task of the next section to derive (11) from deeper principles.[5]

2 Semantic Selection and Clause-Typing

The analysis I develop is keyed to the intuition that psych-adjectives and non-psych-adjectives, of the sort discussed above, differ radically in their argument structures. In

[3] In fact, the deontic sense of (10b) is itself ambiguous between a relational and a propositional modality (this is clearer with quantificational subjects, e.g. *Someone needs to talk to Mary*). This ambiguity is orthogonal to the discussion in the text.

[4] The object gap construction (10c) must be expressed with a gerundive complement (e.g., **John$_i$ needs to talk to e_i*) for independent reasons. English does not allow object-gap infinitivals in case positions (Clark 1990).

[5] Generalization (11) restricts attention to bound gaps; the distribution of arbitrary PRO is governed by independent principles, to which we return in section 4.1.

order for an individual to be an *experiencer*, there has to be something which is experienced; in Pesetsky's (1995) terminology, there has to be a *target/subject-matter* argument. Thus, psych-adjectives are relational, minimally dyadic.[6] In contrast, being a *theme*, that is, an argument of a non-psych-adjective, does not seem to imply the presence of any other argument. Correspondingly, non-psych-adjectives are monadic. Whereas the infinitival complement is an argument of a psychological predicate, namely the *target/ subject-matter* argument, it is *not* an argument of a non-psych-adjective. What is it then? I suggest, and demonstrate below, that it is a predicate modifier in the latter case.

Let us now state those intuitions formally:

(12) *Semantic Selection*

a. A psych-adjective denotes a two place relation between an individual (*experiencer*) and an eventuality (*target/subject-matter*).

$$A_P(<DP_e, CP_{<s,t>}>)$$

b. A (non-psych) "material" adjective denotes a one place property of an individual (*theme*). That property, in turn, can be modified by a predicative infinitival.[7]

i. $A_M(DP_e)$ ii. $f(CP_{<e,st>}, A_M)(DP_e)$

Semantically, (12) requires there to be two types of infinitives: Propositional and predicative.[8] We now have to spell out the syntax-semantics mapping that provides those two types. I will adopt the standard assumption that null-operator constructions, formed by movement, create predicative expressions. More precisely, a null operator in the syntax is interpreted as a lambda operator in the semantics, abstracting over the variable left in the trace position (Heim & Kratzer 1998). I will further assume that PRO is a free variable at

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[6] This is an oversimplification. A few psych-adjectives can optionally appear with no "notional" subject matter argument (e.g., *sad, happy*). However, as far as I can tell, all of them accommodate a dyadic interpretation as well *(sad/happy about* x). The same is not true of non-psych adjectives. For the purposes of our discussion it is sufficient that an infinitival complement to a non-causative psych-adjective saturates the target/subject matter argument slot of that adjective. I return to causative adjectives in section 4.2.

[7] I leave the precise semantics of the modification relation, f in (12b-ii), unspecified. An informal paraphrase of this relation is *with respect to*; thus (9a) is roughly interpreted as 'The chicken is ready with respect to eating'. Often a purpose or utility is implied (as in (7a)), but this is not necessary (e.g., (15b) below).

[8] By "propositional" I simply mean a saturated, <s,t>-type entity, as opposed to the unsaturated, predicative <e,<s,t>>-type entity. The term thus covers propositions, facts, and different kinds of eventualities.

the infinitive's level; it may be bound by a local antecedent (obligatory control) or by some (existential or generic) operator at the matrix level (arbitrary control). This view of PRO is in fact denied in "thematic" treatments of control (Chierchia 1984, 1989, Dowty 1985), which take controlled infinitivals to denote predicates; I believe the present discussion strongly argues against that view, as will become clear in section 6.

Given that an object gap can only be a trace of a null operator,[9] whereas a subject gap can either be that or PRO, we obtain three syntactic types of infinitival complements, that map onto two semantic types:

(13) *Semantic Typology of Infinitival Clauses*

a. $[_{CP}\ Op_1[_{IP}\ DP/PRO_{arb}...[_{VP}\ ...\ t_1]\ ]]$ $\Rightarrow$ CP denotes a predicate (<e,<s,t>>)
b. $[_{CP}\ Op_1[_{IP}\ t_1...\ [_{VP}\ ...\ ]\ ]]$ $\Rightarrow$ CP denotes a predicate (<e,<s,t>>)
c. $[_{CP}\ [_{IP}\ DP/PRO...[_{VP}\ ...\ ]$ $\Rightarrow$ CP denotes a proposition (<s,t>)

Case (13a) is illustrated in (14), case (13b) in (15) and case (13c) in (16):

(14) a. The book$_1$ is available $[_{CP}\ Op_1$ for [us to read t_1]].
b. The book$_1$ is available $[_{CP}\ Op_1\ [PRO_{arb}$ to read t_1]].

(15) a. The book$_1$ is available $[_{CP}\ Op_1\ [\ t_1$ to be read]].
b. The volcano$_1$ is ready$_M$ $[_{CP}\ Op_1\ [\ t_1$ to erupt]].

(16) a. The patient is eager $[_{CP}$ for the doctor to operate on him].
b. Mary$_1$ is reluctant $[_{CP}\ PRO_1$ to be assisted].

Notice the important difference between (15) and (16b): Whereas the subject gap is an A-bar variable in the former, it is PRO in the latter. This yields a difference in the semantic type of the infinitive (predicative in (15), propositional in (16b)), which in turn is dictated by the matrix predicate - non-psychological in (15), psychological in (16b). In the next section we will see that there are strong empirical reasons to distinguish those two constructions, despite their superficial similarity.

[9] Throughout the discussion I am ignoring NP-gaps in passive and unaccusative constructions. These gaps are bound internal to the infinitive (by the derived subject), hence have no effect on its overall semantic type.

The combination of (12) and (13) fully derives the generalization (11). By (12a), a complement to a psych-adjective must be propositional. (13) provides exactly two varieties of propositional complements - one with no gap, the other with a subject gap (interpreted as controlled PRO); hence, (11a). By (12b), a complement to a non-psych-adjective must be predicative. (13) provides exactly three varieties of such complements: One with an overt subject and an object gap, another with a null subject (interpreted as PRO_{arb}) and an object gap, and yet another with a subject gap (interpreted as a variable bound by a null operator); hence, (11b).

While the theoretical assumptions embodied in (13a,c) are relatively uncontroversial, those in (13b) are far from obvious. The latter amounts to the claim that subject gaps in infinitives may be variables locally bound by an A-bar operator. This is normally assumed to be impossible in the case of overt operator movement, as wh-movement and topicalization:

(17) a. It is unclear [who_1 [PRO_{arb} to invite t_1 for lunch]].
b. * It is unclear [who_1 [t_1 to invite Mary for lunch]].

(18) a. $Cannibals_1$, it unusual [PRO_{arb} to invite t_1 for lunch].
b. * $Philologists_1$, it unusual [t_1 to invite cannibals for lunch].

Such facts are standardly attributed to some case distinction between the subject and object position in infinitivals, together with the requirement that *wh*-chains be case-marked. However, there are good reasons to believe that whatever constraint rules out (17b) and (18b) should be restricted to *overt* operators. In fact, under the minimalist copy-theory of movement, the analogy between overt and covert operators loses much of its force. The relevant LF-representations are the following:

(19) a. * It is unclear [$_{CP}$ who_1 [~~who~~$_1$ to invite Mary for lunch]].
b. The $volcano_1$ is $ready_M$ [$_{CP}$ PRO_1 [PRO_1 to erupt]].

The *wh*-chain in (19a) is blocked for the same reason that *who* cannot occupy the subject position of the infinitive. In this respect, the PRO-chain in (19b) is licit, since PRO *can* occupy that position. If some other constraint blocks that chain, it should be a constraint that refers to the higher, A-bar position of PRO. As we will see below, whereas (19a) is universally excluded, (19b) is a language-specific option. The question to ask, then, is what makes PRO a possible *head* of an A-bar chain in some languages but not others;

notice that this is a very different question from what makes a *wh*-word an impossible *tail* of an A-bar chain in the subject of infinitives. I will not answer either question in this paper; my only point is to make it clear that (19a) and (19b) fall under different licensing mechanisms, hence the former can furnish no conceptual argument against the latter.[10]

Empirical considerations also support that conclusion. As Clark (1990) convincingly argues, null operator chains in English can be tailed by subject gaps. This is manifested in cases where an infinitive with a null subject occurs in a predicative position:

(20) a. The money is [to be deposited, not wasted].
b. The right person [to fix the sink] could not be found.

Both the purpose clause in (20a) and the relative clause in (20b) are predicated of the matrix subject, which binds the subject gap in the infinitive. In Clark's analysis, the matrix subject provides a range of quantification for the null operator which is moved from the subject gap position:

(21) a. The money$_1$ is [Op$_1$ [t$_1$ to be deposited, not wasted]].
b. The right person$_1$ [Op$_1$ [t$_1$ to fix the sink]] could not be found.

Discussing a wide variety of null operator constructions in English, Clark reaches the following generalization: A null operator chain in [$_{CP}$ Op$_1$ [... t$_1$ ...]] is licit if and only if either t$_1$ or CP (or both) are not in a case position. Otherwise, the operator must be realized overtly (e.g., a wh-word). The generalization is derived from the chain condition and a lexicalization requirement on case-marked elements. What is important for our purposes are two points. First, there is independent evidence in English that subject-gap infinitives can be predicative, that is, option (13b) is available; therefore, the claim that (15) is yet another instance of that option is not so outlandish as it may first appear, both conceptually and empirically. Secondly, the availability of this option is possibly related to case theory. As I show in section 5, the latter claim predicts certain crosslinguistics correlations, that are strikingly confirmed.

Given our claims about the different argument structure of psych and non-psych adjectives, and the semantic typology of infinitives, we expect a "split" between cases of type (22a) and cases of type (22b,c):

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[10] I will continue to apply the traditional notation for null operator chains [Op$_1$...t$_1$] throughout, however the reader should note that the case of interest (13b) should in fact read like (19b), i.e. [PRO$_1$...PRO$_1$].

(22) a. John is ready$_P$ [PRO$_1$ to eat the soup].

b. The soup$_1$ is ready$_M$ [Op$_1$ [t$_1$ to be eaten]].

c. The soup$_1$ is ready$_M$ [Op$_1$ [for us/PRO$_{arb}$ to eat t$_1$]].

To the extent that one can find linguistic tests that are sensitive to the semantic type of the infinitive, (22b) should pattern with (22c), rather than (22a). This is in spite of the fact that (22a,b) both involve subject gaps, while (22c) involves an object gap. If what I claimed above is correct, the gap's position is immaterial in the present context; what is crucial instead is whether or not the matrix adjective is psychological. The next section presents arguments that demonstrate this pattern.

3 Argument-Modifier Asymmetries

The hypothesis put forward in (12) is that an infinitive under a psych-adjective is an *argument* of the adjective but an infinitive under a non-psych-adjective is a *modifier* of the adjective. We have already seen that this distinction underlies the effects summarized in generalization (11). Let us turn to other contexts that bring to light the same distinction.

Preliminary observations about the adjectives we mentioned follow naturally from the psych/non-psych distinction. Thus, certain languages lexicalize the psychological and the material sense of *ready* in two different items. In English, *ready* is ambiguous, but (the adjective) *prepared* can only have the psych reading (e.g., **Dinner is prepared to eat*). Conversely, in German *bereit* is ambiguous but *fertig* only has the non-psychological reading. Such patterns of lexicalization are expected if indeed the ambiguity we observe is not simply pragmatic but is grammatically encoded at the level of argument structure.

Moreover, it seems that the infinitives occuring under the two kinds of *ready* are interpreted differently. The relevant contrast, which is subtle but real, has to do with the modal force of the infinitive. Consider the following pair:

(23) a. # John is ready$_P$ to forgive Mary and not to forgive Mary.

$\Rightarrow$ b. John entertains contradictory attitudes (of "readiness").

c. $\forall w_r\ p(w_r) \wedge \forall w_r\ \neg p(w_r)$ [w_r=readiness$_P$ world]

(24) a. The computer is ready$_M$ to use and not to use.

$\not\Rightarrow$ b. The computer has contradictory properties.

c. $\exists w_r\ p(w_r) \wedge \exists w_r\ \neg p(w_r)$ [w_r=readiness$_M$ world]

The oddity of (23a) stems from the intuition that the embedded conjunction expresses a contradiction; the only way to make sense of it is to grant the entailment in (23b). The entire utterance is not strictly contradictory, though, since humans frequently entertain contradictory beliefs or desires. Thus (23a) has the same status as sentences like *Mary wished to finish this affair but still let it go forever.* Whatever cognitive model we resort to in order to make sense of such examples (simultaneous multiple "egos", temporal individuation of different "stages" of the same person), it is quite hard to avoid a contradiction without such a model.

Interestingly, (24a), with a non-psychological *ready*, does not force a comparable accommodation, since it does *not* entail (24b). (24a) might be pragmatically marked, simply because it seems to convey little information, if anything; but one need not resort to complex models of "computer identity" in order to understand it.

I believe that the source of the embedded contradiction in (23a) and the lack thereof in (24a) lies in the different modal force of the infinitives in these examples. The complement of $ready_P$ is interpreted with *universal* modality. Notice that this is a general characteristic of propositional attitude contexts - they all induce universal quantification over belief/desire worlds. $Ready_P$ being a psychological predicate, it fits in with this pattern. Consequently, the embedded conjunction yields a logical contradiction, as shown in (23c). The complement of $ready_M$, however, is interpreted with *existential* modality, much like the complement of an ability modal.[11] Consequently, the embedded conjunction yields no logical contradiction, as shown in (24c).

This interpretive contrast between the complement to a psych-adjective and the complement to a non-psych adjective provides independent support for the distinction drawn between (13b-c): The predicative infinitival is associated with existential modality, while the propositional one is associated with universal modality. Although this particular clustering is not an a priori necessity, its existence does argue against an alternative view, namely one that does not distinguish in any way between the two types of complements.

Consider now some syntactic tests which further distinguish these constructions. A psych adjective may occur without an infinitival complement only if the latter is explicit in the context (i.e., ellipsis), whereas a non-psych adjective allows free complement omission:

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[11] Notice that ability *can*, just like $ready_M$, may be predicated of inanimate subjects, as in *This car can run for years without any mechanical problems.* I suspect that a closer analysis will reveal that the meaning of $ready_M$ incorporates that of ability *can* as a subcomponent.

(25) a. A: Someone should do the laundry, you know.
B: Well, I'm willing (to do the laundry).

b. A: The laundry is really dirty, you know.
B: Well, I'm willing *(to do the laundry).
B': Well, the washing machine is available (to do the laundry).

This contrast is expected if the infinitive is an argument of the psych-adjective but a modifier of the non-psych adjective.

It is a familiar fact about movement operations that they are sensitive, inter alia, to the semantic role of the category from which movement takes place. In particular, arguments are transparent to extraction but non-arguments - namely, adjuncts and modifiers - are opaque. This furnishes a straightforward test for the present proposal: Extraction should be possible from a complement of a psych-adjective but not from that of a non-psych-adjective. The facts confirm this prediction (the answers given in parentheses are intended to rule out upstairs readings for the wh-word):

(26) a. When$_1$ is John ready$_P$ to test the car t_1? (answer: tomorrow)
b. How$_1$ is John ready$_P$ to eat the dish t_1? (answer: without chopsticks)

(27) a. * When$_1$ is the car ready$_M$ to test t_1? (answer: tomorrow)
b. * When$_1$ is the car ready$_M$ to be tested t_1? (answer: tomorrow)
c. * How$_1$ is the dish ready$_M$ to eat t_1? (answer: with chopsticks)
d. * How$_1$ is the dish ready$_M$ to be eaten t_1? (answer: with chopsticks)

(28) a. How is the police willing to inspect the evidence t_1? (answer: with care)
b. * How is the evidence available (for the police) to inspect t_1? (answer: with care)
c. * How is the evidence available to be inspected t_1? (answer: with care)

Of particular interest here is the fact that the passive infinitives (27b,d) and (28c) under a non-psych-adjective pattern with the active ones (27a,c) and (28b) in resisting extraction, and not with the infinitives under psych-adjectives (26) and (28a), although they share with the latter (but not with the former) the property of having only one externally visible gap.

Next, consider extraposition of the infinitival clause. In VP-fronting configuration, the infinitive must be adjacent to a non-psych-adjective but not to a psych-adjective.

Extraposition is not absolutely impossible in the former case (prosodic factors presumably involved as well), but the contrast with the latter case is clear enough:

(29) a. Ready_P/anxious/willing to serve (his country) though I'm sure John is,
I doubt that he is anxious to be posted in Bosnia.
b. Ready_P/anxious/willing though I'm sure John is to serve (his country),
I doubt that he is anxious to be posted in Bosnia.

(30) a. Ready_M to serve (be served) though I'm sure the soup is,
I doubt that the guests will want it on such a hot day.
b. ?? Ready_M though I'm sure the soup is to serve (be served),
I doubt that the guests will want it on such a hot day.

(31) a. Available to use (be used) though I'm sure this computer is,
I'd rather stick to my old typewriter.
b. ?? Available though I'm sure this computer is to use (be used),
I'd rather stick to my old typewriter.

One may wonder why modifiers cannot be extraposed the way arguments can. This may appear puzzling at first sight, given that restrictive relative clauses - undoubtedly modifiers - do extrapose quite freely. However, notice that extraposition of relative clauses is contingent on the presence of a complementizer, which is otherwise optional. This is visible in both finite and nonfinite relative clauses:

(32) a. I saw the man (that) Mary invited to the party yesterday.
b. I saw the man yesterday *(that) Mary invited to the party.

(33) a. A book (for you) to read arrived yesterday.
b. A book arrived yesterday *(for you) to read.

Given this condition on extraposition of predicative clauses, the fact that the infinitival complements in (30) and (31) resist extraposition is no longer puzzling: They are not introduced by a lexical complementizer, a pre-requisite for extraposition of non-arguments. We therefore expect the object-gap cases to become acceptable in the presence of the complementizer *for*:

(34) a. Ready$_M$ though I'm sure the soup is for the waiter to serve,
I doubt that the guests will want it on such a hot day.

d. Available though I'm sure this computer is for me to use,
I'd rather stick to my old typewriter.

The asymmetry in extraposition tells us that infinitives under psych-adjectives are of a different nature than those under non-psych adjectives: Whereas the former can freely extrapose just in virtue of being arguments,[12] the latter must have recourse to a strategy (overt complementizer selection) which characterizes extraposition of predicative clauses in general.

A fourth context that distinguishes arguments from modifiers (or adjuncts) is preposition stranding. Both psych and non-psych adjectives can freely take *for*-PP's:

(35) a. John is ready$_P$ for the exam.
b. The soup is ready$_M$ for dinner.

