1993. *Semantics and Linguistic Theory (SALT)* 3. 57–76. https://doi.org/10.3765/salt.v3i0.2754

The Interplay of Syntax and Semantics in Complement Control

Patrick Farrell
University of California, Davis

1. Introduction

The examples in (1) illustrate a phenomenon that has attracted considerable theoretical attention ever since the era in which a transformation known as EQUI(valent NP Deletion) was supposed to have deleted the underlying subject of the embedded phrase (Rosenbaum 1967, 1970).

(1) a. Sam$_i$ hopes [ø$_i$ to be invited to the party]
b. My wife thinks I$_i$ want [ø$_i$ to feed the kids]
c. The candidate$_i$ promised the voters [ø$_i$ to reduce the deficit]
d. Sam forced Jack$_i$ [ø$_i$ to eat the pizza]

Two important features of this phenomenon (in English), henceforth COMPLEMENT CONTROL, are (i) that a nonfinite predicative phrase functioning as a complement of a lexical head does not have a subject overtly expressed internally, and (ii) that a specific argument of the lexical head of which the predicative phrase is a complement is necessarily interpreted as the latter's subject. Thus, where 'ø' in these examples represents the phonologically unexpressed subject argument of the bracketed phrase,[1] the only interpretation available is one in which this argument is coreferential with the NP marked in these examples with the same index, which is said to be the CONTROLLER.

This paper is concerned with the nature of the principles that ensure the correct choice of controller. Based on the observation that in cases where there is a potential choice the nonsubject is generally chosen (as in (1d)), one proposal has been a MINIMAL DISTANCE PRINCIPLE (Rosenbaum 1970, Chomsky 1980, Larson 1991), according to which the syntactically closest NP is chosen.[2] Due in part to the fact that obvious manipulations of syntactic position do not affect controller choice, as illustrated for example by comparing (1d) with (2a) or (2b) with (2c), various thematic, semantic, and/or pragmatic alternatives to a syntactically based condition have been explored (for example, Jackendoff 1972, 1987, 1990, Comrie 1984, Foley & Van Valin 1984, Farkas 1988, Sag & Pollard 1991).

[1] In most GB analyses controlled complements are clauses with an empty NP subject — either the [+anaphoric] PRO (for example, Chomsky 1981, Manzini 1983) or some other variety of null pronoun (Huang 1989, Borer 1989). An alternative approach is to analyze controlled complements (at the phrase structure level) as internally subjectless phrases whose subject is interpreted as one of the arguments of their governing predicate (for example, Bresnan 1982, Gazdar et al. 1985, Culicover & Wilkins 1986). I simply sidestep this issue here.

[2] Larson (1991) presents an analysis of cases such as (1c) that is consistent with a Minimal Distance Principle, by virtue of the fact that at an abstract syntactic level, the subject of *promise* is the 'closest' NP, in the hypothesized relevant sense of closeness.

Utpal Lahiri and Adam Wyner (eds.), *SALT III*, 57-76, Ithaca, N.Y.: Cornell University.

(2) a. Jack$_i$ was forced by Sam [ø$_i$ to eat the pizza]
b. The candidate$_i$ made the people a promise [ø$_i$ to reduce the deficit]
c. The people got from the candidate$_i$ a promise [ø$_i$ to reduce the deficit]

More or less independently of the question of whether non-syntactic factors influence controller choice, an enduring idea has been that some kind of a syntactic COMMAND constraint limits the range of potential controllers in some important way. In Larson's approach, for example, minimal distance is defined in terms of the notion 'c-command' (Reinhart 1976). Others have pursued the idea that the unexpressed subject of the controlled complement is an anaphor in the sense of the binding theory, and as such must (at least under certain conditions) be locally bound, and hence locally commanded, by its controller. This approach is adopted both in certain Government-Binding theory (GB) analyses, in which binding is defined in terms of c-command (for example, Manzini 1983, Koster 1984, Borer 1989) and in the Head-Driven Phrase Structure Grammar (HPSG) analysis of Sag and Pollard 1991 (henceforth S&P), in which binding is defined in terms of the notion 'o-command'.

The main goals of this paper are to argue that a syntactic command constraint on complement control is neither necessary nor desirable and to show that apparent evidence for such a constraint is better handled otherwise. After presenting in §2 a lexical semantic analysis of controller choice that ties together in a somewhat novel way certain ideas from various sources, in §3 I consider obstacles to a c-command condition on complement control that the proposed analysis overcomes and in §4 I show that, although less problematic than its c-command based analogs, the HPSG binding-theoretic analysis proposed by S&P fails to account satisfactorily for the main problems for which it was intended, i.e., the impossibility of passivized subject controller verbs ('Visser's generalization') and the fact that the thematically expected controller is sometimes not chosen with predicates such as *promise* (the 'controller shift' problem). I present alternative, more adequate solutions to both of these problems, in which syntactic command plays no role.

2. A lexical semantic approach to controller choice

The approach to the question of controller choice I take is based on three main ideas. First, following the general sort of analysis advocated in Williams 1987, 1989, the formal mechanism of control involves binding of arguments at the level of ARGUMENT STRUCTURE (AS), i.e., the level at which grammatically relevant distinctions between the semantic arguments of a predicate are represented in structured 'theta-grids' (as in Hale 1983, Zubizarreta 1987, Rappaport & Levin 1988, Grimshaw 1990, and many others). Second, following S&P (who build principally on insights of Jackendoff 1972 and Foley and Van Valin 1984), control predicates can be divided into lexical semantic classes based on which rules for controller choice can be stated in terms of thematic relations. Third, under the assumption that

thematic relations ('agent', 'patient', 'theme', etc.) are convenient labels for certain kinds of relational configurations at the level of (lexical) CONCEPTUAL STRUCTURE (CS) (Hale 1983, Jackendoff 1987, 1990, Rappaport and Levin 1988, Pinker 1989), the control rules might look directly to features of the CS of the controlling predicates.

As noted by S&P, predicates with controlled complements can be divided into three broad classes, according to whether they denote an event involving influence to bring about a state of affairs, an event involving commitment to a state of affairs, or a state involving a psychological or emotional orientation toward a state of affairs. Some representative examples are shown in (3).

