Chapter 8: Control Theory from a Broader Perspective

Mark Baker
Rutgers University

8.1 Scope and Goals: Ghostly operators, PRO, and serial verb constructions

In the first seven chapters of this work, the emphasis has been on comparing a set of crosslinguistically uncommon constructions that involve how complementizers relate to the noun phrases around them with one another. One thing that all these constructions have in common on my analysis is that they involve an NP in the matrix clause controlling a ghostly DP operator in the embedded clause. By treating this as control, I imply that there is also a comparison to be made between the ghostly DP constructions and constructions that have PRO as the subject of an infinitival clause in English and many other languages—the constructions for which the concept of control was introduced into linguistic theory. However, this comparison has mostly been a tacit one up to this point. In this last substantive chapter, I want to bring this comparison to the fore and see what we can learn about linguistic theory from it. One key question is whether we can substantiate the idea that the same theory applies to both PRO in nonfinite clauses and the ghostly DP operators, which are in finite clauses in most cases. Another key question is whether control theory itself looks a bit different now that we have a range of new cases to consider under this heading. These are the questions that animate this final chapter.

As a review, the major properties of the control relation as I have argued for it in the ghostly DP constructions are simple enough.[1] First of all, there is a complement-noncomplement asymmetry that concerns where the clause containing the controlled item appears in a larger syntactic structure. When the clause is the complement of a verb (or other lexical head), all of the ghostly operator constructions are possible and have quite stable properties. When the clause is not a complement of the verb, but rather a subject, a relative clause, a high adjunct clause, or a root clause, the constructions diverge and one of two outcomes: either the ghostly operator construction is ruled out entirely (agreeing C, logophoric pronouns, indexiphoric constructions, some SR constructions), or it is possible but has notably different antecedence properties (allocutive agreement, LD-anaphoric constructions). One also needs to fit low adjunct clauses, especially rationale clauses, into this generalization. Descriptively, they behave like complement clauses, rather than like other kinds of adjunct clauses.

The second major property of the control relationship in ghostly operator constructions is that *w*hat can be the controller/antecedent of the controlled item is constrained: it has to be an argument of the verb (inside the clause) which the item that contains the controlled element is the complement of. This includes the fact that the controller cannot be the argument of a higher predicate, and the fact that the controller has to c-command the controlled element.

[1] Not considered here is the Edge condition. This was most important for control of Sp and Ad in Magahi and other indexical shift languages. It also plays a role in controlling SoK and OoK in Kipsigis, if that really involves C-agreement (or control of the arguments of some other head), and perhaps in controlling LogOp and AddrOp in a language with addressee pronouns, such as Mupun. However, the Kipsigis situation is contested and some important information missing in Mupun. Also the issue of controlling two items inside the same clause does not normally arise for PRO. Therefore, I do not consider the Edge Condition here, leaving that for future work.

The third major property of the control relationship in ghostly operator constructions is that which argument of the matrix verb can control/antecede a given ghostly DP in the complement clause is tightly regulated by thematic roles. Agents, causers, experiencers, and sources can control the primary ghostly operators Sp, SoK, LogOp, zOp, 1LogOp and SROp. In contrast, goal and theme arguments can control the secondary ghostly oeprators Ad, AddrOp, OoK (if it exists), and 2AddrOp. This factor is more important than the grammatical function of the controller—e.g. whether it is a subject or an object or an oblique nominal. In addition, I have taken the step of saying that this is the result of thematic-role *matching*, assuming that Sp, SoK, LogOp and their kin get an agent-like role from the C-like heads that license them, whereas Ad, AddrOp, and their kin get a goal-like role from the C-like head. However, this further claim is somewhat abstract. It is loosely motivated by the fact that the C involved in the ghostly operator construction is often cognate to a verb like 'say', together with the fact that it works.

The first two of these properties are both expressed in the (Generalized) Obligatory Control Signature (GOCS), which is taken from the literature on obligatory control—especially Landau (2013), with important roots in earlier work such as Manzini (1983) and Landau (2001). As such, the relationship between these properties and the behavior of PRO is relatively direct, although by no means trivial to recognize, especially since the constructions involved are not superficially all that similar and because one needs to draw a line between OC and NOC for PRO in order to see it. Practically everyone makes such a distinction—e.g., even researchers less directly connected to the Chomskian tradition, like Jackendoff and Cullicover (2003)—but the exact boundaries of the two phenomena are debated. This is the kind of gross patterning that is accounted for by Hornstein's (1999) movement theory of control as well, inasmuch as A-movement happens only out of complement clauses, is local, and targets c-commanding positions. However, this reinforcement of the OCS has some theoretical bite, since it is by no means obvious from the literature on control in general that the OCS is a central empirical generalization and points to the fundamental principle(s) of control. For example, the OCS plays only a minor role in Landau's (2015) more recent "Two-tiered" theory of control, which focuses more on the control/non-control distinction than on the OC/NOC distinction, consider which clauses can and cannot have a controlled subject. The fact that the distinctions from control theory that are expressed in the (G)OCS are the ones that are the most useful and generalizable to other phenomena could therefore be telling us something important.

The third property of control in ghostly DP constructions is much less obviously connected to the study of PRO in English and other languages. Indeed, thematic role matching seems to be false for the OC of PRO. For example, a theme or goal argument of the matrix verb can control an agent argument of the complement clause in sentences like those in (1).

(1) a. Mary persuaded John$_i$ [PRO$_i$ to bring some wine to the party].
b. The general ordered the corporal$_i$ [PRO$_i$ to march out at dawn].
c. Peter taught/enabled Sue$_i$ [PRO$_i$ to make tiramisu].

Examples of an agent argument of the matrix clause controlling a theme or goal argument in the embedded clause also exist. For example, they arise when a commitment verb in the matrix clause, which induces subject control, is used together with the right kind of passive or unaccusative predicate in the embedded clause. Examples are in (2).

(2) a. Chris$_i$ promised their spouse [PRO$_i$ to be examined by a doctor].

b. ?John$_i$ vowed to Mary [PRO$_i$ to get/be promoted to manager before Christmas].
c. Pat$_i$ swore (to Chris) [PRO$_i$ to wake up by 6:00am on Sunday].

Despite these challenges, linguists who have pondered the phenomenon of *control shift* have in fact proposed that thematic role matching plays a role in controller choice for PRO: see Panther and Köpcke (1993) as well as Jackendoff and Cullicover (2003). But the matched thematic roles are in some cases different from the ones normally used for argument projection and other issues at the interface of syntax and lexical semantics: they are roles like BEN (benefactive) and OBLIGATED, rather than the familiar roles of agent, theme, and goal.[2] So it is far from obvious that thematic role matching is a key facet of control that applies to both ghostly operator constructions and PRO constructions.

For help in facing some of the issues, I invoke a third potentially relevant empirical domain, where the matching thematic roles is much more obvious. This is the domain of *serial verb constructions* (SVCs) as they are found in West African languages—in particular, those SVCs that exhibit argument sharing. SVCs are standardly defined as constructions in which a single clause contains more than one verb in sequence, without the verbs being connected by any overt coordinating or subordinating morpheme. There are many subtypes, but one important kind consists of two transitive verbs. (3) has some canonical examples from a range of languages, including Edo (Nigerian) (Stewart 2001), Igbo[3] (Nigerian), and Ewe (Collins 1997).

(3) a. Ozó dẹ̀ LGB tié. (Edo) (Stewart 2001: 60)
Ozo buy *LGB* read
'Ozo bought *LGB* (Chomsky's *Lectures on Government and Binding*) and read it.'

b. Ozó gie̱!gié ghá dún!mwún èmà khié̱n. (Edo) (Stewart 2001: 25)
Ozo quickly ITER pound yam sell
'Ozo quickly pounded yams and sold them repeatedly.'

c. Adhá tì-gbu-ru Ezè. (Igbo) (Stewart 2001: 152)
Adha beat-kill-rv Eze
'Adha beat Eze to death.'

d. Wo ɖa fufu ɖu. (Ewe) (Collins 1997: 461)
they cook fufu eat
'They cooked fufu and ate it.'

What is notable about these examples is that the agent of the first verb is also understood as the agent argument of the second verb, and the patient/theme of the first verb is also understood as the patient/theme of the second verb. As far as selectional restrictions and real world knowledge go, an example like (3c) could conceivably have a 'crossed' reading, in which Adha beat Eze and this caused Eze to kill Adha out of anger or in revenge. On this reading, the patient of the killing

[2] Panther and Köpcke also use AG, reminiscent of agent, but distinct from it, with an idiosyncratic and shallow characterization of that role: see Landau (2013: 146) for a critique of this.
[3] On the surface, this example is a resultative V-V compound rather than a true SVC. However, it is common to derive these in African languages from an SVC source by way of head movement; see Déchaine (1993), Stewart (2001), Collins (2002).

would be the agent of the beating rather than the patient of the beating. But this reading is impossible with these constructions. Another relevant type of SVC consists of a transitive first verb and an unaccusative (either eventive or stative) second verb.

(4) a. Ozó sùá Úyì dé. (Edo) (Stewart 2001: 8)
Ozo push Uyi fall
'Ozo pushed Uyi down.'

b. Ẹ̀sósa gbé émátọ̀n pẹ̀rẹ́. (Edo) (Stewart 2001: 58)
Esosa hit metal be.flat
'Esosa beat the metal flat.'

c. Ekpe a *f*o kɔpo yi xɔ-me. (Ewe) (Collins 1997: 465)
rock FUT hit cup go room-in
'A rock will hit the cup into the room.'
(Not: 'A rock will hit the cup and then go into the room.' This meaning is OK for *Ekpe a fo kɔpo* ***a*** *yi xɔ-me*, with *a* FUT repeated.)

In these examples too the theme argument of the second verb is the same as the theme argument of the first verb, not the agent argument of the first verb. An interpretation of (4a) in which Ozo falls as a result of pushing Uyi, causing him to lose his balance, or of (4c) in which the rock ricochets off the cup and therefore enters the room is either impossible or tests out as a covert conjunction, with different syntactic properties.[4]

One respectable analysis of these constructions, due to Collins (1997) is that they involve control. Collins claims that the second verb heads a VP that is in the complement position of the first verb. The visible object is projected as the specifier of the first verb (which moves higher up to Voice/v in the usual way). In addition, the second verb has a silent DP as its internal argument—a pro, even though that is not generally licensed in object positions in these languages. So the Collins-inspired structure for these examples is roughly as in (5).[5] (See also Stewart (2001) and Baker and Stewart (2002) for evidence that there is a silent DP associated with the second verb, at least in the (3)/(5a) construction.)

(5) a. They v $[_{VP}$ fufu$_i$ cook $[_{VP}$ eat pro$_i]]$ (Collins 1997: 491)

b. Rock v $[_{VP}$ cup$_i$ hit $[_{VP}$ pro$_i$ go room-in$]]$

Collins (1997: 478-479) also makes the further claim that the pro argument of the V2 is controlled by the object argument of the V1, giving these examples the interpretation that we observe them to have. This is what makes these constructions relevant to the topic of this chapter.

[4] Both Stewart (2001) and Collins (1997) make a distinction between resultative SVCs (RSVCs), with an unaccusative V2, and SVCs with a transitive second verb (Stewart calls these consequential SVCs (CSVCs)). I suppress this distinction for now, returning to it below.

[5] Collins has the pro argument of 'eat' in Spec VP2 rather than as the complement of V2. This simply depends on how one thinks theme arguments are projected: do they go in the lowest available position in VP, or are they always in Spec VP? Also his structure for a resultative SVC is a slightly different.

Indeed, the DP-pro relationship in (5) does have the key properties of OC that I recapped above. First, the relationship holds when the VP headed by the second verb is the complement of first verb. The relevant languages often have a contrasting coordination construction, with or without an overt coordinator. The coordination construction has two VPs that are in close proximity to each other in terms of linear order, but they are in parallel, rather than the one being the complement of the other. In this alternative construction, it is not possible to have a null DP in VP2 controlled by the object of V1. For example, (6) from Ewe is different from (4c) in that it has the tense particle a repeated before the V2. As a result, it cannot have the VP-complement-of-V structure in (5c); rather Collins (1997: 483-484) analyzes it as I′ (T′) coordination. In this case, a silent DP inside the VP headed by 'go' cannot be controlled by 'cup', the theme argument of 'hit'.

(6) Ekpe a *fo* kɔpo a yi xɔ-me. (Ewe) (Collins 1997: 465)
rock FUT hit cup FUT go room-in
'A rock will hit the cup and then go into the room.'
(Not: A rock will hit the cup such that the cup goes into the room.)

The same thing can be seen by comparing SVCs with overt VP coordination in Edo, using the coordinator *vbè* 'and'. The second verb in the true SVC in (7a) can have a silent DP as its object, controlled by 'tree', the object of the first verb. However, in the superficially similar structure with an overt conjunction in (7b), a covert pronoun referring to the object of V1 is bad, and an overt pronoun must be used.

(7) a. Òzó guàlọ́ èrhán vú. (Baker and Stewart notes, 1995)
Ozo find tree uproot
'Ozo found a tree and uprooted it.'

b. Òzó mię́ èrhán vbè vú *(érẹ̀).
Ozo see tree and uproot it
'Ozo saw a tree and uprooted it.'

This is evidence that theme arguments in these languages can only be controlled in a specific structural environment—when the VP headed by the verb that selects that argument is merged directly with the first verb as its complement. This is similar to the fact that clauses in complement position have special OC possibilities for both ordinary control of PRO and the ghostly operator constructions.

The second crucial property of control that is found in these types of SVCs is that the controller of the null argument of the second verb must be an argument of first verb, the head that the VP headed by the second verb is the complement of. It cannot be (say) the possessor of the object, as shown in (8).[6]

(8) #Uyì vbó [ìgan òkhókhò] khién. (cf. Stewart 2001: 119-121, 127)
Uyi pluck feathers chicken sell
Not as: Uyi plucked the chicken's feathers and sold it (the chicken).

[6] The emphasis of Stewart's discussion is that raised possessors cannot antecede pro in an SVC, but it is also true that unraised possessors cannot antecede (control) pro.

(Possibly OK as 'Uyi plucked the chicken's feather and sold it (the feather).)

This can be seen as a manifestation of the second central property of control, on a par with possessors not being OC controllers of PRO or ghostly DP operators. It is also true that the argument of a higher verb cannot antecede/control the null object of the V2 of a serial verb. For example, no example like (9) has been attested in the literature, such that *Uyi* the theme argument of 'convince' is the understood antecedent of the theme argument of 'beat' rather than *Adesuwa* the object of 'find', and it has been understood that such structures are not possible.

(9) Ozo_n convinced Uyi_k that he_n will [$_{VP}$ find Adesuwa_i [$_{VP}$ beat $\text{pro}_{i,*k}$]]
Ozo convinced Uyi that he (Ozo) will find Adesuwa and beat her/*him.

The third property of OC that these SVC constructions share is the thematic role matching requirement that I have made extensive use for ghostly operator constructions and that Panther and Köpcke (1993) consider to be a factor in the control of PRO in English and German. We have already seen this at work in (3) and (4) above. We can also see thematic role matching in SVCs where the first verb is a ditransitive, with a theme argument and a source or goal argument, and the second verb takes only a theme argument. The theme argument of the first verb can control the theme argument of the second, but the source or goal argument of the first verb cannot.

(10) Úyì kòkó Àdésúwà_i ùkpòn_k mú ($\text{pro}_{i,*k}$). (Stewart 2001: 127)
Ozo gather Adesuwa cloth carry
'Ozo gathered the cloth from Adesuwa and carried it/*her away.'

Overall, then, SVCs provide us with a third possible domain for Generalized Control Theory. Moreover, it has the potential to be a bridge between the ghostly operator constructions and the conventional control constructions. On the one hand, it connects naturally to the ghostly operator constructions, in that some of them that have a 'say'-like complementizer that may have evolved out of a SVC-like construction of some sort. This seems especially clear in a language like Ibibo. It makes sense, then, that the control properties of one could be parallel to those of the other. On the other hand, it also connects to standard control constructions, in that one can see that both the controlling clause and the controlled clause are headed by verbs which are open class items and whose properties can be studied separately (in contrast to C-like heads, whose semantic and argument-taking properties may be relatively abstract or underspecified by the available data). The SVCs also suggest that it is possible to control an internal argument—something that I have posited for the control of ghostly DPs like Ad in Magahi, but which is not known from the control of PRO.

Therefore, in the rest of this chapter, I pursue a generalized control theory that is designed to cover ghostly DP operator constructions, SVCs, and control into infinitival clauses in an even-handed way. I develop the view in the following stages. I start with a rather simplistic look at one kind of SVC which inspires an idea about how to think about control more generally. Next, I use that idea to analyze control in ghostly operator constructions in a deeper way. Then I take a closer look at the SVC constructions, to ask why theme sharing is possible without sharing other arguments in some of these constructions. This leads to a more general and nuanced idea about the class of constructions where one sees an OC effect. With this in hand, I am finally ready to

face OC of PRO in infinitival complements. A crucial idea is that there is argument sharing not between the matrix verb and the embedded verb, but rather between the matrix verb and a covert modal that is the true head of the complement clause in many crucial cases (Wurmbrand 2014). This will explain why OC seems to be driven by a kind of thematic roles, but they are modal-thematic notions like OBLIGATED more than standard thematic roles like agent and theme (Jakendoff and Culicover 2003). This theory is developed and tested against a fairly detailed investigation into the subtleties of controller choice and control shift with triadic verbs. The upshot is a broadened view of control theory, where it applies to a wider range of phenomena than is normally considered under this heading.

8.2 Deriving Obligatory Control from Thematic Uniqueness

In looking for a new way to approach the theory of OC, I start by foregrounding the fact that OC is influenced by thematic roles in a characteristic way—more so than other grammatical relationships are. This is visible to some extent already for the control of PRO inside nonfinite clauses, and even more so in ghostly operator constructions under my analysis. It is seen most vividly of all in SVCs. Why would that be, and what does it imply about the nature of OC?

To drive home that there is something to capture here, let us briefly compare the OC of PRO with the antecedence of PRO in nonobligatory control (NOC) environments. This is a good comparison in that the two kinds of constructions have significant things in common. Both are taken to involve PRO, the special null pronominal element that can only be in the subject position of a nonfinite clause in English. Moreover, both kinds of PRO can have logophoric properties of a sort (see Landau 2015: 84-85). Neither PRO is restricted to having its antecedent be an agent, the way LogOp is, or a goal, the way that Ad is. Nevertheless, both need to be anteceded by an agent *or* a goal; they cannot be controlled by the object of *about* for example. (11) shows this for OC in the complement of the verb *ask*: the controller of PRO can be the goal of the asking ((11a)) or the agent of the asking ((11b)), but it cannot be the object of *about* ((11c)).

(11) a. John asked Mary$_i$ [PRO$_i$ to come early].
b. Johnnie$_i$ asked his mother [PRO$_i$ to (be allowed to) stay up late].
John$_i$ asked [whether PRO$_i$ to defend himself$_i$]
c. *John asked about Mary$_i$ [PRO$_i$ to defend herself$_i$]
*John asked about Mary$_i$ [whether PRO$_i$ to defend herself$_i$]
(compare: John asked about Mary$_i$ [whether she$_i$ should defend herself$_i$].)

(12) shows the same thing for NOC in the extraposed CP subject of the predicate *would be easy*: the antecedent of PRO can be the goal of the matrix event of saying ((12a)), or the agent of the matrix event of saying ((12b)), but not the object of an *about* phrase associated with the saying ((12c)) (Kuno 1987: 134-135, Landau 2013: 245)

(12) a. John$_i$ said to Mary$_k$ [that it would be easy [PRO$_k$ to prepare herself$_k$ for the exam]].
b. John$_i$ said to Mary$_k$ [that it would be easy [PRO$_i$ to prepare himself$_i$ for the exam]].
c. *John said about Mary$_k$ [that it would be easy [PRO$_k$ to prepare herself$_k$ for the exam]].

With patterns like this in mind, Landau (2015: 83) imagines a unified theory of OC and NOC.

What I want to emphasize here is that despite these similarities, there are differences in the texture of how the two control-like constructions are thematically restricted. For example, it matters a lot to OC whether the matrix predicate is *promise* or *persuade*. In (13a) we observe only subject control, not object control, whereas in (13b) we see only object control, not subject control.

(13) a. John$_i$ promised Mary$_k$ [PRO$_{i,*k}$ not to contradict himself$_i$/*herself$_k$ before the jury].
b. John$_i$ persuaded Mary$_k$ [PRO$_{k,*i}$ not to contradict herself$_k$/*himself$_i$ before the jury].

It can also matter to OC whether the embedded predicate has an agentive subject or a passive subject—the phenomenon known as control shift. Hence for many speakers (to varying degrees), (14a) allows object control in contrast to (13a) and (14b) allows subject control in contrast to (13b) (Bresnan 1982, Farkas 1988, Sag and Pollard 1991, Panther and Köpcke 1993, Landau 2013: Sect. 5.1.2).

(14) a. John$_i$ promised his young daughter$_k$ [PRO$_k$ to be allowed to stay up late on New Year's Eve]
b. Little Mary$_i$ persuaded her father$_k$ [PRO$_i$ to be allowed to stay up late on New Year's Eve]

We see, then, that thematic roles constrain OC in relatively tight and fine-grained ways. Now semantic and pragmatic factors restrict the interpretation of NOC PRO too. Thematic roles can play into that, no doubt. But they do not constrain NOC PRO as tightly as they do OC PRO. Both the matrix subject and the matrix object can antecede NOC PRO regardless of whether they are arguments of the verb *promise* or *persuade*, and both can antecede PRO regardless of whether PRO is the subject of an active agentive verb or of a modalized passive verb, as shown in (15).

(15) a. John$_i$ promised Mary$_k$ that [PRO$_{i,k}$ contradicting himself$_i$/herself$_k$ before the jury] would be a big mistake.
b. John$_i$ persuaded Mary$_k$ that [PRO$_{i,k}$ contradicting himself$_i$/herself$_k$ before the jury] would be a big mistake.
c. John$_i$ promised Mary$_k$ that [PRO$_{i,k}$ being allowed to stay up late on New Year's Eve would be awesome.
d. John$_i$ persuaded Mary$_k$ that [PRO$_{i,k}$ being allowed to stay up late on New Year's Eve would be awesome.

Like the control of NOC PRO in this respect is assigning an antecedent to an anaphor, whether the subject or the object (e.g. *each other* in the embedded subject position, somewhat marginal), and bound variable anaphora involving ordinary pronouns. In contrast to these less constrained antecedence relationships, something special is going on with OC.

This pattern affects how we look at the relationship between syntax and semantics when it comes to OC. Two of my direct theoretical predecessors, Manzini (1983) and Landau (2015), hold that it is the job of syntax to determine that either the subject or the object (direct or indirect) of a verb controls PRO in a CP complement that verb, but it is not syntax's job to determine which one is the controller. The structures allowed by the syntax are then filtered by the semantics/pragmatics, in a way that they leave open. But their versions say little or nothing

about why the semantic/pragmatic constraints on OC have quite a different character—more restrictive, and more sensitive to thematic roles—than semantic/pragmatic constraints on other relations involving binding or coreference. Indeed, Manzini reduces control to a kind of anaphora, and Landau to a kind of variable binding, neither of which is subject to relatively tight thematic constraints.

What kind of account could in principle capture this special character of OC? Let me imagine a possibility, starting with resultative SVCs (RSVCs). Some canonical examples were given in (4), and are repeated in (16), with (16d) added.

(16) a. Ozó sùá Úyì dé. (Edo) (Stewart 2001: 8)
Ozo push Uyi fall
'Ozo pushed Uyi down.'

b. Ẹ̀sósa gbé émátọ́n pẹ̀rẹ́. (Edo) (Stewart 2001: 58)
Esosa hit metal be.flat
'Esosa beat the metal flat.'

c. Ekpe a *f*o kɔpo yi xɔ-me. (Ewe) (Collins 1997: 465)
rock FUT hit cup go room-in
'A rock will hit the cup into the room.'
(Not: 'A rock will hit the cup and then go into the room.' This meaning is OK for *Ekpe a fo kɔpo* ***a*** *yi xɔ-me*, with *a* FUT repeated.)

d. Me nya ɖevi-ɛ dzo. (Ewe) (Collins 1997: 461)
I chase child-DEF leave
'I chased the child away.'

As observed above, the theme argument of the second verb must be equated with—controlled by—the theme argument of the first verb, even when that would not be forced by general pragmatic conditions. Compare these true SVCs with similar English examples which conjoin two sentences, the second of which has a pronoun subject that matches the gender and number of both the subject and the object of the first conjunct, as in (17). In (17), it is quite possible for the pronoun to refer to either argument of the first conjunct.

(17) a. Ozo pushed Uyi and (then, as a result) he fell down. (*he*=Ozo or Uyi)
b. The rock hit the ball and (then, as a result) it went into the room. (*it*=rock or ball)

Semantic and pragmatic factors will often make one of these interpretations more likely than another in a given context. But we have to consider why some of these factors, especially the thematic role of the antecedent, are much stronger in the SVCs than they are in TP coordination. This question is parallel to the one of why particular thematic factors have a much stronger effect on OC than they do on NOC. Therefore, an answer to the question about SVCs might lead to an answer to the question about OC as well.

My leading idea is to derive this restriction on antecedence that is characteristic of resultative SVCs from the principle of thematic uniqueness, as articulated by Carlson (1984), who was fleshing out some assumptions implicit in the Theta theory of Chomskian syntax of the

time. Carlson emphasizes the intermediate status of thematic roles with respect to the relationship between syntax and semantics. On the one hand, they are not intrinsic to the syntactic apparatus, and they are not part of the core syntactic vocabulary. On the other hand, they are not purely semantic either. This intermediate status is similar to what we are wrestling with in terms of controller choice in contexts of OC: it seems not to be fully determined by observable syntactic structure, but it is not as free as one would expect on the grounds of mere semantic compatibility either. Carlson (1984: 271) writes "one of the more fundamental constraints is that of 'thematic uniqueness' — that no verb seems to be able to assign the same thematic role to two or more of its arguments." He then goes on to show that thematic uniqueness is not a property of verbs per se, but rather of the events that they express. As such, we can state the constraint of thematic uniqueness as in (18).[7]

(18) *Thematic Uniqueness:*
If x bears thematic role θ_a to event e, and y bears the same thematic role θ_a to event e, then x=y.

Carlson illustrates (18) with the contrast shown in (19): (19a) is acceptable, but (19b) is not.

(19) a. Before trying it with an ax, John opened the present with a sharp instrument.
b. *John tried with a sharp instrument to open the present with an ax.

Both sentences have two verbs, *try* and *open*, and both have an instrumental phrase in construction with each verb. However, they differ sharply in acceptability. In (19a), the trying event is different from the opening event (and is ordered temporally after it). Each of these events can involve an instrument, expressed by two distinct *with* phrases. In contrast, there is only one event under discussion in (19b), an event of trying-to-open something. (Note that this is a construction of obligatory control, within the broad domain of my inquiry; see (62)-(65) below.) This single event can only have one instrument related to it, even though there are arguably two distinct VPs which a PP could attach to syntactically.[8] This then is a motivation for thematic uniqueness phrased in terms of events, as in (18).

[7] Although (18) is stated rather simply, I want to leave open the possibility that there could be some semantic complexity lurking around the statement "x=y". I do not consider in this work the topic of partial control: the much-discussed fact that sometimes a controlled item can apparently refer to a larger group that contains the referent of the controller, as in *The department chair*$_i$ *wanted PRO*$_{i+}$ *to meet at noon*. See Landau (2016) and Pearson (2013) for two relatively recent treatments of this phenomenon, both of which involve adding something extra to the core account of control. Landau adds an associative plural marker to PRO (or the predicate); see also Madigan (2008). Pearson adds the notion of the extension of a world-time-individual triple to cover both partial control and temporal mismatches in control complements. See also Baker and Camargo Souza (2020: (66)) for brief discussion of analogous issue of referential overlap (as opposed to identity) in same subject-type SR constructions.

[8] Carlson goes on to point out that (19b) is bad not only if the DPs *a sharp object* and *an ax* refer to different items, but also if they refer to the same item—a possibility given that most axes are also sharp objects. I assume that this is due to a combination of thematic uniqueness, which would force the two DPs to corefer, and (some version of) Condition C, which forces them to be disjoint in reference—a contradiction. A key reason why one of the elements (the lower one) in a control relationship needs to be a minimal pronoun like PRO, pro or one of the ghostly DPs is to avoid this sort of Condition C violation, I suggest. (Whether the controlled element can also be a reflexive anaphor or a pronoun with a intrinsic phi-features is a somewhat complex question that I do not take up here. There are potential examples in Hungarian, several other European languages, and the East Asian languages. See Landau (2013: 117-119) and references cited there for some discussion.)

Thematic uniqueness is relevant to resultative SVCs because there is evidence that in this construction (like the control construction in (19b)), the two verbs work together to characterize a single event. One source of evidence for this claim comes from adding a manner adverb like 'quickly' to the RSVC, as discussed by Stewart (2001), Baker and Stewart (2002), and more recently Zimmermann and Amaechi (2018). Assuming that adverbs of this sort are predicates of events, as in the Davidsonian tradition, they give us a way of probing into the event structure of the SVC. In fact, Edo has two kinds of manner adverbs one can consider, a more verbal kind that comes before the core VP and a more nominal kind that comes after it. (Note that the post-VP version starts with a vowel, which is a property of nouns in Edo, whereas the pre-VP version starts with a consonant.) The data are given in (20).