(36) a. Few journalists are eager for this kind of job.
b. Few journalists are available for this kind of job.

However, a *what*-question can be answered with an infinitive only in the psych-variant; the non-psych variant is marginal at best:

(37) a. John is ready$_P$ to take the exam.
b. What is John is ready$_P$ for? To take the exam.
c. Few journalists are eager to cover this story.
d. What are few journalists eager for? To cover this story.

(38) a. The soup is ready$_M$ to eat / be eaten.
b. ?? What is the soup ready$_M$ for? To eat / be eaten.
c. Few journalists happen to be available to cover this story.[13]
d. ?? What do few journalists happen to be available for? To cover this story.

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[12] Notice that this is a general property of arguments, not just infinitival ones:

i. How proud do you think John will be of his son when he hears the news?
ii. Proud though I'm sure John will be of his son when he hears the news,
he may feel uncomfortable with the public attention.

[13] The use of *happen to* is intended to suppress any psychological interpretation of *available*.

The following examples, with unaccusative embedded verbs, illustrate the same point perhaps more sharply:[14]

(39) a. The rock ready$_M$ to fall.
b. * What is the rock ready$_M$ for? To fall.

(40) a. The volcano is ready$_M$ to erupt.
b. * What is the volcano ready$_M$ for? To erupt.

The failure of preposition stranding with non-psych adjectives is in fact quite significant. The traditional treatment of infinitival complements to these adjectives assimilates them to purpose clauses (Faraci 1974, Bach 1982, Chierchia 1989). However, it is a well-known fact that purpose clauses can be questioned with no comparable effect on acceptability:

(41) a. What did John buy this book for? To read to his children.
b. What did Mary send John for? To obtain the secret documents.

If complements to non-psych adjectives are genuine purpose clauses, then their incompatibility with preposition stranding is mysterious (at least in the non-unaccusative cases). If, on the other hand, they are predicate modifiers, then we expect them to contrast with arguments in this respect.[15]

4 Two Apparent Problems

Before we turn to some crosslinguistic evidence for the proposed analysis (section 5), we should discuss some consequences that appear, at first sight, to be problematic. The first issue concerns the impossibility of arbitrary control in complements to psych-adjectives, even when the latter are propositional; the second issue concerns the status of *tough*-adjectives in this system, which are psychological but nonetheless take object-gap complements. Let us consider each point in turn.

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[14] I suspect that (38b,d) are not as bad as (39b)/(40b) due to irrelevant reasons. In the former case, although the modifier reading of *for* is ruled out, a residual *purpose* reading can still associated with the embedded predicate. In the unaccusative cases (39b)/(40b) the purpose reading is quite implausible.
[15] See Chierchia (1989) for the proposal that purpose clauses are arguments of "augmented predicates".

4.1 No PRO_{arb} Under Psych-Adjectives

The analysis based on semantic selection correctly rules out object gaps under psych-adjectives. However, it still leaves open the possibility of arbitrary control:

(42) a. The chicken$_1$ is ready$_M$ [PRO_{arb} to eat e_1].
b. * The chicken$_1$ is ready$_P$ [PRO_{arb} to eat e_1].
c. * The chicken$_1$ is ready$_P$ [PRO_{arb} to eat it$_1$].

(43) a. Sally$_1$ is available [PRO_{arb} to consult e_1].
b. * Sally$_1$ is willing [PRO_{arb} to consult e_1].
c * Sally$_1$ is willing [PRO_{arb} to consult her$_1$].

Our theory so far predicts the contrast between the (a) and the (b) cases: Since an object-gap infinitive is necessarily predicative, it can modify a non-psych adjective but cannot satisfy the selectional requirement of a psych-adjective to take a propositional complement. However, the (c) cases do satisfy this requirement in virtue of filling the object gap; thus the contrast between the (a) and the (c) cases cannot be reduced to semantic selection and must be sought elsewhere.

The natural explanation lies in control theory. We have already seen in section 3 that the infinitive is a modifier of matrix predicate in the (a) cases and an argument in the (c) cases. This explained, among other things, the contrast in their transparency to extraction. Let us adopt the standard assumption that arguments are projected as complements and modifiers as adjuncts. It would then follow that the infinitive in the (a) cases above is external to the matrix AP whereas the infinitive in the (c) cases is AP-internal. The OC Generalization (see chapter 3) states that only infinitives internal to the maximal projection of the matrix predicate fall under the jurisdiction of OC. Consequently, the infinitives in the (c) cases must find a local controller, and PRO_{arb} is correctly ruled out. By contrast, OC does not apply in the (a) cases, so PRO_{arb} is allowed. In fact, it is not only allowed, but inevitable, since control by the matrix subject would leave the (obligatory) object gap unbound. The OC Generalization, independently motivated by the analysis of Super-Equi, receives strong support in the domain of adjectival complementation as well.

4.2 *Eager* vs. *Easy*

There is a well-known class of psych-adjectives that appear to violate (11a): *Tough*-adjectives allow, in fact require, an object-gap in their infinitival complement. Thus *eager* and *easy* minimally contrast in the following way:

(44) a. $John_1$ is eager [PRO_1 to please Mary].
b. * $John_1$ is eager [PRO_{arb} to please e_1].

(45) a. * John is easy (for us_1) [PRO_1 to please him].
b. John is easy (for us_1) [PRO_1 to please e_1].
c. * $John_1$ is easy for us [PRO_{arb} to please e_1].

Both types of infinitival complements appear to be arguments of the matrix adjective; this accounts for obligatory control by the experiencer argument, violated in (44b) and (45c). What is puzzling, given (11a), is the grammaticality of (45b) and the ungrammaticality of (45a). Unlike *eager*, *easy* seems to select a predicative complement. This, however, is only partially true; *easy* can appear with propositional arguments as well:

(46) a. It is easy for the rich [for the poor to do the hard work].
b. It is easy (for the $rich_1$) [PRO_1 to do no work at all].

One can argue that (45a) is ruled out on interpretability grounds: *John* is neither in a θ-position nor linked to one. This leaves us with (45b) to account for. Prima facie, the difference between *easy*-type and *eager*-type adjectives is the fact that the experiencer argument is internal in the former case but external in the latter one. It is possible, then, to restrict (11a) to psych-adjectives with an external experiencer. This statement would capture the facts, but is not really illuminating. Perhaps we can do better.

Notice that although both the subject of *eager* and the object of *easy* bear the role Experiencer, the semantic role of the *infinitive* is different in the two cases. Thus, in *John is eager to please,* the infinitive denotes the *content* of John's mental state; it answers the question what does John's eagerness consist in. In Pesetsky's (1995) terms, the infinitive is the *target/subject-matter* (T/SM) argument of the matrix predicate.

What is the semantic role of the infinitive in *tough*-constructions? This is a long debated question, however, common to many accounts is the observation that *tough*-constructions involve a *causative* interpretation. This is quite clear in (47a,b):

(47) a. It is annoying for [$_{EXP}$ John$_i$] [$_{CAU}$ PRO$_i$ to listen to operas].
b. [$_{CAU}$ PRO$_i$ to listen to operas] is annoying for [$_{EXP}$ John$_i$].
c. [$_?$ Operas] are annoying for [$_{EXP}$ John] [$_?$ PRO$_i$ to listen to].

The infinitive in (47a,b) is interpreted as the Cause argument, which is responsible for bringing about a certain mental state in the Experiencer argument. Matters are less clear in the *tough*-construction (47c), where either the matrix subject or the infinitive (or both?) are plausible candidates for the Cause argument. Pesetsky (1987) takes the infinitive to be the Cause argument, the matrix subject being thematically unrelated to the matrix adjective; in his system *annoying* is a two-place relation in all the three cases (47a-c). Kim (1995) takes the matrix subject in (47c) to be the real Cause argument, the infinitive being a situation-argument, restricting a generic operator lexically associated with the matrix predicate in *tough*-constructions. In her system, *annoying* is a two-place relation in (47a,b) but a three-place relation in (47c). There are arguments either way; I will not try to decide between those proposals here.

Whichever version we adopt, what seems to be clear is that the infinitive in (47c) is *not* a T/SM argument of the matrix predicate; the sentence does not claim that there is a state of "John's annoyance", the *content* of which is his listening to operas. Rather, it claims that listening to operas is involved (directly or indirectly) in the *causation* of such a state. Conversely, it seems inappropriate to paraphrase the *eager*-example as 'The event of pleasing someone would cause John to experience eagerness'.

The hypothesis that *easy*-type adjectives are causative and *eager*-type ones are not has more than just intuitive appeal to it. It predicts different behaviors in diagnostic environments. Pesetsky (1995) shows that only T/SM arguments, but not causers, can participate in nominalizations (48). If our hypothesis is correct, we predict that *eagerness*-type nominalizations should be possible but *easiness*-type ones should not. This is confirmed in (49):[16]

(48) a. Bill's anger / annoyance at the article.
b. * The article's anger / annoyance of Bill.

(49) a. Bill's eagerness / readiness / reluctance to please.

[16] Within the causative nominalizations, those constructed with Level I suffixes (49b) are somewhat better for some speakers than those constructed with Level II suffixes (49c); however, even the former ones are significantly worse than the non-causative cases (49a).

b. ?? The problem's easiness / difficulty to solve.

c. * The movie's astonishment / depression to watch.

I conclude that the different complementation properties of *eager* and *easy* follow from the different semantic roles they assign to their complements. While *eager* selects a T/SM argument, *easy* selects a Cause/Restrictor argument. Conceivably, only entities with propositional content can function as T/SM; thus *eager*-type adjectives can take nominal or propositional complements, but not predicative ones. Causes and Restrictors enjoy a greater freedom - therefore, *easy*-type adjectives may take either nominal/propositional (46) or predicative (45b) complements.

The generalization in (11) should be accordingly revised:

(50) *Generalization of Infinitival Complementation* (Version II)

Given a *non-causative* predicate P that takes an infinitival complement C:

a. If P is psychological, C contains at most one bound gap - in subject position.

b. If P is non-psychological, C contains exactly one bound gap (subject or object).

5 A Crosslinguistic Correlation

I have argued that subject-gap infinitives under non-psych-adjectives, as in (51), are possible in English due to the availability of strategy (13b), namely, null operator movement from the subject position in the infinitive:

(51) a. The book$_1$ is available [$_{CP}$ Op$_1$ [t$_1$ to be read]].

b. This story$_1$ is not fit [$_{CP}$ Op$_1$ [t$_1$ to be printed].

c. The volcano$_1$ is ready$_M$ [$_{CP}$ Op$_1$ [t$_1$ to erupt]].

I have also suggested that the same strategy is employed in constructions like (21b), repeated below:

(52) The right person$_1$ [Op$_1$ [t$_1$ to fix the sink]] could not be found.

Following Clark (1990), I assume that null operator chains are subject to certain case requirements. Although the precise nature of these requirements is not clear, it is conceivable that languages may differ on their case resources. In particular, PRO may bear

a "real" case in some languages (Icelandic and Russian) but no (or just "null") case in others (English). If Clark is correct in assuming that null-operator chains "resist" case in some fashion, we may expect crosslinguistic differences in this domain.

In fact, we can derive a very specific prediction. Assume that some case-related factor, call it F_C, is responsible for the availability of null-operator chains tailed by subject-gaps in infinitives. Assume further that whether or not F_C is realized in a given language is a parametric option.[17] Since we reduce both subject infinitival relatives and subject-gap complements to non-psych-adjectives to the presence of F_C, we predict the following correlation:

(53) *A Crosslinguistic Correlation*

A language has subject infinitival relatives iff it has subject-gap infinitival complements to non-psych adjectives.

(53) is an extremely non-trivial prediction, almost bizarre in that it ties together superficially very different constructions. Of course, it is not logically necessary; even if subject infinitival relatives and complements to non-psych adjectives share some feature, they may differ on other features, possibly parametric as well, which would allow one construction to surface but not the other, in any given language. However, let us make the strongest assumption that such is not the case. To the extent that (53) is confirmed, we have very strong evidence in favor of the distinction between obligatory control (which involves PRO) and predication (which involves a null operator). The implications of this distinction are taken up in the next section.

Among the 11 languages that I have tested, none violated the correlation (53). Languages that have both constructions are English, Italian, Québec French, Brazilian Portuguese, Spanish, Swedish and the German dialect of Itzgründisch. Languages that lack both constructions are Upper Austrian, Russian, Hebrew and Hindi. I have not found a language that has one of the two constructions mentioned in (53) but not the other.

The paradigm below presents data from languages of the first class. The (a) cases represent subject infinitival relatives, and the (b) cases represent infinitival complements to $ready_M$. Both are possible in these languages.

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[17] If operator movement is feature-driven in the sense of Chomsky (1995), an alternative formulation is available. F_C may designate the parametric possibility of PRO to bear the "operator feature". See the discussion of (19b).

English

(54) a. The right person to do the job is Harry.
b. The manuscript is ready to be read.

Italian (Sveva Besana, p.c.)

(55) a. L'uomo giusto per/*da fare questo lavoro é Gianni.
the-man right for/*from to-do this job is John
b. Il manoscritto é pronto per/*da essere letto.
the manuscript is ready for/from to-be read
c. Un libro da leggere mi farebbe piacere.
a book from to-read to-me would-do pleasure
d. Il manoscritto é pronto da leggere.
the manuscript is ready to-read

It is of particular interest that (55a,b) exploit the same preposition (*per* 'for') to introduce the infinitival; the preposition *da* 'from', used in object-gap constructions (55c,d), is impossible in the subject-gap constructions, lending further support to the underlying equivalence of (55a,b).

Québec French (Marie Hélène-Côté, p.c.)

(56) a. La meilleure personne pour faire le travail, c'est Jean.
the best person for to-do the job, it's John
b. Le manuscrit est prêt à être lu.[18]
the manuscript is ready to to-be read

Brazilian Portuguese (Luciana Storto, p.c.)

(57) a. O homem certo para fazer este traballho é o João.
the man right for to-do this job is the John
b. Il manuscrito está pronto para ser lido.
the manuscript is ready for to-be read

[18] I am told that the preposition *pour* instead of *à* in (56b) is quite marginal, though not ungrammatical.

Spanish (Karlos Arregui-Urbina, p.c.)

(58) a. El hombre adecuado para hacer esto es Juan.
the man right for to-do this is John
b. El manuscrito está listo para ser leído.
the manuscript is ready for to-be read

Swedish (Andres Holmberg, p.c.)

(59) a. Den rätta mannen (för) att göra jobbet är John.
the right man (for) to do the-job is John
b. Manuskriptet är färdigt för att läsas.
the-manuscript is ready for to be-read

Itzgründisch German (Cornelia Krause, p.c.)

(60) a. Der richtige Mann, um den Job zu erledigen, ist Harry.
the right man, COMP the job.ACC to do, is Harry.
'The right man to do the job is Harry'
b. Das Manuscript ist fertig um gelesen zu werden.
the manuscript is ready COMP read-PASS to will-INF
'The manuscript is ready to be read'

Like Italian and Brazilian Portuguese, Itzgründisch German uses the same type of infinitive (headed by *um*) in both environments. Interestingly, Upper Austrian minimally differs from Itzgründisch German in disallowing such constructions:

Upper Austrian (Martin Hackl, p.c.)

(61) a. * Der richtige Mann, (um) den Job zu erledigen, ist Harry.
the right man, (COMP) the job.ACC to do, is Harry.
'The right man to do the job is Harry'
b. * Das Manuscript ist fertig (um) gelesen zu werden.
the manuscript is ready (COMP) read-PASS to will-INF
'The manuscript is ready to be read'

c. John ist bereit das Manuscript zu lesen.
John is ready the manuscript to read
'John is prepared to read the manuscript'

Austrian German *does* make use of the *um*-infinitive (e.g., in purpose clauses), however not in subject relative clauses or subject-gap complements to non-psych-adjectives. The co-presence (or absence) of those two constructions is precisely what we expect under the present analysis. Notice that Upper Austrian also has control into complements of psych-adjectives (61c); this is expected on the assumption that control does not involve null operator movement.

Russian, Hebrew and Hindi present the same paradigm:

Russian (Ora Matushansky, p.c.)

(62) a. * čelovek sdelat' ètu rabotu (èto) John.
man to-do this work (is) John
'The man to do this job is John'
b. * Rukopis' gotova byt' pročitannoj.
manuscript ready to-be read (PASS)
('The manuscript is ready to be read')
c. John gotov byt' izbrannym na ètot post.
John ready to-be elected to new position
'John is ready to be elected to the new position'

The contrast between (62b,c) indicates that control in Russian adjectival constructions is only possible in complements of psych-adjectives.

Hebrew

(63) a. * ha-iš letaken et ha-kiyor ze Gil.
the-man to-fix acc. the-sink it Gil
'The man to fix the sink is Gil'
b. * ktav-ha-yad muxan lehikare.
the-manuscript ready to-be-read
'The manuscript is ready to be read'

c. Gil muxan likro et ktav-ha-yad.
Gil ready to-read the-manuscript
'Gil is ready to read the manuscript'

d. sefer tov likro kaše limco.
book good to-read hard to-fond
'A good book to read is hard to find'

(63a,b) represent the failure of subject infinitival relatives and subject-gap complements to non-psych-adjectives, respectively. (63c) shows that Hebrew, like all the languages above, freely allows control into infinitival complements of psych-adjectives. What is perhaps striking about Hebrew is the fact that it *does* have infinitival relatives, only on object positions (63d), not subject positions (63a). Thus, if someone were to attribute the lack of subject infinitival relatives in Upper Austrian and Russian to some general (unknown) prohibition against null operator movement from infinitives, this account would not carry over to Hebrew. What seems to be at stake is specifically whether the language can move a null operator from the subject position of an infinitive.

Hindi (Rajesh Bhatt, p.c.)

(64) a. * Vo a:dmi: (jo/jis-ka:) sink thi:k kar-na: a: gaya: hE.
the man (REL/REL.GEN) sink correct do-INF come go.PRF is
('The man to fix the sink has come')

b. * Kita:b paRh-i: ja:-ne ke-liye taiya:r hE.
book read-PRF go.INF.PASS-GEN.OBL for ready is
('The book is ready to be read')

c. Kita:b paRh-ne ke-liye taiya:d hE.
book read-INF for ready is
'The book is ready to read'

d. Ram invite ki-ye ja:-ne ke-liye taiya:r hE.
Ram invite do-PRF go.INF.PASS-GEN.OBL for ready is
'Ram is ready to be invited'

(64a) and (64b) display a subject infinitival relative and a subject-gap complement to a non-psych-adjective, respectively. As before, the contrast between (64b,d) indicates that control in adjectival constructions is only possible in complements of psych-adjectives.

Interestingly, Hindi allows an object-gap complement to a non-psych adjective (64c); this means that whatever rules out (64b) is specific to the subject position of infinitives.