(3)

Influence	*Commitment*	*Orientation*
order, persuade, permit, command, direct, advise, convince, impel, induce, pressure, prompt, encourage, urge, ask, appeal (to), cause, force, etc.	promise, swear, agree, contract, pledge, vow, try, intend, refuse, choose, decline, decide, demand, attempt, threaten, propose, offer, etc.	want, desire, wish, long, prefer, hope, need, expect, aspire, hate, be eager, be able, be easy (for), occur (to), be important (to), etc.

Under the assumption that the main control principle has the effect of ensuring that the subject of the controlled complement be coindexed with another argument of the predicate of which it is itself an argument, nothing further needs to be said about predicates of orientation, since other than their complement clause, they have only an experiencer argument.[3] Only with predicates of influence and certain predicates of commitment does a potential choice of controllers arise.

A schematic lexical entry for predicates of influence such as *force* and *convince* is plausibly as in (4), following in essence Jackendoff's (1990) analysis of the CS of *force*.[4]

(4) AS: [x <y, z>]

CS: $\begin{bmatrix} \text{CAUSE}\ ([x], [\text{Event}\ z]) \\ \text{AFFECT}\ ([x], [y]) \end{bmatrix}$

[3] Some predicates in the orientation class appear in structures which might suggest that there is a potential choice of controllers (for example, *I want my wife to feed the kids* and *For me, this book will be easy to read*). I assume that in both cases the non-experiencer NP is not a semantic argument of the main clause predicate, as in the raising-to-object and *tough* movement analyses of classical transformational grammar. In the *want* type case, there is no control; in the *easy* type case, there is control — but the experiencer is the only argument of *easy* (other than the complement clause) and thus the only potential controller.

[4] Throughout the paper, I use CS representations of the sort found in Jackendoff 1990, simplified in certain ways. Specifically, I do not distinguish the various varieties of CAUSE and AFFECT predicates that need to be recognized. Moreover, I simply represent variable arguments, corresponding for example to elements of type THING, with lower case Roman letters ([x]) and suppress indexing as a way of showing correspondences, letting choice of letter do the job.

What seems to matter is that the controller, the object NP in an active clause or the direct internal argument, is the influenced or acted on participant. Stated directly in terms of the CS representation, the controller is the second argument of AFFECT, which in Jackendoff's system is a predicate on the action tier, where the actor/acted on conceptual distinction (in various manifestations) is encoded.

In the case of predicates of expression of commitment that may optionally appear in a structure with an overt addressee (such as *promise* and *vow*), the controller is the acting participant, as shown in (1c) for example. The lexical entry for such predicates is plausibly as in (5).

(5) AS: [x <(y), z>]
CS: [SAY ([x], [TO ([y])], [CAUSE ([x], [Event z])])
AFFECT ([x],)]

The key difference between predicates of influence and predicates of commitment is that the internal argument of the latter is not necessarily conceived of as being fundamentally affected by the action, a fact that manifests itself in the contrasting behavior of the two types of predicate with respect to the pseudocleft *do to* test of affectedness (Jackendoff 1990), as illustrated by the following examples.

(6) a. * What I did to *those guys* was tell *them* my name
b. What I did to *those guys* was kick *them*
(7) a. What I did to *those guys* was force *them* to finish the job
b. * What I did to *those guys* was promise *them* to finish the job

The contrast between (7a) and (7b), like that between (6a) and (6b), is attributable to the fact that an addressee is not conceived of as being necessarily influenced by the action denoted by the predicate. The absence of a second argument of AFFECT in the CS in (5) expresses this intuition.

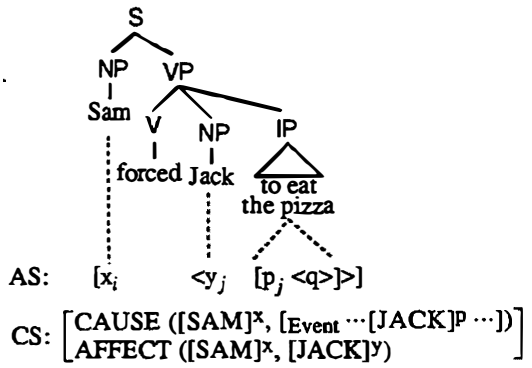
In essence, a thematic principle of controller choice needs to say that in case there is a potential choice of controllers, the influenced participant is chosen, if there is one, otherwise the acting participant. The overall control theory contemplated here is summed up in the following principles.

(8) a. The EVENT argument of an X° *A* denoting a relation of INFLUENCE, COMMITMENT, or ORIENTATION may/must be expressed as a predicative phrase (= CONTROLLED COMPLEMENT), whose subject is necessarily coindexed with another argument of *A* (= CONTROLLER).[5]
b. If the CS of an X° *A* with a controlled complement *C* contains [AFFECT (α, β)], the controller of *C* is the argument of *A* that corresponds to β, if β is not null; otherwise it is α.

[5] For languages like English, it would further have to be specified that the controlled complement is nonfinite and without overt subject, features of the phenomenon that appear to vary cross-linguistically (see Borer 1989). Presumably, the precise range of semantically compatible predicates that allow and/or require control varies cross-linguistically as well.

(9) illustrates the effects of (8) for (1d).

(9)



The direct internal argument of *force*, argument *y* in the AS, is coindexed with the phonologically unexpressed subject argument of *eat*, *p* in the AS, by virtue of the fact that some argument of *force* must be coindexed with the subject of *eat* by (8a) and this argument must correspond to the second argument on the action tier in the CS of *force* by (8b). In the case of control predicates such as *promise*, the external/actor argument is chosen as controller, since it corresponds to the only argument on the action tier in the CS. With control predicates of orientation, the experiencer argument is chosen because it is the only possible choice, whether or not there is an action tier in the CS of such predicates.

3. Obstacles to a c-command constraint

A central claim of the approach to control theory sketched above is that although reference to the notion 'subject' is required for identification of the controlled argument, position in phrase structure is irrelevant to controller choice. As noted above, this claim differentiates this approach from that taken in standard GB binding-theoretic accounts of control and accounts based on a Minimal Distance Principle. Binding-theoretic accounts claim that the unexpressed subject of a controlled complement is an anaphor, which must be bound (i.e., coindexed with a c-commanding NP) in a local domain. The notion 'local domain' is defined in such a way as to ensure that the binder be found within the minimal clause containing the controlled complement. Thus, the locality effect of (8a) (but not the effect of (8b)), is attributed to binding theory. The Minimal Distance Principle approach, as recently revived in Larson 1991, attempts to achieve both the effects of (8b) and the locality effect of (8a) by requiring that the subject of a controlled complement be bound by the closest c-commanding NP. Since the notion 'c-command' (generally defined as in (10)) plays a crucial role in both of these approaches, they constitute

viable alternatives to the approach advocated here only if there is in fact a generalization concerning possible controllers that employs this notion.