(20) a. Ozó giẹ!giẹ ghá sú!á ọ̀gọ́ dé. (Edo) (Stewart 2001: 24)
Ozo quickly ITER push bottle fall.
'Ozo quickly pushed the bottle down repeatedly.'
(Each pushing+falling event is quick.)

b. *Ozó sùá ọ̀gọ́ giẹ!giẹ dé. (Edo) (Stewart 2001: 26)
Ozo push bottle quickly fall.
('Ozo pushed the bottle such that it quickly fell.')

c. *Ozó sùá ọ̀gọ́ ẹ̀giẹ́giẹ́ dé. (Edo) (Stewart 2001: 26)
Ozo push bottle quickly fall.
('Ozo pushed the bottle quickly such that it fell.')

d. Ozó kòkó Àdésúwà mòsé ẹ̀giẹ́giẹ́. (Edo) (Stewart 2001: 36)
Ozo raise Adesuwa be.beautiful quickly
'Ozo raised Adesuwa to be beautiful quickly.'
(the raising+becoming-beautiful is quick)

(20b,c) shows that neither kind of adverb can come between the two verbs of the RSVC, modifying only one of them. (20a,d) show that both kinds of adverb can appear on their favored side of the SVC as a whole. Even in that case, the adverbs cannot be interpreted as modifying only the event that is denoted by the verb that is closest to them. Rather, they must be interpreted as modifying an event that consists of both the pushing and the falling.[9] Other considerations also support this conclusion, including the position and interpretation of the iterative particle *gha*, and the behavior of the predicate cleft construction in Edo (Stewart 2001).

The crucial idea now is that the fact that 'bottle' the structural object of 'push' must control the argument of 'fall' can be derived from the fact that 'push' and 'fall' are predicates of the same event together with thematic uniqueness. I continue to assume Collins's (1997) phrase structure in (21).

[9] Maybe it is not quite accurate to say that there is a single event that is both a pushing event and a falling event, with no further mereological structure. It might make more sense to say that there is an event that contains a pushing event and a falling event as subevents. In that case, the full analysis of RSVCs would be more like the analysis of CSVCs sketched below. The difference could be that the two verbs of an RSVC are merged together very low in the structure, lower than the lowest licensing position for a manner adverb. However, the simpler version in the text should be sufficient to motivate my leading idea and get it into the reader's mind.

(21) Ozo voice/v [$_{VP1}$ bottle push [$_{VP2}$ fall *pro*]] (cf. Collins 1997: 491)
|_____|

Now let us do a rough-and-ready compositional semantics of this structure. The VP headed by 'fall' will have a meaning like (22a) once the unaccusative verb combines with its null pro argument inside VP. *Push* has a meaning like (22b), assuming that the external argument of the transitive verb *push* is "severed" (and the internal argument is not), following Kratzer (1996). *Push* can now combine with the VP using Kratzer's rule of event identification—the same principle of composition that combines Voice heads with verb phrases in her treatment. The result is (22c) as the meaning of the larger V′. Applying this function to the denotation of 'the bottle' gives (22d). Combining this predicate of events with Kratzer's meaning for the agentive Voice head (λx λe Agent(e)=x) by another instance of event identification gives (22e). Finally, applying the result to 'Ozo' gives (22f) as the meaning of the core SVC structure, abstracting way from niceties such as tense, aspect, and modality (as I do throughout this chapter).

(22) a. VP2: λe fall(e) & theme(e)=pro
b. V1 push: λx λe push(e) & theme(e)=x
c. V1′: λx λe push(e) & theme(e)=x & fall(e) & theme(e)=pro.
d. VP1: λe push(e) & theme(e)=the.bottle & fall(e) & theme(e)=pro.
e. Voice′: λx λe agent(e)=x & push(e) & theme(e)=the.bottle & fall(e) & theme(e)=pro.
f. VoiceP: λe agent(e)=Ozo & push(e) & <u>theme(e)=the.bottle</u> & fall(e) & <u>theme(e)=pro</u>.
… so pro=the.bottle

This is all a very standard vanilla-flavored Kratzerian approach, except for the addition that V can merge with a VP, composing by the independently motivated rule of event identification. This is supported by the crucial ontological assumption that *fall* and *push* can be predicates of the same event (or near enough, see fn 8). But since since *pro* refers to the theme of the falling event and *the bottle* refers to the theme of the pushing event, and these are the same event, and an event can only have one theme (Carlson's thematic uniqueness), it follows that *pro* must refer to the bottle. I propose that this is the engine of obligatory control. OC is induced to satisfy thematic uniqueness in cases where two argument-taking predicates are predicates of the same event (or closely related events). This takes place at the border of syntax and semantics, where thematic roles play their role, in Carlson's view of things. (See xx for some further theoretical discussion.)

An advantage of this view is that we can already see how it has the potential to give a unified explanation of the Generalized Obligatory Control Signature, at least as it applies to resultative SVCs. The first key claim of the GOCS is that OC is something special that happens when a constituent that contains a controllable DP (here a VP) merges directly with a projection of a verb (or other argument-taking lexical head), as its complement or a low adjunct modifier. This follows from the hypothesis that event identification is at the heart of obligatory control, given that event identification is a compositional principle that applies when two syntactic expressions merge together to form a unit. Other, less direct relationships between an argument-taker and a constituent with a controllable DP will not in general feed this principle. Rather, they will be interpreted in other ways, and in accordance with the details of the more elaborate

structure that they are found in and the contribution of other heads that may are involved (coordinators, subordinating elements, tense-mood-aspect heads, and the like).

A second key claim of the GOCS is that OC is something special that relates an *argument* of a head to something inside a constituent that is merged with that head. This restriction that the controller must be an argument, not an adjunct or something contained in an argument, follows from the hypothesis that OC is induced by thematic uniqueness applied to the event that the first/higher verb is a predicate of. By definition, thematic uniqueness holds of entities that bear some thematic relationship to a particular event. Therefore, it will only induce control between a DP that bears a thematic relationship to the first verb (a predicate of events) and a DP that bears a thematic relationship to the second verb (also a predicate of events—in this case, a predicate of the same event). Now the DPs that bear a thematic role with respect to a particular event are the DPs that are arguments of the verb that is a predicate of that event, by definition. It therefore follows from this hypothesis that the controller must be an argument of the verb which the second VP is the complement of.

The third and final key characteristic of OC as I have presented it is that it is sensitive to the particular thematic roles of the controller and the controllee—not just to grammatical functions or the coarse-grained structure of the construction. This also follows organically from the current proposal, couched in terms of thematic uniqueness. This is obviously a principle that pays attention to the specific thematic roles that grammatical elements bear. It licenses the outcome that one DP is equated with another one only if the DP has a particular thematic role—say theme—as opposed to another one. Indeed, thematic uniqueness requires a very specific relationship between the thematic roles of the controller and the controllee, that they must be the same thematic role. For SVCs, this is empirically warranted, in that the theme argument of the second verb must be controlled by the theme argument of first verb, not by its agent argument or its goal argument, as we have seen. Whether this rigid sort of sensitivity to thematic roles holds up for all the cases of OC, especially OC of PRO, will have to be investigated.

Before moving on to the constructions of central interest to this work, I note in passing that this account might work for resultative constructions in English too, which involve adjectives (or PPs) as the result rather than verbs. Collins (1997: 493) among others draws a direct connection between RSVCs like those in (16) and the English resultative construction in (23). Note that there is a PRO in the AP complement of the verb *water*, which is controlled by the theme argument of that verb.[10]

(23) a. John watered the tulips all flat.
b. [John Voice [$_{VP}$ tulips$_i$ water [$_{AP}$ [all [PRO$_i$]] flat]]

Having a PRO inside the AP resultative was also a popular view in GB-era theories that were concerned about the Theta Criterion (see also (Bowers 1993)). (Although there is an equally robust history of saying there is no PRO there; Baker (2003) is one of many examples.) If there is a PRO in (23), then this is surely a case of OC. Moreover, it is tightly constrained by thematic roles: only the theme argument of the verb can control the PRO inside AP. An example like (24)

[10] The main reason Collins cites for positing a PRO inside AP is because of floated quantifier all, on the assumption of Sportiche (1988) that such quantifiers reveal the positions of null DPs. However, this test might not be totally reliable, given that floated quantifiers can be in other VP-internal positions too.

is possible, but *tired* is a depictive predicate not a resultative; it expresses that John was tired throughout the watering event, not just at the end as a result of the watering event.

(24) #John$_i$ watered the tulips [PRO$_i$ tired].

Moreover, adverb modifiers suggest that there is a single eventuality in (23): *John quickly watered the tulips flat* means that the event of *watering-flat* was quick, not just the watering part. Suppose the subject of *flat* is the theme argument of a state/eventuality of being flat. This thematic analysis is justified by adjective-verb correspondences like *The dough is flat*, *The dough flattened*, and *John flattened the dough*. Here *the dough* is the theme argument of the transitive and inchoative verbs *flatten*, and the thematic relationship of *the dough* to *(be) flat* is parallel to this Therefore, it makes sense to say that *the dough* is the theme argument of the adjective *flat* as well. Given these pieces, we could derive OC in (23) in the same way as I did in (21), following steps like those in (22). PRO is the theme argument of *flat*. *The tulips* is the theme argument of *water*. The same event is both an event of watering and an event of be(com)ing flat. This event has a single theme (thematic uniqueness). Therefore PRO must be bound to *the tulips*—an instance of obligatory control. I do not fully commit to (23) having a controllable empty category inside AP, but if it does then my leading idea can be grounded in data that are near at hand to the English speaker as well as data that are less familiar.

8.3 Ghostly operator constructions

Now I take the next step toward expanding this sketch of a leading idea into a more comprehensive account of the class of phenomena that I take to involve OC by considering the ghostly operator constructions. As a canonical example to get a proof of concept, consider a Magahi example involving allocutive marking and indexical shift of both first and second person pronouns, as in (25). Such examples are particularly interesting in that, on my analysis, they involve two obligatory control relationships, not just one. The matrix subject controls Sp in the CP complement of 'tell'—a sort of control seen also in upward C-agreement constructions and logophoric pronoun constructions—and at the same time the matrix goal controls Ad in the CP complement. This sort of double control is not familiar from the study of normal control into nonfinite clauses.[11]

(25) a. Santee-aa <u>profesar saaheb-ke</u> kah-kai ki ham apne-ke dekh-l-i-<u>ain</u> ha-l.
Santee-FM professor HH-DAT told.3.NS.S that I you.HH.ACC see-PFV-1.S-HH.AL be-PFV
'Santee$_i$ told the professor$_k$ that I$_i$ saw you$_k$.'

b. Santee$_i$ Voice [the professor$_k$ told [$_{CP}$ Sp$_i$ C1 [$_{CP}$ Ad$_k$ C2 [I$_i$ saw you$_k$]]]
|_____| agree

[11] Double control might happen in CSVCs like 'Ozo buy food eat', as in (3d). This would happen if the projection of V2 'eat' has two empty categories, one representing its agent and the other its theme, as in Ozo$_i$ Voice [food$_k$ buy [DP$_i$ eat DP$_k$]] (compare (5a)). I do not entirely rule out the possibility that some examples in some languages might have this kind of double-control analysis. However, the more common view post Kratzer (1996) is that the SVC has a single Voice head that takes a serialized VP as its complement and attaches an agent to the composite event of buying+eating. See Collins (1997: 491), Stewart (2001), Baker and Stewart (2002).

Recall also that in ghostly operator constructions, the complementizer C is often related to the verb 'say', where the complementation construction might very well have evolved out—or even still be—a kind of serial verb construction (Major 2021, Major and Torrence 2021, Driemel and Kouneli To appear).[12] It should not be too big a leap, then, from control in SVCs to control in operator constructions.

I continue to assume, as I have all along, that relevant C heads in the left periphery (Fin, according to Alok (2020)) license Sp and Ad in their projections. Moreover, they do so by assigning them a sort of thematic role: agent in the case of Sp and goal in the case of Ad. In neo-Davidsonian terms, this suggests that the C head(s) are, like verbs, predicates of events—events that DPs can refer to the agents and goals of. But let's assume that, in the limiting case, the C heads have no more semantic content than this; they are trivial predicates of events, true of any event that has an agent and a goal. This is a plausible formal expression of the widespread sense that verbal complementizers are semantically bleached verbs, which have lost much if not all of their substantive semantic content. (This need not be entirely true for all cases; we have seen that the Eval head that is present in upward C-agreement constructions does tend to have a more substantive semantics. Whatever this is, exactly, I assume that it can be added into this base account.)

Now we can take a new step. Inspired by RSVCs, the next question is what is the semantic relationship of C itself to the verb that it heads the complement of? Since I have inferred that the operator-licensing C is a predicate of events, it is plausible to say that its projection combines with the matrix verb by event identification. Moreover, since C is a trivial predicate of events (by hypothesis), such that C(e) is true of all events (within a certain class), it follows that "verb(e) & C(e)" is true of an event if and only if "verb(e)" is true of that event. In other words, C can combine with any matrix verb that selects the CP it heads by event identification. In particular, the CP headed by *ki* in (25b) can combine with 'tell' by event identification. Even though C has no substantive content as a predicate of events, thematic uniqueness still applies, implying that the agent of the telling event denoted by the matrix verb is the same as the agent of C, and the goal of the telling event is the same as the goal of C. As a result, the agent of 'tell' controls Sp in the complement clause, and the indirect object of 'tell' controls Ad in the complement clause—and never vice versa. (26) sketches the semantics that I have in mind, in a way parallel to (22), with various details glossed over.[13]

(26) a. CP: λe C(e) & agent(e)=Sp & goal(e) = Ad & content(e)= pro saw pro
b. tell: λx λe tell(e) & goal(e)=x
c. V': λx λe tell(e) & goal(e)=x & C(e) & agent(e)=Sp & goal(e)=Ad & content(e)=…
d. VP: λe tell(e) & goal(e)=Bantee & C(e) & agent(e)=Sp & goal(e)=Ad & content(e)=pro saw pro
e. Voice′: λx λe agent(e)=x & tell(e) & goal(e)=Bantee & C(e) & agent(e)=Sp &

[12] It is by no means necessary that the C of a ghostly operator construction be explicitly verbal either synchronically or in its diachronic origins. Indeed, *ki* in Magahi is not, nor is *ke* in Ibibio. My syntactic theory goes through as long as C assigns the right kind of thematic roles to its ghostly DP arguments, whether it is verbal in any (other) sense or not. When there is a V-C relationship, it can help to motivate our theoretical intuitions, but it is not part of the official theory.

[13] Here I assume that the TP complement of C (Fin) denotes a proposition that specifies the content of the event that C is a predicate of. In taking some events to be individuals that have content, I follow Kratzer (2006), Hacquard (2006) Moulton (2009, 2015) and Elliott (2017). This is discussed in some detail in section 8.5 in the context of infinitival clauses.

goal(e)=Ad & content(e)=pro saw pro

f. VoiceP: λe agent(e)=Santee & tell(e) & *goal(e)=Bantee* & C(e) & agent(e)=Sp & *goal(e)=Ad* & content(e)=pro saw pro

Therefore Sp=Santee and Ad=Bantee.

Because the e argument of C is identified with the e argument of 'tell', thematic uniqueness implies that the agent argument of 'tell' is the same as the agent argument of C, and that the goal argument of 'tell' is the same as the goal argument of C. As a result, the subject 'Santee' controls Sp, and the indirect object 'Bantee' controls Ad—the correct result. The mechanics are parallel to those I motivated for SVCs, and the two different instances of thematic uniqueness go through smoothly without interfering with each other.[14]

If one started from the semantics of event identification and worked backwards towards a plausible syntax, it could play out in (at least) two ways. One can imagine the equation amounting to two DPs being projected where one binds the other, as I presented here, or one can imagine it amounting to only one DP being projected in the syntax even though it is understood as the argument of two predicates. Even for the best-studied case of PRO in control infinitives, it has been vigorously debated whether the complement constituent has a syntactically projected DP (PRO) or not. The preponderance of syntactic evidence seems to show that PRO is there as a distinct DP in at least some infinitival complements, and that is what most Chomskyan syntacticians assume, even though semantically oriented treatments often try to do without this (see Landau 2013: Ch. 3 for an overview). For SVCs, the question is just as challenging, and there has not been a consensus view. The answer may well even be different for different types of SVCs (see Baker and Stewart 2002 for such a view; Zimmermann and Amaechi 2017 leave the question open). However, for the paradigm case of a ghostly operator construction in (25), I have a clear reason for saying that C has its arguments syntactically projected, even though they must be controlled by arguments of the matrix verb. This is because the arguments of C can differ in phi-features from the arguments of the verb that control them. In particular, we have seen that Ad in Magahi is [+2nd], as shown by both the kind of agreement that it triggers on Fin (showing three levels of honorificity, not just two) and by the features on pronouns that it binds in the embedded clause. This second consideration also implies that Sp in Magahi and other indexical-shifting languages is [+1st]. If the semantic arguments of C were bound variables in the semantics

[14] There are similarities and differences between this proposal and the related one put forward for the agreeing C-like element in Kipsigis by Driemel and Kouneli (to appear). We share the idea that the C-like element is a predicate of events and it takes a null pronominal element as its agent argument, as well as potentially a null goal argument. (For me, it is a C that is a trivial predicate of events; for D&K, it is the verb 'say', which retains some lexical content, but a relatively bleached/abstract one.) A key difference, however, is that I say that the event that C is a predicate of is equated with the event that the matrix verb denotes by event identification, whereas for D&K the embedded clause and the matrix VP are predicates of different events, which constitute the two arguments of a rather flexible "bidirectional causative" element (which they associate with subjunctive morphology). I then claim that the arguments of C are controlled by corresponding arguments of the matrix verb, where control is a tight syntactic relationship induced by thematic uniqueness. In contrast, D&K relate the arguments of C/V to those of the matrix verb by ordinary coreference, constrained (only) by general considerations of semantic consistency and coherence.

Very similar to D&K's view is that of Özyıldız et al. (2018), from which they borrow the "directly causally linked" connective. Many works by Travis Major share this idea that the putative C of a seeming complement clause is really a verb. However, for him the details of how this works can vary some from language to language, the 'say' complement construction being a type of serial verb construction in Avatime (Major and Torrence 2021), a kind of converb construction in Uyghur (Major 2021), a kind of "reduced manner adverbial clause in Lubukusu (Major et al. in progress), etc. I do not go through the possible differences among these various constructions here.

but not projected as distinct DPs in the syntax, there would be no place for these features to be housed where they could influence syntactic processes of agreement.(Ozyildiz, Major et al. 2018)

(27) Santee$_i$ Voice [the professor$_k$ told [$_{CP}$ Sp$_i$ C1 [$_{CP}$ Ad$_k$ C2:2nd [pro$_i$ saw pro$_k$]]]].
[3rd] |_____[3rd]_____| [1st] [2nd] agree [1st] [2nd]

Similarly LogOp in the West African languages is [+Log], a feature that is not borne by its controller but which it does pass on to pronouns that it binds. There may be other ways to achieve this cluster of results, but positing an explicit pronoun in the syntax with its own bundle of features is a natural way. More generally, agreement processes tend to show that there are DPs in the CP space for the C-like heads to agree with locally (C-agreement and allocutive), as I have argued throughout this work.

One positive feature of this account is that it iterates, allowing (say) the agent of the matrix verb to control more than one ghostly DP in the periphery of the complement clause. One clear case in which this can happen is in Ibibio, whether the subject of a CP-selecting verb can control both SoK in the Spec of one C-like head (Eval), resulting in upward C-agreement, and LogOp in the Spec of another C-like head (C), resulting in the binding of a logophoric pronoun. This is seen in an example like (28).[15]

(28) a. Okon i-ki-dọkkọ-ke Emem i-bo ke imọ i-ya i-nwam anye.
Okon 3.SG-PST-tell-NEG Emem 3.SG-C that LOG 3.LOG-FUT-3.LOG-help 3.SG
'Okon$_i$ didn't tell Emem$_k$ that he$_i$ will help him$_k$.'

b. Okon$_i$ not tell Emem$_k$ [$_{EvalP}$ SoK$_i$ Eval [$_{CP}$ LogOp$_i$ C [Log$_i$ will help him$_k$]]]
agree

The account based on thematic uniqueness has what generalizes to this case without new stipulations. Here there are three predicates of events that combine by event identification, such that they end up applying to the same event: C (*ke*), Eval (*bo*), and the verb 'tell' (*dọkkọ*). Each of these predicates licenses a DP in its specifier, to which the agent role is assigned.[16] Since each of these DPs refers to the agent of the same event, thematic uniqueness entails that they must be the same. This licenses the agent of 'tell' controlling both SoK, the trigger of C-agreement, and LogOp, the binder of logophoric pronouns. The composite semantic representation of the VoiceP for (28b) will be approximately (29).

(29) VoiceP: λe agent(e)=Okon & tell(e) & goal(e)=Emem & Eval(e) & agent(e)=SoK &
& C(e) & agent(e)=LogOp & content(e)=he will help him
Therefore LogOp=SoK=Okon

[15] Recall from Chapter 5 that we know that C/Eval does not agree with LogOp because in some cases the trigger of C-agreement can be different from the binder of a logophoric pronoun. For example, in a construction like "X heard from Y that…", X can control SoK whereas Y controls LogOp. I discuss how this is possible given my current theory of control in the discussion of (41) below.

[16] Here I simplify a little bit in suppressing the distinction between the V 'tell' and the agentive Voice head that selects it. Technically, it is not 'tell' that licenses a DP specifier with the role of agent, but rather Voice. However, this comes to the same thing, since Voice is yet another predicate of events that combines with VP by event identification within this Kratzerian system.

It is thus possible, even expected, for an argument of the matrix verb to control more than one ghostly DP contained in the CP complement of the verb.

So far, I have looked at examples with the matrix verb 'tell', a very canonical selector of logophoric phenomena, and a verb whose arguments match up very well with those that I hypothesize for the C-like heads. Now let us consider variations in which the matrix verb and the C-like head are not as similar in the arguments that they take as 'tell' and Fin are in Magahi. One way that this can arise is the matrix verb might take a goal argument, but C might take only an agent argument. That is true for C/Eval in African languages with C-agreement other than perhaps Kipsigis. As already anticipated in (28b), this head takes an SoK argument but there is no evidence that it takes an OoK argument. Other such cases are LogOp in Ibibio and zOp in Japanese. These languages do not have special addressee pronouns the way that Mupun and Tikar do, so there is no motivation for saying that their Cs license AddrOp in addition to LogOp or zOp. That is fine for the current proposal about the nature of OC. The analysis is similar to the one in (25)+(26), with the sole exception that there is no conjunct like "goal(e)=X" in the line corresponding to (26a), giving the value of the CP complement. The agent of the matrix verb still gets equated with SoK or LogOp, the agent of C, but there is no requirement that the goal of the matrix verb control anything. Thus the analysis of an example like (30a) with the structure in (30b) will be as in (31).

(30) a. **Kámbale** mw-a-ka-bw-ira abá-kalí **a-ti** Maryá
CL1.Kambale AF-CL1.S-TNS-tell-APPL CL2-women CL1-that Mary
mw-á-gúl-ir-é ehí-lole. (Kinande)
AFF-CL1.S.TNS-buy-ASP CL19-bananas
'Kambale told the women that Mary bought bananas.'

b. Kambale$_i$ tell women [$_{EvalP}$ SoK$_i$ Eval [Mary bought bananas]]

(31) a. CP: λe Eval(e) & agent(e)=SoK & content(e)=Mary bought bananas
b. tell: λx λe tell(e) & goal(e)=x
c. V': λx λe tell(e) & goal(e)=x & Eval(e) & agent(e)=SoK & content(e)=Mary bought bananas
d. VP: λe tell(e) & goal(e)=the.women & Eval(e) & agent(e)=SoK & content(e)=Mary bought bananas
e. Voice′: λx λe agent(e)=x & tell(e) & goal(e)=the.women & Eval(e) & agent(e)=SoK & content(e)=Mary bought bananas
f. VoiceP: λe <u>agent(e)=Kambale</u> & tell(e) & goal(e)=the.women & Eval(e) & <u>agent(e)=SoK</u> & content(e)=Mary bought bananas
Therefore SoK=Kambale

There is thus no requirement that the verb and C match perfectly in their argument structures, only that when they do have corresponding arguments those argument must enter into a control relationship. This is analogous to what we saw with SVCs, where the first verb may take an agent or a goal argument that is not shared with the second verb, as in examples like 'Ozo push Uyi fall'. This extra argument is harmless, as long as the arguments that do get the same thematic role—for the SVC, the theme arguments—are identified via a control relationship.

Consider next the converse case, in which the C-like head has a goal argument but the matrix verb does not have one. This situation arises in Magahi, where Fin selects both Sp and Ad, but the CP-selecting verb can be one that lacks a goal, like 'say' or 'think'.[17] From the point of view of event identification and thematic uniqueness, this case works the same as the previous one. The agent of the matrix verb controls the Sp argument of Fin, but there is no argument of the matrix verb to control the Ad argument of Fin. However, there is an asymmetry between the two cases. In one case, the substantive predicate (the verb) has extra arguments that the trivial one (C/Fin) lacks; in the other case, the trivial predicate has arguments that the substantive one lacks. Thematic uniqueness is not sensitive to this distinction, but other aspects of Theta theory might be. In fact, sentences like 'Santee thinks that I saw Bantee/you' are grammatical and sometimes allow indexical shift—but they have some funny properties that are consistent over a range of languages including Uyghur, Nez Perce, and Magahi. As discussed in Chapters 3 and 4, a first person pronoun in the complement of 'think' can refer to the subject of 'think', as in (32a). However, when the first person pronoun has this reading, the embedded verb cannot show allocutive marking, resuming the marking on the matrix verb ((32b)), and there cannot be a second person pronoun in the embedded clause ((32c)).

(32) a. Santee-aa soch hai ki **ham**tej h-i.
Santee-FM think be.3.NH.S that I smart be-1.S
'Santee$_i$ thinks that he/I$_{sp,i}$ am smart.'

b. Santee-aa soch-l-ain ki hamRam-ke dekh-l-i-ain.
Santee-FM think-PFV-HH.AL that I Ram-ACC see-PFV-1.S-HH.AL
'Santee$_i$ thought that he/I$_{*i,sp*}$ saw Ram.' (said to a teacher)

c. Santee-aa soch-l-ai ki hamokra/#toora dekh-l-i.
Santee-FM think-PFV-3.NH.S that I 3.NH.ACC/you.NH.ACC see-PFV-1.S
'Santee$_i$ thought that he/I$_{i,}$ saw him/*you.'
(Also OK: 'Santee$_i$ thought that I$_{sp*}$ saw you$_{ad*}$.')

Following Deal (2020), I described this as a defective addressee effect: Ad in the FinP of the embedded clause cannot have a referential value. In particular, it cannot refer to the addressee, as Ad* in the root clause does. Compositionally, following the model of the examples we have seen so far, the semantic value of the matrix VoiceP for an example like (32c) is (33) (compare (31f)).

(33) VoiceP: λe agent(e)=Santee & think(e) & Fin(e) & agent(e)=Sp & goal(e)=Ad & content(e)= 'pro saw pro'

What is notable here is that this formula implies that Ad refers to the goal of an event of thinking. But 'think' is not a trivial property, which can apply to any event the way that C can. In particular, thinking events do not have goals. We know this from the elementary fact that we cannot generally add a goal argument to a clause anchored by 'think' in English or other languages (barring belief in some kind of telepathy).

[17] 'Say' is not a different lexical item from 'tell' in Magahi, but it is in Ibibio and some other Niger-Congo languages. Even in Magahi, there is evidence that it is possible to use 'say' without there being a goal argument projected in the syntax.

(34) #John thought to Mary that he is intelligent.

Therefore, there is something borderline incoherent about the formula in (33), which does attribute a goal to a thinking event. However, we want examples like (32) to be constrained in their meaning, but not incoherent. Suppose then that we understand the relevant fact about thinking events not as "there is no goal of a thinking event" but rather as "The goal of a thinking event is no one". Then the subformula of (33) "… think(e) & agent(e)=Sp & goal(e)=Ad…" is not ill-formed, but Ad is some kind of placeholder DP that refers to no one. No one has no determinate social rank with respect to the referent of Sp, so this special Ad has no honorific features, and it cannot trigger agreement for honorificity on Fin. Also 'you' in the domain of Ad must be bound by Ad by the PLC, but such a 'you' cannot refer to anything because Ad does not. Like my original discussion of these facts in Chapter 4, this necessitates a very specific way of understanding "no one" in the uncontroversial observation that the goal of a thinking event is no one. But this analysis does make sense of why something special happens to Ad in just this situation.[18]

Another issue that arises in generalizing this control theory beyond verbs like 'tell' is how strict is the thematic matching between the matrix verb and the C-like head. I assumed in the previous paragraph that the subject of 'think' has the thematic role agent. And perhaps it does: thinking can be a volitional activity, as in a sentence like *Every morning I start my day by spending some time <u>thinking</u> about the deep questions about Theta theory.* But even if 'think' does select an agent argument, some other dyadic verbs do not, and their arguments can still control Sp and its kin. For example, in Magahi the animate argument of 'seem' can be the antecedent of a shifted first person indexical as in (35), discussed in chapter 4. We normally consider this argument to be an experiencer rather than an agent. Indeed, this distinction is visible to the morphosyntax inasmuch as the experiencer bears dative case, not nominative, which is correlated with its nonagentive thematic role.