Notice that all the four languages that lack subject-gap complements to non-psych adjectives have control structures with psych-adjectives. Indeed, when *ready* is lexically ambiguous between the two senses, the control option is always available. Thus (62b), (63b) and (9b) are acceptable under the absurd reading whereby the manuscript is mentally prepared to be read.[19]

In this section I presented an argument from a crosslinguistic correlation to the effect that complements to non-psych-adjectives involve null operator movement. Naturally, one should be cautious when drawing universal conclusions from a sample of 11 languages. Nevertheless, in the absence of known counterexamples to generalization (53), I shall take it, tentatively, to be true, leaving its ultimate corroboration for further research.

There are other pieces missing in the background. I have not spelled out the precise theory of null-operator chains that accounts for their distribution. I think that Clark's (1990) insight, that this problem is tightly related to Case theory, is correct, but the details have yet to be filled. Properties of lexical complementizers across languages seem to be relevant; thus, the minimal contrast between Itzgründisch German and Upper Austrian may be traced to independent differences between the properties of the particle *um* in these dialects. Languages with inflected infinitives (like Portuguese) may exploit other mechanisms to license subject gaps. With this in mind, the significance of generalization (53) stands on its own. The claim we make is that the same mechanisms, whatever they turn out to be, underlie complementation to non-psych-adjectives and null-operator structures. Crucially, and this is all we need to establish, obligatory control is available through a different mechanism.

6 Consequences for the Theory of Control

The present proposal crucially relies on the notion of *semantic selection*: The idea that a predicate selects for a semantic type (proposition or predicate) of its complement. It therefore bears directly on the old debate between "semantic" and "syntactic" conceptions of obligatory control. The semantic view, that takes infinitives with a subject gap to denote unsaturated predicates, is represented in Bach (1979, 1982), Williams (1980), Dowty (1985), Chierchia (1984, 1989) and Clark (1990). The syntactic view, that takes infinitives with a subject gap to denote propositions, is represented in the GB literature by Chomsky

[19] (61b) lacks this reading since the German *fertig* is unambiguously non-psychological.

(1981), Manzini (1983), Bouchard (1984), Borer (1989) and others. The present proposal is situated within the syntactic camp, however it invokes a notion of semantic selection. Therefore, to avoid terminological confusion, I will refer to the "semantic" view mentioned above (where the infinitive is taken to denote a predicate) the *predicational* view of obligatory control, and contrast it with the *propositional* view.

Many of the arguments advanced in the literature against the predicational view attempt to establish the syntactic presence of PRO in the subject position of the infinitive (see, for example, Koster & May 1982). PRO is said to interact in various ways with binding theory and other components of the grammar (e.g., the ECP), in a way which is hard to capture in a VP-analysis of infinitives. However, there is an inherent weakness in any argument of the form "PRO exists in the syntax, therefore the infinitive is propositional". In fact, the conclusion does not follow from the premise, no matter how empirically solid the premise is. This is simply because the grammar provides for the option of null operator movement. As already shown in section 2, there are environments in English where a subject-gap infinitive is unmistakably predicative. Clark (1990) argues that *all* obligatory control cases are implemented in this manner:

(65) a. D-Structure: [PRO to VP]
b. LF: [Op_i [t_i to VP]] (PRO = null operator chain)

I think that Clark's radical conclusion is unwarranted; in fact, the evidence from psych-adjectives argues directly against the idea that obligatory control is achieved via predication. Nevertheless, Clark's point, that syntactic PRO is compatible with predicative infinitival, holds (in principle, and in other circumstances, in practice). This renders arguments for a syntactically represented subject in infinitives neutral on the semantic issue.[20]

The present proposal criticizes the predicational view of control from a different angle. What we are saying is that there is direct evidence that controlled infinitives are propositional. Importantly, the argument does not involve an intermediate step regarding the presence of PRO, hence does not suffer from weakness noted above. Let us spell out the argument.

Consider first the issue of selection. As already noted by Faraci (1974), an infinitival complement to a psych-adjective can contain either a subject-gap or no gap at all, but object gaps are excluded:

[20] This point is explicitly acknowledged in Higginbotham (1992).

(66) a. John is eager [___ to be operated on by the doctor].
b. John is eager [for the doctor to operate on him].
c. * John is eager [for the doctor to operate on ___].

This state of affairs was stated in generalization (11a), and derived from the combination of selectional requirements of psych-adjectives (12a) and the clausal typology (13). Crucially, the clausal typology treats PRO-infinitivals and *for*-infinitivals on a par, both being propositional (if no object gap is present). However, the predicational approach would be hard pressed to explain what makes (66a,b) a natural class that excludes (66c). If both subject-gap and object-gap infinitives are interpreted as unsaturated predicates, then one should expect (66a,c) to form a natural class to the exclusion of (66b). Thus, faced with the paradigm in (66), the predicational approach must invoke at least two stipulations: All psych-adjectives are semantically ambiguous, selecting either a predicate or a proposition. In addition, the open position in the predicate embedded under the psych-adjective must be the subject's position.[21] In contrast, the present approach assumes no such massive selectional ambiguity (psych-adjectives *always* select propositions), and derives the subject-object asymmetry from independent restrictions on the distribution of PRO.

The second major problem for the predicational approach is how to distinguish psych-adjectives from non-psych-adjectives with respect to the tests discussed in section 3. Recall that across the board, subject-gap complements to non-psych-adjectives pattern with double-gap complements to non-psych-adjectives and not with subject-gap complements to psych adjectives:

(67) a. John is $ready_P$ [___ to eat the soup].
b. The $soup_i$ is $ready_M$ [___ to be eaten].
c. The $soup_i$ is $ready_M$ [___ to eat ___].

Thus, under ellipsis, extraction, extraposition and preposition stranding, (67b,c) form a natural class that excludes (67a). As far as semantic types are concerned, the predicational approach again cuts the pie in the wrong place, grouping (67a,b) together (infinitive of type <e,<s,t>>), to the exclusion of (67c) (infinitive of type <e,<e,<s,t>>>). To accommodate the facts, the predicational approach must give up any principled correlation between

[21] Notice that Clark's (1990) reduction of obligatory control to predication faces the same problem, in spite of entertaining PRO in the syntax. Complements to adjectives are not case-marked, in Clark's sense, so null operator movement from the object position (as in *tough*-constructions) is incorrectly allowed to occur with psych-adjectives in his system.

semantic types and argument/adjunct status; a predicative infinitival can be either an argument or a modifier, where these terms are understood strictly syntactically, with no semantic import. That would fail to capture the observation that at least some argumenthood tests (e.g., extraposition and preposition stranding) *are* sensitive to semantic interpretation. By contrast, the propositional approach preserves a tight mapping between the status of an infinitive as an argument or an adjunct and its semantic type, gaining some explanatory insight into the observed asymmetries.[22]

A third challenge to the view of control as predication is posed by the crosslinguistic data reviewed in section 5. As stated in generalization (53), the availability of constructions like (67b) across languages does not correlate with that of (67a), but rather with that of subject-gap infinitival relatives. As far as I know, every language (that has infinitives) has some analogue to (67a): Control into complements of psych-adjectives is a universal option. In contrast, as we have seen, some languages do not have constructions like (67b). The predicational view of control is unable to distinguish those two constructions. In particular, if both involve a predication relation between co-arguments of an adjective, it is a mystery why this relation is blocked (in the languages discussed) whenever the adjective is non-psychological. Moreover, the source of generalization (53) is unclear. Relativization involves syntactic movement (λ-abstraction) and predicate modification. Constructions like (67b), on the other hand, do not involve movement, under the predicational view. Rather, the infinitive is taken to be a VP that denotes a property, which is itself an argument of the matrix adjective. Those two mechanisms are quite different; their crosslinguistic correlation receives no explanation in the predicational approach to control.

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[22] Both Bach (1982) and Chierchia (1989) treat the infinitive under the predicate *available* as a purpose clause, which is an argument of the predicate (or of a "natural augmentation" of the predicate, in Chierchia's analysis). On this view, the fact that this infinitive behaves like a modifier with respect to the tests discussed in section 3 calls for explanation. Chierchia suggests (fn. 16) that arguments of augmented predicates may be syntactic adjuncts. This would take care of the extraction data, but as far as I can see, would not carry over to the extraposition and preposition stranding tests, which are sensitive to the *semantic* distinction between arguments and modifiers.

Summary

- *Generalization of Infinitival Complementation*
  Given a non-causative predicate P that takes an infinitival complement C:
  a. If P is psychological, C contains at most one bound gap - in subject position.
  b. If P is non-psychological, C contains exactly one bound gap (subject or object).
- *Semantic Selection*
  a. A psych-adjective denotes a two place relation between an individual (*experiencer*) and an eventuality (*target/subject-matter*).
  $$A_P(<DP_e, CP_{<s,t>}>)$$
  b. A (non-psych) "material" adjective denotes a one place property of an individual (*theme*). That property can be modified by a predicative infinitival.
  i. $A_M(DP_e)$ ii. $f(CP_{<e,st>}, A_M)(DP_e)$
- Complements to psych-adjectives require an antecedent under ellipsis, are transparent to extraction, may extrapose and may strand *for*; complements to non-psych adjectives display the opposite properties.
- Complements to psych-adjectives are interpreted with universal modality; complements to non-psych adjectives are interpreted with existential modality.
- *A Crosslinguistic Correlation*
  A language has subject infinitival relatives iff it has subject-gap infinitival complements to non-psych adjectives.
- PRO is not (always) a lambda-variable; control is not (always) predication.

Chapter 5: Implicit Control and Control Shift

Introduction

Control theory has produced a vast amount of research over the past two decades. In certain areas, understanding has significantly deepened, along with the growth in empirical knowledge. These areas include, among others, the OC/NOC distinction, the relation of control to binding, the nature of PRO and the relation between tense and (partial) control. Obviously, the various issues are not resolved, in fact they are under constant debate. Nevertheless, it seems that those debates by now are carried out against a fairly rich background of understanding, which has gradually grown over the last 20 years.

By contrast, other areas in control theory "lag behind"; although we have accumulated a great deal of data in them, theoretical understanding is relatively limited. Two topics belonging to this category are discussed in this chapter: Implicit Control and Control Shift. They are illustrated in (1) and (2), respectively. In (1a), the dative controller can be left implicit; (1b) allows an implicit agent controller but (1c) does not. In (2), *promise* and *ask*, normally assigning agent and goal control, respectively, switch to the opposite pattern:

(1) a. Louise gestured/said/signaled (to Tom_1) [PRO_1 to follow her].
b. It was decided (by the $committee_1$) [PRO_1 to investigate the matter].
c. * John was promised (by $Mary_1$) [PRO_1 to leave].

(2) a. $John_1$ was promised [PRO_1 to be allowed to leave].
b. $Mary_1$ asked John [PRO_1 to be allowed to leave].

Both implicit control and control shift are subject to complex felicity conditions, mostly semantic and pragmatic. Those conditions seem to be of a rather flexible nature, varying not only across languages but also from speaker to speaker. This is, undoubtedly, one reason why it proved so hard to pinpoint the precise principles governing these phenomena. Thus while the literature abounds with data, the status of many generalizations is yet unclear, resulting in an unwelcome situation where too many incompatible theories coexist, with no decisive evidence forthcoming.

This chapter is a critical review of the literature on implicit control and control shift. In what follows I will try to extract the clearest possible generalizations and insights from that literature. I think it is an effort worth making, and one that is badly needed, if we are ever to make any progress in these areas. Although no comprehensive theoretical proposal will be made here, I hope to sharpen up some of the issues that any future theory would have to face. Inevitably, the discussion to follow will sometimes read as a list of examples

and counterexamples; still, whenever possible, we will state the relevant generalizations and point out which of the existing proposals explain them and which do not.

One issue that I will not take a stand on is how implicit arguments are to be represented in the grammar. Other than control, implicit arguments interact in complex ways with binding, argument linking (as in *John underwent an operation*) and secondary predication, in nominal as well as in verbal environments. Existing analyses treat them as pronouns, thematic indices, variables at LF, or slots at lexical-conceptual structure (for extensive discussion, see Williams 1987, Brody & Manzini 1987, Roeper 1987, Clark 1990, Safir 1991). For concreteness, I will assume (following Clark 1990) that implicit arguments are represented as variables at LF, although nothing crucial rests on this choice.

This chapter is organized as follows: In section I discuss implicit control, divided into dative and agent control. Section 1.1 establishes implicit dative control as a solid effect, with all the properties of normal OC. In section 1.2 I address several analyses that challenge the notion of implicit dative control, and instead classify the relevant cases under NOC. For each proposal, I show that the challenge does not withstand a closer scrutiny. Section 1.3 extends our observations to implicit controllers of purpose clauses.

Section 2 is devoted to implicit agent control. In section 2.1 I consider various attempts to tackle "Visser's Generalization" (which is said to rule out (1c)), and conclude that none of them is fully satisfactory. In section 2.2 I turn to control into impersonal passives and temporal adjuncts - two cases that systematically violate Visser's Generalization. It is shown that adjunct control has certain peculiar properties, setting it apart from standard OC cases (contrary to standard treatments). In section 2.3 I consider rationale clauses, which have often been claimed to exhibit implicit agent control. I review some compelling evidence against that view, however conclude that no existing proposal is able to capture all the relevant data.

The overall picture emerging from the discussion of implicit control is the following: Implicit datives (and more generally, oblique arguments) can control whenever they are independently licensed; omissibility of controllers is orthogonal to control. Control by implicit agents presents a more complex picture. Broadly speaking, implicit agents can control - both in impersonal passives and in adjuncts (excluding rationale clauses, which involve a more abstract notion of "intentionality"), although the adjunct cases are subject to further ill-understood restrictions. "Visser's Generalization" possibly covers a single case - that of (1c) - hence teaches us very little.

Section 3 is dedicated to control shift. In section 3.1 I present the data on this phenomenon. In section 3.2 I discuss in detail five theories of control shift, some of which invoke special mechanisms to account for control shift and some of which do not. It is

concluded that narrowly thematic approaches are ill-equipped to deal with the phenomenon; yet the choice between the more sophisticated approaches, which appeal to notions of intentionality and causation, is a rather subtle question. Section 4 considers, in light of these considerations, the status of the Minimal Distance Principle (MDP), which selects a controller solely on the basis of syntactic locality. I argue that the MDP fails to provide a systematic account of subject control and control shift, and that recent attempts to derive it from the MLC raise even further empirical problems.

The summary of this chapter briefly states the conclusions from the preceding discussion: Findings, generalizations, and theoretical constraints on possible accounts.

1 Implicit Control

1.1 Control by Implicit Datives

The idea of control by implicit dative arguments can be traced back to Kimball (1971). Challenging the Super-Equi Deletion rule of Grinder (1970), Kimball argued that this rule can, and in fact must, be decomposed into two distinct deletion rules: The first one is a standard Equi-NP deletion rule, applying between the "dative" argument of an adjectival predicate and the embedded subject; the second one is a long-distance rule, deleting the dative controller under identity with a commanding NP.[1]

(3) a. S-Structure: Jones said it was necessary to see himself.
b. D-Structure: Jones said it was necessary *for Jones* [*Jones* to see himself].
c. Equi-NP: Jones said it was necessary *for Jones* [Ø to see himself].
d. Dative-Deletion: Jones said it was necessary Ø [Ø to see himself].

Abstracting away from technical execution, which has radically changed since the early 70's, Kimball's analysis captures the essence of what later came to be called "control by implicit arguments". Furthermore, Kimball's discussion makes it explicit that he takes the interpretation of such constructions to implicate those unpronounced "dative" arguments.

Following Kimball's insight, Epstein (1984) observes that sentences like (4a) are interpreted as in (4b), with an implicit BENEFACTIVE/EXPERIENCER argument (boldfaced

[1] The term "dative" is used somewhat loosely here, covering both *to*-PP's and *for*-PP's. In fact, our conclusions extend straightforwardly to all implicit oblique arguments.

below) understood to be coreferential with PRO; thus even cases of so-called arbitrary PRO in fact involve implicit control by an argument itself bound by a universal quantifier:[2]

(4) a. It is fun [PRO to eat ice-cream].
b. ∀x [it is fun **for x** [for x to eat ice-cream]]

Koster (1984) notes that so-called LD-control in examples like (5a) is blocked in the presence of an overt BENEFACTIVE argument (5b); a natural suggestion is that the true controller in both cases is that argument, which is left implicit in (5a) but is linked to a remote antecedent. The *control* relation is local throughout:

(5) a. $Mary_1$ said it was difficult [PRO_1 to take another topic].
b. Mary said it was difficult for $Bill_1$ [PRO_1 to take another topic].

Turning to verbal environments, Rizzi (1986) argues convincingly that implicit dative arguments can control (but not bind). He distinguishes between generic contexts, where a dative *pro* may be projected, and non-generic contexts, where it cannot. Nonetheless, an implicit dative argument in the latter context may still control:

(6) a. Lo psichiatra (gli) ha detto [di PRO parlare di se stessi].
'The psychiatrist said (to him) to speak about himself'
b. Il generale ha ordinato (ai soldati) di partire.
'The general ordered (to the soldiers) to leave'.

In English, the distribution of implicit dative arguments of verbal predicates is restricted to certain communication verbs (*say, shout, signal...*). When allowed, implicit datives can control just like overt datives (see discussion in section 1.2). The idea that implicit arguments enter control relations allows us to solve a puzzling problem raised by Manzini (1983) regarding the following contrast:

(7) a. Mary knows that it would help Bill [PRO to behave herself in public].
b. * Mary knew that it had been decided (by John) [PRO to behave herself].

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[2] The question of the source of universal - more likely, generic - quantification in (4b) is left open here. As shown in chapter 3, section 6, some difficulties arise with Epstein's (1984) QR-analysis, which do not arise in Lebeaux's (1984) idea of a base-generated empty operator.

For Manzini, the infinitive in (7a) is co-superscripted with the expletive *it*; the latter cannot be an accessible subject for PRO (because of the i-within-i condition), so PRO has no domain governing category and it is freely indexed.[3] From the ungrammaticality of (7b) Manzini concludes that extraposed clauses in impersonal passives are not similarly coindexed with the expletive. It is unclear what lies behind this technical device; why, for example, does the indexing mechanism not act the other way round, allowing (7b) and disallowing (7a)? In fact, one does not want to motivate this particular mechanism because it is simply untrue that LD-control always fails across an impersonal passive:

(8) a. Mary knew it had been recommended [PRO to behave herself in public].
b. Mary knew it had been prohibited [PRO to reveal herself in public].

Manzini's technical device does not really explain the contrast in (7) and in fact incorrectly rules out (8), on a par with (7b). The notion of implicit control immediately accounts for the contrast between (7b) and (8). Notice that *recommend* and *prohibit*, but not *decide*, select an internal goal argument (that is, the person to whom the prohibition/ recommendation is made). The interpretation of (8) makes it clear that it is by this argument that PRO is controlled. No such argument is available in (7b), and the periphrastic agent *John* is incompatible with the feminine reflexive.