(10) *C-command*: *X* c-commands *Y* iff the minimal maximal projection dominating *X* dominates *Y*. (Manzini 1983)

I maintain that there is no such generalization, for various reasons.

To begin with S&P point out that the controller may, under certain conditions, be expressed in a sentence in a discourse that is distinct from that in which the controlled complement occurs, as illustrated by the following examples.

(11) a. Jack persuaded Sam$_i$ of something. I don't remember exactly what, but I think it was [ø$_i$ to fix his car]
b. The candidate made an appeal to the voters$_i$. It was [ø$_i$ to vote for change]

Since c-command is a relation among elements dominated by some common S node, it is unclear how a local c-command condition on control could be made consistent with examples such as these. The lexical semantic analysis, by contrast, provides a straightforward account. The bracketed infinitival phrases express semantic arguments of the syntactically remote predicates (*persuade* in (11a) and *appeal* in (11b)). The control principles hold for these predicative phrases just as they do for those expressed in the more typical syntactically governed position.

A second problem is that the controller can be expressed within various kinds of phrases that limit its c-command domain in such a way as to preclude syntactic binding of the controlled complement's subject, as in the following examples, in which the c-command domain of the controller is indicated by angled brackets.[6]

(12) a. It would never occur ⟨[$_{PP}$ to [$_{NP}$ Jack]$_i$]⟩ [ø$_i$ to do such a thing]
b. It would be easy ⟨[$_{PP}$ for [$_{NP}$ my wife]$_i$]⟩ [ø$_i$ to feed the kids]
c. Jane pleaded ⟨[$_{PP}$ with [$_{NP}$ the teacher]$_i$]⟩ [ø$_i$ to give her son an A]
(13) a. ⟨[$_{NP}$ [The president's]$_i$ only hope]⟩ was [ø$_i$ to reduce the deficit]
b. the promise that ⟨[$_{IP}$ [the candidate]$_i$ made]⟩ [ø$_i$ to lower taxes]
c. an attempt on ⟨[$_{NP}$ [the president's]$_i$ part]⟩ [ø$_i$ to convince the Senate to pass the bill]

Although it is possible that certain of these cases might be amenable to some kind of analysis that would allow a c-command constraint to be maintained,[7] it is unclear

[6] (12a-b) illustrate a kind of infinitival phrase in extraposed position that appears to differ from the kind discussed by S&P (as in *It would bother me to have to do that*). Unlike in the latter case, in the case of (12a-b), control by the experiencer argument is obligatory, whether or not the complement is in the extraposed position, as can be seen from the ungrammaticality of **Tom knew that to cut himself would never occur to Jane/it would never occur to Jane to cut himself*.

[7] As has been observed by others (for example, Chomsky 1981, p. 226, Pollard & Sag 1992, p. 270, Kuno 1987, Ch. 2), the problem illustrated by the examples in (12) arises in connection

whether a non-ad-hoc solution is available. In at least the case of (13b-c), there do not seem to be even remotely plausible alternatives that are consistent with a c-command constraint. One might claim that the controller is a c-commanding null pronoun, rather than the apparent controller expressed in the adjunct phrase. However, a structure with a null pronoun should be ruled out for the same reason as one with an overt pronoun, as in the examples in (14) (presumably as a violation of Principle C of the binding theory).

(14) a. * the promise from him$_i$ that [$_{IP}$ [the candidate]$_i$ made]...
b. * his$_i$ attempt on [$_{NP}$ [the president's]$_i$ part]...

It should be clear that the kind of control illustrated by (13b-c) is unproblematic under the approach adopted here. The NPs indicated as controllers must by virtue of the meanings of the constructions be understood as the promiser in (13b) and the attempter in (13c); the control principles in (8) ensure that the promiser argument of *promise* and the attempter argument of *attempt* be interpreted as the controllers, independently of how (or indeed if) they happen to be syntactically expressed. These principles provide a similarly straightforward account of the other cases illustrated by the examples in (12) and (13), since in every case the controller is the semantically appropriate argument of the predicate of which the infinitival phrase expresses the event argument.

Finally, as has been noted elsewhere (Williams 1985, Jackendoff 1990, p. 67), controllers in certain constructions need not be syntactically expressed at all. Consider, for example, sentences such as the following, in which the unexpressed subject of the complement clause is necessarily understood as being the same as the implicit argument of the governing noun or adjective.

(15) a. Jack talked about an attempt $\emptyset_i$ [$\emptyset_i$ to rob the bank]
b. Jack realized it wouldn't be easy $\emptyset_i$ [$\emptyset_i$ to fix this car]
c. The boss's order $\emptyset_i$ [$\emptyset_i$ to mop the kitchen] was ignored
d. All I want is a promise $\emptyset_i$ [$\emptyset_i$ to do things right]

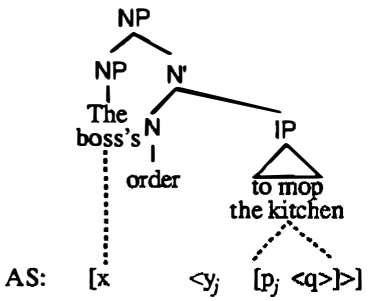
In these kinds of structures, the subject of the controlled complement is naturally given a so-called 'arbitrary' interpretation, i.e., is interpreted as having an unspecified human referent. If so, the same interpretation is necessarily given to the implicit argument that the semantic control principles designate as controller. It is also possible for the controlled subject to be interpreted as having the index of a remote overt NP, in which case the expected controller must be interpreted in the same way. In (15a), for example, the robber may be understood as being Jack; if so, Jack is necessarily understood as being the attempter as well.