(35) Santee-aa-ke laga h-ai ki ham tej h-i.
Santee-FM-DAT seem be-3.NH.S that I smart be-1.S.
'It seems to Santee$_i$ that he/I$_{i,sp*}$ is/am smart.'

My analysis is that this sort of experiencer is generated as Spec of VP (or ApplP) and therefore receives dative case rather than nominative case (see Baker (In press) on closely related Hindi). In other examples, experiencer arguments may even stay inside VP while some other nominal—an expletive, body part nominal, or idiom chunk—occupies the Spec TP subject position, as in (36) from Ibibio. This type of experiencer can nevertheless still control LogOp, such that it is the ultimate antecedent for a logophoric pronoun in the complement clause.

(36) Esɪt a-nem <u>Okon</u> ke Emem á-maá <u>ímò</u>.
heart 3.SG-sweet Okon that Emem 3.SG-like LOG

[18] Note that we crucially do not want to say that the Ad argument of Fin is optional in Magahi and similar languages, as way of accommodating the argument structure of Fin to that of 'think'. That would account for impossibility of allocutive agreement in (32b), but not for the impossibility of 'you' in the complement clause in (32c). If Ad were missing in FinP of the complement of 'think' in examples like this, I would expect 'you' to be possible referring to Ad*, its binder according to the PLC.

'Okon$_i$ is happy (lit. the heart is sweet on Okon) that Emem likes him$_i$.'

Therefore, we do not want to say that these experiencer arguments are simply agents in an extended sense, given that they do not map onto the same syntactic positions as agents. Nevertheless, they can control Sp or LogOp when circumstances are right (when there is no agent argument of the clause).

To account for this behavior, we need to be careful about what thematic predicates are used in the neo-Davidsonian analysis. An insufficient analysis would be to say that the animate argument of 'seem' or 'be happy' is an experiencer whereas Sp and LogOp are agent arguments of C. Then the semantic formula for an example like (35) would be (37). Thematic uniqueness does not apply here, so nothing licenses the OC of Sp by the experiencer.

(37) VoiceP: λe experiencer(e)=Santee & seem(e) & Fin(e) & agent(e)=Sp & goal(e)=Ad & content(e)=pro is smart

Nor would it work to say that Sp is really the experiencer argument of C/Fin. Although we cannot observe the thematic role of Sp very directly, this hypothesis would simply move the problem from sentences like (35) to sentences like (25) and (32); now the problem is that the agent argument of 'tell' or 'think' does not control the experiencer argument of C/Fin by thematic uniqueness.

The solution to this is to say that there is a higher order, more coarse-grained thematic role that subsumes agent and experiencer as subtypes. This is a common move in Theta theory. Ramchand (2008: 53-55) is an influential example: she argues that volitional agents, experiencers of psych predicates, and (possibly) inanimate causers are all instances of a single thematic role which she calls *initiator*. (See Dowty (1991) on agent as a proto-role, and Foley and Van Valin's (1984) notion of an actor argument for similar intuitions couched within different frameworks.) For concreteness, I adopt a version of this in which a given nominal argument of a predicate can bear both a fine-grained role like agent or experiencer and a compatible coarse-grained role like initiator simultaneously (cf. Jackendoff 1990). I also revise my hypothesis to say that C-heads like Fin in Magahi, C in Ibibio, and Eval in Kinande assign the initiator role to their external argument (Sp, LogOp, and SoK, respectively). Given these assumptions, the semantic formula for the matrix VoiceP of (35) will be (38) rather than (37).

(38) VoiceP: λe experiencer(e)=Santee & <u>initiator(e)=Santee</u> & seem(e) & Fin(e) & <u>initiator(e)=Sp</u> & undergoer(e)=Ad & content(e)=pro is smart

Now thematic uniqueness applies to the initiator role of the event, implying that Sp=Santee and licensing the OC of Sp by *Santee*, as desired. In other examples, the subject may bear the experiencer role and the initiator role, and the initiator role will cause it to control Sp. Note that it does no harm to these control dynamics to have the finer-grained thematic roles of experiencer or agent also present alongside initiator in the representation. They do not induce control of the ghostly DP, but they do not prevent it either. An advantage of including them is that one can claim that the absolute position of the DP (in Spec VP or Spec VoiceP) and its case marking (dative or nominative/unmarked) is determined by its finer-grained thematic role (cf. the UTAH of Baker (1988)) while the coarser grained thematic is what determines the OC relationship. It seems quite possible to have it both ways in this case. One can handle cases in which the source argument of a verb like 'hear' controls Sp or LogOp in the same way: such DPs are sources and

initiators, although not agents (different from the agent of 'tell'). The source role causes them to be projected as the object of a P like 'from' while the initiator role allows them to control Sp or LogOp.[19]

We can and probably should apply the same style of thinking to canonical internal arguments as well. We have seen that the goal argument of 'tell' can control the Ad argument of Fin in Magahi, another case of thematic role matching. However, the theme argument of a verb like 'convince' can as well, as in (39).[20]

(39) Bittuaa Chhotu-aa-ke soch-wal-k-ai ki *pro* toraa dekhl-i..
Bittu-FM Chhotu-FM-ACC think-CAUS-PFV-3.NH.S that (I) you.ACC see-PFV-1.S
'Bittu$_n$ convinced Chhotu$_i$ that he/I$_n$ saw him/you$_i$.'

Here we can say that both goals and themes bear the coarser-grained role undergoer (Ramchand 2008, Foley and Van Valin 1984), as does the Ad argument of Fin (as anticipated in (38)). The undergoer role causes either of them to control Ad, while their different finer-grained roles might cause them to appear in slightly different positions inside VP and/or receive different case markings in some languages. (40) is a formula for (39) that expresses this.

(40) VoiceP: λe agent(e)=Bittu & initiator(e)=Bittu & convince(e) & theme(e)=Chhotu & <u>undergoer(e)=Chhotu</u> & Fin(e) & initiator(e)=Sp & <u>undergoer(e)=Ad</u> & content(e)= pro saw pro
Thematic uniqueness: Sp=Bittu, Ad=Chhotu

The same example with 'convinced' replaced by 'told' would have the same formula, except that we would have "goal(e)=Chhotu" rather than "theme(e)=Chhotu", but this does not affect the OC, which rides on the undergoer role, not the theme or goal roles. In principle, the same factors could be relevant to the control of AddrOp which binds addressee pronouns in Mupun and Tikar and to the control of OoK that triggers suffixal agreement on C in Kipsigis, although the data on these cases are scant or contested.[21]

While my official Theta theory now includes initiator and undergoer as well as agent, experiencer, theme, and goal, I often do not include both roles of the subject or both roles of the object(s) when it is not important for understanding a particular example.

---

[19] Thematic uniqueness of course implies that a single verb cannot have two initiators. This could undergird the law of theta theory that I assumed in Chapters 4 and 5, that a single clause can have an agent and a goal, but the goal cannot count as an experiencer (a type of initiator) in the presence of an agent (another initiator). One cannot have both an agent and a causer in the same simple clause (not counting a causative construction) either. One can have both an agent and a source, as in *John bought a car from Mary*. I assume that some source arguments count as initiators but others do not: pure sources qua paths are clearly not initiators in any sense (*Mary jumped from the bed to the floor*) and the thought is that the source of 'buy' is more like one of those than it is like the source of 'hear'.

[20] I believe that the object of 'convince' in English and other languages is a theme argument rather than a goal argument, because it necessarily undergoes a change of (mental) state. Also this argument is marked with *of* rather than *to* in related nominals, to the extent that these are possible: *The convincing ?of/*to John that he should leave took a long time*. However, this distinction is blurred somewhat in Magahi by the fact that dative case and accusative case are systematically syncretic in the language.

[21] An alternative way to think about the Edge effect of Chapters 2 and 3 in the terms of this section could be that it is a law of Theta theory that the goal-like arguments of dyadic predicates that also select a CP complement count as initiators rather than as undergoers. I do not know that this has any advantage over the syntactic analysis offered in Section xx.

So far, I take the consequences of the new hypothesis for the control of ghostly DP operators to be positive or neutral. There is however one genuine challenge for the new theory based on thematic uniqueness. Recall from chapter 5 that logophoric constructions in Ibibio and Yoruba are special in that there can be two LogOps in the periphery of a single clause, each with a different controller. In this respect, logophoric pronouns are different from shifted first person indexicals in Magahi and other languages and from LD anaphors in Japanese and other languages; for those constructions, two special operator-bound pronouns in the same clause must refer to the same person. An Ibibio example of two logophors in the same clause referring to different antecedents in the next higher clause is given in (41).

(41) a. Nditọ e-ke-kop e-to Okon ke ímọ̀ i-maa-gha mm-ímọ̀.
children 3.PL-PST-hear 3.PL-from Okon that LOG 3.SG-like-NEG PL-LOG
'The children$_k$ heard from Okon$_i$ that he$_i$ doesn't like them$_k$.'

b. The children$_k$ heard from Okon$_i$ [LogOp1$_k$ LogOp2$_i$ C [Pro$_i$+L not like Pro$_k$+L]]

Within the terms of the current analysis, it is inescapable that the two LogOps in the periphery of the embedded clause cannot both have the same thematic role, like agent or initiator. If they did, they would have to be coreferential, which they are not. Still, both LogOps need to have some substantive subject-like thematic role; otherwise one of them could potentially be controlled by the goal argument of 'tell'. This is not possible, as shown by the badness of (42).

(42) *Okon a-ma-a-dọkkọ Edem ke imọ i-ya-i-nwam imọ.
Okon 3.SG-PST-3.SG-tell Edem that LOG 3.LOG-FUT-3.LOG-help LOG
('Okon$_i$ told Edem$_k$ that he$_i$ will help him$_k$.')

So I am pushed to say that C in Ibibio has the special property of assigning the initiator role to one LogOp and some other thematic role from the agent-like family to another LogOp. For concreteness, I tentatively assume that C in Ibibio (and Yoruba) can assign the source role as well as initiator.[22] Semantic formulas for (41) would then be composed as in (43). (To derive the value for Voice′ in (43e), I assume that there is a flavor of Voice that licenses an experiencer+initiator subject rather than an agent+initiator subject—a common view. Alternatives in which this is the argument of V itself or an Appl head would also be possible.)

(43) a. CP: λe C(e) & initiator(e)=LogOp1 & source(e)=LogOp2 & content(e)=pro not like pro.
b. hear: λx λe hear(e) & source(e)=x
c. V': λx λe hear(e) & source(e)=x & C(e) & initiator(e)=LogOp1 & source(e)=LogOp2 & content(e)=pro not like pro

[22] One can think of this as the view that Ibibio has a logophoric complementizer that is basically a grammaticized version of 'hear', with an experiencer/initiator argument and a source argument, as well as one that is a grammaticalized version of 'say', with an agent/initiator argument. A possible reason for saying that the second LogOp has a source role rather than an experiencer role is that an initiatior/agent+experiencer argument structure for C might wrongly allow two LogOps to be controlled in a sentence like (42), if the goal argument can count as an experiencer (see also section 5.xx for agent-experiencer interactions with a matrix verb like 'remind').

The two-LogOp structure allowed by Ibibio also underlies its ability to have C-agreement with a different DP than one that antecedes a logophoric pronoun. See Section 5.xx

d. VP: λe hear(e) & source(e)=Okon & C(e) & initiator(e)=LogOp1 & source(e)=LogOp2 & content(e)= pro not like pro
e. Voice′: λx λe experiencer(e)=x & initiator(e)=x & hear(e) & source(e)=Okon & C(e) & initiator(e)=LogOp1 & source(e)=LogOp2 & content(e)= pro not like pro
f. Voice′: λx λe experiencer(e)=children & <u>initiator(e)=children</u> & hear(e) & <u>source(e)=Okon</u> & C(e) & <u>initiator(e)=LogOp1</u> & <u>source(e)=LogOp2</u> & content(e)= pro not like pro

Here thematic uniqueness applied to the source argument of the event implies that LogOp2 is controlled by 'Okon', and thematic uniqueness applied to the initiator (/experiencer) argument of the event implies that LogOp1 is controlled by 'the children'. Therefore, although this construction is not a special strength of the approach to OC based on event identification and thematic uniqueness, it is not a fatal contradiction either. As far as I can see, any account needs to say something a bit special about what thematic roles license LogOps in these multiple LogOp structures, given that multiple Sp, zOp, and SoK structures are indeed not allowed.

Overall, then, generalizing this sort of account from resultative SVCs to the ghostly DP constructions that are the focus of this study works well. The crucial idea that control relationships between the arguments of two predicates are induced by the two being predicates of the same event can plausibly carry over, and various of the details can be worked out.[23]

8.4 More on serial verb constructions

So far, I have used simple examples of a resultative SVC to motivate a new approach to obligatory control, and I have shown how that approach can apply to account for the major facts about the control of ghostly DP constructions. I want to end by showing how this idea also works for the control of PRO subjects in nonfinite clauses. But before I go there, I want to return to the domain of SVCs, looking at another kind which are a bit more complicated than the ones that I considered in section 8.2. This will lead to a more general and flexible version of the thematic uniqueness hypothesis, which allows for two events to be closely related to one another in ways other than identity. In addition to improving the analysis of SVCs for its own sake, the flexibility and generality will pay some dividends when it comes to the analysis of the control of PRO.

---

[23] The current theory of OC also constrains how we analyze resumptive allocutive marking in Magahi and super-LD anaphora in Japanese, in schematic examples like (i) and (ii).

(i) Ad_i:NH Deepak told professor$_k$ [Ad_k:HH C1:HH [Santee told Bantee [Ad_k:HH C2:HH [Ram is smart]]]].
(ii) Taro$_i$ think [zOp$_i$ C1 [Hanako say [zOp$_i$ C2 [everyone voted for zibun$_i$]]]]

In particular, it is inconsistent with Baker and Ikawa's (2024) proposal of "chained control", in which Sp/Ad or LogOp in one clause can be the obligatory controller of the Sp/Ad or LogOp of the subjacent clause. This is because the event that the higher C is a predicate of is different from the event that the lower C is a predicate of. For example, in (ii) C1 must be a predicate of the thinking event and C2 must be a predicate of the saying event and these must be different events (they have different arguments, can have incompatible adverbial modifiers, etc.). In contrast, the view adopted already in this work is compatible with the current theory of OC. On that view, the lowest CP in (i) and (ii) extraposes, becoming in effect a high adjunct clause, which is not an OC context. It follows that only those operators that can undergo NOC (zOp, Sp, Ad: those with intrinsic interpretable features) allow the appearance of chained control. According to this view, the ghostly DP in the lowest CP does not undergo OC at all, so the current theory of OC has no direct bearing on this. [Expand in text?]

Alongside the resultative SVCs (RSVCs) discussed above, Stewart (2001) and Baker and Stewart (2002) distinguish a class they call consequential SVCs (CSVCs). Superficially, CSVCs are made up of two transitive verbs, whereas RSVCs in the Edo language have an intransitive verb of the unaccusative class. (3) gave examples, two of which are repeated here.

(44) a. Ozó dẹ̀ LGB tié. (Edo) (Stewart 2001: 60)
Ozo buy *LGB* read
'Ozo bought *LGB* (Chomsky's *Lectures on Government and Binding*) and read it.'

b. Wo ɖa fufu ɖu. (Ewe) (Collins 1997: 461)
they cook fufu eat
'They cooked fufu and ate it.'

Whereas RSVCs express only a single event according to adverbial modification tests, CSVCs are more complex. Depending on the type of adverb (nominal or verbal) and its position, a manner adverb can modify the event expressed by the first verb of the CSVC ((45a)), or the event expressed by the second verb of the CSVC ((45b)), or a complex event that is expressed by the two of them taken together ((45c)).

(45) a. Òzó dùnmwún èmà ẹ̀giẹ́giẹ́ khiẹ̀n-nẹ́. (Edo) (Stewart 2001: 37)
Ozo pound yam quickly sell-PL
'Ozo pounded yams quickly and sold them.'
(the pounding was quick, but not necessarily the selling)

b. Òzó dùnmwún èmà khiẹ̀n ẹ̀giẹ́giẹ́. (Stewart 2001: 24)
Ozo pound yam sell quickly
'Ozo pounded the yam and sold it quickly.'
(the selling was quick, but not necessarily the pounding)

c. Òzó giẹ́!giẹ́ dún!mwún èmà khiẹ̀n!-nẹ́. (Stewart 2001: 24)
Ozo quickly pound yam sell-PL
'Ozo quickly pounded yams and sold them.' (the pounding+selling was quick)

This shows it is too simple to say that 'pound' and 'sell' are both predicates of a single event that is simultaneously a pounding and a selling. Rather, there are three events that are expressed linguistically here, which stand in part-whole relationships to one another. There is a big event, part of which is a pounding event and part of which is a selling event.

Following suggestions about how this kind of SVC might be composed by Zimmermann and Amaechi (2018), we can assume for concreteness that the CSVC has a covert head dominating VP headed by the second verb which puts the events denoted by the two verbs together into a predicate of a larger event. I simply call this head X. Zimmermann and Amaechi propose the structure in (46a), and the semantics for X could be rendered as in (46b).[24]

[24] This is a blend of two proposal of Zimmermann and Amaechi's. It adopts their right branching structure in which the object of first verb c-commands the null object of the second verb. However, it gives X the more symmetrical

(46) a. Ozo voice $[_{XP}$ yam$_i$ [pound [X $[_{VP2}$ sell pro$_i$]]]
|_____|

b. X: $\lambda P_2\ \lambda P_1\ \lambda x\ \lambda e\ \exists e_1\ \exists e_2\ e=e_1+e_2\ \&\ P_2(e_2)\ \&\ P_1(e_1)\ \&\ \text{Theme}(e_1)=x$

The composition of a semantics for (46a) would then be as in (47).

(47) a. VP_2: λe sell(e) & theme(e)=pro
b. X′: $\lambda P_1\ \lambda x\ \lambda e\ \exists e_1\ \exists e_2\ e=e_1+e_2\ \&$ sell(e_2) & theme(e_2)=pro & $P_1(e_1)$ & Theme(e_1)=x
c. X′′: $\lambda x\ \lambda e\ \exists e_1\ \exists e_2\ e=e_1+e_2\ \&$ sell(e_2) & theme(e_2)=pro & pound(e_1) & Theme(e_1)=x
d. XP: $\lambda e\ \exists e_1\ \exists e_2\ e=e_1+e_2\ \&$ sell(e_2) & theme(e_2)=pro & pound(e_1) & Theme(e_1)=the.yam
e. Voice′: $\lambda x\ \lambda e$ agent(e)=x & $\exists e_1\ \exists e_2\ e=e_1+e_2\ \&$ sell(e_2) & theme(e_2)=pro & pound(e_1) & Theme(e_1)=the.yam
f. VoiceP: $\lambda x\ \lambda e$ agent(e)=Ozo & $\exists e_1\ \exists e_2\ e=e_1+e_2\ \&$ sell(e_2) & theme(e_2)=pro & pound(e_1) & Theme(e_1)=the.yam

Now an adverb inside VP2 naturally comes out as a predicate of e2, the selling event, without implying anything about the pounding event. In contrast, an adverb outside of the VP/XP constituent ends up modifying the big event, e, which consists of a pounding and a selling. This gives us what we need for understanding event modification in this class of SVCs.

However, this analysis does not yet license 'the yam', the theme argument of the first verb, controlling pro, the theme argument of the second verb. Thematic uniqueness does not imply that the theme of one event (e1) is the same as the theme of a different event (e2). And yet we do want there to be obligatory control here on empirical grounds. Edo, Ewe, and Igbo all require the object of the second verb to be an empty category bound by the object of the first verb, as long as one controls for the difference between a true one-complex-event SVC and a covert coordination construction, which expresses two events that may only be loosely connected. The difference is relatively easy to see in Ewe, because in the future tense the SVC has only one instance of the future particle *a*, placed before the first verb, whereas the covert coordination has two instances of *a,* one before each verb (i.e., it is really T′ coordination).

(48) a. M-a ɖa nu ɖu. (Ewe, Collins 1997: 467)
I-FUT cook thing eat
'I will cook something and eat it.'

---

meaning of event cumulation, rather than the asymmetric meaning of event extension. Event cumulation seems to fit Stewart's Edo data slightly better, but I do not insist on this.

An alternative version would be to say that a VP headed by V1 is in the specifier of XP, and XP has the meaning: $\lambda P_2\ \lambda P_1\ \lambda e\ \exists e_1\ \exists e_2\ e=e_1+e_2\ \&\ P_2(e_2)\ \&\ P_1(e_1)$. This would not have the theme argument of first verb c-command the theme of the second verb, but it would create room for adjuncts and additional arguments to be generated inside the VP headed by the first verb. I leave open the details—which could vary some from language to language.

Either version of the structure in (46a) calls for a somewhat odd instance of head movement to take the first verb out of a projection headed by X to land in Voice. Zimmermann and Amaechi do not discuss this issue. I assume that this can be handled with a relatively minor adjustment to the syntax and/or the semantics.

b. M-a ɖu nu *(a) no tsi. (Ewe, Collins 1997: 467)
I-FUT eat thing FUT drink water
'I will eat something and drink water.'

Similarly, Stewart (2001: 60-62) contrasts (49a), with an overt pronoun as the object of the second verb, with (49b), with no overt object in this position.

(49) a. Òzó lé ízẹ̀ rrí órẹ̀. (Edo, p. 60 (72b))
Ozo cook rice eat it.
'Ozo cooked rice and ate it.'

b. Òzó lé èvbàré ré. (Edo, p. 61 (74a))
Ozo cook food eat
'Ozo cooked rice and ate it.'

(49b) must have a kind of one-complex-event reading in which Ozo purposely carries out a two-stage plan: he cooks the food with the intention of eating it, and he does eat it. In contrast, (49a) allows for a two-distinct-events reading in which Ozo cooked the rice without the intention of eating it, planning to sell it for money, but then later he loses self-control and ends up eating it himself. The two structures can also be distinguished in how adverbs are licensed and interpreted in them. Similarly, Zimmermann and Amaechi document for Igbo systematic differences between "sequence SVCs", which do necessarily have argument sharing, and "multi-event SVCs", which do not have argument sharing. For example, the former do not allow contradictory adverbs to modify the two verbs, whereas the latter do allow this.

(50) a. Uche gbu-ru o.ku.ko.i o.si.i.so. sie _(*nwayo.o. nwayo.o). *Sequence
Uche kill-PST chicken quickly cook slowly
'Uche killed and cooked the chicken quickly (*slowly).

b. Uche gbu-ru o.ku.ko.i o.si.i.so. sie yai nwayo.o. nwayo.o. OK:Multi-Event
Uche kill-PST chicken quickly cook 3.SG slowly
'Uche killed the chicken quickly and cooked it slowly.'

Empirically, then, SVCs with a structure like (46a) do require the theme object of the first verb to control the theme argument of second verb, which must be phonologically null.

This kind of control in SVCs follows, I claim, from the special relationship that events have to their theme arguments. This can be stated simply and somewhat informally as in (51).

(51) Events are individuated by their themes.

Quasi-metaphysically, it makes sense to say that an event only occurs if there is some kind of change that takes place in a thing. This thing that undergoes the change, whether of property or location, concrete or abstract, counts as the theme argument of the event.[25] It follows that all

[25] One can generalize this to states as well, which also have theme arguments, but CSVCs do not generally include stative verbs, so I do not take the space to discuss this.

event-denoting verbs need to have a theme argument of some kind, although it is not necessarily syntactically represented. This intuition underlies why Gruber (1965) and Jackendoff (1972, 1983), the pioneers of using thematic roles in linguistic analyses, referred to them as *thematic* roles, acknowledging the centrality of the idea of a theme. This is seen in other ways as well. For example, it is well known that theme arguments are the ones that "measure out" events for aspectual purposes in incremental theme constructions (Tenny 1994). For example, in (52) the event of lawn-mowing is completed to the degree that the theme of the event, the lawn, has undergone a change of state, from being unmowed to mowed. As a result, there is a near equivalence between (52a), with *halfway* as an event modifier in VP, and (52b), with *half* as a quantifier applied to the DP in the theme position.

(52) a. The youth has mowed the lawn halfway.
b. The youth has mowed half of the lawn.

Similarly, counting events is closely related to counting the themes in the so-called pseudo-opacity examples in French studied by Obenhauer (1984), such that (53a) and (53b) largely overlap in meanings.

(53) a. Jean a beaucoup trouvé de coins.
Jean has many found of coins
'Jean found many coins.' (there were many coin-finding events)

b. Jean a trouvé beaucoup de coins.
John has found many of coins
'Jean found many coins.' (there was one or more events of finding many coins)

I propose, then, that this special relationship between theme arguments and events has consequences for the natural language mereology of events. It stands to reason that if events are individuated by their theme arguments, then related events have related themes. In particular, if one event is part of another event, then the theme of the smaller event must be a theme of the larger event, since it undergoes a change of state as part of the larger event. Moreover, a linguistically expressed event can only have one theme argument, by Carlsonian thematic uniqueness. So we derive the consequence in (54).[26]

(54) If e_1 is part of e_2, then theme(e_1) = theme(e_2).

I emphasize that this is a statement about a particular kind of linguistically expressed event; I do not deny that metaphysically, and even for other semantic purposes, the sum of any two events is an event of sorts.

This is what we need to get control of the object of the second verb in a CSVC from thematic uniqueness. For an SVC with the structure in (55a), I initially derived the semantic formula in (55b).

(55) a. Ozo voice [$_{XP}$ yam$_i$ [pound [X [$_{VP2}$ sell pro$_i$]]]

[26] This reasoning would also hold of the coarser-grained but closely related thematic role of undergoer. I do not distinguish the two in this part of the discussion. (…)

b. VoiceP: $\lambda x\ \lambda e$ agent(e)=Ozo & $\exists e_1\ \exists e_2\ e=e_1+e_2$ & sell(e_2) & theme(e_2)=pro & pound(e_1) & Theme(e_1)=the.yam

Now what is the theme argument of the larger event e, consisting of the pounding plus the selling? (55b) does not say anything about this directly. However, it says that the theme of the pounding subevent is the yam, and we can infer from this plus (54) that the yam counts as the theme of the larger event as well. (55b) also says that the referent of *pro* is the theme of the selling subevent. Therefore, it must also be a theme of the larger event, by (54). And the larger event can only have one theme, by thematic uniqueness. It now follows that *pro* must be bound by 'the yam', by this extended use of thematic uniqueness, and this licenses the obligatory control of *pro* by the object of the first verb in this construction.

This analysis also opens up space for the verbs in a CSVC to have arguments other than the theme which are not shared with the other verb in the SVC. This is because the statements in (51) and (54) are specific to theme arguments, and analogous statements do not necessarily hold for other kinds of thematic roles. And indeed, this seems warranted. For example, is certainly possible for the second verb of an SVC to have a goal argument that is not an argument of the first verb in any direct sense. This is seen in the very common kind of example in (56a); (56b) is a thematically similar example, with a different ditransitive verb, 'pay' instead of 'give', showing that this is a productive construction.

(56) a. Ozó dẹ̀ èvbàré rhié nè Ìfuẹ̀kò. (Edo) (Stewart 2001: 3)
Ozo buy food give to Ifueko
'Ozo bought the food and gave it to Ifueko.'

b. Òzó rhié íghó hàé Úyì. (Edo) (Stewart 2001: 130)
Ozo take money pay Uyi
'Ozo took money and paid it to Uyi.

In Edo it is also possible for the first verb to have an argument (here a source rather than a goal) that plays no role in the event denoted by the second verb, as in (57), repeated from (10) above.

(57) Úyì kòkó Àdésúwà ùkpòn mú (*pro*). (Edo) (Stewart 2001: 127)
Ozo gather Adesuwa cloth carry
'Ozo gathered Adesuwa's cloth from her and carried it away.'

If we analyze (56b) as involving only a single event that is both a taking and a paying, then that event would have to have Uyi as its goal. This in turn would imply that Uyi is the goal of the taking event. And we may not want to say this, since it is plausible to say that taking events do not normally have goals. We saw in the previous section that attributing a goal argument to an event that does not normally have one (such as a thinking event) can lead to infelicity or special effects (e.g. the defective addressee effect). However, the current, more complex notion of how events are expressed in CSVCs avoids any difficulty in this. CSVCs are complex events that are made up out of two subevents—in this case, a taking event and a paying event. There is no inference from Uyi being the goal of the paying subevent to Uyi being the goal of the event as a whole or of the taking event that constitutes its first phase. So just as the more complex event

structure of CSVCs allows for the possibility of having manner adverbs modifying one subevent but not the other, so it allows for the possibility of one verb having an argument (e.g. source, goal, or location) that bears no thematic role to the other one. There must be a control relationship between the theme arguments of the two verbs, but only those arguments.[27]

I want to emphasize that this is a generalization of the kind of reasoning in sections 8.2 and 8.3. The general version of the analysis is that when there is a close relationship between the events denoted by two predicates, this can induce an identity (control) relationship between arguments of the two predicates. That is the force that induces OC. What we saw with RSVCs and ghostly operator constructions is special case, since one particularly close relationship between events is the identity relationship. This gives identity between all the corresponding arguments of the two verbs. That is what we see in ghostly DP constructions, as well as perhaps in some resultative constructions. But another kind of relationship between events is the part-whole relationship. This is a close relationship, but not as close as identity. It gives control of some arguments but not all of them. This more general form of the analysis will be useful for analyzing OC of PRO in infinitival clauses, since in that construction too the matrix verb and the embedded verb do not express exactly the same event, and each verb can have arguments that do not bear a thematic role to the other one. In these respects, infinitival complement constructions are more like CSVCs than they are like simple resultatives or ghostly operator constructions.