The implicit dative controller not only *can* be syntactically absent, but sometimes *must* be so. Consider the verb *prohibit*, which curiously selects a gerund in the active (9a) but an infinitive in the impersonal passive (9b). The internal argument is in fact syntactically inexpressible in the latter (9c), however still interpreted as the controller:[4]

(9) a. John prohibited Mary from [PRO speaking loudly].
b. It was prohibited [PRO to speak loudly].
c. * It was prohibited on/to/for Mary [PRO to speak loudly].

Therefore, we have a case of implicit control - (8b) and (9c) - that cannot be reduced to syntactic control, suggesting that control theory should not be confined to S-Structure. More generally, control theory must apply at whatever grammatical level where implicit arguments are represented.

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[3] See Manzini (1983) for the technical details.

[4] To the extent that a *for*-NP may follow *prohibit* in (9c), it is not an argument of the verb but rather a Comp-Subject sequence, as the ungrammaticality of (i) indicates.

i. * For Mary, it was prohibited [PRO to speak loudly].

1.2 Challenges to Control by Implicit Datives

In this section I discuss theories that analyse the cases of the sort discussed above as instances of NOC (Bresnan 1982, Bouchard 1984, Huang 1989, Sag & Pollard 1991), or assign them a status different than normal OC (Chierchia 1989). In each case, I show that there are strong empirical arguments to reject the distinction between implicit and overt datives qua controllers. I conclude that the theoretically more restrictive theory, in which implicit control is just like overt OC (except for the phonetic realization of the controller), is also more empirically adequate.

Bresnan (1982)

Bresnan (1982) further applies Williams's criterion of "no obligatory syntactic controller" to argue that certain verbs of communication induce NOC (anaphoric control in her terminology):

(10) Louise gestured/said/signaled (to Tom) [PRO to follow her].

Unlike Williams (1980), though, Bresnan assumes that the choice of controller in NOC is not entirely free, and may be subject to thematic restrictions; hence, the goal argument must be selected as the controller of PRO in (10). Notice, however, that the "thematic restrictions" on anaphoric control suspiciously converge on the obliqueness hierarchy of functional control in Bresnan's system: OBJ_2>OBJ_1>SUB. Thus, barring the *promise*-type verbs (lexically marked for subject control), it is *always* the case that the goal argument wins on the anaphoric control hierarchy, and it is *always* the case that OBJ_2 wins on the functional control hierarchy. But the goal argument *is* OBJ_2; given the absolute separation of anaphoric and functional control, this convergence seems totally accidental in Bresnan's theory.

Consider the alternative view. Verbs of communication induce OC just like any other control verb. Controller choice, being a thematic matter, is determined by the semantic class of the verb. For verbs of influence ('directives') and communication, the controller is the goal argument. Therefore, the fact that both *order* and *signal* are object control verbs is not an arbitrary coincidence of two unrelated theories (functional and anaphoric control), but rather a thematically coherent consequence of one theory, namely the theory of OC.

Now, an independent issue that must be addressed outside the theory of control is the question of syntactic expression of arguments. Why is it that certain arguments are more easily omissible than others? Crosslinguistically, it seems that datives and accusatives contrast in this way (for attempts to explain this contrast, see Rizzi (1986), Manzini (1986), and Brody & Manzini (1987)); Whether or not an argument is omissible is a factor that interacts with control but is clearly independent of it, as illustrated below:

(11) a. John convinced *(Mary) of his innocence.
b. John convinced *(Mary) [PRO to believe him].
c. Mary forced the song *(on John).
d. Mary forced *(John) [PRO to sing].

(12) a. John said the secret (to Mary).
b. John said (to Mary) [PRO to listen to him].
c. Mary helped (John) with the dishes.
d. Mary helped (John) [PRO (to) do the dishes].

Thus, *convince* and *force* do not drop their theme argument, but *say* and *help* can drop their goal argument; this is true whether or not the verb appears in a control environment.

Moreover, certain oblique controllers are no less obligatory than accusative ones, contra Bresnan (1982). Recall that for Bresnan, the obligatory presence of a controller signals functional control; yet functional control is excluded for obliques, and occurs only with the "unrestricted functions" (subject, direct and indirect object). It thus follows from Bresnan's theory that all oblique controllers, being anaphoric controllers, are omissible. The prediction is massively disconfirmed - more so in languages other than English, where oblique controllers are abundant (e.g., Hebrew):

(13) Tom pleaded *(with Anne) [PRO to understand his situation].

(14) a. Gil mana *(me-Rina) [PRO le-nace'ax].
Gil prevented from-Rina PRO to-win
'Gil prevented Rina from winning'

b. ha-avira ha-yedidutit hekela *(al Gil) [PRO le-hištalev ba-xevra].
the-atmosphere the-friendly made-easy on-Gil PRO to-be-incorporated in-the-company

'The friendly atmosphere made it easier for Gil to be incorporated in the company'

c. Rina hitrisa *(be-Gil) [PRO le-hamrot et pi ha-mora].
Rina challenged in-Gil [PRO to-defy Acc mouth-of the-teacher]
'Rina challenged Gil to defy the teacher'

It is similarly plausible that "Bach's generalization" - that object control verbs do not detransitivize - is an artifact of some deeper requirement that direct objects be syntactically expressed.[5] Apparent counterexamples to this (witnessed in Italian and Spanish) are most likely cases of object *pro*-drop, as argued by Rizzi (1986) - hence do not involve real detransitivization. Notice that even if Bach's generalization is not reducible to independent factors, it is probably spurious, cutting the pie at an arbitrary point; obligatory syntactic presence of the controller is not limited to direct objects.

A general conclusion that can be drawn from this discussion is the following: Different control verbs select different arguments from their argument structure as the controller, based on very general semantic classifications (e.g., verbs of commitment, influence or orientation; see Comrie (1984) and Sag & Pollard (1991) for relevant discussion). Whether or not that argument must be expressed in the syntax is a complex issue, involving both universal conditions (direct objects normally must be expressed) and language-particular ones (most datives are omissible in Hebrew, but only datives of communication verbs are omissible in English). At any rate, this issue is orthogonal to the theory of OC, which makes no distinction between overt and implicit controllers.

Huang (1989)

Huang (1989) attributes the possibility of arbitrary PRO under *say*-type verbs and interrogatives to the presence of a hidden NP node intervening between the infinitive and the matrix VP (adopting an analysis originally due to Rosenbaum 1967). Sentences like (15a,b) have the structure in (15c):

(15) a. John said [PRO_{arb} to behave oneself].
b. John wonders [how [PRO_{arb} to behave oneself]].
c. $[_S \ldots[_{VP} \ldots[_{NP} [_{S'} [_S$ PRO...]]]]].

[5] This is also suggested by Larson (1991), who notes that "only internal arguments other than themes are optionally projected at D-Structure in English" (p.119).

In Huang's "generalized control theory", the control domain of PRO must contain an accessible SUBJECT; but in (15c), neither candidate for a control domain - the embedded S or NP - contains a subject, hence PRO has no control domain and remains free (as in Manzini's (1983) treatment of NOC).[6]

Huang presents two pieces of evidence for the claim that the infinitives in (15a,b) are complements of N, not V. The first has to do with their ability to undergo passive and pseudo-cleft, and appear as nominal complements - as opposed to regular OC verbs:

(16) a. That he would come was never said.
b. What he said was that he would come.
c. He said the right thing.

(17) a. * To go was forced John.
b. * What he forced (John) was (for John) to go.
c. * He forced (John) the task.

As to the passivization and pseudo-cleft tests, the real generalization seems to be sensitive to case rather than category; see my discussion of similar claims by Martin (1996) in chapter 2, section 8. Although *force* fails to undergo pseudo-clefting, *promise*, which is no less an OC verb, does - as in (18a); Larson (1991) observes a parallel contrast with *wh*-questions (18b,c):

(18) a. What John promised was to leave immediately after the show.
b. What did John promise Mary? [Answer: to leave by five o'clock]
c. * What did John force Mary? [Answer: to leave by five o'clock]

Secondly, whether or not a control verb can take a nominal complement is independent of the type of control it exhibits.[7] Many verbs that take nominal complements do not allow arbitrary PRO in control environments:

(19) a. John wanted promotion.

[6] As demonstrated in chapter 2, control into interrogative infinitivals like (15b) is never "arbitrary", but rather partial. The case of concern, however, is (15a).

[7] Notice, incidentally, that (16c) involves the propositional *say*, rather than the directive *say* (equivalent to *tell*), which is the one found in control constructions. The latter, in fact, takes no nominal complements (e.g., **John said the behavior*; cf. (15a)).

b. * John wanted [PRO_{arb} to be promoted].

c. John declined the offer.

d. * John declined [PRO_{arb} to accept the offer].

Of course, the real cause for the ungrammaticality of (19b,d) is the lack of any implicit matrix argument that can license the generic interpretation of PRO. Thus Huang's first argument does not distinguish between "real" OC verbs like *force* and alleged NOC verbs like *say*: Two of his tests are misapplied, and the third one is orthogonal to the OC/NOC distinction.

Huang's second argument is that *say*-type verbs may occur with either finite or non-finite clauses, whereas *force*-type verbs only occur with the latter. This follows if *say*-type verbs do not in fact subcategorize for the clause but rather for the NP containing it, as in (15c), and consequently cannot impose any restriction on the type of the clause.

However, as Huang himself notes, the correlation goes only one way: Some verbs (like *prefer* and *hope*) pass the passive/pseudo-cleft test, select either a finite or a non-finite complement, but nonetheless display OC (e.g., **John prefers behaving oneself*). To account for these verbs, Huang posits a rule of NP-node deletion which applies after D-Structure when the head of the NP in (15c) is not lexical. Notice that this rule must be obligatory in order to force OC in (20); at the same time, it must be blocked from applying in (20b), which according to Huang, relies on the presence of an NP node. Given that (20b) also diplays OC, it is hard to see how Huang's analysis can escape a contradiction.

(20) a. John prefers to go.

b. What John prefers is to go.

Moreover, at least some verbs which allow "arbitrary control" in Huang's sense do require their complements to be infinitival, contrary to Huang's prediction that such selection is not possible:

(21) a. A supporting environment can help (to) pull oneself together after a tragedy.

b. * A supporting environment can help that one would pull oneself together after a tragedy.

Finally, perhaps the most serious problem for Huang's analysis is the fact that it fails to account for the disappearence of NOC with *say*-type verbs in the presence of an overt matrix goal argument:

(22) a. * John shouted to Mary [PRO_{arb} to arrest Bill].
b. * $Mary_i$ remembered that John had whispered to Bill [PRO_i to behave herself].

The ungrammaticality of (22), which naturally follows on the assumption that implicit control is an instance of OC, remains inexplicable under Huang's theory.[8]

Sag & Pollard (1991)

Sag & Pollard (1991) claim that cases as in (23) counterexemplify "Manzini's Generalization" (that the controller must be within the minimal clause containing the complement infinitive):

(23) a. $John_i$ helped the barbers (to) shave him_i.
b. * $John_i$ helped (to) shave him_i.
c. ?? The barbers were grateful that John had helped to shave himself.
d. Col. Jones signaled (to) the pilot to land.
e. Col. Jones signaled (to) the control tower to land.
f. $Col. Jones_i$ knew that the control tower had signaled (him_i) to position $himself_i$ for a landing.
g. Bill knew she had said to behave himself.

(23a-c) illustrate two senses of *help*: Non-participating assistance (23a) and participating assistance (23b,c). Notice that the latter takes over when the object is unexpressed, explaining the binding violations (neither the subject nor the object is an exhaustive controller). While these observations are correct, it is not clear to me why S&P take them as evidence against Manzini's generalization. Notice that nothing in Manzini's (1983)

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[8] The pair in (22) is also problematic for Bouchard (1984), who classifies (15a) under NOC, like Huang. For Bouchard the distinguishing feature of these cases is the fact that the matrix verb is a non-bridge verb, disallowing S'-deletion (which is the source of OC in his system). However, many non-bridge verbs allow neither arbitrary nor long-distance control:

i. John said that Mary forgot / threatened [PRO to talk about herself / *himself].
ii. * Mary convinced Sue [PRO_{arb} to talk about oneself].

These facts are expected under the notion of OC by implicit arguments: None of the verbs in (i-ii) selects a dative argument that can be dropped, hence none can give rise to apparent "NOC effects" (as in 15a)).

theory of control bears on the issue of split antecedents; all that is required is that the binder(s) (whether overt or implicit) be local, in accordance with the binding theory.

Consider now the *signal* cases. As (23d,e) show, this verb allows either subject or object control, depending on the pragmatics of the event (similar behavior is displayed by *ask*). Other cases (23f,g) seem to exhibit LD-control, violating the locality of OC. S&P maintain that Manzini neither explains the shifting control behavior, and in fact predicts LD-control to be impossible. As to the first claim, it is correct: Manzini (1983) had no theory of controller selection, though she states that this matter is detemined by semantic/pragmatic factors. In fact, S&P's theory is in complete agreement with this statement. As to the second claim, it is incorrect: Manzini does explain apparent LD-control into complement infinitives in terms of actual *local* control by *implicit* arguments.

However, it turns out that S&P's alternative fares even worse. According to their analysis (following Bresnan's ideas), verbs like *signal* may select an infinitive with either an anaphoric unexpressed subject, e.g. (23d,e), or a pronominal one, e.g. (23f,g). When the former is selected, the controller must be local; when the latter is selected, the controller must be remote, in accordance with binding conditions A and B, respectively.

Notice that both subject and object control are subsumed under the anaphoric subject case (since both instantiate local control); hence, S&P's system does not distinguish between them in any sense more illuminating than Manzini's. Furthermore, the type of infinitive selected by the verb is divorced from the presence or absence of an overt object; it is simply an isolated lexical ambiguity. Thus, nothing in S&P's system explains why LD-control is blocked in the presence of an overt object, even with communication verbs. Sentences like (24), crucially missing from S&P's discussion, refute their theory:

(24) a. * Col. Jones$_1$ knew that the control tower had signaled to the plane to position himself$_1$ for a landing.
b. * Bill knew she had said to his mother to behave himself.

By contrast, the difference between (23f,g) and (24) is entirely predictable under the theory of implicit datives qua controllers. In the former case, where the dative is not syntactically expressed, it is nontheless active as an implicit argument. That argument locally controls the subject of the infinitive, while being identified by (coindexed with) the remote antecedent. This option is blocked in (24), where the overt dative is referentially distinct from the remote DP; since the only dative slot is already occupied, the remote DP has no local "anchor" from which to control PRO, and the result is ruled out. We therefore see that a theory of control incorporating the notion of implicit arguments is empirically more

adequate to deal with the facts of communication verbs than theories which deny this notion.

Chierchia (1989)

Chierchia (1989) extends the lexical-entailment approach to control of Chierchia (1984) to handle implicit controllers as well. Chierchia takes infinitives in OC to denote properties, which are associated with the appropriate controller via entailed predication. The basic principle of control is given below (Chierchia 1989: 144):

(25) a. $E(\beta_r [P]) \Rightarrow E(\beta_r [P/P^*(\theta(\beta))])$

b. Th > Go > Ag ...

β_r is an eventuality of type-r (where types are means of collapsing different guises of the same predicate under one label), which takes the property P as an argument; in our case, β_r and P are the matrix and the infinitival predicates, respectively. θ is a partial function from eventualities to participants; thus the θ-function "Agent" maps the verb *kick* in *John kicked the ball* to *John*, but is undefined for (say) the verb *fall*. The square brackets in the right-hand side of (25) notate standard substitution ($\beta[\alpha/\gamma]$ is β with γ substituting α). Given this, (25a) reads as follows: "Suppose that an r-eventuality β that has the property P as one of its constituents is the case; then an r-eventuality obtained from β by replacing P with the eventuality <P,x> (where x is the bearer of the role θ with respect to β) is also the case" (Chierchia 1989: 144). The specific θ-role is selected according to the hierarchy in (25b) (subject to marked exceptions, e.g., subject control verbs). This is how "control" is captured in Chierchia's system. For instance, knowing that *John tried to swim* entails knowing that John tried to bring about a situation where he swims.

Next, Chierchia considers implicit controllers:

(26) a. It was decided to leave.

b. Mary helped do the dishes.

c. To leave was rude.

Chierchia assumes that argument-manipulating operations PAS and $DROP_2$ remove the agent from the eventualities in (26a,c) and the second argument (Goal) from that in (26b), respectively. Formula (25a) is applicable here; however, since the relevant controller is absent, it leads to an undefined semantic expression. Indeed, this is how Chierchia claims

to derive the requirement that OC controllers be syntactically present (e.g., Visser's generalization). Obviously, something must be added to save (26) from ungrammaticality.

Chierchia suggest a modification of (25a) as follows:

(27) $E(\beta_r\ [P]) \wedge \underline{\theta(\beta)=x_i} \Rightarrow E(\beta_r\ [P/P^*(\theta(\beta))])$

The underlined condition makes (27) inapplicable when β has no argument that bears the role θ; namely, precisely in the cases under consideration. Chierchia suggests that certain predicates select (27) over (25a) as a parametric option, escaping the "undefined entailment".

How does implicit control then come about in this system? Argument manipulating operations also license, according to Chierchia, lexical entailments. In particular, Passive as in (26a) implies the existence of an agent:

(28) $E(<PAS(decide'), leave'>) \Rightarrow \exists y\ [E(<decide', y, leave'>)]$

The lexical entailment of Passive (28) provides the agent that is necessary for the lexical entailment of control. By chaining those entailments we obtain the desired interpretation.

Notice that since the choice of controller in PAS(β) or $DROP_2$(β) is not directly dictated by the control principle (25a), it bears no obvious relation to the choice of controller in the fully-fledged β. This leaves certain regularities unaccounted for in Chierchia's system. The problem can be most clearly seen in cases where *both* PAS and $DROP_2$ apply:

(29) a. It was recommended to see the movie.

b. $E(<PAS(DROP_2(recommend')),see\text{-}the\text{-}movie'>)$

c. PAS-entailment $\Rightarrow \exists x\ [E(<DROP_2(recommend'),x,see\text{-}the\text{-}movie'>)]$

d. Control-entailment $\Rightarrow \exists x\ [E(<DROP_2(recommend'),x,<see\text{-}the\text{-}movie',x>>)]$

e. $DROP_2$-entailment $\Rightarrow$ * $\exists x \exists y\ [E(<recommend',x,y,<see\text{-}the\text{-}movie',x>>)]$

Consider the lexical derivation in (29). The eventuality with the "passivized" and "dative-dropped" verb *recommend* is the base form (29b). The lexical entailment of PAS licenses the eventuality in (29c), where x is the agent. We now apply the control principle. Since there is (yet) no goal argument, the controller chosen on the thematic hierarchy (25b) is the agent, and we get (29d). Next we apply the lexical entailment of $DROP_2$, resulting in (29e),

which reads: There are x and y such that x recommended to y that x see the movie. This is clearly not the reading of (29a), so the above derivation should be blocked.