The idea that c-command is necessary for control can apparently be maintained in the light of examples such as these only at the expense of introducing

with overt anaphor binding as well, as in *I spoke to the men about each other*. To my knowledge, this problem for a c-command based binding theory remains unsolved.

some nd of otherwise unmotivated enrichment of syntactic representations or complication of the definition of c-command.[8] Under the analysis adopted here, on the other hand, implicit arguments of the sort under consideration are simply arguments that are present in AS but not in phrase-markers. For example, the structure of the relevant portion of (15c) would be as follows.[9]

(16)



Since complement control involves AS binding, the fact that arguments need not be projected in phrase-markers under certain circumstances (quite generally in nominals, for example) does not affect the indexing procedure.

By way of conclusion, the generalization concerning complement control is that the controller must be a specific argument of a lexical head of which the controlled phrase is interpreted as the event argument, as expressed in the complement control principles in (8). It is true that in many cases this relationship coincides with local c-command between an NP expressing the controller and the controlled complement. However, as there are also various cases in which an analysis involving c-command is apparently not available, a condition on complement control formulated in terms of c-command misses the generalization.

4. The irrelevance of o-command for control

4.1. HPSG binding theory and complement control

As noted above, the control principles in (8) are inspired in large part by the analysis of complement control proposed by Sag and Pollard (1981=S&P). Certain details of expression aside, the main difference between the analysis advocated here and the S&P analysis is that the latter includes — in addition to a set of similar semantically-based control principles — the assumption that the unexpressed subject of a controlled complement is an anaphor that is subject to the principles of HPSG

8 Problems with positing a null NP of the PRO type are discussed in Williams 1985 and Jackendoff 1990. Positing an ordinary null pronoun is problematic for reasons discussed below. See Williams 1985 and Roeper 1987 for some other proposals to make implicit arguments count as c-commanders.

9 This analysis embodies the claim that nouns of this sort have ASs, contra Grimshaw 1990.

binding theory. Unlike in the GB version of binding theory, these principles are formulated in terms of local O-COMMAND, a structural relation between elements on a SUBCAT list, which is essentially a representation of syntactic argument structure in which the elements that a predicate is in syntactic construction with are ordered according to relative obliqueness. The key idea is that less oblique elements unilaterally o-command more oblique ones — where subjects are less oblique than direct objects, which are less oblique than PPs, etc. — and precedence on a SUBCAT list correlates with less obliqueness and, at least generally in English, with linear precedence. The HPSG view of the portion of binding theory of immediate relevance is expressed in (17) and (18) (from S&P).

(17) *O-command*: *A* locally o-commands *B* just in case the content of *A* is a referential parameter and
  a. *A* precedes *B* on a SUBCAT list, or
  b. *A* locally o-commands some *C* that subcategorizes for *B*.

(18) *Principle A*: A locally o-commanded anaphor must be locally o-bound.

To see how this version of binding theory is supposed to work, let us first consider some simple cases involving overt anaphors. The SUBCAT list for (19a) is as shown in (19b).

(19) a. Jack$_i$ cut himself$_i$
  b. [SUBCAT <NP$_i$, NP:*ana*$_i$>]

(20) a. * Jack's comment about herself$_i$ helped the senator$_i$ to get re-elected
  b. *comment* [SUBCAT <NP[poss]$_j$, PP[about]:*ana*$_i$>]

The subject of *cut* locally o-commands the object anaphor, as there is a SUBCAT list on which the former, which is referential, precedes the latter. Since this anaphor is locally o-commanded, it must be locally o-bound, i.e., coindexed with a locally o-commanding element. Being coindexed with the subject, it is locally o-bound; binding theory is satisfied. Consider now the ungrammaticality of (20a). The anaphoric PP *about herself* is locally o-commanded by the possessive NP *Jack*, since this NP is referential and it precedes *about herself* on the SUBCAT list of *comment*, as shown in (20b). *About herself*, which — being locally o-commanded — must be locally o-bound, is coindexed not with *Jack* but with *the senator*, an NP which does not locally o-command it, by virtue of the fact that there is no SUBCAT list on which the two elements both appear. Since *herself* is not coindexed with a locally o-commanding element, Principle A is violated.

All that is needed to extend HPSG binding theory to complement control is (i) the assumption that the unexpressed subject of the controlled complement is an anaphor, and (ii) a definition of local o-command such that this anaphor is locally o-commanded as if it were on the SUBCAT list of the predicate whose argument is the controller, which is the effect of (17b). Controlled complement phrases are assumed to be VPs which, like VPs in general, subcategorize for a subject NP. By (17b), the subject of a complement VP is locally o-commanded by whatever locally

o-commands that VP. Thus, in (21a), for example, the subject anaphor that the VP *to eat the pizza* subcategorizes for is locally o-commanded by *Jack* and *Sam*, since these NPs precede the VP in question on the SUBCAT list of *force*, as shown in (21b).

(21) a. Jack forced Sam$_i$ [$\emptyset_i$ to eat the pizza]
b. [SUBCAT <NP, NP$_i$, VP [SUBCAT <NP:*ana*$_i$>]>]

The anaphor is coindexed with *Sam*, and hence locally o-bound; binding theory is satisfied. As *Sam* expresses the influenced argument of *force*, the semantic control principles are also satisfied.

One way in which the HPSG binding-theoretic approach to control improves on its GB analogs is that it does not require all anaphors to be locally bound. Just in case there is no local o-commander for an anaphor, it need not be locally o-bound. This exemption makes possible a plausible account of examples such as the following.

(22) a. The candidate made an appeal to the voters$_i$. It was [$\emptyset_i$ to vote for change]
was [SUBCAT <NP:it, VP [SUBCAT <NP:*ana*$_i$>]>]
b. We witnessed an attempt $\emptyset_i$ [$\emptyset_i$ to rob this bank]
attempt [SUBCAT <DET, VP [SUBCAT <NP:*ana*$_i$>]>]

In the case of (22a), the unexpressed subject of the bracketed VP is not locally o-commanded by any element, under the assumption that the subject of *was* is an expletive pronoun, i.e., a pronoun whose content is not a referential parameter, and thus not a potential o-commander. In the case of (22b), the anaphor subject of the embedded VP is also not o-commanded, since the only other element on the SUBCAT list of *attempt*, being a determiner, is not a potential o-commander. As the implicit anaphors are exempt from any binding requirement, the coindexing shown is guaranteed solely by the semantic control principles.

This approach is not without problems, however. To begin with it encounters immediate obstacles with examples such as (13a) and (15c), repeated here as (23a) and (24a) respectively.