8.5 Control of PRO in infinitival complements

Now we come to the key question for a generalized control theory: can the canonical OC found with infinitival complements in English and similar languages be unified with the SVC-inspired approach to control in ghostly operator constructions outlined here? I argue that the answer is yes. Of course, the literature on control in English is vast. To keep the topic manageable and focused on the most interesting (challenging) cases for my hypothesis, I focus on controller choice in verbs that take three argument verbs: a subject and an object or PP complement as well as an infinitival CP complement. (For general orientation to this topic, along with some history and references, see Landau 2013: Section 5.1.) The question is which of the verb's two non-CP arguments is the controller of the PRO inside the CP. This is analogous to the question of which argument of a matrix verb controls a particular ghostly DP in a finite CP complement. My expectation is that a theory that works for these triadic verbs will also work for dyadic verbs where there is only one possible OC controller for PRO consistent with the GOCS. I have no

[27] It also follows from this view that an argument of the first verb cannot control the goal argument of the second verb, rather than its theme argument. Stewart (2001) observes that examples like (i) are impossible in Edo, in contrast with (56b). For an internal argument of the first verb to control the goal argument of the second verb, it would have to be a goal argument itself. Even then there would have to be some analog of (54) to license an inference that the goals of two events that are part of a larger event most be the same, and I am not assuming that in general.

(i) *Òzó guàlọ́ Úyì hàé íghó. (Stewart 2001: 130)
Ozo find Uyi pay money
'Ozo found Uyi and paid him some money.

reason to doubt this, but there may well be particular dyadic predicates that deserve special discussion that I do not consider here.[28]

8.5.1 Orientation: Many challenges and one easy case

At first glance, there seem to be many disanalogies between control of PRO and control in SVCs and ghostly DP constructions. The GOCS expresses some substantive similarities, in that the clause containing the controlled element must be merged directly with the matrix predicate and the controller must be an argument of the merged-with predicate. However, theta-role matching does not seem to hold—at least not for the most obvious thematic roles. Famously *promise* is a subject-control verb and *order* is an object control verb:

(58) a. The sergeant$_i$ (deliberately) promised the corporal [PRO$_i$ to relieve him at 0400].
b. The sergeant (deliberately) ordered the corporal$_i$ [PRO$_i$ to wake his troops at 0400].

This difference does not follow from the conventional thematic roles. The subject is an agent in both cases by standard considerations. Both can be the focus of agent-oriented adverbs like *deliberately*, and both pass Jackendoff's pseudo-clefting test, as shown in (59).

(59) a. What the sergeant did was promise the corporal to relieve him at 0400.
b. What the sergeant did was order the corporal to wake his troops at 0400.

Evidence that the objects are goal arguments with both verbs is that they are introduced by the preposition *to* rather than *of* in nominalized versions:

(60) a. [The (sergeant's) promise to/*of the corporal] was to relieve him at 0400.
b. [The (sergeant's) order to/*of the corporal] was to wake his troops at 0400.

So in (58a) the agent of the embedded verb is controlled by the agent of the matrix verb, whereas in otherwise very similar (58b) the agent of the embedded verb is controlled by the goal of the matrix verb. This is not thematic role matching.

Another disanalogy between OC of PRO and SVC-type constructions is that the events denoted by the matrix clause and the embedded clause seem not to be closely related in many cases. The verbs can be modified by different manner adverbs like *quickly* or *slowly*, for example. They can even take place at different times, perhaps even 50 years apart in the case of examples like (61a,b).

(61) a. John$_i$ promised Mary [PRO$_i$ to take her out to dinner at their 50th high school class reunion]
b. Mary ordered John$_i$ [PRO$_i$ to remarry if she died before age 70].

[28] Landau often distinguishes eight classes of control predicates across languages (e.g. Landau 2015: 6-7). Of these, half clearly have triadic members and are discussed here: desideratives (e.g. *promise*), propositional (e.g. *claim*), interrogative (e.g. *ask*—but a different sense), and implicative (*force*). Two other classes are classic restructuring predicates and may often take subjectless complements rather than complements with PRO: aspectuals (*begin*) and modals (*have to*). This leaves two other classes that are not considered here: factives (*hate, like*) and evaluatives (adjectives: *rude, smart*).

So the hypothesis that OC is induced by event identification and thematic uniqueness does not look like a promising approach at first glance.

Before facing these issues directly, it is worth bearing in mind that there are cases of standard OC for which the SVC-inspired analysis is a better fit out of the box. This includes implicative verbs like *manage* and *try*. For these, the event denoted by the embedded clause cannot happen at a different time from the event expressed by the main clause verb, as emphasized by Landau (2001, 2004) and Wurmbrand (2003, 2014), among others. Thus, (62a,b) are bad.

(62) a. #Today John tried to take Mary out to dinner in 50 years.
b. *Tomorrow Mary will manage to remarry when her husband dies in 25 years.

Indeed, I don't know that one can have conflicting adverbs of any type modifying the matrix verb and the embedded verb. The cases in (63) with manner adverbs are also deviant.

(63) a. #John accidentally tried to read the book deliberately.
b. #Mary slowly managed to read the book quickly.

Moreover, at least in prototypical cases, OC with implicative verbs involves thematic matching in that the agent argument of *manage* or *try* controls the agent argument of the complement verb, as in (64). The subject of *manage* or *try* qualifies as an agent by the pseudocleft test, and it controls the agent argument of the complement clause verb *read*.[29]

(64) What John did was manage/try to read the book.

It is plausible, then, to use event identification here for these cases. Although I will not work out a detailed proposal, a derivation like (65) seems like a good possibility.

(65) a. [PRO to read the book]: λe read(e) & agent(e)=PRO & theme(e)=the.book.
b. [manage [PRO to read the book]]:
λe manage(e) & read(e) & agent(e)=PRO & theme(e)=the.book.
c. [John Voice [manage [PRO to read the book]]]
λe <u>agent(e)=John</u> & manage(e) & read(e) & <u>agent(e)=PRO</u> & theme(e)=the.book.
Therefore: PRO=John

The hypothesis here is that there is only one event, which is both a reading and a managing. That event can be quick or slow, deliberate or accidental, past or in the distant future, but it cannot be both, accounting for (62) and (63). Since the same event is both a reading and a managing, it also

[29] In English, it is not hard to get a reading in which the subject of the implicative verb controls a theme subject in the embedded clause, as in (i). I assume that this is the result of coercion, where an agent thematic role is overlaid on what is normally a theme argument. 'Try' constructions in some other languages are less flexible in English in this regard.

(i) a. John tried/managed [PRO to get sick] so as to get out of doing his work.
b. Mary tried to [PRO be criticized by the press] to draw attention to her campaign.
c. John managed [PRO to be tall, to believe that the sky is green].

follows that the agent of the reading must be the same as the agent of the managing. This induces control of PRO by *John*, by thematic uniqueness.

8.5.2 Deriving subject control versus object control

Of course, these are not the most interesting cases of controller choice, and a range of theories might get this result. For example, Landau (2015) simply derives control in these cases from syntactic predication, where a predicate must be syntactically near its subject. Indeed, the complement clause might not have PRO at all in these cases; Wurmbrand (2003) observes that they are canonical restructuring constructions, which she analyzes as having subjectless (extended) VP complements rather than CP complements.[30] I do not claim that the analysis-sketch in (65) is necessarily better than alternatives like these. But it is a reasonable possibility opened up by the line of reasoning I have been developing, and if it proves to be correct for at least some cases in some languages, it could constitute something of a bridge between the world of SVCs and argument sharing and the traditional domain of control theory.

The crucial question is whether something like this can also be done for future infinitives—the ones that Landau (2015) treats as having logophoric control—where controller choice is more of an issue. I claim that the answer is yes. A crucial idea to bridge the gap to this kind of infinitival complement comes from Wurmbrand (2014). She builds a detailed argument that even this class of infinitival clauses does not have a true tense value in English—they are neither present nor future (nor past)—using criteria like sequence of tense phenomena. She argues that the appearance of tense in some infinitival complements stems from the fact that the complement contains a silent but syntactically present modal head, where modalized event descriptions are always understood as being future relative to some point of reference. More specifically, she claims that the modal head is *woll*, an abstract modal item which is not overt in tenseless environments, but whose present tense form is *will* and past tense form is *would* (see also Abusch (1985, 1988), among others). A simple sentence like *Chris will go to the store tomorrow* thus has the syntactic structure in (66).

(66) $[_{TP}$ Chris$_i$ PRES $[_{ModP}$ e$_i$ woll $[_{VoiceP}$ e$_i$ go to the store tomorrow]]].

---

[30] Suppose we maintain the sort of approach that I have in which a verb combines with its complement by event identification, but we apply this to a structure in which the complement is a subjectless VP rather than a clause with a PRO subject. Then the rough-and-ready composition for *John managed to read the book* is as in (i). The main difference is that there is no "agent(e)=PRO" term in (ia) that gets passed along. However, an agent is still added to the managing event by Voice in the matrix clause (ic), and since the managing event is the same as the reading event, John is the agent of the reading too. Therefore, the final formula in (ic) is essentially equivalent to that in (65c), although there is no control of a null subject. This could account for why it is hard to tell in many cases whether the complement of these verbs has a PRO subject or not, and perhaps both constructions exist side by side within or across languages.

(i) a. $[_{VP}$ read the book]: λe read(e) & theme(e)=the.book.
b. [manage $[_{VP}$ (to) read the book]]:
λe manage(e) & read(e) & theme(e)=the.book.
c. [John Voice [manage [PRO to read the book]]]
λe agent(e)=John & manage(e) & read(e) & theme(e)=the.book.

Control verbs (and also certain raising/ECM verbs) with future complements then select ModPs as their complements, not TPs. The present tense in an example like (66) is on all accounts real and semantically interpreted. Based on this, I claim that there are two distinguishable eventualities in (66): it means that Chris is now in a state such that he/she will go to the store in the future. Time adverbs like *tomorrow* normally attach to the future part, the VP/voiceP complement of the modal head. However, I can also say *Chris will now go to the store tomorrow*. This is felicitous in a situation in which plans have changed so that it is now the case that Chris will go to the store tomorrow. Thus, it is not impossible for an adverb to attach to the present tense TP above *woll* as well as to the VoiceP under it.

This modal-eventuality analysis can be a game changer for the prospects of an SVC-like analysis based on event identification and thematic uniqueness for control examples involving verbs like *promise* and *order*. On Wurmbrand's analysis, typical examples have the structure shown in (67).

(67) a. Mary promised John [$_{\text{ModP}}$ PRO$_{\text{i}}$ MODAL [$_{\text{VoiceP}}$ e_{i} go to the store tomorrow]]
b. Mary ordered John [$_{\text{ModP}}$ PRO$_{\text{i}}$ MODAL [$_{\text{VoiceP}}$ e_{i} go to the store tomorrow]]

While Wurmbrand assumes that the null modal in the infinitival complement is *woll*, she does not really argue for this. Since all root modals have future-shifted meaning, any of them would do in this basic respect; *woll* is merely the semantically most neutral one. In the complement of *promise* or *order* it is plausible to say that the null modal in the complement is actually something like 'must' or 'be obligated to', given the semantic equivalencies shown in (68).

(68) a. Mary ordered John to go to the store.
=Mary ordered John such that he must go to the store.

b. Mary promised John to go to the store.
=Mary promised John such that she must go to the store.

Indeed, the predicate in the complement of these verbs is restricted to being the sort that can combine felicitously with a deontic necessity modal or an imperative head (see Jackendoff and Cullicover (2003), among others). For example, one can sensibly command someone to be quiet or consider them under an obligation to be quiet, but in most real-world situations it is not felicitous to command them to be tall, or consider them under an obligation to be tall. Similarly, one can command someone to say that the sky is green, but one cannot very well command them to believe that the sky is green.

(69) a. John must/is obligated to be quiet. Be quiet!
b. Mary must/is obligated to say that the sky is green. Say that the sky is green!
c. #John must/is obligated to be tall. #Be tall!
d. #Mary must/is obligated to believe that the sky is green.
#Believe that the sky is green!

Similarly, it is natural for *to be quiet* or *to say that the sky is green* to be used as the complement of *promise* or *order*, but not (in most contexts) for *to be tall* or *to believe that the sky is green* to be used there.

(70) a. Mary promised John to be quiet/#tall.
b. Mary promised John to say/#believe that the sky is green.
c. Mary ordered John to be quiet/#tall.
d. Mary ordered John to say/#believe that the sky is green.

The contrasts in (70a,b) reduce to the ones in (69) under the assumption that there is a necessity modal as the head of the ModP complement of these verbs.

Returning then to (67), it is true that there is no close relationship between the promising event or the ordering event and the going event: they take place at different times, have different agents, different locations, and so on. However, there could very well be a close relationship between the promising or ordering event and the necessity eventuality expressed by the null modal. Indeed, that is where we should expect the relationship to be, given that the modal is the head of the complement of the control verb. I assume that in unembedded sentences like (71) there is indeed an eventuality of being obligated that is distinct from the eventuality of going to the store. For example, these two eventualities can hold at different times: the obligation exists in the present, but the going event exists in the relevant future possible world(s).

(71) a. John is now obligated to go to the store tomorrow.
b. Now John must go to the store tomorrow.

My central claim, then, is that the obligation eventualities expressed by the complement clauses in (67) do bear a close relationship to the event of promising or ordering denoted by the matrix verb. In particular, I claim that the obligation eventuality is the resulting state of the event of promising or ordering. This is supported by the fact that the inferences in (72b,c) hold in English, on par with the ordinary resultative inference in (72a).

(72) a. Chris pounded the metal flat.
Therefore (as a result), something is flat (namely the metal).
b. Mary promised John to go to the store.
Therefore (as a result), someone is obligated to go to the store (namely Mary).
c. Mary ordered John to go to the store.
Therefore (as a result), someone is obligated to go to the store (namely John).

Consider next the implications of this relationship between eventualities for the sharing of arguments—for obligatory control. The prediction is that any argument sharing will be sharing between the arguments of *promise* or *order* and the arguments of the modal—not the arguments of the embedded verb *go*, except insofar as the arguments of *go* are the same as those of the modal. This assumes that the modal in the complements of *promise* and *order* is a root modal (not an epistemic one). This is the sort that is in some sort of thematic-role (like) relationship to the subject of the clause that it heads. Indeed in early generative syntax, these modals were analyzed as a kind of control predicate (Perlmutter 1971, Jackendoff 1972) (see Hacquard (2010) for a contemporary version, and Landau (2015: 6) who includes modal predicates on his list of control verbs). My hypothesis, then, is that the resulting state of the promising or ordering event is equated with the obligation eventuality described by the ModP complement of the verb. This results in an argument of *promise* or *order* being equated with the subject argument of Mod by

thematic uniqueness. Whether this amounts to subject control or object control depends on independently observable aspects of the lexical meanings of *promise* and *order*.

Here is a way of fleshing out this leading idea with some details. I assume that the covert modal head, like a true verb, is a predicate of eventualities; it is true of states of having an obligation. I also assume that the subject of ModP bears a thematical role to the state/eventuality of having an obligation; let us call this the holder role (Kratzer 2006). These claims are perhaps less controversial for a lexical head like *be obligated* or a true verb like *müssen* in German than for the head of a special functional category Mod like *must* in English, but I assume that there is no fundamental semantic difference between these cases. In foregrounding the idea that necessity modals (and other root modals) are predicates of events rather than quantifiers over possible worlds, I am extending a proposal made for attitude verbs like *believe* and *say* that has been pioneered by Kratzer (2006) and developed by Moulton (2009, 2015) and Elliott (2017), among others (see also Hacquard (2006) for a different use of the idea that some events have propositional content). These authors argue that the *that* complement of a verb like *believe* or *say* is really a predicate of a content-bearing entity of some kind. This view is designed to capture the fact that CPs can be used as predicates of the nominalized verb as in (73a) as well as merging directly with the verb as in (73b) or with the nominalized form of the verb in (73c).

(73) a. Lucy's belief was that there are ghosts. (Kratzer 2006)
b. Lucy believes that there are ghosts.
c. Lucy's belief that there are ghosts is not unjustified.

Example (74) shows that a parallel paradigm exists for a modal predicate like *obligated* and its infinitival complement. This supports giving *obligated* an analysis parallel to the Kratzer-Moulton-Elliott analysis of *believe*, where *obligated* is also a predicate of eventualities and its associated infinitival clause is a predicate of a content bearing-entity of some kind.[31]

(74) a. Mary's obligation is to go to the store.
b. Mary is obligated to go to the store.
c. Mary's obligation to go to the store was unfairly burdensome.

For presentational purposes, I follow Elliott's (2017) version most closely, according to which the content-bearing individual that the complement clause is a predicate of is the eventuality of believing or saying itself (see Elliott 2017: 69).[32] The parallel claim for a predicate that expresses a necessity modal is that states of being obligated have intrinsic content, and infinitival CPs can be predicates of such states, expressing what their content is. On these assumptions, the semantics of a sentence like *Mary must/is obligated to go to the store* is as in (75) (compare Elliott 2017: 69-71). (75a) is an informal version that Elliott often uses, and that will sometimes

[31] No similar paradigm is available for *must*, but that is not because it is semantically different in these ways, but because as a defective verb (auxiliary, i.e. modal) it does not have a nominalized form any more than it has an infinitival form.

[32] In contrast, Kratzer (2006) and Moulton (2009, 2015) talk about verbs like *believe* taking a covert entity-denoting argument (one that refers to the belief, the thing that is believed), and the CP is a predicate of this entity. I assume that my main ideas can be rendered in this version too, but it is convenient to not represent this covert argument.

be adequate for my purposes. (75b) is a more fully realized version that unpacks the content of the obligation in more detail as a proposition (a predicate of worlds) built compositionally out of an event description, the semantic value of the VoiceP contained in the complement of *obligated* or *must*. (I assume that the subject argument of a stative predicate has a holder thematic role (Moulton 2009, Elliott 2017); little hinges on this, but see xx.)

(75) a. λe holder(e)=Mary & obligation(e) & Content(e)=Mary go to store.
b. λe holder(e)=Mary & obligation(e) & Content(e)=λw ∃e [going(e) & Agent(e)=Mary & goal(e)=the.store & e is in w]

(75) is also the semantic value of the ModP complement of *promise* in (67a) and of *order* in (67b), by hypothesis, except that in place of Mary there is a PRO, the value of which is fixed by the control relationship we are trying to understand better.[33] I do not go into exactly how a formula like (75) for the complement clause is derived compositionally,[34] but take this for granted so as to concentrate on how (75) interacts with a matrix predicate that selects it.

I turn then the matrix clause of examples like (67), focusing first on the version with *promise*. For an accomplishment verb like this, I follow Ramchand (2008) in saying that the lexical item corresponds to three distinct heads in the syntax (see also Baker (2003: Sec 2.9), which she calls InitP (initiation), ProcP (process), and ResP (result). This is shown in (74).[35]

(76) [$_{\text{InitP}}$ Mary promise-init [$_{\text{ProcP}}$ John promise-proc [$_{\text{ResP}}$ promise-res [$_{\text{ModP}}$ PRO$_i$ MODAL [$_{\text{VoiceP}}$ e_i go to the store tomorrow]]]]]

InitP is highest phrase of the three and the one in which the agent is introduced; it is roughly equivalent to VoiceP in Kratzer's terminology.[36] I immediately revert to calling this VoiceP. But further decomposing V into Proc and Res is a new step for this work. The advantage of doing this is that the eventuality of which Res is a predicate is a proper part of the larger eventuality of promising and can be equated with the eventuality of which the ModP is a predicate. This allows Res and ModP to combine by simple event identification (Kratzer 1996: 122), as in resultative SVCs and ghostly operator constructions. This is a formal expression of the intuition that the

[33] Tense will also be handed differently in the matrix clause and in the infinitival complement, but I am abstracting away from tense (and aspect) throughout this discussion.
[34] There may be nontrivial issues here. A significant part of the Kratzer-Moulton-Elliott program for treating matrix verbs as predicates of events is moving the quantification over possible worlds commonly associated with these verbs to the C head of the CP complement of the verb. However, it is not clear that the complement of *be obligated* has a C head, and it is clear that the complement of *must* does not. I do not take a stand on exactly where this element of meaning comes from. (Indeed, it may come from different elements in the somewhat different syntaxes that can be used to express obligations in English.)
[35] It is very possible that the goal argument of promise is not introduced in ProcP/VP, but as the specifier of a distinct head Appl which takes ProcP as its complement. I abstract away from this for simplicity.
[36] This is not entirely accurate, in that Ramchand's Init is a predicate of a distinct event that leads to (causes) the process event, whereas Kratzer's Voice head does not introduce a new event variable. Kratzer's slightly simpler view is adequate for my most of my purposes, although I do use Ramchand's version in my analysis of some 'so that' adjuncts in section 8.6.

result of a promising event is someone being in a state of being obligated in a certain way. The infinitival clause then characterizes this obligation. Res and ResP have the formulas in (74).[37]

(77) a. Promise-res: λx λe promise-res(e) & holder(e)=x

b. Res′/ResP: λx λe promise-res(e) & holder(e)=x & obligation(e) & holder(e)=PRO & content(e)=PRO go to store

We can already see that the x argument of *promise-res* is going to be equated with the PRO argument of the Modal head, since both are said to be holders of the same state, which is simultaneously an obligation to go to the store and an obligation which exists as the result of a promising event. This will result in obligatory control.

The next step is to consider how ResP combines with ProcP and VoiceP to build up the complex event of promising. Ramchand's (2008: 42-45) basic view is that Proc is a predicate of a different event from Res; it denotes the process of promising, which "causally implicates" (also "leads to") the eventuality denoted by ResP. She symbolizes this relationship between events as e1 → e2. Crucial for our purposes is how the arguments of the causing event relate to the argument of the resulting event. For events of promising, my claim is that the agent of the causing event is also the holder of the resulting state—of the obligation that is the result of the promising. In other words, *promise* means inherently that the agent puts her/himself under an obligation to the goal (Jackendoff and Culicover 2003). Crucially, this fact about promising events can be observed apart from instances of obligatory control. We can observe this aspect of lexical meaning even when *promise* takes as its theme argument a DP or a finite CP rather than a nonfinite ModalP, as in (78).[38]

(78) a. Mary promised John a favor. (Mary must do John a favor)
b. John promised Mary a cookie. (John must give Mary/let Mary have a cookie.)
c. John promised Mary that he will go to the store. (John must go to the store).

So part of the lexical-semantic analysis of *promise* is that the agent of the larger event is also the holder of a related (resulting) state of obligation. This meaning is not contributed by the meaning of PRO or the infinitival complement itself, either directly or by some form of coercion between the matrix verb and the meaning of the CP. This can be captured by giving *promise-proc* a meaning like (79a), where it combines with a relation between an entity and an event to create a relation between two entities and a different event. This combines with the meaning of ResP given in (77b) by function application to give (79b). This then combines with the DP in Spec

[37] Ramchand (2008) would have a DP in Spec ResP, which she calls the resultee. Depending on the verb, this is generally equated with either the Spec InitP (the initiator) or the Spec ProcP (the undergoer), in a control-like relationship. I could adopt this too. However, I choose to build this relationship into the meanings of the verbal heads instead, to emphasize that this kind of "control" is part of the lexical semantics of the verbal complex—not the kind of OC that I am analyzing here. I want to avoid the appearance of a circularity in which one OC relationship is explicated in terms of another relationship of the same type.

[38] A different way of understanding the similarity between *promise* with a DP theme argument and *promise* with an infinitival clause as its theme argument is to say that examples like (78a) and (78b) have a CP complement with a covert verb, something like *Mary promised John [PRO TO DO a favor]*. This view is proposed by Larson, den Dikken and Ludlow (1997). I do not adopt it, but it could undercut my claim that the crucial aspects of lexical semantics of *promise* can be observed in examples that do not involve PRO.

ProcP, with agentive Voice, and with the DP in Spec VoiceP in familiar ways ((79c-e)) to give the formula in (79e).

(79) a. Promise-proc: λR λy λx λe promise(e) & goal(e)=y & ∃e′[(e→e′ & R(e′, x)]
b. Proc′: λy λx λe promise(e) & goal(e)=y & ∃e′[(e→e′ & promise-res(e′) & holder(e′)=x & obligation(e′) & holder(e′)=PRO & Content(e′)=PRO go to store]]
c. ProcP: λx λe promise(e) & goal(e)=John & ∃e′[(e→e′ & promise-res(e′) & holder(e′)=x & obligation(e′) & holder(e′)=PRO & Content(e′)=PRO go to store]
d. Voice′: λx λe agent(e)=x & promise(e) & goal(e)=John & ∃e′ [(e→e′ & promise-res(e′) & holder(e′)=x & obligation(e′) & holder(e′)=PRO & Content(e′)=PRO go to store]
e. VoiceP: λe agent(e)=Mary & promise(e) & goal(e)=John & ∃e′[(e→e′ & promise-res(e′) & <u>holder(e′)=Mary</u> & obligation(e′) & <u>holder(e′)=PRO</u> & Content(e′)=PRO go to store]
Therefore PRO=Mary

Notice that (79d) is arrived at by a slightly different form of event identification than used previously, one that combines two relations between an entity and an event rather than one relation between an entity and an event and one predicate of events. This is a small generalization, but in this case it results in the same individual being both the agent of the promising event and the holder of the obligation that is the result of that event, given the meaning attributed to *promise-proc* in (79a)—i.e., given what promising events are. This in turn results in the agent of *promise* controlling PRO in the ModP complement *promise*, by thematic uniqueness applied to the holder argument of the state of obligation denoted by ModP, which is also the resulting state of the promising event. Thus, subject control here is the result of event identification, thematic uniqueness, and what *promise* means (what promising events are). This is the SVC-inspired account of subject control with *promise* that I was looking for. In addition, this result is expected to carry over to other matrix verbs with a similar lexical semantics: to other commitment verbs in English, like *swear, vow, pledge, threaten*, … (Sag and Pollard 1991), and to close analogs of *promise* in other languages. This is a positive result, as emphasized by Jackendoff and Cullicover (2003). After all, what makes something a commitment verb is the fact that the one who initiates the event undertakes a commitment, putting themself under an obligation.

It is worth emphasizing that we do have a kind of thematic role matching here, but it is not the agent of *promise* matching the agent of *go* that is crucial (contrast the matching of the Ag role assumed by Panter and Köpcke (1993) but criticized by Landau (2013)). Rather it is the holder of the state of obligation that is intrinsically associated with an event of promising that matches the holder of the state of obligation denoted by the Modal head that is crucial. Less familiar thematic roles are matched rather than normal ones, because one of the argument-taking words involved is a modal, and those are associated with less familiar thematic roles. The other factor is that we do not have event identity between the promising event itself and the event expressed by the ModP complement, but between a subpart of the promising event, namely its resulting state. In this way, subject control with commitment verbs is more like control in CSVCs than it is like the simpler case of control in ghostly operator constructions.

Now let us compare this analysis of subject control in (67a) with (67b), the same sentence with the matrix verb *order*, rather than *promise*. The goal of setting things up the way that I have is that the very same factors that result in subject control with *promise* produce object control with *order*, following an intuition of Jackendoff and Cullicover's (2003). The embedded clause has the same structure: a ModP, with a covert necessity modal. As a result, the predicate has the same kinds of semantic restrictions on it (see (70)). The matrix clause also has the same structure: it is a triadic verb with an agent subject, a goal indirect object, and the CP in the complement position. It also implies a resulting state, which is a state of having an obligation. So the Ramchandian decomposition of the verb into Init/Voice, Proc, and Res is appropriate here as well, giving the structure in (80).

(80) [$_{\text{VoiceP}}$ Mary Voice [$_{\text{ProcP}}$ John order-proc [$_{\text{ResP}}$ order-res [$_{\text{ModP}}$ PRO$_i$ MODAL [$_{\text{VoiceP}}$ e_i go to the store tomorrow]]]]]

The only difference is what the verb *order* means, i.e. in what events of ordering are. Whereas a promising event is one in which the initiator of the event puts themself under an obligation, an ordering event is one in which the initiator of the event puts the goal of the event under an obligation. This intrinsic property of *order* can also be observed apart from OC and infinitval complementation by observing the meaning of (admittedly a bit stretched) sentences in which *order* is used with a finite CP complement ((81a)) or a DP argument ((81b)).

(81) a. ?The sergeant ordered the corporal that he must clean the latrine.
(The corporal must clean the latrine.)
b. ?The sergeant ordered the corporal a very difficult task.
(The corporal must do a very difficult task)

The overall thematic analysis of an *order* sentence is thus very similar that of a *promise* sentence, but there is a crucial difference in how the resulting state of an ordering event relates to the participants in that event. I build this into the meaning of the *order-proc* head, giving it the denotation in (82). Here the variable associated with the goal of ordering is the same as the variable associated with the relation involving the resulting state, whereas with *promise-proc* they were different variables.

(82) order-proc: $\lambda R\ \lambda x\ \lambda e$ order(e) & goal(e)=$\underline{\mathbf{x}}$ & $\exists e'[(e \rightarrow e'$ & R(e′, x)]

Everything else is essentially the same. The ModP complement is the same. There is no relevant difference between *order-res* and *promise-res*; perhaps the states these are predicates of are slightly different, but both count as states of having an obligation. And the Voice head is the same. The composition goes as in (83).