However, it is hard to see how Chierchia's system can rule out this derivation with no recourse to unmotivated stipulations. Suppose one tries to impose order between the lexical operations, such that PAS always precedes $DR()P_2$, excluding the step (29b). This is obviously incorrect, as dative drop is never contingent on passivization (e.g., *John recommended this movie*). Alternatively, one may require all entailments licensed by argument-manipulating operations to precede control entailments. This would have the effect of forcing step (29e) to precede step (29d), so the control entailment would have to pick up the goal as the controller.

It is hard to see, though, what independent evidence could justify imposing temporal order on lexical entailments. Notice that lexical entailments hold between propositional expressions; i.e., they are properties of full utterances and not of any subpart thereof. Therefore, they are not induced incrementally, the way syntactic structure is. Imposing some order among the steps of (29) may give the desired result but would constitute a restatement rather than a solution of the problem.

Chierchia's analysis of implicit control is tangled in this misfortune due to the strong assumption that implicit arguments have a different thematic status than overt arguments. Since they are removed from the basic θ-grid of the verb, control may refer to them only after some other lexical operation takes place. However, that assumption, we have seen, is unwarranted. There is every reason to believe - at least with respect to datives - that implicit arguments are constantly and uniformly retained under all guises of lexical entries. The fact that the implict goal, and not the implicit agent, must be the controller in (29a), comes as no surprise: The same control principle that applies to the syntactically full-fledged verb applies here as well. Nothing further needs to be said about these cases.

We still have to address the source of "Visser's generalization", which motivates part of Chierchia's analysis. As I argue below, this generalization (like Bach's generalization) does not survive upon closer inspection.

1.3 Implicit Dative Control in Purpose Clauses

It is sometimes argued, based on examples like (30), that the controller of the subject gap in purpose clauses must be overt:

(30) a. $John_1$ bought the $book_2$ [PRO_1 to read e_2].

b. John bought $Mary_1$ the $book_2$ [PRO_1 to read e_2].

In the absence of an overt goal argument, as in (30a), the subject controls PRO, an option excluded when the goal argument is overt (30b).

However, while it is true that overt goal (or benefactive) arguments are obligatory controllers in purpose clauses, it is not generally true that an implicit goal is always overriden by an overt agent. Given the appropriate context, an implicit goal may easily be the preferred controller:

(31) The university should provide (the students$_1$) a decent library [PRO$_1$ to work in e_2].
[Nishigauchi 1984]

A more striking example is given in (32). The author of this thesis heard this sentence uttered by a native speaker of (at least) English in spontaneous speech:

(32) "I have nothing to read". [Ken Hale, 3/10/98, 11:00 AM]

Ken was invited to give a guest lecture in a seminar. The instructor asked Ken if the students should read some background material for his lecture, to which Ken replied with (32). Clearly, in the given context, Ken meant that he has nothing *for the students* to read, rather than making a gloomy comment about his own empty bookshelves. Being a salient referent in the context, the students can easily antecede the implicit benefactive argument in (32), bleeding the otherwise "default" subject control reading.[9]

2 Control by Implicit Agents

We will consider four cases where control (or lack thereof) by an implicit agent is involved, or has been argued to be involved: i) control into the complement of passive *promise*; ii) control into the complement of impersonal passives; iii) control into (mostly temporal) adjuncts; iv) control into rationale clauses.

The evidence suggests that case (i) is impossible (Visser's Generalization), case (ii) is quite systematic, and case (iii) is attested as well, although subject to some murky

[9] As Bach (1982) points out, PRO in certain purpose clauses does not even have a grammatical controller, but rather is pragmatically interpreted:

i. This book is to read to the class.
ii. Here's *Bambi* to read to your children.

restrictions. Case (iv), I will argue, is unrelated to implicit agents, its control properties involving a more abstract relation of "intentional causation".

2.1 Visser's Generalization

The term "Visser's Generalization" (VG) was coined by Joan Bresnan, referring to the following observation:

(33) Subject control verbs do not passivize.

Relevant examples, from Bresnan (1982) are given in (34), to be contrasted with (35), where passivization applied to object-control verbs:

(34) a. * Mary was failed (by John) as a husband.
b. * John was promised (by Mary) to leave.

(35) a. John was regarded (by Mary) as pompous.
b. John was persuaded (by Mary) to leave.

This asymmetry was first noted in Chomsky (1965: 229), and produced quite an elaborate body of research aiming to explain it (Anderson 1977, Chomsky 1977, 1980, Bach 1979, Williams 1980, Bresnan 1982, Růžička 1983, Koster 1984, Farkas 1988, Larson 1991, Sag & Pollard 1991). In what follows I briefly review some of these proposals and point out problematic issues that still remain unanswered. For now I am ignoring the well-known cases of control shift, e.g. *John was promised to be allowed to leave*; these do not violate VG, which I take to restrict control by implicit agents. We return to control shift and its implications to the general theory of control in section 3.[10]

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[10] Bresnan (1982: 403) adds to (34) the following examples:

i. * His friends are struck (by him) as pompous.
ii. * Aunt Mary was made good little housekeepers (by the boys).

However, as Sag & Pollard (1991) note, (i-ii) are irrelevant to Visser's Generalization; predicates with non-thematic subjects never passivize (e.g., **A furor was arisen (by there)*). In fact, (34a) may also be independently excluded by a general requirement that subjects of secondary predicates be overt, e.g., **John ate *(the meat) raw*. This leaves us with the curious possibility that VG is a generalization over a single case - that of *promise*. In section 2.2 we will see that VG is in fact systematically violated in two other environments.

In Bach's (1979) Categorial Grammar system, subject-control verbs and object-control verbs are assigned to different combinatorial categories. Thus, *promise* is a function that first combines with its object, next with the infinitive and finally with the subject; whereas *persuade* first combines with the infinitive, then the object and finally the subject. Bach attributes the different control properties of the two verbs to a principle that selects the argument combining with the predicate immediately *after* the infinitive as the controller (in Larson (1991), this argument hierarchy is reflected in the syntax as well).

Next, Bach makes the following assumptions: i) Transitivity (=taking an object) is a property of VP's, not V's; ii) Passivization can only apply to transitive VP's. From the above discussion it follows that *persuade(to leave)* is a transitive VP but *promise(Mary)* is an intransitive VP; hence passivization can apply to the former but not to the latter.

As Sag & Pollard (1991) comment, order among arguments is a syntactic notion; as far as semantic composition is concerned, any order is equally valid, or arbitrary. Hence, it is quite dubious to attribute any linguistic consequences to semantic argument ordering. More to the point, Bresnan (1982) correctly observes that Bach's account of Visser's Generalization (VG) crucially relies on the impossibility of passivizing an intransitive VP rather than on the unavailability of the suppressed agent. Therefore, Bach makes the prediction that VG would not hold in languages like Icelandic and Norwegian, that *do* allow (impersonal) passives of intransitive verbs. This prediction is false (e.g., in those languages, *It is driven (*drunk) in town*).

Chomsky (1977, 1980) distinguishes between "subject of V" and "subject of Aux", corresponding to the subjects of active and passive sentences, respectively. Thus a passive verb has no subject. If that verb requires subject-control, this requirement cannot be met. Presumably, "subject of" is a syntactic, not a thematic relation. But then the question remains: What is it about the implicit agent of passive, as opposed to, say, an implicit dative, that requires it to be syntactically present in control environments.

Williams (1980) argues that (34) with the *by*-phrase violates the c-command condition on predication relations. Notice, however, that standard c-command tests show that the periphrastic agent does c-command the infinitive:

(36) a. John was persuaded by $her_{2/*1}$ to forgive $Mary_1$.

b. John was persuaded by every $girl_1$ to forgive her_1.

Moreover, as Williams himself notes, VG holds even in the absence of the *by*-phrase. To account for these cases he then concludes that "every predicate must have an antecedent".

This of course restates the problem to be solved, and again, does not distinguish between implicit agents, which cannot control, and implicit datives, which can.

Bresnan (1982) derives VG from a general condition on functional controllers (i.e., controllers in OC), to the effect that they must bear unrestricted grammatical functions - subject or direct/indirect object. Since passive demotes the agent to Ø or oblique - both restricted functions - no functional control relation can be established.

Bresnan's response to the dative/agent asymmetry is inevitably linked to the functional/anaphoric asymmetry. That is, implicit datives can control because they occur in anaphoric control constructions. But unless anaphoric control can be diagnozed independently of the behavior of different predicates under implicit control, the argument is circular. It seems that the definitional property of anaphoric control, according to Bresnan, is the ability to take a *for*-complement. Serious problems arise with this view (originating in Williams (1980)), discussed by Manzini (1983); we return to them below. In the present context, Bresnan's theory makes the following prediction: A dative controller can be dropped iff its predicate can take a *for*-complement. Bresnan mainly discusses the verb *signal*, which conforms to this generalization, but the following examples refute it in both directions:

(37) a. John recommended *(to Mary) to see this movie.
b. John recommended for Mary to see this movie.

(38) a. John said (to Mary) to be quiet.
b. John said (*for Mary) to be quiet.

Thus, Bresnan's theory offers no principled account of agent/dative asymmetry in implicit control; the functional/anaphoric control distinction is orthogonal. Perhaps more seriously, subject-control verbs that take *for*-complements conform to VG in the impersonal passive - contra to Bresnan's prediction (given that they involve anaphoric control):

(39) a. John hated/wished (for Mary) to win the game.
b. * It was hated/wished to win the game.

Růžička (1983) proposes that the subject-control "feature" be replaced by a "Thematic Identity Condition" (TIC), requiring the controller and PRO in a *promise*-construction to bear non-distinct thematic roles. The idea is that in (34b) the matrix subject is an addressee and PRO is an agent, two thematic roles sufficiently distinct to violate the TIC. However,

Růžička provides no similarity metric for thematic roles. In fact, the vocabulary of θ-theory is too impoverished to capture the underlying semantics of control. As Růžička notes, *promise* can embed a passive infinitive, where the controller is an agent and PRO is a patient, violating his TIC; and different embedded predicates are amenable to subject control to varying degrees, depending on pragmatics no less than semantics:

(40) a. John promised to be elected.
b. Er versuchte, geröntgt/abgeholt/bestraft zu werden. [German]
he tried (?)X-rayed/?met/*punished to be.

Koster (1984) tries to reduce VG to the independent requirement that anaphors have an overt antecedent. In Koster's system, PRO in OC is an anaphor, governed by the matrix verb which triggers S'-deletion. Following Williams (1980), Koster assumes that verbs that cannot take *for*-infinitivals select a bare S-complement, whose PRO subject must then satisfy both the binding theory and control theory. A sentence like (34b) can have two possible sources:

(41) a. $John_1$ was promised (by $Mary_2$) [$_S$ e_1 to leave].
b. $John_1$ was promised e_1 (by $Mary_2$) [$_S$ PRO_2 to leave].

In (41a), essentially a raising construction, binding is satisfied but control is not: The embedded subject is coindexed with the matrix goal argument, rather than the agent, as required by the lexical control property of *promise*. In (41b), control (by the matrix agent) is satisfied but binding is not: PRO is an anaphor unbound in its governing category (assuming that neither implicit arguments nor objects of *by* can bind). Thus VG follows from an unresolvable clash between binding theory and control theory.

Koster's account has the appeal of linking VG to an independently established property, namely restrictions on possible Binding-Theory antecedents. In that respect, it seems to me to be superior to most of the alternatives discussed above. Unfortunately, there are numerous problems with the claim that only S-complements (IP-complements in current terminology) admit OC. As discussed in chapter 2, the OC/NOC distinction is orthogonal to the IP/CP distinction, and none of the defining NOC properties (LD-control, arbitrary control, strict readings of PRO etc.) are found with CP-complements.[11]

[11] For similar arguments directly pertaining to Koster's discussion of Dutch, see Petter (1998). Sag & Pollard's (1991) account of VG, like Koster's, also invokes a clash between control requirements and binding requirements. Due to binding, the derived subject in (34b) must be coindexed with PRO (or the

Moreover, there are factual objections. The verb *count on* can be a subject-control verb for many speakers, and may select a *for*-complement ((42a,b) are from Williams 1980); Koster would predict it to be a NOC verb, incorrectly allowing PRO to be unbound in (42c):

(42) a. I am counting on you for Mary to get there in time.
b. I_1 am counting on Bill [PRO_1 to get there in time].
c. * $Bill_1$ was counted on (by me_2) [PRO_2 to get there in time].

Larson (1991) argues that the ungrammaticality of (34b) follows from the lack of a c-commanding controller at D-Structure. Larson assumes that *promise* is a double-object verb, such that the goal argument is lower than the infinitive at D-Structure. A second assumption is that control must be established at D-Structure, prior to any movement, according to the M(inimal) D(istance) P(rinciple).

Larson's theory of subject control faces some general problems, independently of VG, to which we return in section 4. Basically, the theory cannot explain subject control with non-dative-shift verbs (like *ask* and *propose*), thus failing to extend beyond the single verb *promise*. In section 3, where we discuss the complex semantic/pragmatic factors entering the choice of controller, it will become apparent that the MDP is untenable. Specifically to VG, Larson does not explain the dative/agent asymmetry regarding the option of implicit control.

2.2 Contexts of Implicit Agent Control

There are two environments which support control by implicit agents of passives: The first one is in complements of impersonal passives, the second one is in (usually temporal) adjuncts. Those cases violate VG, although normally not mentioned in its context. Their relevance is discussed below.

2.2.1 Impersonal Passives

Control by the implicit agent of an impersonal passives is illustrated in (43):

HPSG analogue; I am abstracting away from the technical details). If the agent is present in a *by*-phrase, and is not a reflexive, coindexation with the derived subject violates Condition B or C. If the agent is a reflexive, or implicit, the structure is ruled out by whatever rules out reflexive interpretations of passive.

(43) *English*

a. It was decided to leave.

Dutch (Koster 1984)

b. Er werd geprobeerd [(om) PRO Bill te bezoeken].
there was tried (Comp) PRO Bill to visit

German (Růžička 1983)

c. ihm war versprochen worden [PRO Hans in die
him had been promised PRO Hans into the
Auswahlmannschaft aufzunehmen].
select-team to include

Cases like (43a) were traditionally analysed as cases of NOC, following Williams' (1980) criterion that an OC controller must be syntactically present (Williams 1980, Bresnan 1982, Bouchard 1984, Koster 1984). However, we have already seen in the discussion of control by implicit datives, that syntactic presence is not criterial for OC. Moreover, as Manzini (1983) notes, the absence of a syntactic controller fails to correlate with the option of a lexical subject in the infinitive - another NOC diagnostic according to Williams/Bresnan:

(44) * John decided for Bill to shave himself.

Whether or not a predicate selects a *for*-infinitival seems to be a fact isolated from control, often displaying a great variation among speakers; see discussion in chapter 2. Perhaps the most straightforward demonstration that (43) is not a case of NOC is the following:

(45) a. * It was decided by $John_1$ [PRO_{arb} to teach him_1 Spanish].

b. * $Mary_1$ said that it was decided by John [PRO_1 to behave herself].

When the matrix agent is syntactically present, neither arbitrary nor long-distance control - two diagnostics of NOC - are possible. What probably causes the confusion is the impersonal interpretation associated with these constructions, when the *by*-phrase is absent; since the implicit agent is impersonal, the PRO it controls is too, making it look very much like arbitrary PRO. But again, arbitrary interpretation here is no more an indication of NOC than it is in *It is fun to play baseball*, where the implicit matrix goal receives a generic interpretation, inherited by the controlled PRO.

The question then arises why impersonal passives, as opposed to personal passives, do not obey VG. This point can be further illustrated with transitive verbs that have both personal and impersonal passives. Kawasaki (1993: 105) observes that some speakers marginally allow an impersonal passive with *promise*; for those speakers, there is a detectable contrast between (46a-b):

(46) a. * The demonstrators were promised (by the committee$_1$) [PRO$_1$ to investigate the matter].

b.%? It was promised (by the committee$_1$) [PRO$_1$ to investigate the matter].

As far as I know, Kawasaki (1993) contains the only attempt, albeit a sketchy one, to address this question. Kawasaki suggests that the control requirements on an infinitival complement to an impersonal passive are "relaxed", thanks to the presence of the expletive subject. Extending Chomsky's (1981, 1986a) treatment of *there*-replacement, she assumes that the expletive subject *it* is replaced at LF by the "extraposed" infinitive. Control is "checked at LF", and therefore "when a subordinate clause is related to the subject position, it does not behave as a genuine complement to the matrix predicate, but escapes the syntactic requirement of the predicate" (p.108).

It may well be that what allows impersonal passives to escape VG is somehow related to the presence of the subject pronoun *it* (which is not a pure expletive, unlike *there*). However, Kawasaki's assimilation of these constructions to extraposition in general seems too strong. As shown in chapter 3, normal cases of extraposition (with non-psychological predicates) allow true arbitrary interpretation for PRO. This is not possible in the case of complements to impersonal passives, which at best allow partial control. Thus (45a) minimally contrasts with (47):

(47) It helped John$_1$ [PRO$_{arb}$ to teach him$_1$ Spanish].

This contrast is not explained by Kawasaki's proposal, which predicts (45a) to be as good as (47). The analysis of control in extraposition I have developed in chapter 3 does account for this contrast; put briefly, it is claimed there that complements fall under OC and adjuncts under NOC. The infinitive in (45a) is a complement, whereas the one in (47) has the option of VP-adjunction, a distinction that follows from the different argument structures of the matrix predicates in these examples. What remains unexplained, then, is what is it about impersonal passives that allows them to violate VG without being cases of NOC. As far as I can tell, this is still an open question.

2.2.2 Adjuncts

In certain environments, implicit agents can control into adjuncts. Before we discuss these cases, a general comment is appropriate. Control into adjuncts is an extremely complicated topic, which suffers from two compounding factors: i) Not all adjuncts are alike, and not all adjunct positions are alike; ii) the data are not sharp, and speakers disagree on many crucial examples. I will not make any attempt in this study to develop a theory of adjunct control (there may be no such theory). My goal here is simply to illustrate certain properties that are relevant to our discussion. We will concentrate on temporal adjuncts, headed by *after/before/while*, absolutive adjuncts, and adjuncts headed by *without*. Presently we put aside rationale clauses; the control properties of these are quite different, and we return to them in section 2.3.

Some examples of implicit agent control into adjuncts are given by Roeper (1987):[12]

(48) a. The game was played wearing no shoes.
b. The president was elected without considering his competence.
c. ? Beer was drunk after arriving home.
d. ? Shoes must be put on before going to school.

To the extent that these examples are acceptable, the missing subject of the embedded gerund must be interpreted as the implicit agent of the matrix clause; so these seem to be cases of OC.