(23) a. [$_{NP}$ [The president's]$_i$ only hope] $_j$ was [$\emptyset_i$ to reduce the deficit]
b. *was* [SUBCAT <NP$_j$, VP [SUBCAT <NP:*ana*$_i$>]>]
(24) a. The boss's order $\emptyset_i$ [$\emptyset_i$ to mop the kitchen] was ignored
b. *order* [SUBCAT <NP[poss]$_j$, VP [SUBCAT <NP:*ana*$_i$>]>]

The unexpressed subject of the embedded VP in (23a) is locally o-commanded only by *the president's only hope*, but is coindexed with another NP. Although the semantic control principles are satisfied, binding theory apparently is not. Similarly, in (23b), the controller is the implicit influenced argument of *order* rather than the

expressed actor argument, which is the only apparent o-commander of the embedded anaphor.

One might justifiably wonder why any attempt should be made to extend the principles of binding theory to complement control, given the independent need for a set of principles along the lines of those in (8). There are two classic problems for control theory that ostensibly motivate such an attempt within the overall S&P approach. I believe, however, that the proposed solutions to these problems ultimately fail and that there are more satisfying solutions that do not involve a local o-command condition.

4.2. Visser's generalization

Under the assumption that passive *by* phrases do not precede VP complements on SUBCAT lists, the HPSG binding-theoretic analysis of control provides a potential solution to the problem illustrated by the ungrammaticality of (25a), an instantiation of so-called Visser's generalization.

(25) a. * Sam was promised $\emptyset_i$/by Jack$_i$ [$\emptyset_i$ to fix the car]
b. [SUBCAT <NP, VP [SUBCAT <NP:*ana*$_i$>], PP[by]$_i$>]

The VP and its unexpressed subject anaphor are locally o-commanded by only the subject of *be promised*. They are not locally o-commanded by the optional *by* phrase, as it is more oblique. Neither are they locally o-commanded by the implicit promiser argument (in the case of a short passive), because it is either not on the SUBCAT list or, if analyzed as a null pronoun, is also more oblique. Since the semantic control principles require that the promiser be the controller, the controlled anaphor cannot be bound by its unique local o-commander. The ungrammaticality of (25a) is due to a Principle A violation.

Attractive though this sort of explanation may appear to be, there are at least two shortcomings with it. To begin with, there is no basis for the assumption that passive *by* phrases are necessarily more oblique than controlled complements. Examples such as (26a) show that a *by* phrase, when sanctioned, would normally precede a controlled complement, as would be expected if it were less oblique.

(26) a. Jack$_i$ was persuaded by Sam [$\emptyset_i$ to fix the car]
b. Jack appealed to Sam$_i$ [$\emptyset_i$ to fix the car]
c. Jack's promise from Sam$_i$ [$\emptyset_i$ to fix the car] was fulfilled
d. This car was bought by Sam for himself
e. This letter was apparently sent by the president to himself

Furthermore, PPs expressing semantic arguments of predicates normally can be controllers, as illustrated by (26b-c). Thus, PPs, in general, are less oblique than VP complements, under the assumption that obliqueness is relevant to control and anaphor binding in the way that HPSG binding theory claims. (26d-e) show that passive *by* phrases may precede and locally o-bind overt VP-internal reflexives,

which entails that *by* phrases may be less oblique than other PPs (including, for example, complement *to* phrases). Independently of (25a), it would seem that one would have to conclude that *by* phrases are (or at least may be) less oblique than *to* phrases, which are less oblique than VP complements, in view of which the claim that *by* phrases are necessarily more oblique than VP complements is apparently false.

A second problem arises with respect to examples such as those in (27), which illustrate that control fails with passivized subject control verbs, even when passivization would result in an impersonal construction with an expletive subject pronoun.

(27) a. * It was hoped $\emptyset_i$/by all$_i$ [$\emptyset_i$ to have a good time]
b. * It was attempted $\emptyset_i$/by Jack$_i$ [$\emptyset_i$ to fix the car]
c. * It was not liked $\emptyset_i$/by anyone$_i$ [$\emptyset_i$ to be late for class]

That the ill-formedness of these examples is due to whatever constraint is responsible for (25a) is suggested by the fact that such passive structures are possible in cases where the logical subject is not a controller. For example, verbs in this class that also take a finite non-controlled complement allow impersonal passivization, as shown by the examples in (28). Furthermore, impersonal passives can be formed on an infinitival complement that is not controlled by the logical subject of the governing verb, as shown by the examples in (29).

(28) a. It was hoped ø/by all [that the weather would be nice]
b. It was not liked ø/by anyone [that taxes were being raised]
(29) a. It was expected of us$_i$ [$\emptyset_i$ to be there on time]
b. It was suggested to me$_i$ [$\emptyset_i$ to try a different approach]

Ideally, the explanation for the ungrammaticality of (25a) should extend to the examples in (27), which appear to be bad in precisely the same way. However, the S&P account of (25a) as a Principle A violation leaves (27) unexplained. Since the logical subject of verbs like *be hoped*, whether overtly expressed in a *by* phrase or not, is not a local o-commander of the VP complement and its anaphor subject, and the superficial subject of such verbs is not a local o-commander by virtue of the fact that it is an expletive pronoun, the anaphor should be exempt from any binding requirement and should be able to be freely coindexed with the argument specified by the semantic control principles.

The alternative that I propose is that the ill-formedness of both (25a) and (27) is attributable to an analysis of passive (following Bresnan & Moshi 1990) according to which the external argument is suppressed at the level of AS, in conjunction with the assumption that suppressed arguments are not visible for complement control.[10] The optional *by* phrase in a passive clause is a kind of adjunct,

[10] Another case of argument suppression for Bresnan & Moshi is that of so-called object deletion, whereby the direct internal argument of a transitive verb is not syntactically expressed (as in *I*

which corresponds to an element in the CS rather than being projected from the AS. Independently, then, of whether there is an overt *by* phrase, the ASs for the corresponding active and passive versions of a representative selection of control verbs are as in (30), where in each case *z* is the controlled complement, *x* in the active version is the argument selected as controller by the principles in (8), and the symbol 'ø' indicates a suppressed argument.