(83) a. Proc′: $\lambda x\ \lambda e$ order(e) & goal(e)=x & $\exists e'[(e \rightarrow e'$ & order-res(e′) & Holder(e′)=x & obligation(e′) & Holder(e′)=PRO & Content(e′)=PRO go to store]
b. ProcP: λe order(e) & goal(e)=John & $\exists e'[(e \rightarrow e'$ & order-res(e′) & Holder(e′)=John & obligation(e′) & Holder(e′)=PRO & Content(e′)=PRO go to store]

c. Voice′: λx λe agent(e)=x & order(e) & goal(e)=John & ∃e′[(e→e′ & order-res(e′) & Holder(e′)=John & obligation(e′) & Holder(e′)=PRO & Content(e′)=PRO go to store]

d. VoiceP: λe agent(e)=Mary & order(e) & goal(e)=John & ∃e′[(e→e′ & order-res(e′) & <u>Holder(e′)=John</u> & obligation(e′) & <u>Holder(e′)=PRO</u> & Content(e′)=PRO go to store]
Therefore PRO=John

In this case, thematic uniqueness applied to the holder argument of the *order-res* eventuality (a state of being obligated) implies that the goal John is identical to the referent of PRO. This induces object control, not subject control. Again, the result is correctly expected to carry over to other English verbs with meanings similar to *order* (*command, enjoin, assign, compel*…) and to near-equivalents of *order* in other languages.

This analysis is a fleshing out of Jackendoff and Culicover's (2003) insight that it is the lexical semantics of *promise* vs *order* that induces subject control versus object control—not some difference in syntactic structure or some unique exceptional feature associated with 'promise', as in in tradition the classic Minimal Distance Constraint (Rosenbaum 1967), including its more recent versions in Larson (1991) and the control-as-movement variant championed by Hornstein (1999) and much related work. The idea is that the very same factors that cause ("unmarked") object control with *order* also cause ("marked") subject control with *promise*: in both cases, we are matching the one who is under an obligation. The only difference is whether the agent is undertaking an obligation themselves (*promise*) or imposing it on the one they are talking to (*order*). I have then fleshed out this insight some and embedded it in a more general framework that relates it to SVCs, resultative constructions, and the general (independently motivated) ideas of event identification and thematic uniqueness.

Of course, not all control verbs have the semantics of imposing an obligation, by any means. But we can generalize this account to other verbs, by opening up the possibility that the infinitival ModP complement of a verb can have different covert modals; it need not be a deontic necessity modal akin to *must/be obligated*. For example, an example like (84a) with the object control verb *persuade* does not imply that John is obligated to go to the store. But it does imply that John intends to go to the store, as a result of the persuading event. So we can say that the complement of *persuade* has a covert modal meaning INTEND (cf. *will* in older English and its cognates in other Germanic languages). The example in (84a) then has the syntactic structure in (84b), and its ModP complement can be ascribed the meaning in (84c).

(84) a. Mary persuaded John to go to the store.

b. [$_{\text{VoiceP}}$ Mary Voice [$_{\text{ProcP}}$ John persuade-proc [$_{\text{ResP}}$ persuade-res [$_{\text{ModP}}$ PRO$_i$ INTEND [$_{\text{VoiceP}}$ e_i go to the store]]]]]

c. λe intention(e) & Holder(e)=PRO & content(e)=PRO go to store

Next, we consider the meaning of the verb *persuade*. The key is to convince ourselves that it is intrinsic to (one sense of[39]) persuading someone that they are caused to intend to do something.

[39] *Persuade* is a bit more complex than *order* in that it has multiple meanings. It can mean 'cause to believe' rather than 'cause to intend'. We see this prominently when it appears with a finite nonmodal CP complements, but also when it appears with certain DP/PP complements.

That state of intending is the resulting state of an act of persuading. Indeed, this sense is present in uses of *persuade* that do not have an infinitival complement, as in (85).

(85) a. Mary persuaded John of this course of action.
Therefore (as a result), John intends to take this course of action.
b. Mary persuaded John that he should go to the store.
Therefore (as a result), John intends to go to the store.

Now we can explain object control with *persuade* in the same way we did object control with *order*, except that thematic uniqueness applies to the holder of a state of intending rather than to the holder of a state of being obligated. An eventuality of *persuade-res*-ing is a kind of a state of intending, and a denotation for *persuade-proc* is in (86a). A complete meaning for the VoiceP in (84a) is given in (86b). This is derived compositionally in a way that is exactly parallel to (83).[40]

(86) a. persuade-proc: $\lambda R\ \lambda x\ \lambda e$ persuade(e) & theme(e)=x & $\exists e'[(e \rightarrow e'$ & R(e′, x)]
b. VoiceP: λe agent(e)=Mary & persuade(e) & theme(e)=John & $\exists e'[(e \rightarrow e'$ & persuade-res(e′) & <u>Holder(e′)=John</u> & intention(e′) & <u>Holder(e′)=PRO</u> & content(e′)=[PRO go to store]]
Therefore PRO=John

Here thematic uniqueness implies that PRO=John. Similar to *persuade* are words with related meanings like *convince,* and *entice*. Moroeover, we could go on from here to develop a typology of object control structures based on what kind of modal meaning is shared between the Modal head in the complement and the resulting state of the matrix verb. (87) gives some plausible examples.[41]

(87) a. Mary permitted/allowed John to go to the store.
As a result, John has permission to go to the store; John CAN go to the store.
b. Mary taught/helped/enabled John to cook moussaka.

(i) a. Mary persuaded John that it will rain.
b. Mary persuaded John of her point of view.

This is just the familiar fact that verbs can have a range of meanings, which share some aspects in common but not others. (We might now wonder, though, why this second meaning of *persuade* cannot take a control complement. Thus *#Mary persuaded John to be too short to go on that ride* is not possible meaning 'Mary persuaded John that he is too short to go on that ride.') I assume that this follows from the fact that propositional control verbs are very rare in English, *claim* being perhaps the only one (Landau 2013, Wurmbrand 2014).

[40] One small difference is that I assume that the object of *persuade* is a theme rather than a goal, since *persuade* is a change of state verb rather than a verb of communication. Note that its internal argument cannot be marked by *to* in nominal constructions the way that the internal arguments *order* and *promise* can be: **Mary's persuasion to John was to go to the store.* This difference does not affect the overall derivation in any way, however.

[41] An interesting follow-up question arises here: why are there many classes of object control verbs, classified by the kind of modal meaning in their complements, but there is only one major class of subject control verbs (commitment verbs)? From the current perspective, this should be a fact about lexical semantics. Apparently, there are no verbs that have meanings such that X acts on/for Y with the result that X has a new intention, ability, permission, or possibility. I will not speculate as to why this is so, beyond observing that it might follow from the definition of a theme that it is usually the theme of an event that is involved in the event's resulting state. (This hunch does not say why commitment verbs are an exception to this, however.)

As a result, John has the ability to cook moussaka; John CAN cook moussaka.

c. Mary suggested/proposed/asked/requested John to cook moussaka.
As a result, John has the possibility of cooking moussaka; John MIGHT cook moussaka.

Before going on, it is worth bearing in mind that fact that English and many other languages allow not only subject control and object control but also oblique control, in which the object of an adposition acts as the OC controller of the PRO subject of an infinitival complement. (88) gives an example that is semantically similar to (84a) with *persuade*.

(88) Mary prevailed upon John$_i$ [PRO$_i$ to go to the store].

Notice that oblique control happens not only with a P like *to* (*John signaled to Mary$_i$ PRO$_i$ to turn right*), which might be considered a manifestation of dative case, but also with Ps like *on* (*I'm counting on Chris$_i$ PRO$_i$ to go to the store*), *from* (*We demanded from him$_i$ PRO$_i$ to turn himself in*; Landau (2015: 15)) and even *upon* ((87)). Landau (2015: 15) points out that this is a serious problem for his Agree-based theory of obligatory control, since objects of P cannot normally be targets for Agree, perhaps because P is a phase head. It is also a problem for Hornstein's (1999) movement-based theory of OC, since DPs cannot normally move into object of P position. Indeed, it is a problem for any theory in which the controller needs strictly to c-command the controllee. However, such examples are not a problem for the current theory, as long as we hold that these PPs express arguments of the verb which the nonfinite clause is a complement of; what thematic role that argument has is not crucial. Suppose that *John* in (88) is expressed as the object of a P because it bears some very particular thematic role to the event of prevailing, call it the "upon" role. OC is still induced as long as the variable that fills that sui generis role is also the one that is the holder of the resulting state of the prevailing event. (88) can thus be associated with the formula in (89), parallel to the one for *persuade* in (86b).

(89) VoiceP: λe agent(e)=Mary & prevail(e) & **upon(e)=John** & ∃e′[(e→e′ & prevail-res(e′) & <u>Holder(e′)=John</u> & intention(e′) & <u>Holder(e′)=PRO</u> & content(e′)=[PRO go to store]]
Therefore PRO=John

We can compare these cases of the potential controller being (inside) a PP with ones in which the potential controller is the possessor inside a larger DP. Possessors cannot be obligatory controllers, as shown in (89), a fact I have attributed to the GOCS throughout.

(90) *John's$_i$ letter promised Mary [PRO$_i$ to come for a visit soon].

From the perspective of c-command, it might be obscure why (88) is allowed and (90) is not. But from the perspective of argumenthood, this makes sense: the object of a P can be the argument of the verb that heads the clause, the P having only a role-flagging function, whereas the possessor of a N does not normally count as an argument of the verb.[42]

[42] If we can clearly distinguish Ps that mark arguments of the verb from Ps that themselves take arguments, then my approach makes the prediction that the former but not the latter can participate in OC. A possible test for the two

8.5.3 Control shift

We now have a prototype account of controller choice for canonical cases of control into infinitival clauses, capable of explaining why some examples involve object control whereas others involve subject control. Let us move from there to consider so-called *control shift*. This is a somewhat marginal and unstable phenomenon, at least in English, but an interesting one in that it is a challenging test for any theory of controller choice, hence for a general theory of OC; see Landau (2013: Sect. 5.1.2) for a good overview. The broad outlines of the control shift phenomenon are as follows. *Promise* is normally a subject control verb, but it can be used as an object control verb with a particular kind of complement and in a particular context, as in (91a). Conversely, *persuade* is normally an object control verb, but it can be used as a subject control verb with a particular kind of complement and in a particular context, as in (91b). Moreover, in many cases it is similar factors that allow both shifts to happen. For example, it matters for both kinds of control shift whether the thematic role of the embedded subject is agent or not, and what the modal force of the embedded infinitival is. When the subject of the infinitival complement is a theme or benefactive and the embedded clause is about permission rather than obligation, *promise* can switch to object control, and *persuade* can switch to subject control (to varying degrees for different speakers).

(91) a. His mother promised little Johnnie$_i$ [PRO$_i$?(to be allowed) to stay up late].
b. Little Johnnie$_i$ persuaded his mother [PRO$_i$??(to be allowed) to stay up late].

Unlike standard theories, mine is concerned with how the fine-grained thematic roles of the arguments in the matrix clause match up with those of the arguments of the embedded clause, including roles contributed by modals in the embedded clause. Therefore, it has some distinctive resources for addressing the issue of control shift. Let us explore, then, how to capitalize on this opportunity.

I start with the shift from object control to subject control. This is a good starting point because there is a wider range of object control verbs to draw upon, which gives us the opportunity to explore different factors that influence this. Indeed, the literature documents some

---

comes from binding theory. PPs headed by near seem to count as binding domains for pronouns, whereas PPs headed by to do not. According to a binding theory like Reinhart and Reuland's (1993), this implies that *near* is a predicate distinct from the verb but *to* is not.

(i) Mary$_i$ saw a snake [near her$_i$].
(ii) Mary sent a letter [to her*$_i$/herself$_i$]

My prediction, then, is that only PPs that work like (ii) will allow obligatory control. This needs to be tested systematically, but it is true that upon in (87) does not allow a pronoun to be coreferential with the subject (see (iii)), and I cannot think of any cases of oblique control with a P like *near*.

(iii) The manager$_i$ imposed [upon himself$_i$/*him$_i$] [PRO$_i$ to cover the night shift].
(iv) *I shouted near Mary$_i$ [PRO$_i$ to duck quickly].

It is conceivable that a DP that is formally the possessor of a noun in the object position could be an OC controller in some kind of light verb construction, in which the verb and the noun constitute a single predicate for purposes of thematic role assignment. I do not pursue this possibility here.

significant range in this phenomenon; see especially Panter and Köpcke (1993) for some graded experimental data in English and German. At one end of the spectrum are verbs like *ask* and *request,* which are normally object control predicates, but allow the shift to subject control quite readily, without special measures being taken. (For example, they do not need the facilitating phrase *to be allowed* inside their infinitival complement.) At the other end of the spectrum, verbs like *order* and *advise* strongly resist control shift, regardless of what is in the infinitival complement. Somewhere in between are verbs like *persuade* and *convince* which allow control shift with some noticeable "effort" and with considerable variation across examples and speakers. For example, some speakers are only comfortable with it as long as *to be allowed to* included in an example like (91b). Panter and Köpcke (1993) and Jackendoff and Cullicover (2003: 545-547) both have an idea (independently, as far as I know) about what underlies this variation, which I adopt and develop. In a nutshell, their insight is that what is being matched in control shift examples is a benefactive (BEN) role. From the perspective of the embedded clause, having a passive or unaccusative verb in the complement clause means that the PRO subject of that clause does not have an agent role, but rather a benefactive thematic role (in addition, perhaps, to a theme or goal role). From the perspective of the matrix clause, the notion of benefactive is relevant to why matrix verbs vary in their compatibility with control shift. *Ask* is different from *advise* in that if X asks Y to do Z, the normal assumption is that Z will benefit X, whereas if X advises Y to do Z, the normal assumption is that Z will benefit Y. Therefore, the possibility of matching benefactive roles creates an impetus toward subject control with *ask* but not with *advise*. This is the leading idea about control shift that I seek to develop within my Generalized Control Theory.

Let us start with the verb *ask*, considering its lexical semantics apart from an infinitival complement. I claim that the just-made observation that the agent of an asking event is also the normal beneficiary of the event is a property of the lexical semantics of the verb itself. This is visible when *ask* takes a DP or finite CP complement as its second internal argument as well as when it takes a nonfinite ModP. This can be seen in (89). Here there is no issue of the meaning coming from the meaning of PRO or of the infinitival complement or of the control relationship.

(92) a. John asked Mary a question.
(John would benefit from Mary answering the question.)
b. John asked a favor of Mary.
(Mary might do something for John's benefit.)
c. John asked Mary if she would come early.
(Mary coming early would benefit John.)

Like *promise* and *persuade*, *ask* can appear with an agent argument and a goal argument.[43] More challenging is to say exactly what the resulting state of an asking event is. It should be the sort of thing that can include a benefactive argument, to capture the Panter-Kopke/Jackendoff-Cullicover observation. Positing a state of intending would do the trick; it is plausible to say that

[43] The entity-denoting internal argument of *ask* might be a source, rather than a goal, at least in some languages. This argument bears the ablative/instrumental marker *-se* rather than dative *-ke* in Magahi, for example. It seems like the internal argument is both the goal of the communication event of asking and the source of the event that the asker hopes will occur in response to the asking. Perhaps this allows it to count as either a theme or a goal. This does not matter for current purposes. (However, the object of 'ask' can control Ad in Magahi, suggesting it can count as a theme/goal, not just a source. This verb would be interesting to study in more detail crosslinguistically.)

it can be part of someone's intention to do a certain action that the action benefit a particular person.[44] But that by itself is not quite right for an example like *John asked Mary to come early*. The result of the asking is not that Mary intends to come early, necessarily; *ask* is different from *persuade* in this respect. Rather, the result of asking is just that Mary considers whether to intend to come early for John. In other words, there is the possibility of her intending to come early, which the asking event causes her to entertain. I thus suggest that the result of asking (*ask-res*) is equivalent to a stacked modal eventuality: it is Mary being in a state of possibly intending to do something for John. This kind of composed modal meaning is not expressible using overt Modal heads in standard English, because of their special property of not having nonfinite forms (**Mary might will/woll come early for John*), but when one or more of the words expressing a modal eventuality is a main verb in English or other languages, this stacking is perfectly possible (*OK: Mary might intend to come early for John*). Let us assume that this stacking of modal notions is possible for the null modals in an infinitival complement as well.

The more common object control usage of *ask* can then be put together like this. The syntactic structure of (93a) is (93b).

(93) a. John asked Mary to come early.
b. [John Voice [Mary ask-proc [ask-res [PRO MIGHT [e INTEND [e come early]]]]]]

The semantic formula for the ModP complement of *ask* would be something like (91) (here the content of both the possibility and the intention are explicitly unpacked as propositions). This means that there is a possibility associated with PRO, the content of which is that PRO has an intention, the content of which is that PRO comes early.

(94) λe possibility(e) & holder(e)=PRO & content(e)=λw [∃e′ e′ is in w & intention(e′) & holder(e′)=PRO & content(e′)= λw′ [∃e′′ e′′ is in w′ & come-early(e′′) & agent(e′′)=PRO]].

This sort of meaning for ModP, with these particular null modal heads, fits well with the meaning we have observed for *ask-res*, which I express as (92). This means that the resulting state of asking is that a variable x has the possibility of x intending some event that would be for the benefit of y.

(95) *Ask-res*: λx λy λe possibility(e) & holder(e)=x & content(e)=λw [∃e′ e′ is in w & intention(e′) & holder(e′)=x & content(e′)=λw′ [∃e′′ e′′ is in w′ & ben(e′′)=y]]

The two formulas have the same basic structure of an intention embedded under a possibility, so they match in that respect. They differ in that ModP gives a relatively full description of an event that is the content of the possible intention (it is an early coming by someone), whereas *ask-res* gives a much more schematic description of the content of the possible intention, saying only

[44] A state of being obligated also naturally has a benefactive role, the person that one is obligated to. But this does not fit intuitions about *ask* as well: the result of my asking a favor of Mary might be that Mary intends to do something for me, but it is too strong to say that Mary might be obligated to do something for me as a result of the asking.

that it is for the benefit of someone to be named later. When *ask*-res combines with ModP to form ResP, (94) and (95) are composed using event identification[45] to get (96).

(96) ResP: λx λy λe possibility(e) & holder(e)=x content(e)=λw [∃e′ e′ is in w & intention(e′) & holder(e′)=x & content(e′)=λw′ [∃e′′ e′′ is in w′ & ben(e′′)=y]] & possibility(e) & holder(e)=PRO & content(e)=λw [∃e3 e3 is in w & intention(e3) & holder(e3)=PRO & content(e3)= λw′ [∃e4 e4 is in w′ & come-early(e4) & agent(e4)=PRO]].

Now a crucial assumption here is that "content", like the thematic roles, is a function from a content-bearing individual to its content. In other words, there is a unique content for each content-bearing individual (Moulton 2009: 28-29, Elliott 2017: 63-64, 105, 126). This means that something like Carlson's thematic uniqueness holds of content expressions as well. In (96), the possibility described by *ask-res* and the possibility described by ModP are identified. This implies that these possibilities have the same content, which is that a certain kind of intention holds. This means that we can reduce (96) to (97).[46]

(97) ResP: λx λy λe possibility(e) & holder(e)=x & holder(e)=PRO & content(e)=λw [∃e′ e′ is in w & intention(e′) & holder(e′)=x & holder(e′)=PRO & content(e′)=λw′ [∃e′′ e′′ is in w′ & ben(e′′)=y] & content(e′)= λw′ [∃e4 e4 is in w′ & come-early(e4) & agent(e4)=PRO]].

Now this formula has two expressions of the content of the intention that expresses the content of the possibility that is the result of the asking. This intention also has unique content, so we can further reduce (97) to (98).

(98) ResP: λx λy λe possibility(e) & holder(e)=x & holder(e)=PRO & content(e)=λw [∃e′ e′ is in w & intention(e′) & holder(e′)=x & holder(e′)=PRO & content(e′)=λw′ [∃e′′ e′′ is in w′ & come-early(e′′) & agent(e′′)=PRO & ben(e′′)=y]].

Ask-proc then takes ResP as its complement. It can be given a meaning like (96).

(99) *Ask-proc*: λR λx λy λe ask(e) & goal/source(e)=x & ∃e′ [(e→e′) & R(x, y, e′)].

This combines with (98) by function application to give (100).

(100) Proc′: λx λy λe0 ask(e0) & goal/source(e0)=x & ∃e [(e0→e) & possibility(e) & holder(e)=x & holder(e)=PRO & content(e)=λw [∃e′ e′ is in w & intention(e′) &

[45] Again, in type-theoretic terms, this is a slightly different form of event identification from the one explicitly stated in Kratzer (1996). It combines something of type <e<e<s, t>>> (not <e<s, t>>) with something of type <s,t> to get a new predicate of type <e<e<s, t>>> (not <e<s, t>>).

[46] I imagine that there are subtleties here. Moulton and Elliott assume that two content-expressing conditions cannot in general be unified, even when they are semantically compatible in some sense. Their concern is to explain for example why a content-bearing noun like *rumor* cannot be modified by two different CPs. I assume that there is a distinction between two partial descriptions of the same proposition (my case), which can be unified, and two full descriptions of distinct but compatible propositions (Moulton's case), which cannot be unified. I suppose this gets into questions about what propositions are and how they are individuated, which I am not the right person to discuss.

holder(e′)=x & holder(e′)=PRO & content(e′)=λw′ [∃e′′ e′′ is in w′ & come-early(e′′) & agent(e′′)=PRO & ben(e′′)=y]]

The rest of the derivation is very normal. Proc′combines with a DP to fill in its x argument. The resulting ProcP combines with Voice. This adds an agent argument to the description of the event e; that argument is also the one for whose benefit the possible intention is, by generalized event identification. This y argument is filled in when Voice′ combines with its DP specifier to form VoiceP. The final formula for this VoiceP is (101).

(101) VoiceP: λe0 agent(e0)=John & ask(e0) & goal/source(e0)=Mary & ∃e [(e0→e) & possibility(e) & <u>holder(e)=Mary</u> & <u>holder(e)=PRO</u> & content(e)=λw [∃e′ e′ is in w & intention(e′) & <u>holder(e′)=Mary</u> & <u>holder(e′)=PRO</u> & content(e′)=λw′ [∃e′′ e′′ is in w′ & come-early(e′′) & agent(e′′)=PRO & ben(e′′)=John]]
Therefore PRO=Mary

The OC-relevant part of all this is that PRO=Mary, because the holder role of the intention eventuality is unique (as is the holder of the possibility eventuality, if any). This is object control because the resulting state of an asking event is the goal of that event entertaining the possibility of intending to do something, by the meaning of *ask*. This is like the examples from the previous subsection, except that the modal resulting state is more complex in this case. This complexity is just for descriptive accuracy, seeking to be faithful to what the examples mean; it does not influence who control works in a material way.[47] Nor does the fact that *ask* has the meaning that the asked for action benefits the asker have any impact on control in this case.

Now compare this with examples in which the infinitival complement of *ask* has a nonagentive subject, such as a passive or an unaccusative clause. In many cases, these allow subject control quite readily. The infinitival complement could also include a permission modal, implicit or explicit, as in (102a,b), but it does not have to have one for subject control to take place. For example, (102c) does not mean that John is seeking permission to be appointed, but rather that he is seeking to in fact be promoted.[48]

(102) a. Little Johnnie$_i$ asked his mother [PRO$_i$ to be allowed to stay up late on New Year's Eve].
b. ?Little Johnnie$_i$ asked his mother [PRO$_i$ to stay up late on New Year's Eve].
c. John$_i$ asked Mary [PRO$_i$ to be promoted to manager before the end of the year].
d. Little Johnnie$_i$ asked his mother [PRO$_i$ to get a pony for Christmas].

Therefore, there is still the possibility modal similar to *might* in the ModP complement of *ask* in these examples. It is true that a permission meaning is prominent in (102a) with *be allowed*, but that is simply the lexical meaning of the verb *allow*. The sense of 'might' is still there, in that the resulting state of the asking is not that Johnnie is allowed to stay up, but that he *might* be allowed

[47] This is true if eventualities of possibility have holder arguments, as I assumed they can (they can be root modals). If they do not have holder arguments (if they are only raising predicates, in effect), then control must be induced by equating the holder arguments of the intention eventualities that express the content of the possibility eventualities. In that case, the complex structure of the modal expressions and the fact that the content of an eventuality is unique is more important for control. I assume that possibility eventualities do not need to have an expressed holder argument, as in (103) for example.

[48] Many of these examples with ask can be read as having object control rather than as subject control, including (102b-d). Some are ambiguous between the two readings. See fn 55 for discussion of this possibility.

to stay up—if there is a further event of his mother deciding to grant his request. I conclude that a change of modality in the complement clause is not crucial to inducing control shift here.

The pieces for this come together as follows. The embedded clause [PRO MIGHT [INTEND [*be promoted* t]] has the meaning in (103). This assumes that it is part of the lexical meaning of *promote* that the event benefits the one who undergoes it.[49]

(103) λe possibility(e) & content(e)=λw [∃e′ e′ in w & intention(e′) & content(e′)=λw′ [∃e′′ e′′ in w′ & promote(e′′) & theme(e′′)=PRO & ben(e′′)=PRO]]

I continue to assume that the meaning of *ask-res* is as in (104a). (104a) can combine with (103) by event identification to get (104b). This can be simplified to (104c) given that the two eventualities that give the content of the possibility must be the same and the two eventualities that give the content of the intention that is the content of the possibility must be the same.

(104) a. *Ask-res*: λx λy λe possibility(e) & holder(e)=x & content(e)=λw [∃e′ e′ is in w & intention(e′) & holder(e′)=x & content(e′)=λw′ [∃e′′ e′′ is in w′ & ben(e′′)=y]]
b. ResP: λx λy λe possibility(e) & holder(e)=x & content(e)=λw [∃e′ e′ is in w & intention(e′) & holder(e′)=x & content(e′)=λw′ [∃e′′ e′′ is in w′ & ben(e′′)=y]] & possibility(e) & content(e)=λw [∃e′ e′ in w & intention(e′) & content(e′)=λw′ [∃e′′ e′′ in w′ & promote(e′′) & theme(e′′)=PRO & ben(e′′)=PRO]]
c. ResP: λx λy λe possibility(e) & holder(e)=x & content(e)=λw [∃e′ e′ is in w & intention(e′) & holder(e′)=x & content(e′)=λw′ [∃e′′ e′′ in w′& ben(e′′)=y & promote(e′′) & theme(e′′)=PRO & ben(e′′)=PRO]]

This ResP then combines with *ask-proc, Mary*, Voice, and *John* in the usual way to create the VoiceP in (105).

(105) VoiceP: λe0 agent(e0)=John & ask(e0) & goal/source(e0)=Mary & ∃e [(e0→e) & possibility(e) & holder(e)=Mary & content(e)=λw [∃e′ e′ is in w & intention(e′) & holder(e′)=Mary & content(e′)=λw′ [∃e′′ e′′ in w′& <u>ben(e′′)=John</u> & promote(e′′) & theme(e′′)=PRO & <u>ben(e′′)=PRO</u>]]
Therefore PRO=John

Here the thematic roles inside the infinitival complement clause make a difference. There is no agent of the promoting event or holder of the intending state in the embedded clause. Therefore, there is nothing in that clause to become equated with Mary, the one who might intend an action according to the matrix clause. Therefore, there is no object control in this case. However, PRO in the embedded clause does bear a benefactive relation to promoting event, according to the embedded clause. At the same time, the matrix clause implies that John is the benefactive of an event that Mary might intend, given the lexical semantics of *ask*. Therefore, thematic uniqueness applied to the benefactive role of the possibly intended promotion event implies that PRO=John, licensing *John* as the OC controller of PRO. Control has shifted from the object to the subject, as

[49] I also assume that any agent/possossor argument of associated with INTEND is suppressed by the passivization of *promote* along with the agent of *promote* itself. This is similar to the voice matching often seen with so-called "long passives" in restructuring constructions (see Wurmbrand 2003, etc.).

desired. Also behaving like *ask* in easily allowing control shift are verbs with closely related means like *request, beg,* and *implore*. Panter and Kopcke (1993: 83) report that when used with a passive or unaccusative complement, *request* and *beg* shift to subject control in about 25% of their examples in English and a whopping 80% of their examples in German. (For some reason, they did not test *ask*.) This is yet another instance of Jackendoff and Cullicover's (2003) point that the control properties of verbs are not arbitrary but determined by their lexical semantics.

This approach to control shift captures another fact in this vicinity. It has been pointed out by Sag and Pollard (1991), among others, that although there is no syntactically expressed agent of the embedded verb in the control-shifted examples above, there is still an implication that the object of the matrix verb plays an important role in causing the event expressed by the embedded verb to happen. As a result, the following pairs are very close in meaning:

(106) a. Johnnie$_i$ asked his mother$_k$ PRO$_i$ to be allowed (*by her*$_k$) to stay up late on New Year's Eve.
Johnnie$_i$ asked his mother$_k$ PRO$_k$ to allow him$_i$ to stay up late on New Year's Eve.

b. John$_i$ asked Mary$_k$ PRO$_i$ to be promoted to manager (*by her*$_k$).
John$_i$ asked Mary$_k$ PRO$_k$ to promote him$_i$ to manager before the end of the year.

c. Johnnie$_i$ asked his mother$_k$ PRO$_i$ to get a pony (*from her*$_k$) for Christmas.
Johnnie$_i$ asked his mother$_k$ PRO$_k$ to get him$_i$ a pony for Christmas.