Certain peculiar restrictions apply to these constructions. Manzini (1986) observed that an implicit external argument must be interpreted as human when it controls the PRO subject of a temporal adjunct:

(49) a. The avalanche hit the house before rolling down the hill.
b. The house was hit.
c. Mary said that the house was hit before rolling down the hill.

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[12] (48d) may involve control by an implicit argument of the modal, rather than the verb. Williams (1985) invokes this possibility to account for a contrast noted by Chomsky (1982):

i. * The books were sold [without PRO reading them].
ii. The books can be sold [without PRO reading them].

As mentioned in the text, the unclear status of the data underdetermines the correct analysis.

Manzini observes that there is no intrinsic [+human] restriction on controlled PRO, as shown in (49a); neither is the implicit external argument of the passive *hit* required to be human ((49b) can be continued with *by the avalanche*). Still, on the reading where the implicit hitter in (49c) controls PRO (rather than the house), that hitter must be human and cannot be understood to be the avalanche.

Manzini interprets these facts as an indication that PRO in (49c) is really PRO_{arb}, which is intrinsically specified as [+human]. At the same time, Manzini claims that this PRO is controlled by the matrix agent. It is unclear how the possibility of "controlled PRO_{arb}" comes about in this system, since OC and NOC are supposed to obtain in disjoint environments (governed and ungoverned infinitives, respectively).

A better paradigm to illustrate the full picture is the following:

(50) a. [Before PRO entering the basement], the rain washed the stairs.
b. [Before PRO entering the basement], the stairs were washed.
c. [Before PRO entering the basement], Mary was washed.

Those speakers who accept (50b) construe the implicit controller as human - even though nothing about the pragmatics of the situation requires that (cf. (50a)). Still, a human subject, as in (50c), overrides the implicit agent and must be the controller itself.

Kawasaki (1993), who investigated control into temporal adjuncts in great detail, reaches the following conclusion: "Control by a passive agent is the most acceptable when the agent is human and the derived subject is non-human" (p.165). According to Kawasaki, the [+human] restriction reflects the fact that these constructions do not fall under OC but rather under "topic-control"; the reference of PRO is determined by the current discourse topic, which is established extrasententially.[13] For the sake of completeness, we mention some of Kawasaki's observations.

A standard way to refer to a familiar discourse entity is by a definite NP; indefinite NP's introduce new entities. Indeed, Kawasaki points out that only the former is acceptable as a passive agent controller (51a); similarly, since subjects make better topics than objects, PRO can be linked to *many women* in (51c) more easily than in (51b); and finally, in the right context, where the topic is salient enough, it can "control" PRO without even being grammatically represented (51d):

[13] The idea was first suggested by Bresnan (1982) to account for PRO in sentential subjects.

(51) a. After collecting some money, a bank account was opened by the/*a businessman.

b. John harassed many women. ?? After talking to the manager, complaints were filed.

c. Many women were harassed by John. After talking to the manager, complaints were filed.

d. After pitching the tents, darkness fell quickly.

It should be pointed out, however, that all of Kawasaki's examples involve clause-initial adjuncts; the cases discussed earlier (48), with clause-final adjuncts, seem to place stricter constraints on the interpretation of PRO (e.g., ?* *Darkness fell quickly after pitching the tents*). This is most likely related to configurational factors: Clause-initial adjuncts are attached higher than clause-final ones, and in particular, outside the c-command domain of the subject.

The above considerations, though lacking a principled account, do warrant one clear conclusion: Control into adjuncts is not simple OC, contrary to what is frequently claimed (see Mohanan 1983, Borer 1989, Clark 1990, Hornstein 1999). Implicit agents *do* control into these adjuncts, and for clause-initial adjuncts, a grammatical controller is not even obligatory. Moreover, it is also not generally the case that when a controller is syntactically present, it must be the subject. As I have shown in chapter 3, the choice of controller in these environments is sensitive to logophoricity, an observation originally made by Williams (1992). Once logophoricity is separated from subjecthood, one can easily get non-subject controllers with adjuncts.

Recall that we were interested in control into adjuncts because it seems to provide couterexamples to VG. However, as orginally stated, VG only applies to subject control verbs - that is, verbs lexically specified for subject control. One might wonder, then, why we bother to look at adjunct control, which is clearly not lexically governed.

The distinction between complement and adjunct control, however, is irrelevant in the present context. In practice, all the attempts to explain VG - the ungrammaticality of *John was promised to leave* - appeal to the absence of a syntactic agent, and do not exploit the fact that *promise* is lexically specified as a subject control verb. Consequently, those accounts automatically carry over to the adjunct cases, where the implicit agent is equally absent from the syntax. Thus VG may be stated in a way which does not bear on adjunct control, but to my knowledge, all existing accounts fail to distinguish the complement cases

from the adjunct cases in a principled manner. Together with the impersonal passives, adjuncts stand as unexplained exceptions to VG.[14]

By now the terminological irony is hard to miss: The "exceptions" to the generalization are far more numerous and systematic than the cases it covers - possibly passive *promise* alone. Tentatively, then, I suggest a shift in perspective: The default behavior of implicit agents w.r.t. control is normal; they *do* control, like any other implicit argument, and there is no such thing as "Visser's Generalization". What is left to be explained are minor deviations: The [+human] sensitivity in adjunct control (possibly related to "topichood") and the one exception of passive *promise*.

2.3 Rationale Clauses: The ship was sunk to drive linguists nuts

The following contrast, attributed to R. Manzini, has haunted control theory for more than two decades:

(52) a. The boat was sunk [PRO to collect the insurance].
b. * The boat sank [PRO to collect the insurance].

A number of studies claim that the implicit matrix agent in (52a) controls the PRO subject of the rationale clause (Manzini 1983, 1986, Roeper 1987, Clark 1990, Higginbotham 1999). Since unaccusatives have no external argument, PRO in (52b) lacks a controller and the sentence is ruled out.

This pair has caused a great deal of confusion, I believe, because linguists took it as teaching something about control, whereas in fact it teaches something more general, about the interpretation of rationale clause. Other than Clark (1990), to which I return below, no real argument was ever presented to support the claim that (52a) involves implicit agent control; the intuition about the meaning of this sentence *was* the argument. However, the literature contains quite a few examples that cast serious doubts on the relevance of grammatical agency to control into rationale clauses.

The first case, (53a), was already noted in Williams (1974); (53b) is an example by Roeper (1987) and (53c) is from Farkas (1988):

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[14] A nice example from Borer (1985) shows that an implicit agent can simultaneously control into a complement and an adjunct:

i. It is usually remembered to hide from the sun while crossing the Sahara.

On the relevant reading the adjunct is attached to the matrix clause.

(53) a. Grass is green to promote photosynthesis.
b. Flamingoes are pink to attract the opposite sex.
c. The shopwindow has a big sale sign in it (in order) to attract customers.

Roeper further observes that unaccusative and passive subjects may control into rationale clauses, assuming a "secondary agent" role (cf. Zubizarreta 1982). Notice that (54c) is ambiguous between implicit agent control and subject control:

(54) a. Jesus dies to save our souls.
b. The boy fell to deceive his mother.
c. King was arrested to prove a point.

Such facts led Williams (1985) to conclude that rationale clauses are not controlled by implicit grammatical agents but rather by the matrix *event* - insofar as that event can be conceived as under the control of a purposeful agent (for instance, god or evolution in (53a-b)). Williams claims that even sentences like (52b) can be "rendered sensible if we can imagine a circumstance under which 'the boat sank' is a circumstance under the control a of a purposive agent, etc. Suppose that a playwright is rationalizing the design of his play by saying the following" (p.311):

(55) The boat sank in order to impress the queen and move her to murder her husband by the end of act III.

On this view, the sole difference between (52a) and (52b) is that it is much easier to conceive the matrix event in the former as a result of some intentional act. That this is independent of control is witnessed by the fact that the contrast persists even when the rationale clause contains a lexical subject; Lasnik (1984) gives (56), and Kawasaki (1993: 204) cites the minimal pair in (57):[15]

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[15] Roeper (1987) argues that unaccusative clauses are not always incompatible with rationale clauses with a lexical subject:

i. The door opens for everyone to come in at four o'clock.
ii. Most operations occur for doctors to have practice.

Again, the difference between these examples and (56)/(57b) seems at most pragmatic.

(56) * The ship sank for us to prove a point.

(57) a. The ship was sunk (in order) for the owner to collect the insurance.
b. * The ship sank (in order) for the owner to collect the insurance.

A final piece of evidence against implicit agent control into rationale clauses is offered by Lasnik (1988):

(58) The ship was sunk by a torpedo to prove a point.

As Lasnik shows, the instrumental *by*-phrase doubles the suppressed subject θ-role, as an overt agent is incompatible with this *by*-phrase (**The navy sank the enemy ship by a torpedo)*. This means that there *is* no implicit agent in (58), therefore control of the PRO subject in the rationale clause must be licensed through other means.

To summarize, rationale clauses provide no evidence for control by implicit agents, and in certain cases even seem to exclude it; they simply fall under a different generalization.

What this generalization is is an interesting question by itself. Minimally, the matrix event must be "intentional"; I use this term quite loosely, in the sense discussed above, which is no doubt pragmatically determined. There seem to be two options:

(59) For a PRO subject of a rationale clause in a passive matrix sentence:

a. The controller is the matrix event.
b. The controller is the purposeful causer of the matrix event.

At the core of the debate is another famous example, by Lasnik (1988):[16]

(60) * The ship was sunk to become a hero.

[16] The reader will have noticed that the examples under debate all involve sinking, however the object sunk shifts between *boats* and *ships*. This shift is not random; authors who advocate agent-control tend to sink boats, while those advocating event-control prefer to sink ships. Whether this correlation is linguistically significant has not been investigated.

Following Williams, Lasnik claims that the ungrammaticality of (60) confirms (59a); since the embedded predicate cannot be predicated of events, the sentence is ruled out. Lasnik further cites a similar contrast from Jaeggli (1986) illustrating the same point:

(61) a. The report was carefully prepared to impress the board of directors.
b. * The report was carefully prepared to be congratulated by the board of directors.

Again, events can impress, but not be congratulated, hence the contrast.

Lasnik's account does face a problem, though, which he recognizes: The embedded predicate in (52a) seems to require a human subject, no less than the one in (60), yet the latter is sharply worse than the former. A further problem is noted by Clark (1990: 206): Although *become a hero* cannot be predicated of events, *become illegal* can; still, the latter cannot occur in a rationale clause embedded under a passive verb:

(62) a. Smoking marijuana became illegal in the 1930s.
b. * Marijuana was smoked to become illegal in the 1930s.

Clark argues that if event control were possible, the ungrammaticality of (62b) would be a mystery. Rather, there seems to be something special about *become* (and perhaps passive verbs as in (61b)) that excludes it from rationale clauses under matrix passivization. Since event control can explain neither the impossibility of (62b) nor the possibility of (52a), Clark returns to the idea that rationale clauses *are* grammatically controlled by a matrix argument.

Consider again the empirical pattern to be explained:

(63) a. The sailor sank the ship [PRO to become a hero].
b. * The ship sank [PRO to become a hero].
c. * The ship was sunk [PRO to become a hero].
d. The ship was sunk [PRO to collect the insurance].

Clark argues that the rationale clause combines with the matrix verb to form a complex predicate. Such predicates are subject to "semantic filtering", which requires the controller and PRO to bear "compatible" θ-roles. In (63b) there is no appropriate matrix controller (unaccusative lacking agents). In (63c) the controller is an agent and PRO is a theme, whereas in (63d) both the controller and PRO are agents; thus only the latter meets the thematic compatibility requirement.

Of course, Clark has to somehow distinguish (63a) from (63c), which are thematically identical. At this point he states that "high-order one-place predicates such as *sink the ship to become a hero* may not take an element under unrestricted quantification (such as the LF realization of an implicit argument) as an argument" (p.211). Clearly, this is a stipulation, which leaves the original example of Lasnik's unexplained. Moreover, Clark's condition does not extend to other thematic roles:

(64) * Gods are feared [PRO to feel unworthy].

Here both the implicit external argument in the matrix clause and PRO in the rationale clause bear the the θ-role experiencer, yet that compatibility does not redeem the sentence. Finally, given his reliance on grammatical control in rationale clauses, Clark has no account for all the cases in (53).

Another attempt to save the implicit agent control is made by Higginbotham (1999). Higginbotham claims that the rationale clause in (63d) is reanalysed as a *purpose clause* with a gap corresponding to an implicit argument of *insurance*:

(65) The ship$_1$ was sunk [PRO to collect the insurance (*of* e_1)].

The matrix subject is thus removed as a potential controller of PRO. By contrast, (63c) cannot resort to this strategy, since *hero* has no comparable slot for an implicit argument; therefore, the matrix subject must control PRO, resulting in a semantic anomaly.

Notice that the gap inside a purpose clause is standardly analysed as an A-bar variable created by movement. It is far from obvious that implicit arguments can function as such variables.[17] Suppose, for the sake of the argument, that they can. Higginbotham's analysis makes two predictions: i) Whenever an embedded implicit argument is coindexed with the matrix subject, control by the implicit agent should be fine; ii) Whenever an embedded implicit argument is coindexed with a matrix *non*-subject, subject control should be forced. Both predictions are disconfirmed:

(66) a. * The infant$_1$ was adopted [PRO to become a mother (*of* e_1)].

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[17] Other contexts of null operator movement do not allow this option:

i. * The ship$_1$ was easy [Op$_1$ [PRO to collect the insurance (of e_1)]].
ii. * That's the ship [Op$_1$ [PRO to collect the insurance (of e_1)]].

The examples improve when *of* is inserted, in which case the gap is a real trace, not an implicit argument.

b. The journalist was given the document$_1$ [PRO to incriminate the author (*of* e_1)].

Both *mother* and *author* are relational nouns, introducing implicit arguments. Yet the controller of PRO cannot be the adopter in (66a); and it *can* be the giver in (66b), subject-control being quite unnatural. Obviously, whatever rules out (63c), rules out (66a) as well; the generalization seems to be linked to the verb *become*, rather than to the purported availability of an embedded implicit argument.[18] And in light of (66b), the idea that a subject must control when it does not bind a gap in the infinitive is also untenable.

To summarize, there seems to be indisputable evidence that rationale clauses are not controlled by implicit agents. There also seems to be evidence that event control is not a general enough mechanism (cf. (62b), (63d)). A notion of "intentional causer" is more likely to be involved, yet when the matrix verb is passive, PRO must be agentive (cf. (60), (61b)) for unknown reasons.

3 Control Shift

3.1 The Data

The phenomenon of control shift was first noted by Hust & Brame (1976) and has been at the focus of much interest ever since. The phenomenon is witnessed in constructions with two matrix arguments, normally agent and goal. Whereas in normal circumstances the controller of PRO is fixed either as the agent or the goal, in special circumstances the controller shifts to the other argument. Precisely what these "special circumstances" are is what theories of control shift attempt to identify, and it is here that they differ.

Since many examples of control shift in the literature involve not only a shift in control but also matrix passivization, the terminology of grammatical functions is misleading. I will therefore use the thematic terminology to refer to the two types of shifts we find: "Agent --> Goal" and "Goal/Theme --> Agent". Below are representative examples:

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[18] Lasnik's example (63c) improves when the matrix clause contains a modal (A. Marantz, p.c.):

i. The ship must be sunk to become a hero.

This seems to be the same effect mentioned in fn.11, where the controller is an argument of the modal.

(67) Agent --> Goal Control Shift

a. $Mary_1$ was never promised [PRO_1 to be allowed to leave].
b. ? John never promised $Mary_1$ [PRO_1 to be allowed to leave].
c. Grandpa promised the $children_1$ [PRO_1 to be able to stay up for the late show].
d. $Montana_1$ was promised (by the doctor) [PRO_1 to be healthy by game time on Saturday].

(68) Goal/Theme --> Agent Control Shift

a. Jim_1 asked Mary [PRO_1 to be allowed to get himself a new dog].
b. $Susie_1$ persuaded the teacher [PRO_1 to be allowed to leave early].
c. The $council_1$ petitioned the mayor [PRO_1 to be allowed to lower property taxes].
d. $John_1$ begged Mary [PRO_1 to be allowed to consult a doctor].

[Sources: Bresnan 1982, Melvold 1985, Farkas 1988, Sag & Pollard 1991]

Some comments about the quality of the data. The examples are cited with the same judgments as given by the authors above, however there is considerable variation among speakers as to the status of certain cases. Since we are dealing here with subtle tendencies, rather than absolute distinctions, imprecision is inevitable. With this in mind, let me simply report some common observations.

It is usually noted (e.g., Bresnan 1982, Melvold 1985) that the "Agent --> Goal" shift is more acceptable when the goal is passivized; hence the contrast (67a-b). Comrie (1984) rejects examples parallel to (67c), claiming that the only "shifting" modal is *be allowed to.* Chomsky (1980) also notes that substituting *get permission* for *be allowed* in (67a) results in unacceptability. And examples like (68b) are marginal for some speakers (Melvold 1985, Farkas 1988).

Different verbs tolerate control shift to different degrees. *ask* is quite flexible for many speakers, shifting between object-and subject-control even without the insertion of *be allowed to*, solely on the basis of pragmatic understanding of authority relations:

(69) a. The pupil asked the teacher to leave early.
b. The guard asked the prisoner to leave the room.

[Farkas 1988]

The verbs *offer* and *propose* are similarly flexible:

(70) Ich_1 habe ihm_2 angeboten / vorgeschlagen [$PRO_{1/2}$ mich zu erschießen].
I have him offered / proposed PRO myself/me to shoot
'I offered/proposed to him to shoot myself'
'I offered/proposed to him to shoot me'
[German: Wurmbrand 1998b: 168-9]

Likewise, choice of controller with *signal* is context-dependent (goal in (71a), agent in (71b):

(71) a. The parked police car signaled (to) the oncoming motorist to turn left.
b. The speeding car signaled (to) the startled pedestrian to turn left.
[Sag & Pollard 1991]

Other verbs strongly resist control shift even with *be allowed to* in the embedded clause, no matter how plausible the pragmatics is:

(72) a. * $Bill_1$ forced the judge [PRO_1 to be allowed to live].
b. * $John_1$ authorized Mary [PRO_1 to be allowed to defend himself].
c. * $John_1$ encouraged Bill [PRO_1 to be allowed to leave].
[Melvold 1985, Farkas 1988]

Finally, variation is even greater once one looks at other languages. Russian and German appear to be much more restricted than English, disallowing many of the examples in (67)-(68) (Comrie 1984); Hebrew is somewhat more flexible than English, allowing the "Agent --> Goal" shift with embedded copular/passive predicates:

(73) ha-menahel hivtiax li [PRO_1 lihiyot ha-/lehitmanot la- ozer šelo].
the-manager promised to-me PRO to be the-/to be appointed to-the assistant his
'The manager promised me_1 [PRO_1 to be (appointed as) his assistant]'

Let us summarize these observations:

(74) The possibility of control shift depends on:

a. The semantics of the matrix verb.
b. The semantics of the embedded event (e.g., some modal force).
c. Pragmatic information (e.g., authority relations).
d. Language/dialect-particular factors.