(30)

Active		Passive
promise [x <y, z>]	*	*be promised* [ø <y, z>]
persuade [y <x, z>]		*be persuaded* [ø <x, z>]
hope [x <z>]	*	*be hoped* [ø <z>]
suggest [y <to-x, z>]		*be suggested* [ø <to-x, z>]

The effect of passivization on *promise* is to suppress in the AS the argument corresponding to the conceptual actor. Since this argument must be the controller by the semantic control principles in (8) but is suppressed, control fails — whence the ungrammaticality of (25a). The same explanation holds for the ill-formedness of the examples in (27). Impersonal passivization of verbs such as *hope* would involve suppressing the only potential controller. By contrast, control is possible with passivized *persuade* and *suggest* (see (26a) and (29b)), for example, because the controller is not suppressed.

The important point here is that the facts having to do with Visser's generalization do not motivate an o-command constraint on complement control, since there is a reasonable alternative account of these facts that is both more comprehensive and more clearly technically viable.

4.3. Controller shift

Another kind of apparent motivation for an o-command based binding-theoretic analysis of control is that it makes possible a resolution of a paradox that arises in connection with S&P's proposed solution to the problem posed by examples such as (31), which shows that under certain circumstances the actor argument of predicates such as *promise* need not be the controller (indeed there is something of a preference for a shift to object control in such cases), in apparent violation of the semantic control principles.

(31) Jack thinks that I_j promised the $kids_i$ [$ø_{i/j}$ to be allowed to watch TV]

Briefly, the paradox is that one of the arguments of *promise* must be the controller (it cannot be *Jack*, for example); but the factor that is taken to allow controller shift

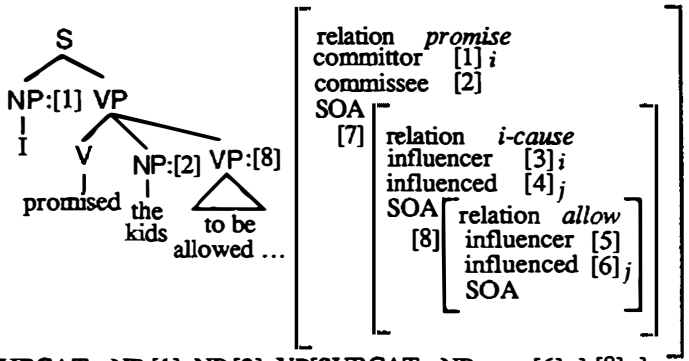
eat). The assumption that suppressed arguments are not visible for complement control, which can be easily incorporated into principle (8a), also buys an account of the well-known fact that object deletion systematically fails with object controller verbs (Bach 1979). This approach of course requires analyzing the implicit argument phenomenon discussed above as being distinct from argument suppression.

effectively exempts the subject of the infinitive from the semantic control principles that might otherwise guarantee a specific controller. Principle A of the binding theory provides a solution in that it requires that the embedded subject be locally bound independently of semantic controller choice.

In a nutshell, the problem with this line of reasoning is that the factor responsible for controller shift is not correctly identified. There is an alternative analysis according to which the possibility of object control follows directly from the semantic control principles and given which the paradox for which Principle A is invoked dissolves. This alternative analysis is preferable, moreover, in that it is consistent with a wider range of facts.

Let us consider in somewhat more detail S&P's analysis of examples such as (31). The main idea is that what makes controller shift possible is an independently occurring phenomenon they call 'causative coercion'. Causative coercion is supposed to make possible, for example, imperatives based on stative and passive verbs, whose superficial subject is not sufficiently agentive to otherwise allow imperative formation (*Be optimistic!, Be happy!, Be noticed!*, for example). Given the observation that *Be optimistic!* means something like 'Make yourself optimistic!', S&P propose that causative coercion is a lexical process by which a stative or passive verb is essentially transformed into a causative one. This process is conceived of as involving addition of an 'interpolated' causative (i-cause) relation in the semantic content of the verbs in question, with no effect on SUBCAT lists and associated phrase structures. Thus, embedding a *be allowed* type VP with an i-cause relation under *promise* would yield an analysis such as is shown in (32), where the semantic content is represented as the bracketed material on the right (certain representational details are omitted or simplified; SOA = state of affairs argument).

(32)



[SUBCAT <NP:[1], NP:[2], VP[SUBCAT <NP: *ana*:[6]>]:[8]>]

S&P's semantic control principles require that, as shown in (32), the committor participant in the promise relation be coindexed with the 'external' argument of the i-cause relation (which is the influencer participant) and that the influenced participant in the i-cause relation be coindexed with the influenced participant in the allow

relation (by virtue of the fact that the latter is, on their analysis, the 'external' argument of passivized *allow*).[11] Importantly, the semantic control principles do not require that the influenced participant in the i-cause relation be coindexed with either of the participants in the promise relation, or for that matter, with anything other than the influenced participant in the allow relation, the net effect of which is that the unexpressed subject of *to be allowed* (together with the necessarily covert influenced argument of *i-cause*) may bear any index, as far as the semantic control principles are concerned. However, since the unexpressed subject of *to be allowed* is an anaphor that is locally o-commanded by the NPs corresponding to the participants in the promise relation, it must be bound by one of these. Thus, Principle A of the binding theory, and this principle alone, ensures that one of the NPs on the SUBCAT list of *promise* be coindexed with the unexpressed subject of *to be allowed*.

As I see it, there are two problems with this general approach to the controller shift problem. First, to the extent that causative coercion is an independently identifiable phenomenon, it must be said to apply to a wide range of stative and passive predicates, including, for example, all those that allow imperative formation. The prediction seems to be that controller shift should be possible in cases such as the following.

(33) a. I_i promised the kids$_j$ [$\emptyset_{i/*j}$ to be optimistic]
b. I_i promised the kids$_j$ [$\emptyset_{i/*j}$ to be happy]

Since examples such as these are good with a subject controller, and there is some kind of agentive or causative restriction on the content of the controlled complement (as evidenced by the oddness of ??*I promised the kids to be tall/to know the answer/to concern their mother*), it would seem that causative coercion would have to be allowed with them under the S&P approach. If so, it is far from clear what would prevent object control. In fact, the controller shift phenomenon with *promise* is apparently quite limited, being possible only with constructions that express some kind of subject potentiation, as in the examples in (34).

(34) I promised the kids$_i$ [$\emptyset_i$ to be able/permitted/allowed to watch TV]

This limitation is completely mysterious under the causative coercion analysis.