This is captured for (106b) by the semantics in (105). The passive embedded verb does not license an explicit agent for the event it is a predicate of. But in this context, that event is identified with an event that is implied by the meaning of the matrix verb. This event is the content of an intention that is ascribed to Mary. We infer from this that Mary is the (prospective) agent of the event, or perhaps is responsible for it in some less direct way. As a result, the embedded verb does not express an agent for the promoting event, but the sentence as a whole does. With the active verb *promote*, the embedded verb does express an agent for the promoting event. The matrix verb also implies an agent (intender) for this event. Thematic uniqueness then implies that the two agents are the same. The final event description then turns out to be essentially the same in these cases, even though what is contributed to it by the embedded clause is a bit different. This accounts for the near equivalence of the sentences in (106) without making use of powerful devices like "causative coercion" (Sag and Pollard 1991; Jackendoff and Cullicover 2003) which interpolate new lexical material into the representation of control shift examples to describe these details.[50]

Essentially the same analysis works for verbs like *persuade* and *convince*, which also allow control shift although they tend to need more contextual support for this; see (91b). For

[50] Note that it is possible to say *Mary promoted John for the manager('s sake)*, where the promotion event is said explicitly to benefit someone other than the theme of the promoting. If the presence of this *for* phrase implies that the theme argument of *promote* is not also its beneficiary, then benefactive matching should not license subject control in an example like (i), according to my analysis.

(i) John asked Mary to be promoted for the manager's sake.

I find (i) to be a bit weird with a subject control reading (and to prefer an object control reading, where Mary is promoted), but it is not dreadful. Perhaps some benefactive relations can be layered; for example, one can buy an ice cream for Johnnie for his mother's sake.

these verbs, Panter and Kopcke (1993: 83) report that 40% of their examples in which these verbs have passive or unaccusative complements were given subject control readings in English and 65% were in German. These verbs are lexically semantically a little bit different from *ask* in that the resulting state of the persuading event is one in which the internal argument actually intends to do an action, rather than just considers intending to do the action. As such *persuade* has a simpler modal structure; see the derivations in (84) and (86). Now I add that there is also some degree of presumption that if X tries to persuade Y to Z, X will benefit from Z. This can be encoded into the meaning by saying that *persuade-res* can be a predicate of eventualities of someone intending to do something *for someone else*. Then when *persuade-res* combines with a ModP with covert INTEND and a benefactive argument but no agent argument, the two benefactives will be equated by thematic uniqueness, exactly parallel to what we see in (105) for *ask*. This results in subject control. Perhaps the impression that shift to subject control is more marked and fragile with *persuade* than it is with *ask* is simply that our sense that the action done by the goal of the event will benefit the agent of the event is stronger with *ask* than it is with *persuade* and *convince*.[51] (One can perfectly well say *John persuaded Mary to take a day off for her own mental health*, for example.)

Compare this with verbs that strongly resist control shift, like *advise* and *recommend*. *Advise* is very similar to *ask* in its thematic roles: it too is an agent-goal verb (cf. the nominal version: *My advice to Mary was…).* It also like *ask* in that an advising event results in the goal argument considering whether to do an action, which is now enters her space of entertained possibilities. As such, a resulting state with stacked modals like 'X might intend VP' is appropriate for *advise* too. Despite these similarities, advise does not allow control shift, even when the subject of its infinitival complement is not an agent. For example, (107a) is possible with object control, and (107b) still has object control, despite the different thematic roles in the complement. Indeed, in Panther and Köpcke's (1993) study, English speakers allowed control shift with *recommend* only 4% of the time with goal verbs or *to be allowed* and 11% of the time with passive complements.[52]

(107) a. John_i advised Mary_k $\text{PRO}_{k,*i}$ to promote him before the year's end.
b. John_i advised Mary_k $\text{PRO}_{k,*i}$ to be promoted before the year's end.

Panther and Köpcke (1993) and Jackendoff and Cullicover (2003) recognize that the minimal difference between *advise* and *ask* that this hinges on is that in the case of *advise* it is the goal argument of the event that is taken to benefit from the suggested action rather than the agent argument. If X advises Y to do Z, then the normal expectation is that Y would do Z for Y's own benefit, in pursuit of Y's goals. As usual, I claim that this meaning can be sensed even with uses of these verbs that do not involve infinitival complements or control, as shown in (108).

(108) a. John advised Mary of this course of action.

[51] More careful research into this would be called for, though. Panther and Köpcke's study actually reports slightly *more* control shift with *persuade* and *convince* than with *request* and *implore* (in English only), so any perceived and anecdotal differences here may not be systematic. It is worth noting, however, that Panther and Köpcke did not test *ask*, probably the most frequent and unmarked of the "directive" verbs in English, and the one that might allow control shift the most freely. Therefore, I do not treat *persuade* as a separate class, pending more study.

[52] German was a bit different. It dislikes object control with nonagentive complements like (107b), but shift to subject control was not loved either. Rather, Panther and Köpcke got a higher percentage of judgments that examples were unacceptable with either object control or subject control in this case.

(Mary will benefit from this course of action (John claims).)

b. John advised Mary that she should come early.
(Mary will benefit from coming early.)

Based on this, I give (109) as the meaning of *advise-res*, the lowest head in the decomposition of *advise*. This is very similar to the meaning for *ask-res* in in (95), except that the benefactive argument of the event that constitutes the content of the possible intention is an instance of the same variable as the holder of the intention, not a different variable.

(109) Advise-res: λx λe possibility(e) & holder(e)=x & content(e)=λw ∃e′ [e′ is in w & intention(e′) & holder(e′)=x & content(e′)= λw ∃e′′ [e′′ is in w & ben(e′′)=**x**]]

The infinitival clause has exactly the same semantic value that is does with *ask*, assuming that it contains the covert modals MIGHT INTEND.

(110) ModP: λe possibility(e) & content(e)=λw [∃e′ e′ in w & intention(e′) & content(e′)=λw′ [∃e′′ e′′ in w′ & promote(e′′) & theme(e′′)=PRO & ben(e′′)=PRO]] (=(103))

Event identification combines (109) and (110) to get (111), once we simplify by applying the fact that the contents of a content-bearing eventuality are unique.

(111) ResP: λx λe possibility(e) & holder(e)=x & content(e)=λw ∃e′ [e′ is in w & intention(e′) & holder(e′)=x & content(e′)= λw ∃e′′ [e′′ is in w & ben(e′′)=x & promote(e′′) & theme(e′′)=PRO & ben(e′′)=PRO]]

We can already see the roots of object control—not subject control—in this formula. The possible intended event has a single beneficiary, which is a lambda bound variable according to *advise-res* and PRO according to the infinitival ModP. Therefore, the two will be equated, by thematic uniqueness. This results in object control once ResP combines with *advise-proc* (whose meaning is like that of *ask-proc*) and its argument. (112) is the final formula.

(112) VoiceP: λe agent(e)=John & advise(e) & goal(e)=Mary & ∃e′ [(e→e′) & possibility(e′) & holder(e′)=Mary & content(e)=λw ∃e′′ [e′′ is in w & intention(e′′) & holder(e′′)=Mary & content(e′′)= λw ∃e3 [e3 is in w & ben(e3)=Mary & promote(e3) & theme(e3)=PRO & ben(e3)=PRO]]

We see, then, that the small difference in the lexical semantic analysis of *advise* as opposed to *ask* is just where it needs to be to affect control in the proper way. It is possible of course for PRO in the embedded clause to bear the agent role and be the holder of the state of having an intention, as in (107a). In this case, the meaning of the ModP is λe possibility(e) & holder(e)=PRO & content(e)=λw ∃e′ [e′ is in w & intention(e′) & holder(e′)=PRO & content(e′)=λw′ ∃e′′ e′′in w′ & promote(e′′) & agent(e′′)=PRO & theme(e′′)=him]]. In this case, thematic uniqueness applies to holder argument of the state of intending (and perhaps derivatively to the holder argument of the state of being possible). However, this also gives

object control in this case. *Advise-res* in (109) has both the holder of the intention and the beneficiary of the intended event as instances of the same variable. Therefore, it does not matter whether the PRO in the ModP complement has an agent role or a beneficiary role in this case; it ends up being identified with the object of *advise* either way. That is, I claim, why *advise* is immune to control shift. And so are verbs with similar meaning like *recommend*, *encourage*, and *exhort*, as expected.

Now let us consider the converse type of control shift: the fact that *promise* can switch from subject control to object control, as seen already in (86). Moreover, this shift away from subject control happens under the same kinds of circumstances that a verb like *persuade* switches to subject control—when the embedded clause has a nonagentive subject, and especially when its subject is the benefactive of the embedded eventuality. This shift does not depend on the complement clause containing the locution *to be allowed to*, or even a covert sense of permission, although these are the most familiar examples. Panther and Köpcke (1993) report that acceptance rates for object control with examples that have passive infinitival complements like (113c) (72% English, 88% German) are even higher than with examples that have *to be allowed* ((113a), 60% English, 64% German), and complements with a verb like *get* sometimes allow control shift too ((113d), more readily in German (61%) than in English (22%), but attested in both). See also Landau (2013: 137-139), who provides an example of 'promise' with a passive complement in Hebrew.

(113) a. Mary promised little Johnnie$_i$ PRO$_i$ to be allowed to stay up late on New Year's Eve.
b. ?Mary promised little Johnnie$_i$ PRO$_i$ to stay up late on New Year's Eve.
c. The manager promised John$_i$ PRO$_i$ to be promoted by the end of the year.
(see Panther and Köpcke 1993: 58)
d. ?Mary promised little Johnnie$_i$ PRO$_i$ to get a pony for Christmas.

Here again we can invoke the benefactive thematic role to account for this shift, following Panther and Köpke (1993) and Jackendoff and Cullicover (2003: 547). It is generally to someone's beneficial to receive a promise, so the benefactive is the goal in this case (similar to *advise*).[53] What is special about these embedded clauses, then, is that they have no obligated or agent role to be equated with the agent of *promise*, but the subject of the infinitival complement does have a strong benefactive sense. Therefore, we get control of PRO by the object induced by thematic uniqueness applied to the benefactive role, not control of PRO by the subject induced by the holder role of the state of obligation. This is exactly parallel to control shift with *ask* or *persuade* in that benefactees are equated in the absence of an explicit agent in the complement clause. The only difference is whether the natural benefactee is the agent of the matrix clause, as it is with *ask*, or the goal of the matrix clause, as it is with *promise*. Here are some sample details. I said above that the resulting state of a promising event is an obligation had by the agent

[53] The exception is when promise shifts toward the meaning of *threaten*, as in (ia). This usage does also allow control shift to some degree, as in (ib). This can be captured by saying that John is a malefactive of the resulting state of the threatening/promising event and PRO is the malefactive of the torturing event, resulting in the two being equated (see Panther and Köpcke 1993: 69). Malefactive and benefactive should perhaps be unified under the more general notion of affected arguments.

(i) a. The gangsters$_i$ threatened/promised John PRO$_i$ to torture him if he didn't cooperate.
b. The gangsters threatened/promised John$_i$ PRO$_i$ to be tortured if he didn't cooperate.

of the promising. Now I add that the obligation is (can be) more specifically to do something for the benefit of the recipient of the promise. This is stated in (114), with the new part underlined.

(114) *Promise-res*: λy λx λe promise-res(e) & Holder(e)=x & content(e)=λw ∃e′ [e′ is in w <u>& ben(e′)=y</u>]

As usual, this benefactive piece can be sensed even with uses of *promise* that do not involve control; for example, *John promised Mary a favor* implies that the favor is done for Mary's benefit. I assume that the ModP complements in (113) have a covert obligation modal, as in other cases of *promise*, where the eventuality of having an obligation is easily identified with the eventuality that results from the promising event (*promise*-res). However, no holder of the obligation is syntactically expressed in the complement clause as the result of passive or the selection of an agentless unaccusative verb (this is another case of "long passive" a la Wurmbrand; see fn. 46; cf. also Hacquard (2010). So the embedded clause has the value in (115)—like (103), except for the flavor of the modal eventuality.

(115) ModP: λe obligation(e) & content(e)=λw ∃e′ [e′ is in w & promote(e′) & theme(e′)=PRO & ben(e′)=PRO].

Then (114) and (115) combine via (extended) event identification to give (116) after simplifying based on the uniqueness of the contents of an eventuality.

(116) ResP: λy λx λe promise-res(e) & Holder(e)=x & obligation (e) & content(e)=λw ∃e′ [e′ is in w & ben(e′)=y & promote(e′) & theme(e′)=PRO & ben(e′)=PRO].

This combines with the same meaning for *promise-proc* as we used before, and then with the goal argument, the voice head, and the agent argument in the usual way. The final result is (117).

(117) VoiceP: λe agent(e)=the.manager & promise(e) & goal(e)=John & ∃e′[(e→e′ & promise-res(e′) & Holder(e′)=the.manager & obligation(e′) & content(e′)=λw ∃e′′ [e′′ is in w &
<u>ben(e′′)=John</u> & promote(e′′) & theme(e′′)=PRO & <u>ben(e′′)=PRO</u>]
Therefore PRO=John

This formula implies that PRO=John by thematic uniqueness of the benefactive role, applied to the event that provides the content of the state of obligation that results from the promising event. In other words, we end up with object control using the same ideas and techniques as gave us shift to subject control with *ask* and *persuade*, as desired. Here too we get the implication that the manager is the agent of the promoting event in (113c), or at least closely responsible for it, even though no agent is explicitly represented in the complement clause. This is because the meaning of *promise-res* contributes that the higher DP argument of *promise-res* is the one who bears the resulting obligation, and this is consistent with the content of the ModP complement even though that complement itself says nothing about this. In this way, my account captures a famous contrast of Pollard and Sag's (1991) involving control shift shown in (118), also discussed by Jackendoff and Cullicover (2003: 546) and Landau (2013: 140), among others. (118b) is infelicitous because a fortune cookie cannot have an obligation toward a football

player, whereas a group of doctors can. ((118c) is possible because the result of a promising-that event is that someone knows something, not that someone has an obligation; compare *The weatherman promised everyone that it would not rain tomorrow*.)

(118) a. The doctors promised Montana to be allowed to play in the Super Bowl next week.
b. #The fortune cookie promised Montana to be allowed to play in the Super Bowl next week.
c. The fortune cookie promised Montana that he would play in the game next week.
d. #The fortune cookie promised Montana to allow him to play in the game next week.

Next we should reconsider the verb *order* in the light of our more developed theory. This verb and its synonyms strongly resist control shift, even when the subject of the infinitival clause is not an agent. (119) gives a range of examples parallel to the kind we have considered for other verbs. My judgments are that (119e) is pretty bad, whereas (119b-d) are possible but they have only an object control reading.[54] For example, (119b) means that John imposes on Mary to do what she can to make sure that the relevant authority promotes her by the set time.

(119) a. John_k ordered Mary_i [$\text{PRO}_{i,*k}$ to promote him].
b. John_k ordered Mary_i [$\text{PRO}_{i,*k}$ to be promoted by the end of the year].
c. John_k ordered Mary_i [$\text{PRO?}_{i,*k}$ to get a pony for Christmas].
d. Johnnie_k ordered Mary_i [$\text{PRO}_{i,*k}$ to stay up late on New Year's Eve].
e. #Johnnie_k ordered Mary_i [$\text{PRO}_{i,k}$ to be allowed to stay up late on New Year's Eve].

The question is how to preserve this result now that I allow the benefactive role to have the effects that it does with verbs like *ask, persuade*, and *promise*. It does seem that the agent of an ordering event can plan to benefit from the action that would result from the order being carried out, whereas ordering events do not generally benefit the one who receives the order. If we build a "& ben(e)=x" clause into the meaning of *order* based on this, then there is nothing in my formal system that will prevent it from inducing control shift on par with how it does with *ask*. Some other property of *order* apparently blocks this.[55]

My proposal for this is that *order* puts more specific selectional properties on its ModP complement than the control shift verbs do, including *promise*. Both select ModPs with a deontic necessity modal—the similarity emphasized in section 8.5.2. But there is some syntactic and thematic variety even within this limited domain. Staying away from the special properties of T

[54]Panther and Köpcke (1993) did not include 'order' in their empirical study, so no experimental figures or comparison with German are available from them.

[55] One might think that the examples in (119b-e) with subject control are anomalous because the authority relationships involved are contradictory. It is well-known that shift toward subject control with *ask* and *persuade* is facilitated by having the object be a person with obvious authority over the subject—like a parent or a manager. In contrast, the verb *order* presupposes that the subject has authority over the object. This means that there is an anomaly in examples like (119e): if Johnnie needs Mary's permission to stay up late, then Johnnie is not in a position to give Mary orders about the matter. I agree that this is a factor disfavoring subject control in (119b-e), but I doubt that it is the only factor, given how strong the restriction to object control is across scenarios. It is also telling to consider the analog of (119e) in (i) with active *allow* in the complement. This has the same paradoxical authority relationships that (119e) would have, but I find it significantly better.

(i) Johnnie ordered Mary to allow him to stay up late on New Year's Eve.

heads like *must* for the moment, English has *have to* and *is obligated to*. With agentive verbs in their complements, the two seem very similar, as in (120a) and (121a). But (120b-d) show that some necessity modals act like raising predicates, tolerating pleonastic and idiomatic subjects, whereas (121b-d) show that *be obligated* acts as a control predicate in these respects. (120e,f) and (121e,f) then applies this to passive clauses. (120e) says that someone needs to make it the case that John is promoted, but it does not say who, whereas (121c) has it that it is John's responsibility get himself promoted. Finally (120f) is possible, but (121f) is infelicitous.

(120) a. Mary has to help John.
b. There has to be some salt in this recipe.
c. The cat has to be out of the bag by Friday (or I'll lose my bet).
d. It is necessary for John to be promoted.
e. John has to be promoted.
f. John has to be allowed to stay up late.

(121) a. Mary is obligated to help John.
b. *There is obligated to be some salt in this recipe.
c. #The cat is obligated to be out of the bag by Friday.
d. *It is obligated for John to be promoted.
e. John is obligated to be promoted.
f. #John is obligated to be allowed to stay up late.

Against this background, I claim that the null necessity modal in the complement of *order* must be the kind that assigns a thematic role to its subject, like *be obligated*, whereas *promise* allows the raising kind of necessity modal, like *have*, which does not assign a thematic role to its subject.[56] We saw just above how a ModP that expresses an obligation but does not say who bears that obligation opens the door for object control induced by the benefactive role. But the more restricted ModP that has to have PRO as the holder of the state of obligation selected by *order* does not allow this (as in my original derivation). *Order-res* is as in (117). We can assume for the sake of argument that this could optionally include a term that says that the required event would be for the subject's benefit.

(122) *order*-res: λx (λy) λe obligation(e) & Holder(e)=x & content(e)=λw ∃e′ [e′in w (& ben(e′)=y)]

But crucially the ModP corresponds to the formula in (123), including the underlined part that can be absent in the ModP complement of *promise*.

(123) ModP: λe obligation(e) & <u>holder(e)=PRO</u> & content(e)=λw ∃e′ [e′in w & promote(e′) & theme(e′)=PRO & ben(e′)=PRO].

[56] Note that there is some easily accessible evidence that *order* has more specific selectional properties than *promise* and *persuade* do. Unlike *promise* and *persuade*, *order* cannot comfortably that a finite CP complement:

(i) John ordered Mary that she *O/*will/??must leave early.

Whether this difference in selectional properties is closely related to the one posited in the text is uncertain.

We combine (122) and (123) by event identification, and equate their contents to get (124).

(124) ResP: λx (λy) λe obligation(e) & Holder(e)=x & Holder(e)=PRO and content(e)=λw ∃e′ [e′in w & promote(e′) & theme(e′)=PRO & ben(e′)=PRO (& ben(e′)=y)]

This combines in the usual way with the Proc head and Voice and their DP arguments, but we can already see how it is going to turn out. Thematic uniqueness necessarily applies to the holder argument of the state of obligation. This means that PRO must be equal to the x argument of *order-res*, which will turn out to be the goal argument of *order* given the meaning of *order-proc*. This holds true regardless of what additional thematic roles may be assigned to PRO relative to the event that gives the content of the obligation (here the promoting event, contributed by the VoiceP of the infinitival complement). Hence, *order* always induces object control, even when its complement—really the complement of the modal that heads its complement—is passive or unaccusative. In principle, *order-res* could say that the benefactive of the required event is y, a variable that will end up being equated with the subject of *order*. But this is an optional part of its meaning, and in fact including it derives a near contradiction in this case. Then PRO would have to be y by thematic uniqueness of the benefactive role of the content of the obligation. This conflicts with the implication that PRO has to be x by thematic uniqueness of the holder role of the obligation itself, since PRO cannot in general be equated with two distinct arguments x and y.[57] This then captures the resistance of *order* to subject control within my system. And it can be extended to near synonyms like *command*, and even the more general verb *tell*. [58]

This reasoning can extend well beyond verbs in the *order* class. Parallel results will hold for any verb that selects a ModP with a modal that assigns a thematic role to its subject. Other good candidates for this would be verbs that select an ability modal glossable as 'is able to'. Like *be obligated*, this modal predicate has control-like properties, as shown in (125) by the badness of (125b-d) and by the meaning of (125e,f).

(125) a. Mary is able to help John.
b. *There is able to be some salt in this recipe. (contrast *can/could*)
c. *The cat is able to be out of the bag by Friday.
d. *It is able for John to be promoted.
e. John is able to be promoted. (He is qualified for promotion, a property of John)

---

[57]The one case where this might be possible is if x=y, as in a reflexive use of *order*, like *John ordered himself to be promoted*. But in such a case, the distinction between subject control and object control collapses anyway.

[58] Note that even verbs that do not require a control-type modal as the head of their ModP complement can permit such a ModP. When they have a ModP that denotes a modal eventuality with a holder argument, they also will resist control shift. Hence English allows a reading of passive and unaccusative complements of *ask* and *persuade* that remain object control, as in (ia,b). Conversely, *promise* can still induce subject control with a passive complement when the pragmatics are right, as in (ic).

(i) a. John asked $Mary_i$ PRO_i to stay up late / to get a pony for Christmas.
b. John persuaded $Mary_i$ PRO_i to be examined by a doctor.
c. $John_i$ promised Mary PRO_i to be examined by a doctor.

One does not have to go as far as saying that these PRO subjects are reanalyzed from themes or goals to agents to get this effect. It is enough that PRO be the holder argument of the eventuality denoted by the covert root modal—which I take to be a weaker and less tendentious claim.

f. #John is able to be allowed to stay up late.

A verb that plausible selects ModP with a covert modal meaning 'be able' is the (morphologically related) verb *enable*. The expectation is that, like *order*, *enable* will be strictly an object control predicate, with no possibility of control shift, regardless of the thematic role of the subject in the infinitival complement or the pragmatics of the situation. This is true, as shown in (125). Even passive and unaccusative predicates are controlled by the direct object.

(126) a. John$_k$ enabled Mary$_i$ PRO$_{i,*k}$ to succeed in the high pressure environment.
b. John$_k$ enabled Mary$_i$ PRO$_{i,*k}$ to be promoted by the end of the year.
c. John$_k$ enabled Mary$_i$ PRO?$_{i,*k}$ to get a pony for Christmas.
d. John$_k$ enabled Mary$_i$ PRO$_{i,*k}$ to stay up late on NYE.
e. John$_k$ enabled Mary$_i$ PRO$_{i,\ *k}$ to be allowed to stay up late on NYE.

Other verbs of this type are *empower*, *teach*, and *help*. This might also apply to verbs that select a certain kind of permission modal in their complements, like *allow* and *permit*, which are also strictly object control verbs.[59]

As a sidebar, we now have the resources to address an apparent asymmetry between the control of PRO and the control of ghostly operators. Throughout this work, I have shown that the source phrase of a verb like 'hear' is like agents and experiencers in being able to control subject-type ghostly operators. Thus, the source of 'hear' can control Sp in Magahi, LogOp in Ibibio and Ewe, and zOp in Japanese, among others. In contrast, Landau (p.c.) observes that source phrases never count as obligatory controllers of PRO in English.[60] *Hear* in English can marginally take an infinitival complement, but it must have subject control, as in (127a), not source control as in (127b).

(127) a. ?The troops$_i$ heard from the general$_k$ [PRO$_i$ to storm the enemy ranks tomorrow at dawn].
b. *The troops$_i$ heard from the general$_k$ [PRO$_k$ to inspect their living quarters tomorrow at dawn].

Using a nonagentive clause in the infinitival complement has no effect on this: (128b) is not any better with source control than in (127b) is, despite the favorable pragmatics.

(128) a. ?*The corporal$_i$ heard from the general$_k$ [PRO$_i$ to be promoted before the next deployment].
b. *The troops$_i$ heard from the general$_k$ [PRO$_k$ to be obeyed without question].

---

[59] However, I am not sure about the control-vs-raising properties of permission modals other than *can* and *may*. The more lexical ones are *is permitted to* and *is allowed to*, and these are passives derived from the control verbs we would be trying to study.

[60] Although Landau (2015: 15) gives the example in (i) as an instance of oblique control. Here the controller is the object of from, presumably because it is a source, is an OC controller. So Landau's generalization may not be exceptionless. Note that this predicate does allow control shift, as in (ib), suggesting that it has the looser selection properties of *promise* or *persuade* rather than those of *order/tell*.

(i) a. We demanded from him$_i$ PRO$_i$ to turn himself in
b. We$_i$ demanded from him PRO$_i$ to be allowed to speak to the prisoner.

Contrast: The troops$_i$ heard from the general$_k$ [that he$_k$ should be obeyed without question].

Now a basic lesson of years of work on OC is that semantically similar verbs have similar control properties, a fact that the current account is designed to explain. The verb *hear* is similar to *tell*, and especially to the passive version of *tell*; "X heard from Y that…" is parallel to "X was told by Y that…" Given this, we expect the control behavior of *hear* to be similar to that of *be told*, and that of *tell* in turn is similar to that of *order*. We have just seen that *order* and *tell* only allow control by their goal argument; this never shifts to control by their agent argument. The parallel statement for *hear*, given that OC is determined by thematic roles rather than grammatical functions, is that control is always by the goal-experiencer (the hearer, the subject) and never by the agent-source (the *from* phrase). Therefore, the badness of (127b) and (128b) is expected on this account. The formal analysis also carries over. I assume that *hear* is like *tell* in selecting (somewhat marginally) an infinitival clause with a control type obligation modal. The holder argument of the obligation eventuality then must be identified with the experiencer argument of the hearing event, and this prevents any secondary thematic roles like benefactive from shifting the control. The same result follows for "X learned from Y [PRO to VP]", where X but not Y can control PRO. *Learn* from is like the passive of *teach*, and *teach* is a predicate known not to allow control shift to the agent argument, because it selects a ModP with Mod like 'to be able'. In contrast, the source argument of 'hear' or 'learn' can control an agent-like argument in the CP space (Sp, LogOp, zOp) crucially because there is no analog of ModP with a Mod head in the CP space. Therefore, holder arguments of modal eventualities do not come into the picture in the ghostly operator constructions, and direct thematic role matching takes place, which can involve an agent-like source argument.

As a culmination to this section on controller choice, I briefly consider the very special case of verbs like *propose* and *offer*. Landau (2013) calls special attention to this class of verbs as a strong challenge for any theory of OC. For one thing, it shifts particularly easily between object control readings and subject control readings with no detectable change in the structure of its infinitival complement. This can be seen in (129), where the pragmatics about who does and does not tend to make diplomatic visits helps to bring out the two possibilities clearly.

(129) a. The Secretary of State$_i$ proposed to Congress$_k$ [PRO$_i$ to make a diplomatic visit to Myanmar].
b. Congress$_k$ proposed to the Secretary of State$_i$ [PRO$_i$ to make a diplomatic visit to Myanmar].

Landau (2013: 146) points this out as a critique of Panther and Köpcke's theory where control shift is driven by thematic matching of the benefactive role, which has been a major source of inspiration for the present account. There is no sense of the thematic roles being different in any relevant way between (129a) and (129b).[61] Similarly, Comrie (1984) gives (130) as an ambiguous example in German, showing that either subject control or object control is possible with no overt change in the infinitival complement.

[61] Landau (2013) conjectures that the benefactive role of *offer/propose* is always associated with the internal argument of the verb, which would be problematic for applying the Panther-Köpcke account of control shift to (129b).

(130) Iche habe ihm angeboten [PRO mich zu erschießen].
I have him offered me/myself to shoot.
'I offered him to shoot myself' *or* 'I offered him that he could shoot me.'

Moreover, *propose* and *offer* have an even more striking property: they allow the mysterious phenomenon of split control. In examples like (131), PRO in the complement clause is partly controlled by the subject argument and partly by the object argument. The anaphoric object inside the infinitival clause shows that PRO is plural in these examples, and the intended meaning shows that its reference includes both John and Mary.

(131) a. Mary_i proposed to John_k [PRO_{i+k} to meet each other_{i+k} at 6:00]. (Landau 2013: 172)
b. John_i proposed to Mary_k [PRO_{i+k} to treat themselves_{i+k} to a trip to the Caribbean].
c. John_i offered Mary_i [PRO_{i+k} to go to Barbados together over spring break].