We now turn to several theories attempting to capture these properties. After discussing their merits and faults, we will consider the implications of control shift for "syntactic" analyses where controller choice is determined by some locality principle.

3.2 Theories of Control Shift

The basic question that control shift raises is the following: Are the principles that govern unmarked control and marked (shifted) control essentially the same, or do the two phenomena involve distinct mechanisms? Under the first option, there is nothing outstanding about control shift; rather, standard principles of control operate here as well, yielding "non-standard" effects simply because they apply to non-standard input. Under the second option, a marked principle of control is invoked to explain the exceptional cases. We will accordingly classify the theories to be discussed below:

(75) a. Control Shift involves no special mechanism
Melvold (1985), Petter (1998).

b. Control Shift involves a special mechanism
Bresnan (1982), Farkas (1988), Sag & Pollard (1991)

It is hard to make a priori arguments in favor of either position. Although simpler at first sight, theories of type (75a) shift the complexity to *standard* control, in order to make it parallel to situations of control shift. Theories of type (75b), by contrast, place the special mechanisms in control shift, but these mechanisms are not ad-hoc and arguably exist elsewhere in the grammar. Thus, the decision between the competing proposals is empirical. As we will see below, no single proposal is free of empirical difficulties, so the choice among them is presently quite subtle. Yet important insights can be gained from this comparative discussion.

3.2.1 "No Special Mechanism" Theories

3.2.1.1 Melvold (1985)

Melvold (1985) proposes to account for control shift phenomena by incorporating "thematic binding" conditions into the lexical entries of particular control verbs. For example, the verb *promise* specifies that the matrix agent binds the embedded agent, and the matrix goal binds the embedded beneficiary. This accounts for (76a,b), respectively, on the assumption that the subject of *be allowed* is a beneficiary:

(77) a. $Mary_1$ promised John [PRO_1 to leave].
b. $John_1$ was promised [PRO_1 to be allowed to leave].

The verb *beg*, in contrast, specifies that the matrix goal binds the embedded agent and the matrix agent binds the embedded beneficiary. The relevant cases are (78a,b), respectively:

(78) a. Mary begged $John_1$ [PRO_1 to leave].
b. $Mary_1$ begged John [PRO_1 to be allowed to leave].

Non-shifting control verbs, like *force*, are said to lack a suitable thematic binder for the embedded beneficiary.

On Melvold's account, each of the shifting verbs specifies two thematic binding relations - in all contexts. "Control shift" is simply the case where the embedded beneficiary role, normally an unlikely subject, is assigned to PRO. However, there is nothing special about the control principle itself in these cases; thematic binding is independent of the mapping to syntax, and links the embedded beneficiary to the appropriate matrix role whether or not it is PRO that bears this beneficiary role.

As noted earlier in connection with Růžička's (1983) analysis, the idea that control shift is best captured at the level of θ-theory is questionable; standard thematic labels do not seem to provide the semantic richness involved in these cases. Indeed, Melvold points out that examples like (79), where the thematic binding relations are agent-theme and agent-agent, respectively, violate her entries for *promise* and *ask*:

(79) a. Tom promised [PRO to be examined by a doctor].
b. Jane asked [PRO to defend herself].

Melvold therefore invokes a notion of "thematic overlay", whereby the appropriate θ-role is imposed on PRO (agent in (79a), beneficiary in (79b)), in accordance with the thematic binding conditions. However, it is not clear what governs the availability of thematic overlay. Melvold argues that it cannot override an obligatory beneficiary role, accounting for the ungrammaticality of (80).[19] That leaves unexplained the original cases of Visser's Generalization; in particular, it is not clear why thematic overlay cannot impose a beneficiary role on PRO in (81), to match up with the matrix (goal) subject:

(80) a. * Jane asked Bill [PRO to be allowed to defend himself].
b. * Tom promised [PRO to be allowed to consult a doctor].

(81) * $John_1$ was promised [PRO_1 to leave].

A further problem with Melvold's analysis is the failure to distinguish the effects of control from those of thematic matching. While the latter act as well-formedness conditions on the former, they cannot replace them altogether. Thus, in a *promise*-construction, when PRO is an agent, there is no thematic binding at all between the matrix goal and the embedded beneficiary:

(82) $John_1$ promised Mary [PRO_1 to allow Bill to leave].

It is possible to argue that *Mary* still binds a "secondary" beneficiary, implicit in the embedded clause. That would imply that the object "allowee" in (82), unlike the PRO allowee in (80b), is not an "obligatory beneficiary", hence can be overriden by the thematic overlay. We are then left with no clear indication what determines which occurrences of the beneficiary role are obligatory and which are not.

It seems that the obligatory binding of the beneficiary PRO in (77b) results from its being a *PRO*, not from its being a *beneficiary*. This distinction is obscured in Melvold's treatment. Nevertheless, the idea of "thematic binding" tracks an important intuition, namely, that the unmarked controller is still "active" in control shift constructions, even if not directly binding PRO. This intuition guides later, more sophisticated formulations, like Sag & Pollard's (1991) "semantic coercion", or Petter's (1998) "deontic authority", which we discuss below.

[19] In fact, (80b) is possible in certain contexts.

3.2.1.2 Petter (1998)

The basic observation of Petter (1998) is that the link between control shift and modality is not accidental. So, even infinitives without *to be allowed* are interpreted with a hidden modal structure, involving permission from a "Deontic Authority" (DA); the examples in (83) are analogous to (84):

(83) a. Grandma promised the children$_1$ [PRO$_1$ to stay up late].
b. The pupil$_1$ asked the teacher [PRO$_1$ to leave early].

(84) a. Grandma promised the children$_1$ *her permission* [PRO$_1$ to stay up late].
b. The pupil$_1$ asked the teacher *for his permission* [PRO$_1$ to leave early].

In English, the DA argument can be made explicit in a periphrasic *by*-phrase of a passive *allow* - that is, the allower is the DA argument. Dutch is more flexible, expressing DA as the object of the preposition *van* 'from' in a variety of contexts:

(85) Jan mag / moet weggaan van Marie.
John may / must leave from Mary
'John may leave, because Mary allowed him to'
'John must leave, because Mary forced him to'

As Dutch modals are regular verbs, they can appear in infinitives, producing the same effect of control shift that *be allowed to* complements produce in English:

(86) a. John$_1$ had Mary$_2$ beloofd [PRO$_{?1/2}$ laat op te mogen blijven].
John had Mary promised PRO late up to may-INF stay
b. John$_1$ vroeg Mary$_2$ [om PRO$_{1/*2}$ vroeg weg te mogen gaan].
John asked Mary for PRO early away to may-INF go

Petter argues that when the DA argument is left implicit, as in the above examples, it behaves like a pronoun. If this pronoun is coreferent with the unmarked controller, PRO must shift to the marked controller to avoid a Condition B violation.[20] Thus, on Petter's account, control shift is a disjoint reference effect:

[20] The idea that implicit arguments are pronominal vis-à-vis the binding conditions has been suggested by Williams (1985, 1987) and Brody & Manzini (1987).

(87) John$_1$ promised Mary$_2$ [PRO$_{*1/2}$ to be allowed by him$_1$/e$_1$ to leave early].

In Petter's theory, the controller of PRO must be some matrix argument, which yields a semantically coherent interpretation. The shift from one controller to another does not involve any novel principle of controller choice, but is rather triggered by a constraint unrelated to control as such. Hence, like Melvold's account, Petter's assumes that control shift does not involve any special mechanism.

It seems to me that the semantic intuition behind Petter's proposal is correct; modality, explicit or implicit, is a constant feature of control shift constructions. However, Petter's analysis fails to cash out this intuition, and suffers from several problems.

First, it is not clear that the type of modality involved must be *deontic*; consider example (67d), repeated below, from Sag & Pollard (1991):

(88) Montana$_1$ was promised (by the doctor) [PRO$_1$ to be healthy by game time on Saturday].

Here what is being promised is not permission but simply a certain state of affairs; moreover, it is not at all clear that there is a hidden modal source in the infinitive (bound by *the doctor*?), so the Condition B account may not extend to this case.

However, cases like (88) are pretty rare, and we may grant that by and large control shift implicates a DA argument in the infinitive. What is absent from Petter's account is an explanation of why is it just this kind of argument, as opposed to other pronominal arguments, that triggers control shift. Notice that Condition B, by itself, does not care about the semantic role of the pronominal DA argument; the shifting effect is caused by virtue of its being *pronominal*, not by virtue of its being DA. Thus, other things being equal, Petter incorrectly predicts the following examples to trigger control shift:

(89) a. * John$_1$ promised Mary$_2$ [PRO$_2$ to visit him$_1$].
b. * Mary$_1$ was promised (by John$_2$) [PRO$_1$ to be visited (by him$_2$)].
c. * John$_1$ promised Mary$_2$ [PRO$_2$ to buy a new computer (for him$_1$)].

In all these cases, an embedded pronominal argument, overt or implicit, corefers with the matrix agent. This yields a Condition B violation under the unmarked choice of controller. Still, control shift is not allowed to "save" these constructions, as opposed to (87).

Thus, coreference between the unmarked controller and the embedded DA argument is not a sufficient condition for control shift. In fact, it is neither necessary, as the following example from Melvold (1985) illustrates:

(90) ? $Jane_1$ was promised [PRO_1 to be allowed by Fred to go fishing].

Notice that here (as a result of Condition C) the implicit matrix agent, which is the unmarked controller, cannot corefer with *Fred*. Melvold (1985) notes that this example "is acceptable only when the implicit agent of the upstairs clause is interpreted as having control over the lower clause lexical agent" (p.16). For Petter, the downstairs agent *is* the DA argument; in fact, she goes at length to establish that the DA function is superimposed on the "allower" argument (the thematic *source*, in her terms). Therefore, the possibility of control shift in (90), where Condition B is not at stake, remains unexplained.

It is clear what parts of Petter's analysis should be modified to make it work. The core intuition, that control shift relies on a hidden DA argument, is probably on the right track. However, that argument cannot be part of the lexical entry of the embedded predicate, and must be represented at a more abstract level. Moreover, the shift in control cannot be mediated by Condition B, which is both too strong and too weak. Rather, it is concomitant to a related shift in the responsibility / authority relations between the matrix arguments, perhaps along the lines discussed in the proposals below.

3.2.2 "Special Mechanism" Theories

3.2.2.1 Bresnan (1982)

Bresnan (1982) takes cases like (67a), repeated as (91a), to instantiate anaphoric control (NOC), rather than functional control (OC). Anaphoric control applies to closed complements (finite clauses or infinitivals with PRO), whereas functional control applies to open complements (bare VP's). Thus, standard OC and control shift fall under different theories in this analysis. Bresnan claims that this distinction is consistent with the fact that (91a) can undergo extraposition and passivization (91b,c), just like finite clauses, as opposed to functionally controlled infinitives (92):

(91) a. Mary was never promised to be allowed to leave.
b. It was never promised to Mary to be allowed to leave.
c. To be allowed to leave was never promised to Mary.

(92) a. John promised Mary to be on time.
b. * It was promised to Mary to be on time.
c. * To be on time was promised to Mary.

[Bresnan 1982: 404]

But notice that (92a) cannot be passivized - indeed, as a result of Visser's Generalization:

(93) * Mary was promised to be on time.

This fact alone is likely to explain the ungrammaticality of (92b-c) (given standard assumptions about connectivity), rendering Bresnan's argument circular: To account for the contrast between (91a) and (93), Bresnan points to the contrast between (91b-c) and (92b-c). But the latter is not an *independent* fact - rather it reflects the very same fact that calls for explanation, namely the impossibility of shifting control to the matrix goal in (93).

To substantiate the alleged analogy between the infinitives in (92) and finite clauses, Bresnan claims that *promise* takes on the meaning of *promise that*, rather than *promise to*, when followed by *to be allowed to VP* complements. Whereas the complement of *promise to* is interpreted as an action, that of *promise that* is interpreted as a theme, abstractly transferable to the matrix goal.

The analogy between *to be allowed to VP* complements and finite complements is semantically dubious; the latter allow a purely epistemic usage, which involves no transfer, as in *John promised that it will rain tomorrow.* Under this reading, the matrix subject need not be animate. Sag & Pollard (1991) cite an elegant minimal pair, showing this very clearly:

(94) a. The fortune cookie promised Montana that he would play in the Super-Bowl.
b. # The fortune cookie promised Montana to be allowed to play in the Super-Bowl.
[cf. The coach promised...]

This observation is quite telling; notice that if all that was going on in (94b) is a control relation between the matrix goal and PRO, it would be mysterious why the animacy of the matrix *subject* should intervene in such a relation. However, if the matrix subject is still implicated in the ultimate interpretation of these constructions (as an indirect party, responsible for the actualization of the embedded event), then this fact is expected. At any

rate, it seems that both on the syntax and on the semantics sides, Bresnan's analysis does not provide an adequate account of control shift.

3.2.2.2 Farkas (1988)

Responding to the difficulty of thematic hierarchies (Chierchia 1984) or GF hierarchies (Bresnan 1982) to properly characterize controller choice, Farkas (1988) proposes a new semantic notion - the RESP(onsibility) relation. RESP(i,s) holds between an initiator i and a situation s just in case i intentionally brings about s.

Farkas argues that RESP is motivated independently of control, governing the felicity of rationale clauses, positive imperatives and the adverb *intentionally*. Furthermore, an initiator of s need not be the agent of s; indeed, agentless situations may have initiators that are not syntactically represented. The following examples illustrate these properties:

(95) a. The shopwindow has a big sale sign in it in order to attract customers.
b. # John resembles his father in order to annoy his grandmother.

(96) a. Be polite!
b. # Be tall!

(97) a. John was intentionally seen by the best specialist.
b. # John was intentionally watched by his neighbors.[21]

According to Farkas, the (a) examples above instantiate situations that, given our assumptions about the world, can be intentionally brought about; they therefore satisfy the RESP relation w.r.t. some initiator; whereas the (b) examples involve situations that fail to meet this condition. "Initiator" often coincides with a grammatical agent, but does not have to. An initiator may determine the actions of the agent - a relation Farkas names A(i,a).

The claim is that in the unmarked case, the controller of the situation described in the infinitive is the initiator of the situation, namely, the individual standing in the RESP relation to it. Farkas argues that this concept covers both *promise*-type and *persuade*-type verbs, explaining the parallels between the above observations and (98):[22]

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[21] The "#" mark refers to the subject-oriented reading of the adverb.

[22] This echoes Lasnik & Fiengo's (1974) observation that infinitival complements to verbs like *try* and *convince* must denote "controllable actions".

(98) # John promised / persuaded Pete to resemble Bill / be tall.

To explain control shift, Farkas posits a markedness principle, which selects as controller the individual whose actions are determined by the initiator. This distinction between the way the controller is selected in unmarked and marked situations places Farkas's theory with those that invoke a special mechanism for control shift.

The markedness principle applies selectively to different verbs. The overall system looks as follows:

(99) In a control construction with a matrix argument i and an infinitival s, s.t. RESP(i,s):

a. Unmarked: Assign controller to i.
b. Marked: Assign controller to an argument x, s.t. A(i,x).
   option (1): always.
   option (2): never.
   option (3): only if i is not projected as a 'core' argument.
   option (4): only if (a) leads to a responsibility clash.

(99a) derives the standard control cases. Consider now how (99b) derives the following paradigm (with dialectal judgments as reported by Farkas):

(100)a. The pupil$_1$ asked the teacher$_2$ [PRO$_{1/2}$ to leave early].
b. * John encouraged Bill$_1$ [PRO$_1$ to be allowed to leave].
c. John$_1$ was promised [PRO$_1$ to be allowed to leave].
d. # John$_1$ promised Bill [PRO$_1$ to be allowed to leave].
e. John$_1$ persuaded Bill [PRO$_1$ to be allowed to leave].

Frakas is explicit about the fact that the judgments in (100) are dialectal; rather than dismissing them, she takes on the task of explaining them.

Those speakers who accept both control possibilities in (100a) classify *ask* under option (1) of (99b); those speakers (probably everyone) that reject (100b) classify *encourage* under option (2) of (99b). Farkas then notes that some speakers accept (100c) while rejecting (100d); for them, selecting the marked controller is contingent on the absence of the unmarked one - namely, on passive. These speakers classify *promise* under option (3) of (99b). The infelicity of (100d) results from the forced application of the unmarked procedure (99a), which yields a responsibility clash (the initiator is not an

intentional causer of the embedded situation). Finally, those speakers who accept (100e) are slightly more liberal: They do allow control shift if the unmarked procedure yields a responsibility clash. These speakers classify *persuade* under option (4) of (99b).

Farkas' analysis has certain undeniable advantages. First, it goes way beyond the previous thematic analyses in characterizing the fine-grained semantics of OC. Furthermore, it is the first proposal in the literature that achieves an impressive goal, that of unifying subject control and object control under a single explanatory principle. As Farkas notes, under this theory it is no longer a coincidence that crosslinguistically, verbs that roughly mean *promise* induce subject control, whereas verbs that roughly mean *persuade* induce object control. Embarassing as it may sound, standard theories of control - with their arbitrary assignment of +SC/-SC features - never really accounted for this elementary fact. Finally, Farkas has an explicit markedness theory, explaining why control shift exhibits so much variability across speakers, and in the specific ways it does.

As far as I can see, there is one empirical gap in Farkas' analysis, concerning examples like (81), repeated in (101a):

(101)a. * John$_1$ was promised [PRO$_1$ to leave].

b. John promised Bill that he will leave.

Control in (101a) is not ruled out by either option (3) or (4) of (99b) (option (2) does not apply to *promise*): The initiator is not projected, and selecting it as a controller will not result in a responsibility clash since PRO is an agent. Farkas claims that (101a) is excluded "due to a constraint independent of control, which requires the participant linked to the DO-argument of *promise* to be disjoint in reference from the participant linked to the initiator" (p.49). This constraint, she says, is witnessed in (101b), where *he* must be disjoint from *Bill*.

Farkas' judgment, I believe, is incorrect; *Bill* and *he* can corefer in (101b), even under the "commissive" (rather than epistemic) reading of *promise*, which is the reading in (101a). It is an odd feature of Farkas' analysis that it takes the contrast between (100c) and (101a) to be entirely independent of all the other constraints on control shift.

This points to another weakness of the analysis, namely its failure to isolate the specific feature of the *be allowed to* complement, which makes it almost obligatory in contexts of control shift. Notice that for Farkas, the shift to a marked controller depends at most on PRO being assigned a non-agent role. Thus the analysis incorrectly predicts that speakers who accept (100c) will also accept (102):

(102) * John was promised to be invited to the party.