A second, more serious problem with the analysis is that it fails to account for controller shift within nominals with an implicit argument, as can be seen by considering the following example.

[11] More specifically, S&P's control principles require that the external argument (= roughly argument that would be the surface subject if expressed) of the SOA in a relation of type commitment, influence, or orientation be coindexed with the committor, influenced, or experiencer participant in this relation.

(35) a. I believe the kids$_i$ got only one thing: [a promise from Max$_j$ [$\emptyset_{i/j}$ to be allowed to watch TV]]

b. *promise* [SUBCAT <DET, PP[from]$_j$ VP [SUBCAT <NP:*ana*$_{i/j}$ >]>]

In this case, as in (31), the unexpressed subject of the infinitive must be understood as being the same as one of the semantic arguments of *promise*, i.e., either *Max* or, preferably, the implicit recipient argument, which is understood to be *the kids* by virtue of the overall meaning of the sentence. However, as can be seen from the SUBCAT list in (35b), the only local o-commander of the embedded anaphor is the PP *from Max*, which is incorrectly predicted to be its only possible binder.[12]

A potentially salvaging move would be to posit a null pronoun on the SUBCAT list of *promise* corresponding to the unexpressed controlling argument. There is some evidence however that the unexpressed arguments of such nominals are not null pronouns. In Farrell (1992) it is argued that the complements of certain nouns in English, notably nouns such as *owner*, *builder*, and *composer*, may be realized as null pronouns (as in *This house$_i$ is being sold by the owner pro$_i$*.) The two cases contrast in two significant ways, as can be seen from the following examples.[13]

(36) a. ? Which house$_i$ did the owner pro$_i$ put up t$_i$ for sale?

b. You know the house$_i$ that I asked you if you remembered who the owner pro$_i$ was?

(37) a. Which child$_i$ would a promise $\emptyset_i$ (from Max) to be allowed to watch TV be a surprise to t$_i$?

b. * You know the child$_i$ that I asked you if you remembered when you overheard the promise $\emptyset_i$ (from Max) to be allowed to watch TV?

(36a) shows that the null complement of *owner* gives rise to the so-called weak crossover effect, just as overt pronouns do (Koopman & Sportiche 1982). The same effect is not found with the implicit argument of *promise* in (37a). (36b) shows that the null complement of *owner*, like overt pronouns in general, can function as a resumptive pronoun in a relative clause structure in which the relativized position is within an island. The implicit argument of *promise*, on the other hand cannot, as shown by (37b). These differences are readily explained only if the arguments of *promise* cannot be null pronouns, in which case (35a) remains a problem for S&P.

12 Alternatively one might claim that *from Max* is more oblique than the controlled complement and therefore is not a possible binder. In this case, however, the unexpressed subject would not be locally o-commanded by any potential binders and should thus be exempt from any binding requirement. Why it must be coindexed with one of the semantic arguments of *promise* remains unaccounted for.

13 It is worth noting that all the predicates with implicit arguments discussed in §3 follow the pattern of *promise*, suggesting that a null pronoun analysis is not available for any of these cases (see footnote 8).

An alternative analysis of controller shift that overcomes the problems facing the S&P account builds on Larson's (1991) observation that examples such as the following have essentially the same meaning.

(38) a. I promised the kids to be permitted/allowed to watch TV
b. I promised the kids [NP permission to watch TV]

The question, then, is what is the meaning of (38b)? It seems relatively clear that *promise* as used in (38b) is a 'double object' or 'dative shift' transfer of possession verb in the class of *give*. (39a) denotes an event involving a realized transfer of possession (or causing to have) of a somewhat more abstract sort than (39b).

(39) a. I gave the kids [NP permission to watch TV]
b. I gave the kids [NP a car]

(38b) differs from (39a) essentially only in that it denotes an event involving an expression of commitment to the same sort of transfer of possession.

Let us assume, following in essence Jackendoff 1990 and Pinker 1989, that the lexical semantics of double object transfer of possession predicates is as indicated in the following schematic lexical entry.

(40) AS: [x <y, z>]
CS: [CAUSE ([x], [HAVE ([y], [z])])
AFFECT ([x], [y])]

The claim of interest here is that the recipient argument — being affected as the beneficiary of the action — is the second argument of AFFECT on the action tier in the CS, which, as noted by Jackendoff and Pinker, accounts for various well known syntactic and semantic differences between the double object and NP [to NP] uses of members of this class of predicates. Now, given this analysis of double object predicates and the above observations concerning *promise*, it is reasonable to assume a lexical entry such as the following for transfer of possession *promise*.

(41) AS: [x <y, z>]
CS: [SAY([x], [TO ([y])], [CAUSE ([x], [HAVE ([y], [z])])
AFFECT ([x],) AFFECT ([x], [y])])]

The stage is now set for an explanation for the kind of controller shift illustrated by (38a). Double object/transfer of possession *promise* optionally allows its theme argument ([z] in the CS in (41)) to be realized by an infinitival phrase expressing subject potentiation, presumably by virtue of the fact that such a phrase has essentially the same meaning as the sort of NP headed by *permission* in (38b). Put differently, by analogy with (38b), the *promise* of (38a) may have the conceptual structure in (41), rather than that normally associated with it when it takes a controlled complement (see §2 above). Crucially, in the CS in (41), the addressee is

also a kind of influenced participant, i.e., the beneficiary of the transfer of possession, which is represented by showing this argument to be the same as the second argument of AFFECT on the embedded action tier. The net result is that the addressee/influenced argument (the object in an active clause) is chosen as controller by control principle (8b), which requires that if there is an action tier in the CS of the governing predicate, the second (or influenced) argument of AFFECT be chosen. The possibility of subject/actor control in the cases in question is due to the optionality of the transfer of possession construal. That is, the analysis of *promise* sketched in §2 is also available for (38a).

On this analysis, then, what is exceptional about the controller shift construction is simply that the controlled complement realizes the theme argument of transfer of possession *promise*, which is otherwise restricted to the double object (or NP NP) construction. That the controller 'shifts' under these circumstances follows from the general principles governing control. Since this analysis is keyed to conceptual structure rather than syntactic configurations, it should be clear that it extends unproblematically to cases of control with nominal *promise*, as in (35a), thus avoiding one serious problem with the S&P analysis of controller shift. The proposed analysis also sheds some light on why controller shift is restricted to cases where the infinitival complement expresses subject potentiation, since the meaning of this type of phrase (being essentially the same as that of an NP headed by *permission*) is such that it can be conceived of as undergoing a transfer of possession, in some abstract sense.