Landau (2015: section 5.3) argues with some care that this phenomenon is real and a distinct construction that does not reduce to nonobligatory control or to partial control. For example, the goal argument of *propose* may be implicit, but it shows the same kind of clause-level locality that is characteristic of OC. Split control also does not allow arbitrary readings, allows only sloppy and *de se* reading, and features like gender must be inherited in languages like Hebrew (Landau 2013: 174). A crucial difference between split control and partial control is that the PRO in a split control can grammatically as well as semantically plural (as in (131a,b)) whereas PRO in partial control examples cannot be. Landau also makes the forceful point that spilt control as in (131) is an unsolved puzzle for practically every theory of the syntax of control. In particular, it is a challenge to theories that seek to derive OC by saying that PRO is an anaphor (Manzini 1983), by saying that PRO is controlled via Agree (Landau 2001, Landau 2004), or by saying that it reduces to movement (Hornstein 1999). None of these syntactic relations otherwise allows for one element to be related to two antecedents, as we have here.

I will not be so bold as to say that my current proposal predicts the existence of split control, but I think it does allow for the possibility more readily than these other theories. Let us imagine what would have to be true for split control like what is seen in (131) to follow from my theory, concentrating on (131a) for concreteness. First, the ModP complement will denote some modal eventuality with a plural PRO as its holder argument. I assume that this is another case of MIGHT+INTEND, similar to the complement of *ask* or *advise*, because here too possible courses of action are being entertained by the participants of the event. So the ModP complement in (131a) would have the meaning in (132).

(132) ModP: λe possibility(e) & content(e)=$\lambda w\ \exists e'$ [e′ is in w & intend(e′) & holder(e′)=PRO_{PL} & content(e′)=PRO meet each other at 6:00]

We get OC when some argument in the infinitival clause bears the same thematic role to an eventuality described by that clause as an argument of the Res head (part of the decomposition of the matrix verb) does to the eventuality described by that head. In other words, *propose-res* would need to be something of the form "$\lambda x\ \lambda y\ \lambda e$ possibility(e) & content(e)=$\lambda w\ \exists e'$ [e′ is in w & intend(e′) & holder(e′)=SOMETHING." Then *propose-res* will combine with ModP in a consistent way, with SOMETHING being identified with PRO. Split control will result if

SOMETHING in this formula is the mereological sum of the two arguments of *propose*. In other words, *propose-res* could have the meaning in (133).

(133) *Propose-res*: λx λy λe possibility(e) & λw ∃e′ [e′ is in w & intend(e′) & holder(e′)=<u>x+y</u>]

This combines with (132) by event identification, and then with *propose-proc*, whose meaning is the rather ordinary one in (134a). Combining with *John*, Voice, and *Mary* finally results in (134b).

(134) a. λR λx λy λe propose(e) & goal(e)=x & ∃e′ [e→e′ & R(x, y, e′)].

b. λe Agent(e)=Mary & propose(e) & goal(e)=John & ∃e′ (e→e′& possibility(e′) & content(e′)= λw ∃e′′ [e′′ is in w & intend(e′′) & holder(e′′)=John+Mary & holder(e′′)=PRO & content(e′′)=PRO meet each other at 6:00].

This does imply that PRO=John+Mary by thematic uniqueness applied to the holder argument of the possible intention. So that is split control. For this to be a theory of split control rather than just wishful thinking, we need to convince ourselves of two things: (i) that (133) is a legitimate meaning for a Res head to have, and (ii) that this is part of the meaning that the English verb *propose* does in fact have. I hereby convince myself of these things. (i) amounts to the claim that mereological summation is a possible part of a lexical entry; since I do not have strong constraints on what lexical meanings can be, I have no reason to rule this out. As for (ii), my method has been to claim that the meaning of Res heads can in principle be studied by considering what inferences can be drawn from sentences involving the verb in question, including sentences that do not involve control. For *propose*, then, consider examples like (135).

(135) a. Mary proposed to John a trip to the Caribbean.
Result: Mary and John consider them both taking a trip to the Caribbean.
b. Mary proposed to John that they treat themselves to a trip to the Caribbean.
Result: Mary and John both consider the possibility of them taking a trip.

The question then is whether the proposing events can have as their result a state of John and Mary possibly having a shared intention. The answer, I believe, is yes. Assuming that this holds up, it is possible to fit an analysis of split control into my framework.

This has very strong consequences. It implies that thematic uniqueness is not simply a syntax-semantics-interface filter on a syntactic control relationship that operates relatively freely in the syntax, whether that relationship is understood in terms of Agree, movement, anaphor binding, or predication. None of those syntactic relationships would provide the semantic interface with a split control candidate that it could license or filter. Rather, it seems that event identification and thematic uniqueness must be the very engine of OC itself. However, this still avoids the trap of reducing OC simply to pronoun binding. That is the one other relationship we know of that allows split antecedence, but OC is otherwise much more restricted than pronoun binding (in the ways described by the OC signature) in ways that must be explicated by a generalized control theory. My approach can, I claim, walk this narrow line.

It is desirable to take one further step in the analysis of *propose*. The meaning in (133) gives the split control possibility seen in (131), but it does not give the more ordinary subject and object control possibilities seen in (129) and (130). The ideal theory would capture the fact that only verbs that freely allow both subject control and object control also allow split control. This could be expressed by revising the meaning of *propose-res* to something like (136).

(136) *Propose-res*: λx λy λe possibility(e) & λw ∃e′ [e′ is in w & intend(e′) & holder(e′)=(x)+(y)]

The idea here is to say that both the x variable and the y variable are optional parts of the holder argument of the possible intention. If only the first argument x is included, we get object control, if only the second argument y is included, we get subject control, and if both are included we get split control. I want this range of possibilities to be detectable in also in examples like (135) that do not have control. And so they are: for example, (135a) can result in John possibly intending to take a trip to the Caribbean, or in Mary possibly intending to take a trip to the Caribbean, or in both of them intending to take this trip together. There is more to ponder here about what exactly is the space of things that can and cannot be stipulated in a lexical meaning, to be sure. But this approach to OC does give a framework in which they can be pondered.

8.5.4 Control with complements that do not have a modal head

The most challenging cases of controller choice, including control shift, happen with triadic verbs that select a clause with a future-shifted reading, as recognized by Landau, Wurmbrand, and others. These are cases in which there is reason to say that there is a modal head in the complement clause which plays a role in mediating the control relationship. However, there are also cases which do not have evidence of a modal in the infinitival clause. This raises questions about whether my analysis of control generalize to such cases. Should it generalize, or do these nonmodal cases call for a different analysis, as in Landau's (2015) two-tier theory of control?[62] I take up this issue via two case studies: the implicative verb *force*, and the propositional verb *claim*. Note that the two are quite different for Landau's typology, and the fall into different classes for Wurmbrand (2014) as well. My analysis of *force* will be more fully realized than my analysis of *claim*.

Consider *force* first. There is no obvious modal meaning associated with the complement of this verb, and the event described by the embedded clause is not understood as future with respect to the one described by the matrix clause. As a result, the matrix and embedded clause cannot have incompatible time adverbs, as is possible with verbs like *ask, persuade*, and *advise*.

(137) Yesterday John forced Mary to cook some rice (#tomorrow).

Verbs like *force* also support an implication pattern which many other control complements do not, arguably because of the presence of the modal. The occurrence of the forcing event entails the occurrence of the event described by the infinitival clause, as in (138). (This is why *force* is classified as an implicative verb.)

[62] Landau (2015) claims that infinitival complements of nonattitude verbs are predicated of the structurally closest DP, with the result that PRO inside the infinitival complement is controlled by that DP.

(138) John forced Mary to cook some rice.
Therefore: Mary cooked some rice.

I conclude that there is no modal eventuality to mediate the control in this case.

The good news is that there doesn't need to be one. Given these temporal and logical patterns, the event described by the infinitival complement is itself a plausible resulting eventuality of the matrix event. Now if this is true, why do we not get thematic-role matching here, of the sort that we see in simple resultative constructions and control with *try* and *manage* (another implicative verb)? After all, Mary is the theme argument of the forcing event in (138), but she is the agent argument of the cooking event. My idea about this is again to pack a bit more into the meaning of the matrix verb itself. I claim that *force* itself implies that the theme of the forcing event is also the agent of another event, one that is caused by the forcing event. Continuing to follow Ramchand (2008) in decomposing Vs into Proc and Res heads, I propose (139a,b) as the two major subcomponents of the verb *force*:

(139) a. *force-res*: $\lambda x\ \lambda e$ agent(e)=x.
b. *force-proc*: $\lambda R\ \lambda x\ \lambda e$ force(e) & theme(e)=x & $\exists e'$ cause(e, e′) & R(x, e′)

Here *force-res* characterizes an event that has an agent, and *force-proc* says that there is another event which is a forcing event, which causes the first event, and the agent of the caused event is the theme of the forcing event. As usual, the task is to convince ourselves that these elements of meaning are inherent in (some uses of) the verb *force*, even apart from the presence of the infinitive and the control relation. The examples in (140) help me to do this.[63]

(140) a. John forced Mary into this course of action.
Therefore (as a result), Mary did this course of action.
b. John forced a certain course of action on Mary.
Therefore (as a result), Mary did this course of action.

It is also worth noting that *force* (except when used as an ECM verb, which it can be[64]) contrasts with the simpler causative verbs *make* and *cause* in two ways. On the one hand, the apparent object of *force* bears a thematic role to the forcing event (see fn 62); on the other hand, the complement clause must express an event that is something that can be done volitionally.

(141) a. John made/caused Mary (to) grow tall.
b. ??John forced Mary to grow tall. (possibly OK as ECM)
c. John made Mary believe that the sky is green.

---

[63] Note that *force* cannot select a finite CP complement (**John forced Mary that she cook(s) some rice*), so that point of comparison is not available in this case.

[64] So not impossible are examples like *The labor organizers forced there to be a riot*, *The agitators forced all hell to break loose at the meeting*, etc., although they feel a little bit marked. The classic test that shows most clearly that *force* has an object control use is the fact that passive in the CP complement of *force* goes with a change of meaning. (ia) has a salient meaning in which Mary exerts pressure on the doctor get the examining event to happen, and (ib) has a salient meaning in which Mary exerts pressure on John to get the examining event to happen.

(i) a. Mary forced the doctor to examine John for cancer.
b. Mary forced John to be examined by the doctor for cancer.

d. #John forced Mary to believe that the sky is green.

I take it that the weirdness of (141b,d) is a sign that the theme argument of the main event is also the agent argument of the caused event—not just some unspecified participant in it. The meanings in (139) express this observation.

Given the meanings for the components of *force* in (139), we can give the complement clause a simple event-denoting meaning. [PRO Inf [cook some rice]] corresponds to the formula in (142).

(142) Infinitival clause: λe cook(e) & agent(e)=PRO & theme(e)=rice.

This combines with *force-res* ((139a)) by event identification to give (143a). The resulting ResP combines with force-proc ((134b)) by function application to give (138b). This Proc´combines with Mary, then with Voice, then with John, to arrive at (138c).

(143) a. ResP: λx λe agent(e)=x & cook(e) & agent(e)=PRO & theme(e)=rice.
b. Proc´: λx λe force(e) & theme(e)=x & ∃e´ [cause(e, e´) & agent(e´)=x & cook(e´) & agent(e´)=PRO & theme(e´)=rice]
c. VoiceP: λe agent(e)=John & force(e) & theme(e)=Mary & ∃e´ [cause(e, e´) & <u>agent(e´)=Mary</u> & cook(e´) & <u>agent(e´)=PRO</u> & theme(e´)=rice]
Therefore PRO=Mary

Then PRO=Mary by thematic uniqueness of the agent of the caused event. We thus derive object control for *force* using the same kinds of reasoning we used for verbs that select a modal in their clausal complement.

An important question that arises now is what happens when the subject of the infinitival complement of *force* does not have an agent thematic role. On my account, this should affect the control—in contrast to Landau's (2015) predication account of implicative verbs, in which the infinitival clause of this kind of verb is simply predicated of the closest DP argument. The examples in (141) already show that PRO not being an agent in the embedded clause can lead to unacceptability. Moreover, full-on control shift is not out of bounds with the matrix verb *force* according to Panther and Köpcke (1993), especially in German. With a complement like 'be allowed to VP', 34% of English speakers and 43% of German speakers accepted subject controlled readings. In German, this acceptance rate also carried over to complements with recipient subjects or passive subjects (in English it dropped to 9%/15%). This is a higher rate of control shift across the board than with 'recommend', even though that is a verb that takes logophoric control in Landau's two tiered system. A hypothetical example in English where subject control seems possible for me is (144).

(144) The union leadership$_i$ forced management$_k$ PRO$_i$ to be allowed to hold meetings with their membership during normal work hours.

Since PRO is not the agent of the predicate *be allowed to VP*, thematic uniqueness will not induce PRO=the management in this case. Therefore, object control is not forced in this example, which is to the point. We can then take this a step farther by making use of a benefactive thematic role, as in other cases of control shift. The surface subject (underlying

object) of *be allowed* has a benefactive role, as above. A simplified approximate value of the complement clause of (144) would be (145).

(145) λe allow(e) & ben(e)=PRO & content(e)=PRO hold meetings with membership.

It is also plausible to say that the subject of *force* can be associated with a benefactive role as well, as Panther and Köpke claim. This comes from the simple default human assumption that if X forced Y to do something, then X probably wanted Y to do it because it would benefit X. We then enrich the meaning of *force-res* by adding the (optional) benefactive role, similar to what we had with *promise-res* above.

(146) *force-res*: λx λy λe agent(e)=x & ben(e)=y.

Then ResP for (144) will be (147a), Proc′ will be (147b), and the matrix VoiceP will be (147c).

(147) a. ResP: λx λy λe agent(e)=x & ben(e)=y & allow(e) & ben(e)=PRO & content(e)=PRO hold meetings with membership.
b. Proc′: λx λy λe force(e) & theme(e)=x & ∃e′ [cause(e, e′) & agent(e′)=x & ben(e′)=y & allow(e′) & ben(e′)=PRO & content(e′)=PRO hold meetings with membership]
c. VoiceP: λe agent(e)=union & force(e) & theme(e)=management & ∃e′ [cause(e, e′) & agent(e′)=management & <u>ben(e′)=union</u> & allow(e′) & <u>ben(e′)=PRO</u> & content(e′)=PRO hold meetings with membership].
Therefore PRO=union

Here PRO=union by the uniqueness of the benefactive role applied to the event that is the result of the forcing. This is an instance of subject control. Note also that the formula implies that it is management that allows the union to meet the membership, even though this is not expressed in the complement clause itself, but only as a description of the caused event is pieced together between the meaning of *force* (its *force-res* part) and the meaning of the complement clause. This is typical for control shifted examples. We see, then, that control shift is a possibility even when there is no modal element in the complement clause, and rightly so according to Panther and Köpcke (1993). One possible reason why control shift is more marked with 'force' than with 'ask' or even 'persuade' could be simply that the subject of 'force' is more weakly associated with a benefactive role than is the subject of these other verbs.[65] (There is also the English-German difference, where subject control is more marked for triadic verbs in English than in German across the board. I have no proposal to make about that.)

[65] Another factor could be that the power dynamics are a bit marked in an example like (144). Normally X can only allow Y to do something if X has more authority than Y does. But if X has the authority to grant or deny permission to Y, Y won't usually have the power to force X to do something. (144) was designed to get around this tension as much as possible by evoking circumstances in which there are different kinds of power at work, and the power is explicitly being contested.

English (more than German, it seems) also allows cases in which the complement of force is a passive clause but PRO still undergoes object control, like the classic in (ib) of footnote 47. I assume that this is possible when some agency is overlaid on the subject of the passive, in addition to its normal theme role. Note that the passives that are good in the complement of force are the very ones that are good as imperatives, like *Be examined by a doctor!* I do not discuss the mechanism of these overlaid thematic roles.

The last control verb that I discuss (up to a point) is the propositional verb *claim*. This is the only control verb in the propositional class in English, and it has some unique properties, but other European languages are said to have more verbs in this class (e.g. verbs like 'believe' or control verbs). As with *force*, there is no temptation to add a modal when paraphrasing the infinitival complement of claim with a finite clause:

(148) a. Mary claimed to be innocent
=Mary claimed that she *is* innocent..
b. Mary claimed to have paid the fine.
=Mary claimed that she did pay the fine.

Additional evidence that there is no modal in the complement of *claim* is that the complement is not interpreted as future relative to the event of claiming; rather it expresses a state that holds at the time of the claiming event (Wurmbrand 2014).

(149) *Mary claimed yesterday to pay the fine tomorrow.
(contrast: Mary claimed yesterday that she will pay the fine tomorrow.)

Nevertheless, this verb does pose a rarely discussed issue of controller choice. It can take a second internal argument, namely a goal. However, even when this internal argument is present, *claim* still shows a subject control pattern, with the agent not the goal controlling PRO. This shows again that subject control in the presence of another argument is not as exceptional as sometimes thought; indeed it is not limited purely to verbs of commitment.

(150) a. Mary_i claimed to the judge_k PRO_i to be innocent.
b. Mary_i claimed to the judge_k PRO_i to have paid the fine.
c. *Mary_i claimed to the judge_k PRO_k to have treated her_i unfairly.
(compare; Mary_i claimed to the judge_k that he_k had treated her_i unfairly.)

Moreover, there is no sign of this predicate allowing any kind of control shift. Even when the complement clause has a nonagentive goal/benefactive subject, the matrix goal cannot control it. Either the example still has subject control, or it is infelicitous.

(151) a. Mary_i claimed to the judge_k $\text{PRO}_{i,*k}$ to have received payment in full.
b. Mary_i claimed to the judge_k $\text{PRO}_{i,*k}$ to have been given a bribe by the defendant.
c. Mary_i claimed to the judge_k $\text{PRO}_{?i,*k}$ to be allowed to change his ruling/her testimony.

This pattern does not seem to fall under my analysis. The event of claiming cannot plausibly be identified with the event expressed by the complement clause verb, nor can any natural part of it. In no sense is the claiming the same event as (say) the paying of the fine, nor is one the direct result of the other, or caused by the other, or imply that the other took place. The two eventualities seem to be independent in this case. Nor is there any obvious thematic role matching between the arguments of the matrix verb and the arguments of the embedded verb, as shown by (151). Finally, there is no motivation for saying there is a hidden modal predicate in the embedded clause that expresses an eventuality that can be identified with (part of) the matrix clause event and whose argument can be shared with one of the matrix verb's.

I do not attempt a fully worked out analysis of this special case but present an idea about where the solution lies. I suggest that in this case it is not ordinary thematic roles that link the matrix clause to the embedded clause, but rather it is shared aboutness relations that connect them. I claim that there is a default assumption that the content expressed in a claiming event is about the claimer. This is a subtle difference between *claim* and a more neutral verb of communication like *say* which underlies the fact that *claim* can be a subject control verb but *say* cannot be (*Mary claimed/*said to have paid the fine*).[66] A hint that this is true comes from judgments about reference *de se* and *de re*. Consider the following classic case of non *de se* reference. Mary hears a recording of someone singing. Mary thinks/says/claims that that person sings great. Unbeknownst to her, the person who is singing is Mary herself. The speaker however does know this. The speaker reports this with one of the sentences in (152).

(152) a. Mary thinks that she is a great singer. (OK)
b. ?Mary said that she is a great singer. (maybe)
c. #Mary claimed that she is a great singer.(inappropriate)

The example with *think* in (152a) is possible in this context, a standard example of *de re* reference. But one colleague and I find that in (152c) the matrix verb *claim* does not allow the pronoun *she* to refer *de re* to the matrix subject as felicitously as an ordinary attitude verb like *think* does. (I find *say* to be intermediate in this respect.) This difference makes sense if claims are by default claims about oneself, which one knows to be about oneself. Then (152c) is in essence like what is made explicit in (152), which only allows a *de se* interpretation.

(153) Mary claimed *about herself* that *she* is a great singer.

The sense that claims made by X are typically about X can of course be overridden—for example by including an explicit *about* phrase, as in (154). Here *she* refers to Mary *de re* in some sense, but that is because it is referentially dependent on the phrase *the person in the recording*, which itself refers to Mary, unbeknownst to her.

(154) Mary claimed about the person in the recording that she is a great singer.

But this needn't take away from the fact that claims are about oneself unless something indicates otherwise.

Now I propose that it is this special *de se* property of *claim* that establishes the OC link between the main clause and the embedded clause. Another property of *claim* that makes it different from many other verbs is that its infinitival complement must refer to a state that holds at the time that the claim is made (Wurmbrand 2014). We see this in (155).

(155) a. *Mary claimed to pay the fine yesterday/tomorrow.
b. Mary claimed to have paid the fine yesterday.
c. Mary claimed to be going to the fine tomorrow.
d. Mary claimed to pay fines immediately whenever she is told to.

[66] More precisely, *say* does not allow subject control. It does allow does allow implicit goal control, in examples like *John said [to us] PRO to watch our heads as we go down to the basement*.

Then I add the assumption in (156) about the default interpretation of stative sentences in particular.

(156) A stative sentence is normally taken to be about the subject of the sentence.

Consider then a sentence like *Mary claimed to the judge PRO to be innocent*. *Claim* implies that the content is the claim is about Mary. Using the infinitival clause as the complement of *claim* implies that the content of the claim is the proposition expressed by [*PRO to be innocent*]. Since the complement is stative—and must be, given the selectional properties of *claim*—this proposition is about the referent of PRO, by (156). Assuming that aboutness relations, like thematic relationships, are unique, it follows that Mary and PRO are coreferential. This licenses the OC of PRO by the subject *Mary*. This is how OC is induced by equating aboutness relations rather than thematic relations in this special case.

This proposal makes an encouraging prediction. On this view, subject control with *claim* trades on the fact that claims are normally about the claimer. But we have already seen that this can be overridden with an overt *about* phrase. The expectation, then, is that including an *about* phrase in the matrix clause will disrupt subject control. This means that examples like (157) should be degraded. One possible comparison sentence for this is (158a), where an *about* phrase used with *claim* does not make it harder for an overt pronoun in a finite clause to refer to the claimer (the complement clause is not stative in this case, so (156) does not apply). Another comparison is (158b), where an *about* phrase does not disrupt subject control with 'promise', where OC is induced by the possession of an obligation rather than by aboutness.

(157) a *?Mary$_i$ claimed about John$_k$ [PRO$_i$ to be innocent of his$_k$ murder].
b. ??Mary$_i$ claimed about John$_k$ [PRO$_i$ to have helped him$_k$ cheat on his LSAT].

(158) a Mary$_i$ claimed about John$_k$ that she$_i$ helped him$_k$ cheat on his LSAT.
b. Mary$_i$ promised about John$_k$ PRO$_i$ to help him$_k$ study for his LSAT.

Indeed, I and my friend find (157b) to be somewhat degraded compared to (158a), although the judgment is not entirely black and white. If this is right, it supports my proposed analysis. Assuming that the details of the analysis can be filled in, it is a way of bringing the special case of *claim* into the picture in a way that is analogous to the core account.[67]

Of course, there are many other control predicates to consider in English and other languages in order to have a full account of OC in all its guises. Other classes to consider include interrogative constructions (like *Mary told/asked John when to leave*), factive predicates (like *Mary likes/hates to cook rice*), and evaluative predicates (like *John was rude to leave early*), among others. Each class of predicates should be studied as to the details of its lexical semantics and how the events it entails might be identified with those of its complement. I leave analysis of these to future research.

8.6 Control of ghostly DP operators and PRO: interaction and comparison

[67] I also predict that (all things being equal) verbs like 'believe' which are control verbs of the propositional class in German and the Romance languages should have this same de se quality that *claim* does in English.

I want to round out the discussion by some more direct comparison of control of the ghostly operators and control of PRO, now that we have well-developed analyses of each on the table. The two feel a bit different. Thematic matching is much more obvious with the ghostly operator constructions (to the extent that null DPs are seen as being there at all) than in infinitival constructions. Control in ghostly operator constructions also feels more stable; it is not subject to the vagaries of control shift that we see with PRO in some classes of predicates. One factor is that C is identified with the main event of the matrix predicate, which is also the one that determines how other arguments of the event are projected. In contrast, the infinitival clause is often identified with a subeventuality of the main event of the matrix verb, namely its resulting state. It is the thematic roles that DPs have with respect to that subevent that are relevant to argument sharing with the infinitival CP, and those can match up in different ways with the overt arguments in the matrix clause. Another factor is the fact that infinitival clauses often have a covert modal that stands between the event description in the embedded clause and the one in the matrix clause. It is the argument of this modal that is shared with an argument of the matrix clause, rather than the obvious arguments of the embedded verb. The CP periphery of a finite clause does not have covert modal elements of this kind, so that is another reason why control of PRO seems more complex.

We can explore these points by seeing whether my accounts of the two kinds of control are compatible with each other, such that the two can cooccur in the same sentence. It seems to be relatively rare for a complement clause to have both ghostly operators and PRO. PRO is normally the subject of a nonfinite clause, whereas the ghostly operators are typically licensed in the CP periphery of a finite clause (e.g. Alok 2020 on Magahi). However, we have seen that LogOp is possible in a control-infinite clause in Ibibio and Yoruba. As a result, we can see both kinds of control together in (159a), with the schematic structure in (159b).

(159) a Okon a-ma-a-temme Emem edi-kpóno ímọ̀.
Okon 3.SG-PST-3.SG-instruct Emem NLZR-respect LOG
'Okon$_i$ instructed Emem$_k$ to respect him$_i$.'

b. 'Okon$_i$ instructed Emem$_k$ [LogOp$_i$ C [PRO$_k$ to respect LOG$_i$.]]

Here there is subject control of LogOp, the agent argument of C, by *Okon* the agent of 'instruct'. In contrast, there is object control of PRO, the agent argument of 'greet', by *Emem*, the theme or goal argument of 'instruct' Each of these control relationships is what we would expect independently of the other, but can my account combine them successfully?

The answer is yes, with a bit of effort and one new assumption. I analyze the matrix verb like *order*, with a state of obligation belonging to the theme argument as its resulting state.[68]

(160) a. instruct-res: $\lambda x\ \lambda e$ obligation(e) & holder(e)=x
b. instruct-proc: $\lambda R\ \lambda x\ \lambda e$ instruct(e) & goal(e)=x & $\exists e'[(e \rightarrow e'$ & $R(e', x)]$

The embedded infinitival clause has, we may assume, a matching covert necessity modal. But unlike the infinitival clauses discussed in section 8.5, which were bare ModPs, we must assume

[68] The alternative would be to analyze 'instruct' here like *teach/enable* in English, with an ability modal in its complement clause. The account would be parallel, and I'm not sure about the lexical semantic nuances of this verb in Ibibio.

that ModP here is embedded under a C head that licenses a LogOp. Following the analysis in section 8.3, this C is a trivial predicate of events, and it takes LogOp as its agent argument. The natural assumption, then, is that the ModP complement of C gives the content of the event that C denotes.[69] So the embedded CP in (159b) corresponds to a formula like (161).

(161) λe C(e) & agent(e)=LogOp & content(e)=λw ∃e′ e′ in w & obligation(e′) & holder(e′)=PRO & content(e′)= λw′ ∃e′′ e′′ in w′ & greet(e′′) & agent(e′′)=PRO & theme(e′′)=pro[+log].

Now an important question is where exactly the CP attaches in (159b). I assume that, rather than being merged directly with the Res head, as I assumed throughout section 8.5, the CP "complement" is merged higher, with a projection of the Proc head, as in (162).

(162) Okon voice [Emem [[instruct-proc [instruct-res]] CP]]

This assumption has an eye on the result: we want the event that C is a predicate of to be the same as the event that Okon is an agent of, so that Okon will end up being equated with LogOp. In fact, Okon is the agent of the instructing event, but not an agent of the state that results from the instructing event. (It would also work to have CP attach to VoiceP.) (160a) and (160b) combined by function application to get (163a). Then the resulting Proc′ combines with the formula for CP in (161) by event identification to give (163b). Attaching the agent with Voice gives (163c).

(163) a. Proc′: λx λe instruct(e) & goal(e)=x & ∃e3[e→e3 & obligation(e3) & holder(e3)=x]
b. Proc′′: λx λe instruct(e) & goal(e)=x & ∃e3[e→e3 & obligation(e3) & holder(e3)=x] & C(e) & agent(e)=LogOp & content(e)=λw ∃e′ e′ in w & obligation(e′) & holder(e′)=PRO & content(e′)= λw′ ∃e′′ e′′ in w′ & greet(e′′) & agent(e′′)=PRO & theme(e′′)=pro[+log].
c. VoiceP: λe **<u>agent(e)=Okon</u>** & instruct(e) & goal(e)=Emem & ∃e3 [e→e3 & obligation(e3) & holder(e3)=Emem] & C(e) & **<u>agent(e)=LogOp</u>** & content(e)=λw ∃e′ e′ in w & obligation(e′) & holder(e′)=PRO & content(e′)= λw′ ∃e′′ e′′ in w′ & greet(e′′) & agent(e′′)=PRO & theme(e′′)=pro[+log].

Here thematic uniqueness applies to the agent role of the instructing event to imply that LogOp is equal to *Okon*, licensing OC of the former by the latter, as desired. This is the same kind of analysis that I gave in section 5.3, except that the matrix verb has been decomposed more, into Proc and Res heads, and I have been more explicit about the meaning of the TP/ModP complement of the logophoric C.