Thus, Farkas offers no acount of the role played by modality in licensing control shift.

Finally, let me point out one conceptual problem in Farkas' theory. The theory, as stated, is totally divorced from syntax. Although the requirement that the initiator be an argument of the control verb is built into the principle of controller choice, it seems rather arbitrary, given that initiators (as Farkas shows) are not in general subject to conditions of syntactic locality. As opposed to theories where the relation between the infinitive and the controller is represented at some syntactic level where natural *domains* can be defined (θ/GF-structure), the semantic relation RESP has no syntactic correlate. This renders the locality of OC quite accidental under Farkas' theory. To illustrate, consider (103):

(103) $Harry_1$ knew that $Fred_2$ owed some money to Richard, so he_1 gave him_2 a loan to settle this. $Fred_2$ then promised Richard [$PRO_{*1/2}$ to pay back his debt].

In this scenario, *Harry* is the initiator of the situation described in the bracketed infinitive, intentionally bringing it about; yet he cannot control PRO, only *Fred* can. In Farkas' theory, this result is obtained by brute stipulation, somewhat weakening the analogy between OC and other manifestations of the purported RESP relation in the grammar.

3.2.2.3 Sag & Pollard (1991)

The theory of OC in Sag & Pollard (1991) is couched in the HPSG framework, and the analysis of control shift involves an elaborate formalism of lexical entries and rules. My exposition of their analysis will abstract away from the technical aspects, concentrating on the key ideas. The reader, however, is advised that a full assessment of S&P's theory should ultimately take account of the formalism as well.

The leading intuition of S&P's analysis is that control shift involves not only a shift in the controller but also a shift in the semantics of the infinitive. S&P note that passivization in the infinitive is neither necessary nor sufficient for control shift; rather, what is common to the infinitives in (67)-(68) is that they all denote *states*. This is incompatible with the semantics of control verbs, which require their complements to denote *actions*.[23] This conflict is resolved by what S&P term *causative coercion*: The state

[23] S&P note that this explains Farkas' observation in (98).

is coerced into an action by interpolation of a hidden causative structure. Thus the sentences in (104) are interpreted as in (105):

(104)a. John promised Mary to be allowed to attend the reception.
b. John asked Mary to be allowed to get himself a new dog.

(105)a. John promised Mary *to cause her* to be allowed to attend the reception.
b. John asked Mary *to cause him* to be allowed to get himself a new dog.

The structures in (105) are not merely paraphrases; at the relevant level where control is established, these are the actual lexical representations. Notice that the interpolated causer is controlled by the unmarked argument (subject in (105a), object in (105b)); thus, strictly speaking, there is no such thing as control shift in S&P's system. Nevertheless, the observed shift in controller does involve a special mechanism, not operative in normal OC - namely, causative coercion.

At this point S&P introduce a distinction between "subject" and "external argument". The idea is that control targets the external argument of infinitival VP's. In English, a redundancy rule guarantees that the external argument is always the subject; this is the HPSG analogue to the GB claim that PRO must be in a subject position. However, S&P claim that in other languages, like Tagalog, the controlled element is semantically identified (as the actor), not syntactically; the syntax may project other arguments as subjects.

In the context of (105), the separation of external arguments from subjects allows S&P to claim that the hidden causer, although not a subject of any VP, is still an external argument, thus falls under the theory of control. The same distinction is also at work in another part of the analysis, to which we shortly return.

Things get a bit complicated, however, since S&P need to explain not only the (intuitively correct) fact that the hidden causer of the infinitive is controlled by the unmarked controller, but also the fact that the actual subject of *be allowed* must be controlled by the marked controller. Following traditional analyses of OC, S&P define the unexpressed subject of the infinitive ('PRO') as a reflexive. As such, it requires a local antecedent. Thus the subject of *be allowed* in (105) must be coindexed with either the matrix object or subject.[24] S&P do not discuss it but seem to tacitly assume that the external argument of *cause* is *not* a possible binder, presumably because it is not a subject. Here the

[24] S&P observe that control shift is not obligatory; thus (104a) can mean "John promised Mary that he would be allowed to attend the meeting".

external argument vs. subject distinction enters again: The former is visible to control but not to binding.

An important insight of S&P's analysis is the link between control shift and an overall semantic shift in the event structure of the infinitive. This link, implicit in earlier proposals, is made explicit and in fact drives control shift in the first place: It is because states are "uncontrollable" that causative coercion steps in and control shift is made possible. Furthermore, S&P account for the fact that even when a marked controller is chosen, the unmarked one is not inert; recall their counterexample to Bresnan (1982):

(106)a. The fortune cookie promised Montana that he would play in the Super-Bowl.
b. # The fortune cookie promised Montana to be allowed to play in the Super-Bowl. [cf. The coach promised...]

The unacceptability of (106b) follows from S&P's analysis, and as far as I can see does not follow from the other proposals: Since the matrix subject in (106b) still participates in a control relation (with the hidden causer) it must be animate, as opposed to the matrix subject of (106a).

Conceptually, S&P's analysis is significantly more complex than any of the other proposals we have examined so far; one wonders to what extent the complexity of the analysis improves over the complexity of the data. The distinction between external argument and subject (crucially different from Williams' original proposal) does not receive any independent motivation.

Empirically, one may question the correlation between control shift and states. It is a strong prediction of P&S's theory that eventive infinitives will not trigger causative coercion and hence will block control shift. This is certainly too strong for *ask*, which for many speakers allows subject control without the insertion of *to be allowed* (cf. (69a)). More seriously, it is far from obvious that complements that trigger control shift must be stative. In (107a), the infinitive contains an agentive *by*-phrase, incompatible with stative predicates; in (107b), the passive *be granted* must be verbal and not adjectival - hence not stative - as it takes a bare nominal complement:

(107)a. John was promised to be allowed by the authorities to import seafood.
b. John was promised to be granted permission to leave.

Notice that stativity of the infinitive is not a sufficient condition for control shift even under S&P's analysis; thus, predicates like *resemble* and *be tall* can never occur in controlled

infinitives. The above considerations suggest that stativity is not a necessary condition either. While the notion of causative coercion does capture an important aspect of the way control shift is interpreted, it seems that S&P misidentified its trigger.

4 The Status of the MDP

The family of theories discussed in section 3 all share the fundamental claim that the role of syntax in determining the controller in OC is that of delimiting a potential domain - namely, the domain of the matrix clause. However, *within* that domain, the choice between subject and object control is not syntactic, but rather sensitive to complex semantic/pragmatic factors. The latter claim is denied by a school of thought originating in Rosenbaum (1967), according to which a locality principle, the Minimal Distance Principle (MDP), determines the controller. This line is represented in the categorial grammar literature by Thomason (1976), Bach (1979), Bach and Partee (1980), and in the GB literature by Larson (1991), Martin (1996), Manzini & Roussou (1998) and Hornstein (1999). Among the recent studies, Larson's is the most serious attempt to defend the MDP in the face of apparent counterexamples, such as subject control with transitive *promise* and the effects of control shift. Therefore, I will mostly follow his discussion below, although some comments will be made about his successors as well.

Larson's version of the MDP is as follows:

(108) *Minimal Distance Principle*

An infinitive complement of a predicate P selects as its controller the minimal c-commanding noun phrase in the functional complex of P.

While subject control in *promise* was treated as a lexical exception by Rosenbaum (1967), the main goal of Larson (1991) is to show that *promise* is well-behaved w.r.t. the MDP, given certain assumptions. Specifically, Larson derives subject conrol across an object from two assumptions: i) *Promise* is a double-object verb: Underlyingly, the infinitive (theme) is higher than the object (goal); ii) The MDP applies to D-Structure. Therefore, the agent is the closest NP c-commanding the infinitive at D-Structure, and subject control is predicted by the MDP.

Although *promise* is a double object verb, various objections can be raised against Larson's specific theory of dative shift, which relates the prepositional and the double object alternants transformationally. The proper analysis of dative shift is a controversial topic, and I will not address it here. Rather, I will simply assume, with Larson, that

assumption (i) is correct, and proceed to examine its consequences. I will also not question assumption (ii), though it is far from obvious, especially in a framework where D-Structure has no theoretical status.

Larson correctly observes that his theory makes two predictions that are, prima facie, false: First, object control with double object verbs should be strictly impossible, and second, subject control with non-double-object verbs should be equally impossible. However, the former is displayed by *promise* with *be allowed to* complements and by *teach/allow*, and the latter by *ask*:

(109)a. John promised $Mary_1$ [PRO_1 to be allowed to sing].
b. John taught $Mary_1$ [PRO_1 to sing].
c. John allowed $Mary_1$ [PRO_1 to sing].
d. $John_1$ asked Mary [PRO_1 to be allowed to sing].

Larson argues that the coindexing in (109a) is obtained not by control but by semantic construal. A double object verb implies transfer of possession; when the theme is an event, the analogue of "possession" is "being responsible for", and what is being transferred is permission. Thus, (109a) triggers a chain of (modalized) entailments of the sort: *Mary got permission to sing --> Mary sings*. Object control is achieved via a construal mechanism independent of control.

It should be pointed out that Larson is silent on the important questions: Why is *be allowed to* necessary for control shift with *promise*? Larson *describes* this fact but does not explain it. Consider the explanatory role of "transfer of possession". Whatever syntactic motivation it may have, it seems that the alleged analogy between *John promised Mary a reward* and *John promised Mary to leave* does not correspond to any clear semantic intuition. If transfer of possession is part of the meaning of double object constructions in general, then it should also be present when *promise* takes a normal infinitival complement. Under Larson's acc t, it is entirely mysterious why the content of the embedded infinitive affects the possibility of control shift. Compare, for example, Farkas' (1988) notion of the Resp(onsibility) relation, which captures a real semantic intuition. Moreover, that intuition explains *both* normal control and control shift, whereas for Larson the two cases are governed by independent principles.[25]

[25] Observe that (109a) can be understood with either subject or object control. Both options presuppose that the matrix subject is in a position to bring about the embedded event, a commonality that is lost under Larson's treatment.

The coindexing in (109b), according to Larson, also involves construal mechanisms independent of control. Larson argues that the double object verb *teach* appears with infinitives only under the "injunctive" reading (e.g., *Jesus taught to love thy neighbor as thyself*). The *teach how to* reading (as in (109b)) is not derived via dative shift, hence expected to exhibit object control under the MDP. Why this is so is unclear, and the data that Larson cites to motivate this treatment of *teach* are rather murky. In any event, what is notable is the appeal to external stipulations in order to reconcile the MDP with problematic data.

As to (109c), Larson in fact denies that this is a control structure; rather, he claims (following Mittwoch 1976) that *allow* is an ECM verb which takes an implicit dative argument; when that argument is coindexed with the ECM subject, we get the "deontic" reading (allowing a person); when that argument is pro_{arb}, we get the "epistemic" reading (allowing a situation). (109c) is reanalysed as (110), with an implicit dative argument (in parentheses):

(110) John allowed [Mary to sing] (to Mary).

It is uncontroversial that *allow* does appear in ECM structures (e.g., *The government will never allow there to be a demonstration*). The question is whether Larson is correct is claiming that it *never* appears in control structures. Several questions may be raised concerning (110). First - why must the matrix dative argument remain implicit? Larson does not discuss this basic point. Second, when it is specific, why must the implicit dative be coindexed with the ECM subject? Notice that implicit datives, in general, can pick up discourse antecedents (111a); however, (111b) cannot have the interpretation (111c), where the implicit dative is coindexed with a discourse antecedent distinct from the ECM subject:

(111)a. Sue was shocked. John said (to her_1) to behave herself.

b. Sue was shocked. John allowed Mary to sing.

c. * Sue_1 was shocked. John allowed [$Mary_2$ to sing] (to her_1).

This seems to suggest that a real control relation is established between the "allowee" and the subject of the infinitive, contra to Larson's analysis.

Finally, consider sentences like (112a):

(112)a. Mary was allowed to sing.

b. $Mary_1$ was allowed [t_1 to sing] (to pro_{arb}/*Mary/*her_1).

Since Larson excludes a control analysis, the matrix subject in (112a) must originate as the ECM subject. But then, after raising, it c-commands the implicit argument. Larson would then predict that (112a) only has the "epistemic" reading in (112b), the "deontic" reading inducing a violation of Condition B or C (see fn.20). This is false; (112a) is truly ambiguous, with one reading implying that *Mary* is the target of the allowing (cf. *Mary was personally allowed to sing*).

Overall, Larson's theory of controller choice seems to work for *promise*, but faces serious difficulties with double object verbs that do not show subject control. To deal with these cases, mechanisms external to control are invoked, which are not free of empirical problems. Furthermore, given that Larson does appeal to semantic constraints on the choice of controller in certain cases, one wonders whether the MDP is doing any non-redundent work in the rest of the cases. A theory in which controller choice is entirely semantic/pragmatic would then be more consistent and more faithful to the facts.

The latter point can be illustrated further with data not considered by Larson. Recall that Larson predicts subject control to be impossible with non-double object verbs. The only exception he considers is (109d); this example is attributed to semantic construal, on a par with (109a). It is therefore subject to the same worries mentioned earlier. However, other than *promise*, English has another subject control verb, *vow*, which is not a double object verb, does not require a *be allowed to* complement, and hence must be accounted for by the core theory of control:

(113)a. John vowed to Mary [PRO_1 to marry her after the war].

b. * John vowed Mary the wedding.

Larson's theory predicts here, incorrectly, object control. Furthermore, in many languages the verbs *threaten* and *commit* are a control verbs, are not double object verbs and nonetheless display obligatory subject control. The examples below are from Hebrew:

(114)a. Gil_1 iyem al Rina [PRO_1 lifgoa ba].
Gil threatened on Rina PRO to-hurt her
'Gil threatened Rina that he would hurt her'

b. Gil_1 hitxayev le-Rina [PRO_1 lalexet ha-bayta].
Gil commited to-Rina PRO to-go home
'Gil made a commitment to Rina to go home'

Clearly, the class of subject control verbs - *promise, vow, commit, threaten* etc. - is semantically coherent; in Sag & Pollard's (1991) terms, these are all verbs of *commitment*. An attempt to explain subject control that ignores this fact, resting instead on the double object criterion, misses an obvious generalization.

The MDP has been recently revived within minimalist accounts of OC, which derive it from the Minimal Link Condition (MLC) on movement. In Manzini & Roussou (1998) the "movement" relation is quite abstract (termed ATTRACT), associating a single DP (the controller) wth θ-features of the matrix and the embedded predicates. The syntax of this relation is subject to a version of the MLC, which is different than Chomsky's (1995) in that "interveners" are attractors rather than attractees. Is a passing remark Manzini & Roussou say that subject control can be treated along the lines of Larson (1991). Recall, however, that it is a crucial assumption in Larson's analysis that control is established at D-Structure; later on, the locality between the matrix subject and the infinitive is destroyed. But Manzini & Roussou adopt a minimalist framework, in which D-Structure has no status. It is thus far from obvious how they would block the ATTRACT operation responsible for control from applying after dative shift, incorrectly yielding object control with *promise*.[26] More seriously, of course, their analysis duplicates all the empirical problems afflicting Larson's.

Hornstein (1999) is aware of the exceptions to the MDP, but rather than attributing them to some hidden (double object) structure, he proposes to view the MDP as markedness condition. This is, of course, Rosenbaum's (1967) original proposal, and it may well have some truth to it (e.g., acquisition data indicating the lateness of subject control; see Chomsky 1969). Subject control is then a highly marked option, attested in a small number of cases, as the majority of transitive control verb exhibit unmarked object conrol.

The problem is that the MDP is not a primitive in Hornstein's system; indeed, it is a major claim of Hornstein's that since control reduces to A-movement, the MDP reduces to the MLC. This reduction is taken to be a strong argument in favor of the whole approach. But then any properties of the MDP should follow from properties of the MLC. In

[26] If anything, the analogue of Larson's analysis, with ATTRACT-F to the matrix subject preceding dative shift, is countercyclic. Therefore, object control with *promise* is not just *allowed* by Manzini & Roussou (1998), but in fact *forced* under cyclicity.

particular, if the MDP is a markedness condition, so should the MLC be. This is clearly not the case, however; the MLC is exceptionless, and its violations are sharply ungrammatical, whereas the "marked" violations of the MDP (i.e., subject control) are perfect:

(115)a. * John seems that it is likely to win.
b. John promised Mary to win.

The contrast between (115a-b) indicates that one of Hornstein's assumptions must be abandoned: Either the MDP does not reduce to the MLC, or controller choice is not determined by the MDP. Either way, the claim that control is raising is seriously undermined.

Quite generally, the facts of controller choice, and in particular control shift, present a very serious challenge to "locality" theories of control. These theories are simply unequipped to deal with any of the properties in (74). Neither the MDP of Larson (1991) nor the MLC of Manzini & Roussou (1998) and Hornstein (1999) incorporate any reference to semantic/pragmatic factors. Moreover, it seems that the interpretive information implicated in control shift is of a rather different nature than what is made available by either θ-theory or lexical-aspect theories . Thus, there is little hope of reducing control shift to alternative hierarchical projections of arguments, in accordance with some version of UTAH or layered AspP(s) projections. But the latter provide the only channel of semantic input to those syntactic theories of OC; therefore, an adequate account of controller choice is beyond their reach.

Summary

Implicit Datives:

- **Display all control properties of overt arguments - impose OC.**
- **In generic environments, interpreted as arbitrary in reference, hence controlled PRO inherits this interpretation; *not* a case of NOC.**
- **Omissibility is orthogonal to control; when allowed to be implicit (by semantic/parametric factors), internal arguments do control.**
- **"Bach's Generalization" (object control verbs do not detransitivize) does not exist.**

Implicit Agents:

- **Freely control in impersonal passives.**
- **Control into temporal adjuncts, subject to certain conditions:**
    - **i) The agent is human, the derived subject is non-human.**
    - **ii) The agent is linked to the discourse topic.**
    - **iii) The adjunct is (preferably) clause-initial.**
- **Fail to control with passive *promise* ("Visser's Generalization"); no satisfactory explanation.**
- **Are *not* involved in control into rationale clauses; rather, an "intentional causer" is required.**
- **When the matrix verb is passive, PRO in a rationale clause must receive an agent role; no satisfactory explanation.**

Control Shift

- **Easiest with communication verbs (*ask, propose*) - overt embedded modal is not necessary.**
- **Harder with verbs of influence (*persuade*) or commitment (*promise*) - overt embedded modal is highly preferred.**
- **Impossible with certain verbs (*force, encourage*).**
- **The unmarked controller is still "active", understood as an "initiator", "interpolated causer" or "deontic authority".**
- **The semantic link between the unmarked controller and the embedded event is abstract, not reflected in the syntax.**
- **The MDP is untenable.**

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