Independent evidence for the claim that the *promise* of the controller shift construction is transfer of possession *promise* comes from examples such as the following, which show that control-shifted *promise*, unlike subject/actor control *promise*, can be used in a context that forces the controlled complement to be construed as an entity capable of undergoing a transfer of possession.

(42) The kids will get what I_j promised them$_i$, which was
  a. permission to watch TV
  b. $\emptyset_i$ to be allowed to watch TV
  c. * $\emptyset_j$ to watch TV

(42b) is presumably acceptable because being allowed to watch TV, like permission to watch TV, is something that can be gotten (and thus possessed) and the *promise* of (42b) denotes an event involving expressed commitment to a transfer of possession of the content of the controlled complement. (42c), on the other hand, is presumably unacceptable because subject/actor control *promise* does not denote an event in which there is commitment to a transfer of possession; the addressee is not understood as being the intended recipient of the content of the controlled complement.

Summarizing, the lexical semantic approach to complement control laid out in §2 makes available reasonable analyses of Visser's generalization and the controller shift problem without appealing to any notion of syntactic command. This is a wel-

come result insofar as a syntactic binding constraint formulated in terms of o-command not only provides inadequate solutions to these problems but is independently of questionable viability.

5. Conclusion

There are several respects in which the 'binding' of complement control (in English at least) differs from that of reflexive anaphora. In particular, only the former phenomenon has the following features:

- The bindee cannot be overt.
- The binder cannot be a suppressed argument.
- The binder must be a specific semantic argument of a governing predicate.

It is clear that the principles governing control must be at least partially distinct from those governing reflexive anaphora. This conclusion does not preclude the possibility that there might be some overlap in the two sets of principles. This paper has shown, however, that there are good reasons not to impose on complement control the syntactic local command constraints of GB and HPSG theories of reflexive anaphora, and that the principles governing control are optimally formulated in terms of the constructs of argument structure and conceptual structure.

References

Bach, Emmon. 1979. Control in Montague Grammar. LI 10.515–531.

Borer, Hagit. 1989. Anaphoric AGR. In Jaeggli and Safir.

Bresnan, Joan. 1982. Control and complementation. The mental representation of grammatical relations, ed. by Joan Bresnan. Cambridge, Mass.: MIT Press.

——, and Lioba Moshi. 1990. Object asymmetries in comparative Bantu syntax. LI 21.147–185.

Chomsky, Noam. 1980. On binding. LI 11.1–46.

—— 1981. Lectures on government and binding. Dordrecht: Foris.

Comrie, Bernard. 1984. Subject and object control: Syntax, semantics, and pragmatics. BLS 10. Berkeley: University of California.

Culicover, Peter, and Wendy Wilkins. 1986. Control, PRO, and the projection principle. Language 62.120–153.

Farkas, Donka. 1988. On obligatory control. Linguistics and Philosophy 11.27–58.

Farrell, Patrick. 1992. Null noun complements in English. LI 23.147–156.

Foley, William A., and Robert D. Van Valin Jr. 1984. Functional syntax and universal grammar. Cambridge: Cambridge University Press.

Gazdar, Gerald, E. Klein, G. K. Pullum, and I. A. Sag. 1985. Generalized phrase structure grammar. Cambridge, Mass.: Harvard University Press.

Grimshaw, Jane. 1990. Argument structure. Cambridge, Mass.: MIT Press.

Hale, Kenneth. 1983. Warlpiri and the grammar of nonconfigurational languages. NLLT 1.5–47.

Huang, C.-T. James. 1989. Pro-drop in Chinese: A generalized control theory. In Jaeggli and Safir.

Jackendoff, Ray S. 1972. Semantics in generative grammar. Cambridge, Mass.: MIT Press.

—— 1987. The status of thematic relations in linguistic theory. LI 18.369–411.

—— 1990. Semantic structures. Cambridge, Mass.: MIT Press.

Jaeggli, Osvaldo, and Kenneth J. Safir. 1989. The Null subject parameter. Dordrecht: Kluwer.

Koopman, Hilda, and Dominique Sportiche. 1982. Variables and the bijection principle. 2.139–160.

Koster, Jan. 1984. On binding and control. LI 15.417-443.

Kuno, Susumu. 1987. Functional syntax. Chicago: University of Chicago Press.

Larson, Richard K. 1991. *Promise* and the theory of control. LI 22.103–140.

Manzini, Maria Rita. 1983. On control and control theory. LI 14.421–446.

Pinker, Stephen. 1989. Learnability and cognition. Cambridge, Mass.: MIT Press.

Pollard, Carl, and Ivan A. Sag. 1992. Anaphors in English and the scope of the binding theory. LI 23.261–303.

Rappaport, Malka, and Beth Levin. 1988. What to do with θ-roles. Syntax and semantics 21: Thematic relations, ed. by Wendy Wilkins. San Diego: Academic Press.

Reinhart, Tanya. 1976. The syntactic domain of anaphora. MIT dissertation.

Roeper, Thomas. 1987. Implicit arguments and the head-complement relation. LI 18.267–310.

Rosenbaum, Peter S. 1967. The grammar of English predicate complement structures. Cambridge, Mass.: MIT Press.

—— 1970. A principle governing deletion in English sentential complementation. Readings in English transformational grammar, ed. by Roderick A. Jacobs and Peter S. Rosenbaum, Waltham, Mass.: Blaisdell.

Sag, Ivan A., and Carl Pollard. 1991. An integrated theory of complement control. Language 67.63–113.

Williams, Edwin. 1985. PRO and subject of NP. NLLT 3.297–315.

—— 1987. Implicit arguments, the binding theory, and control. NLLT 5.151–180.

—— 1989. The anaphoric nature of θ-roles. LI 20.425–456.

Zubizarreta, Maria Luisa. 1987. Levels of representation in the lexicon and in the syntax. Dordrecht: Foris.

(LI = Linguistic Inquiry; NLLT = Natural Language & Linguistic Theory)

Linguistics Program
University of California, Davis
Davis, CA 95616
pmfarrell@ucdavis.edu