However, this formula does not give us controller of PRO yet. There are two states of obligation described here, one the resulting state caused by the instructing event and the other the content of the event described by the CP complement. If we could identify these two events, we

[69] A tempting alternative might be to say that it is the event described by the infinitival clause is identified with the one that C is a predicate of. But that does not work: the event that C is predicated of will be identified with the event described by the main clause, and that is not the same as the event described by the complement clause.

would be done. However, we need a new axiom in order to make the connection. I suggest (164) to close the gap.[70]

(164) If event e has content P and there is an event e′ such that e′ → e, then the content of e′ is the proposition characterized by e.

The intuition behind this is as follows. We have been focused on attitude verbs, which are verbs whose resulting states have propositional content. It seems reasonable to assume that if an event e results in an eventuality that has content, then e itself has content—indeed it has similar content to that of its resulting state. For example, the content of my order to someone is related to the content of the obligation that they have as a result of my order. (164) expresses this intuition.

In particular, (164) allows us to infer from the causative relationship between the ProcP event and the ResP event in (163) to a content relationship between them. This results in two descriptions of the content of the instructing event: one constructed from ResP, and the other expressed by the TP complement of C. Since content-bearing events have unique contents, we can equate the two. This produces control of PRO in one content description by the corresponding variable in the other content description, analogous to what we saw for many examples in Section 8.5. (165) adds to (163) the inference from (164) (italicized).

(165) VoiceP: λe **<u>agent(e)=Okon</u>** & instruct(e) & goal(e)=Emem & ∃e3 [e→e3 & obligation(e3) & holder(e3)=Emem]
& content(e)= λw ∃e4 [obligation (e4) & holder(e4)=Emem'
& C(e) & **<u>agent(e)=LogOp</u>** & content(e)=λw ∃e′
e′ in w & obligation(e′) & holder(e′)=PRO & content(e′)= λw′ ∃e′′ e′′ in w′ & greet(e′′) & agent(e′′)=PRO & theme(e′′)=pro[+log].

Then (166) is derived from (165) by collapsing the two descriptions of the content of the instructing event into one.

(166) VoiceP: λe **<u>agent(e)=Okon</u>** & instruct(e) & goal(e)=Emem & ∃e3[e→e3 & obligation(e3) & holder(e3)=Emem]
& C(e) & **<u>agent(e)=LogOp</u>** & content(e)=λw ∃e′
e′ in w & *obligation (e′) & <u>holder(e′)=Emem</u> & obligation(e′) & <u>holder(e′)=PRO</u> & content(e′)= λw′ ∃e′′ e′′ in w′ & greet(e′′) & agent(e′′)=PRO & theme(e′′)=pro[+log].*

Now (166) says that there is a state of obligation that has Emem as its holder and that has PRO as its holder. Therefore PRO=Emem, by thematic uniqueness. The formula now sanctions both object control of PRO and subject control of LogOp at the same time. The two analyses are indeed compatible, with a bit of a cost—in particular, the cost of the assumption in (164).[71]

---

[70] I'm not sure that *any* event that causes an event with content itself has content. But the "direct causation" relation of → should license this. (Ramchand's (2008) "→" probably stands for a specific kind of causation, where the causing event may include the caused event as a part in some sense. (Compare Pietroski xxx.)

[71] An alternative to consider might involve fancy syntactic derivations rather than the semantic assumption about the content of a complex event in (164). One could imagine merging the nonfinite ModP with the Res head, then

The fact that the agent of the matrix clause controls LogOp and its kin in the complement clause follows in part from the assumption that CP merges with the Proc head, whose initiator argument is the agent of the event denoted by Proc. We should also consider the possibility of the finite CP merging directly with the Res head, as infinitival CPs do throughout section 8.5. Could merging a finite CP in this lower lead to a structure where the object of the matrix verb controls the LogOp (or Sp, SoK, etc.) in the finite CP? The answer is no, as long as we assume that the holder of an obligation tis a kind of undergoer argument, not a kind of initiator argument. If that is so, then the holder (undergoer) of the resulting state is not equated with the agent (initiator) of the event denoted by C by thematic uniqueness, and OC is not licensed. The idea that the holder of a obligation eventuality is a kind of theme/undergoer is justified by the kind of verbal paraphrases that such natural have: these involve predicate adjectives (*is obligated to)* or passive verbs (*is required to*), both of which have theme subjects, not agent subjects.[72] The same is true for most other modal eventualities, I assume, including possibilities (*is possible*), abilities (*is able to*), and permissions (*is allowed to, is permitted to*). The one exception is states of intention; I assume that the holders of this sort of eventuality are a kind of agent/initiator, in light of the close relationship between intentions and acts of the will; see belong (note that *intend* is not passive or adjectival).[73]

An important property that ghostly DPs and PRO have in common not considered so far in this chapter is that both can undergo OC in some adjunct clauses as well as in complement clauses. Let us consider how the current theory of OC can be extended to account for this. It turns out that the topic of control into adjunct clauses is more complex than is often realized; see Landau (2013: Chapter 6) and especially Landau (2021) for discussion. I only have space to consider a small sample of canonical cases or ones that seem particularly instructive.

Consider first the ghostly DP constructions. For these, OC is possible with finite adjunct clauses which can be translated with the complementizer *so that*, whereas ghostly operators are uncontrollable in other prominent adjunct types, including temporal adjuncts, causal adjuncts, and conditional clauses. For example, (167) shows that SoK and LogOp inside a 'so that' clause can be controlled by the agentive subject of the main clause in Ibibio, resulting in the possibility of C-agreement with the matrix subject and a logophoric pronoun referring to it. Similarly, (168) shows that Sp inside this kind of adjunct clause can be controlled by the matrix subject in Magahi, resulting in first person pronouns referring to the referent of that subject.

(167) a. Okon á-ke á-dát íbọ́k ódó (a-bo / a-te) m̀bàak (imo) i-dí-dọ́ñọ́.
Okon 3SG-PST-3SG-take medicine the 3SG-C/3SG-C so.that LOG 3.LOG-prohibit-be.sick

---

sideways merging it with the logophoric C, then remerging the resulting CP with the projection of the Proc head. Then the ModP would be interpreted as a sister of Res (so it is equated with the resulting state) whereas the larger CP is interpreted as a sister of Proc (so it is equated with the instructing event). I assume that the analysis in the text is simpler, where TP/CP has only one merge position (the higher one) but one gets the effect of equating smaller constituents (the ResP inside ProcP and the TP inside CP) out of the assumption that if two events are the same then their contents are also the same. But if (164) fails, this is an alternative to consider.

[72] If anything, the holder of a resultative state might control the Ad (AddrOp, OoK) operator of a low CP. But these do undergo object control—as expected regardless of whether CP merges with ResP or ProcP.

Eventualities of intending or willing something might be different, having agent arguments rather than theme (undergoer) arguments. See xx below.

[73] This means that there could be a gap in this explanation for verbs whose resulting state is an intention, such as 'persuade' and 'convince'. These could conceivably allow object control or Sp or Ad. I will not try to close this gap here. Perhaps it is necessary to distinguish different types of intensions, some with theme-like holders and others with agents.

'Okon$_i$ took the medicine so that he$_i$ would not get sick.'

b. Okon a-maa-dibe mbaak Emem a-di-kit imo. (Ibibio)
Okon 3.SG-PST-hide so.that Emem 3.SG-FUT.NEG-see LOG
'Okon$_i$ hid so that Emem would not find him$_i$.'

(168) a. Bantee lukaa gel-ai taaki hamraa koi na dekh sake.
Bantee hide go.PFV-3.NH.S so.that me.ACC someone not see can
'Bantee$_i$ hid so that no one will see him/me$_i$.'

b. Bantee-aa ghare rukl-ai taaki ham bimmar na ho jaa-i.
Bantee-FM home stay3.NH.S so.that I sick not become go-1.S
'Bantee$_i$ stayed home so that he/I$_{i\ (sp*)}$ would not become sick.'

I have assumed that this sort of adjunct clause adjoins to VoiceP, higher than complements inside VP (which I now decompose into ResP and ProcP) but lower than adjunct clauses adjoined to TP. In the absence of fine-grained syntactic evidence for these languages, this was based primarily on the semantic intuition that 'so that' clauses pertain to the agent argument of the main clause.[74] Now I show a way of fleshing this out that results in OC according to the present theory of control. The leading idea of this theory is that OC is induced by thematic uniqueness implying that the arguments of two closely related eventualities are the same. In the case of 'so that' clauses, I propose that the eventualities in questions are eventualities of intending that pertain to the agent-subject of the sentence as a whole. I have assumed the standard Kratzerian view that the agent is the argument of a Voice head that takes VP (ProcP) as its complement. I mentioned that Ramchand (2008) proposes a variant of this in which the agent is the argument of an Init head, where Init is a predicate of an event that is distinct from the one that is characterized by VP/ProcP but which causes ("leads to") that event. For a true agent (as opposed to a mere causer), this initiating event is an act of the will of a conscious intentional being. This act of the will includes the agent having an intention, of intending that the willed act take place. Moreover, this intention can be part of a larger plan; one can intend one's action to somehow bring it about that some other event or state takes place. This is the kind of situation that 'so that' talks about: [Voice[VP]] [so.that CP] means that the agent x intends (and also wills) for VP to happen, and that x intends that CP become true by virtue of VP happening. A rough-and-ready way of composing this that is compatible with my framework could go as follows, concentrating on (167a) as an example. We can say that the heads glossed 'so that' (*mbaak* in Ibibio, *taaki* in Magahi, etc.) select a CP complement, which can contain ghostly DP operators, and they say that someone has an intention that the proposition denoted by CP be true in the relevant world, i.e. that the eventuality described in CP be realized.

(169) So.that: $\lambda x\ \lambda e$ intention(e) & holder(e)=x (& content(e)=P)

In other words, a decent gloss for 'Okon took the medicine so that he would not get sick' is 'Okon took the medicine intending that he not get sick.' I continue to assume that a logophoric C

[74] But see below on purposive clauses in English, which attach a little lower, to the ProcP complement of Voice/Init, and are not necessarily related to an agent argument of the main clause. It is possible that that analysis should be applied to 'so that' in Ibibio and Magahi too; I have not collected the data to distinguish these possibilities.

is a trivial predicate of events, whose agent is LogOp and whose content is given by CP. This combines with 'so that' to give (170).[75]

(170) So.thatP: λx λe intention(e) & holder(e)=x & C(e) & agent(e)=LogOp & content(e)=pronoun will not get sick

Meanwhile, the matrix clause VoiceP/InitP is, according to Ramchand (2008), a particular kind of initiating event that causes the process of taking medicine to happen. Without going into details about how the ResP and ProcP are composed, Voice′ comes out to be (171).

(171) Voice′: λx λe init(e) & agent(e)=x & ∃e′ [e→e′ & taking-medicine(e′)]

Now (170) and (171) can combine by event identification to give (172a). This combined with the DP in Spec VoiceP gives (172b).

(172) a. Voice′′: λx λe init(e) & <u>agent(e)=x</u> & intention(e) & <u>holder(e)=x</u> & C(e) & <u>agent(e)=LogOp</u> & ∃e′ [e→e′ & taking-medicine(e′)] & content(e)=pronoun will not get sick
b. VoiceP: λx λe init(e) & <u>agent(e)=Okon</u> & intention(e) & <u>holder(e)=x</u> & C(e) & <u>agent(e)=LogOp</u> & ∃e′ [e→e′ & taking-medicine(e′)] & content(e)=pronoun will not get sick

The question, then, is whether the same eventuality can be both an initiation event and an eventuality of intending, such that there are eventualities which the predicate in (172) could be true of. I claim that the answer is yes, or close enough. A willing by an agent to do something is or includes an intending by the agent to do that thing.[76] So willings are a special kind of intending, and something can be both.[77] I also assume that agent (of a willing) and holder (of an intention) are both types of initiator, the coarser grained proto-agent role. (This is where it becomes crucial that holders of intentions have a different status than holders of obligations and

[75] I am a bit unclear whether to combine CP with 'so that' by event identification or by function application. (170) does it by event identification, identifying the intention associated with 'so that' with the eventuality that C is a (trivial) predicate of. The TP complement of C then fills out the content of this intention.

[76] An agent can of course do an action unintentionally, by accident. But this does disrupt the possibility of having a 'so that' clause—or an infinitival purposive clause—used in the sentence. Hence (ia,b) are anomalous. To the extent that they are possible, they have a sense of some providential agent different from John working behind the scenes, willing that John take the medicine and that he not get sick as a result.

(i) a. #John accidentally took the medicine so that he would not get sick.
b. #John accidentally took the medicine in order to not get sick.

[77] This seems like the simplest assumption here, and I don't know that it will not work, so I stick with that. It is possible that a fuller treatment would say that the willing to take medicine and the intending not to get sick are not the same eventuality but are mereological parts of a larger eventuality: an intention to not get sick by taking medicine. In that case, I would have an axiom that the holder of a complex intention that a causal sequence of events take place is the same as the holder of simpler intentions that the individual events (e.g. the taking medicine and the not getting sick take place). This should also license the identification of the one who wills the medicine-taking and the one who wants that x not get sick. This would be similar to the control of one theme by another in a consequential SVC like 'Ozo cook rice eat', where I claimed that the cooking and the eating were different events, but they were part of a larger event and the theme of a smaller event is the same as the theme of larger events that it is a part of. The analogous claim would be that an acting-intentionally eventuality is different from an intending-a-consequence eventuality, but they are part of a larger intention, and the holder of a smaller intention is the same as the holder of a larger intention that it is a part of.

other modal eventualities, as mentioned above.) Then thematic uniqueness applies to (172b) to imply that LogOp=Okon, licensing OC—in this case a kind of subject control, as desired.[78]

Now let us consider control into infinitival adjunct clauses with a PRO subject in English. This turns out to be a complex topic; see Landau (2021) for extensive discussion of some of the intricacies. To keep the topic manageable and to be maximally comparable with the ghostly DP construction, I concentrate on cases in which the adjunct clause can be paraphrased using a finite 'so that' clause with a pronoun subject and perhaps a modal in T. This includes at least what Landau calls subject purposive clauses, object purposive clauses, and rationale clauses. Many such examples have subject control, as in (173a) or (173b); (173a) is the type of example most similar (167) and (168) in Ibibio and Magahi. (These are rationale clauses.)

(173) a. John$_i$ took the medicine [(in order) PRO$_i$ to not get sick].
=John took the medicine so that he would not get sick.
b. Mary$_i$ drove to town [PRO$_i$ to buy some coffee and sugar]
=Mary drove to town so that she could buy some coffee and sugar.
c. Chris$_i$ bought a book [PRO$_i$ to read – to herself at bedtime]
=Chris bought a book so that she could read it to herself at bedtime.

Informal or coarse-grained treatments have often assumed that such adjunct clauses only allow subject control; indeed, it is a classic test for subjecthood to see if a given nominal can control the null subject of an adjunct clause. If this were the whole story, one might contemplate a purely structural approach to this kind of OC. However, it is not the whole story. Landau points out that there are similar adjunct clauses in which PRO is controlled by the object of the main clause rather than the subject, as in (174). (Landau classifies (174a,b) as subject purposive clauses and (174c) as an object purposive clause.)

(174) a. John$_k$ paid Mary$_i$ $10 [PRO$_i$ to stand on her head]. (Landau 2013: 31n.20)
=John paid Mary $10 so that she would stand on her head.
b. John$_k$ paid Mary$_i$ $10 [PRO$_i$ to allow him to see her stamp collection].
=John paid Mary $10 so that she would allow him see her stamp collection
c. Mary$_k$ bought John$_i$ a book [PRO$_i$ to read to himself$_i$ at bedtime]
=Mary bought John a book so that he could read it to himself at bedtime.

Indeed, we can observe a kind of control shift in this domain. (173c) versus (174c) shows that the same adjunct can have subject control or object control depending on what thematic roles are assigned in the matrix clause. Conversely, (174a,b) versus (175) shows that the same matrix clause can induce subject control or object control depending on what is in the adjunct clause—e.g., whether the PRO subject of the adjunct clause is an agent, as in (174a,b), or a benefactive, as in (175).

[78] Here I assumed that the order of heads is [so.that [Op C [TP]]]. However, in some cases, it might be [Op C [so.that [TP]]]. Note in particular that the agreeing C in (167a) is outside *mbaak* 'so that', rather than under it. This should not matter much if 'so that' (or its projection) combines with C (or its projection) by event identification. That is a kind of conjunction, and conjunction is commutative.

The Magahi version of 'so that' has an Ad argument with an undergoer thematic role as well a Sp argument with an initiator thematic role, but the Init head has no corresponding argument to control the Ad argument. The current analysis thus underwrites the idea about why 'so that' adjuncts allow i-shift but not u-shift in Magahi. See section 4.xx for discussion.

(175) John$_k$ paid Mary$_i$ \$10 [PRO$_k$ to be allowed to see her$_i$ stamp collection].

Control in this domain thus concerns how the thematic roles of the arguments of the main verb relate to the roles of the arguments of the verb in the adjunct clause. This is strikingly like control shift with 'promise' and 'ask'/'persuade', and one would like a unified account.

The way I propose to do this also borrows from the analysis of control into complement clauses given at the beginning of this section, where I discussed how "complement" CPs could be merged a bit higher, in ProcP rather than ResP. I assume that this is the level where subject purposive clauses are merged too, since Landau (2021) shows that they are attached lower than VoiceP/InitP, in that they must be included in what is elided in VP ellipsis or what is fronted in VP fronting. (Landau claims that these processes really target the complement of the Voice head, which for me is ProcP.) This structural assumption can then be combined with the kind of analysis that I gave for CPs in ResP in section 8.5. Here are some sample details. As with 'so that' clauses, I assume that the C-material in the adjunct clause expresses an intention that a certain eventuality be actualized. However, in this case it works better to say that the holder of this intention is not specified linguistically.[79] Moreover, the intention in question is not simply that a given eventuality be actualized, but more specifically that it be caused by another event. The meaning of the relevant C is thus (176a). This takes two predicates of events as arguments: the TP complement of C and the matrix VP that CP adjoins too. It passes on the description of the event from the matrix VP and it adds a complex description of an intention, saying on the one hand that the matrix event is done intentionally, and on the other hand that that event is intended to cause some other event—one of the kind described by the complement of the C. Note also that there could well be a null modal in the infinitival complement of this C. For instance, an example like *John$_k$ paid Mary$_i$ \$10 [PRO$_i$ to show him her$_i$ stamp collection]* (like (174b), but a little simpler), this null modal can be a deontic necessity modal. Given these assumptions the adjunct clause as a whole corresponds to the formula in (176b).

(176) a. C: λP λQ λx λe . Q(e, x) & ∃e′ [intention(e′) & content(e′)=[λw ∃e′′ e′′ is in w & Q(e, x)] & content(e′)=[λw′ ∃e3 e3 is in w′ & e→e3 & P(e3)]]

b. CP: λQ λx λe . Q(e, x) & ∃e′ [intention(e′) & content(e′)=[λw ∃e′′ e′′ is in w & Q(e, x)] & content(e′)= [λw′ ∃e3 e3 is in w′ & e→e3 & obligation(e3) & holder(e3=PRO & content(e3)= λw′′ ∃e4 [e4 is in w′′ & show(e4) & agent(e4)=PRO & goal(e4)=him & theme(e4)=stamp.collection]]

In the main clause, the verb *pay* decomposes into three heads: Init/Voice, Proc, and Res. I assume that a natural resulting state of a paying event is that the payee is committed to do something for the payer. This can be seen in examples without any control infinitive such as (177).

(177) John paid Mary \$10 for some advice/for help on the project.
=(If she accepts the money,) Mary is committed to giving John advice/help on the project.

So *pay-res* has a meaning like (178).

[79] This is arguably also supported by the famous example *Grass is green to promote photosynthesis*, where there is no explicit person to whom the intention of promoting photosynthesis is attributed.

(178) *Pay-res*: λx λy λe obligation(e) & holder(e)=x & content(e)= λw ∃e′[e′ in w & agent(e′)=x & ben(e′)=y].

Pay-res combines (not with the infinitival clause but) with the *pay-proc* head and its objects in the usual ways to give (179).

(179) ProcP: λy λe pay-proc(e) & theme(e)=$10 & goal(e)=Mary & ∃e2 [e→e2 & obligation(e2) & holder(e2)=Mary & content(e2)= λw ∃e3 [e3 in w & agent(e3)=Mary & ben(e3)=y]]]

Now ProcP combines with the CP meaning in (176b)—in this case, by function application. This gives (180).

(180) ProcP′: λx λe . pay-proc(e) & theme(e)=$10 & goal(e)=Mary & ∃e2 [e→e2 & obligation(e2) & holder(e2)=Mary & content(e2)= λw ∃e3 [e3 in w & agent(e3)=Mary & ben(e3)=x]] & <u>∃e′ [intention(e′) & content(e′)=[λw ∃e′′ e′′ is in w & pay-proc(e′′) & theme(e′′)=$10 & goal(e′′)=Mary & ∃e4 [e′′→e4 & obligation(e4) & holder(e4)=Mary & content(e4)= λw ∃e5 [e5 in w & agent(e5)=Mary & ben(e5)=x]]]]</u> &
content(e′)= λw′′ ∃e7 [e7 is in w′ & e→e7 & obligation(e7) & holder(e7)=PRO & content(e7)= λw3 ∃e6 e6 is in w3 & show(e6) & agent(e6)=PRO & goal(e6)=him & theme(e6)=stamp.collection]]

This formula has two descriptions of the content of the intention associated with the paying event: one based on the description of that event itself, and one based on the complement of the purposive C. These descriptions are different, but compatible with each other. We know that any content-bearing event has unique content. Therefore, these two descriptions of the content of the intention associated with the paying can be unified and collapsed, as I have done in many cases above. The idea here is simply that the state of Mary being obligated that the payer intends to bring about by the paying is the same as the state of obligation to show off the stamp collection that is described in the adjunct clause. This collapsing results in (181), with the underlined clause in (180) combined with the italicized clause in (180) to give the bolded material in (181).

(181) ProcP′: λx λe . pay-proc(e) & theme(e)=$10 & goal(e)=Mary & ∃e2 [e→e2 & obligation(e2) & holder(e2)=Mary & content(e2)= λw ∃e3 [e3 in w & agent(e3)=Mary & ben(e3)=x]] &
∃e′ [intention(e′) & content(e′)=[λw ∃e′′ e′′ is in w & pay-proc(e′′) & theme(e′′)=$10 & goal(e′′)=Mary & ∃e4 [e′′→e4 & obligation(e4) & <u>holder(e4)=Mary</u> & <u>holder(e4)=PRO</u> & content(e4)= λw3 ∃e5 [e5 in w3 & <u>agent(e5)=Mary</u> & ben(e4)=x & show(e5) & <u>agent(e5)=PRO</u> & goal(e5)=him & theme(e5)=stamp.collection]] [80]

Here the matrix VP implies that the one who is obligated to do something as a result of the paying is Mary and the CP implies that the one who is obligated to do something as a result of the paying is PRO. Therefore PRO=Mary, and object control is licensed. (This equation is also implied by the fact that Mary is the agent of the obliged action according VP and PRO is the agent of the obliged according to the purposive clause.) The mechanisms at work are ultimately

[80] There may be a slight problem here in combining the formulas in whether it is the actual paying event that is intended to cause the showing or the intended paying event that is intendent to cause a showing… See also (185).

the same as those that induce object control with complement clauses, centered on the uniqueness of the contents of eventualities and thematic uniqueness.[81]

This approach is set up to also get control shift when the content of the adjunct clause is different. Consider (175), repeated as (182), which has subject control of PRO rather than the object control seen in the previous example.

(182) John$_k$ paid Mary$_i$ \$10 [PRO$_k$ to be allowed to see her$_i$ stamp collection].

The core semantic connection between the adjunct clause and the main clause in (182) is not different from that in (176). In (182), there is an intention (John's) that the paying event cause an eventuality in which someone (he himself) is allowed to see the stamps, parallel to the intention in (176) that the paying cause someone (Mary) to have to show him the stamps. However, the precise linguistic packaging of the contents of the adjunct clause is different in (182). The infinitival clause is passive here, such that PRO bears a benefactive role rather than an agent role. This in turn implies that the holder of the intended obligation is not expressed in the adjunct clause in (182). In this case, then, the formula for the purposive clause is (184).

(183) CP: λQ λx λe . Q(e, x) & ∃e′ [intention(e′) & content(e′)=[λw ∃e′′ e′′ is in w & Q(e, x)] & content(e′)= [λw′ ∃e3 e3 is in w′ & e→e3 & obligation(e3) & content(e3)= λw′′ ∃e4 [e4 is in w′′ & allow(e4) & ben(e4)=PRO & content(e4)=PRO see her stamp collection]]

The semantic value of the main clause ProcP is the same as before, and it composes with the adjunct clause CP by function application.[82] Once again, there are two descriptions of the content of the intention that is associated with the paying, one from the matrix VP and one from the adjunct CP.

(184) ProcP′: λx λe . pay-proc(e) & theme(e)=\$10 & goal(e)=Mary & ∃e2 [e→e2 & obligation(e2) & holder(e2)=Mary & content(e2)= λw ∃e3 [e3 in w & agent(e3)=Mary & ben(e3)=x]]]
& ∃e′ [intention(e′) & content(e′)=[λw′ ∃e′′ e′′ is in w′ & pay-proc(e′′) & theme(e′′)=\$10 & goal(e′′)=Mary & ∃e3 [e′′→e3 & obligation(e3) & holder(e3)=Mary & content(e3)= λw2 ∃e4 [e4 in w2 & agent(e4)=Mary & ben(e4)=x]]]] &
content(e′)= [λw3 ∃e5 e5 is in w3 & e→e5 & obligation(e5) & content(e5)= λw4 ∃e6 [e6 is in

[81] More generally, subject purposive clauses are only possible when the matrix predicate denotes an event of creating or acquiring an entity, which thereby becomes available to fulfill the purpose denoted by the adjunct clause (see Landau 2021: 36 among others). (i) is another example.

(i) Mary wrote this book$_i$ [PRO$_i$ to be read by all].

Here the resulting state of the writing is obviously not that the book is obligated to do something. However, a book is now available to play a role in an intended event of reading. Here the covert modal in the adjunct clause is probably something more like CAN (a possibility modal), which matches an underspecified possibility that results from the book now existing, the result of the writing event. This connection through states of possibilities might be more typical for subject purposive adjuncts than the connection through a state of obligation discussed in the text. See also the brief discussion of object purposive clauses in (186) below.

[82] In fact, VP-constituency tests like those used in Landau (2021) suggest that the adjunct clause in (182) can be attached higher, to VoiceP rather than to VP/ProcP. However, these tests do not show that it must be attached higher. I assume that it can be attached to VP here as well, given the semantic parallels to (174b), and I emphasize that option to focus on the thematic effects on this sort of control. (Examples like (186a) also show clearly that adjuncts attached lower the VoiceP can still be controlled by the agent/subject; see Landau (2021).)

w´´ & allow(e6) & ben(e6)=PRO & content(e6)=PRO see her stamp collection]]

This time there is no statement about the holder of the obligation or the agent of the obliged action that results from the paying that comes from the adjunct clause to be harmonized with the one expressed by the main clause, because the adjunct clause is passive. As a result, there is nothing to induce object control in this case. However, there are two statements about the benefactee of the obligated event to harmonize: the main clause implies that this is the variable x, ultimately John the agent of the paying, whereas the embedded clause implies that it is PRO, the benefactee of the allowing event. This is shown more clearly in the collapsed formula in (185).

(185) ProcP´: λx λe . pay-proc(e) & theme(e)=$10 & goal(e)=Mary & ∃e2 [e→e2 & obligation(e2) & holder(e2)=Mary & content(e2)= λw ∃e3 [e3 in w & agent(e3)=Mary & ben(e3)=x]]] & ∃e´ [intention(e´) & **content(e´)=[λw´ ∃e´´ e´´ is in w´ & pay-proc(e´´) & theme(e´´)=$10 & goal(e´´)=Mary & ∃e3 [e´´→e3 & obligation(e3) & holder(e3)=Mary & content(e3)= λw2 ∃e4 [e4 in w2 & agent(e4)=Mary & <u>ben(e4)=x</u> & allow(e4) & <u>ben(e4)=PRO</u> & content(e4)=PRO see her stamp collection]]]]**

Therefore, the subject John controls PRO in the adjunct clause in this case, an instance of subject control. Thus we get control shift with this kind of adjunct clause using techniques and reasoning similar to what we used for complement clauses associated with verbs like 'ask' and 'persuade'.

We can also observe a kind of control shift with object purposive clauses in the pair in (186). Here there is no difference in the adjunct clause, but there is a difference in the main clause—whether a goal/benefactive phrase is included or not—and this influences whether there is subject control or object control.

(186) a. John$_k$ bought a book [PRO$_k$ to read to himself at bedtime].
b. John$_k$ bought Mary$_i$ a book [PRO$_k$ to read to herself at bedtime].

I do not go through these examples in as much detail. The idea is simply that the resulting states implied by the main clauses are different in the two examples. Since the resulting states are what are harmonized with the content from the adjunct clause, this makes a difference for OC. The resulting state of John buying Mary a book is that Mary owns a book, whereas the resulting state of John buying a book (with no indirect object) is that John owns a book. A state of X owning a book is the same as (or closely related to) a state of X being able to use the book for its intended purpose. Meanwhile, I assume that the covert modal in the adjunct clause is CAN in these cases, rather than MUST, matching the modality of the resulting state of the matrix verb 'buy'. So one description of the intention associated with the buying that is constructed by the C is that the buying should cause a modal state of PRO being able to read the book. The other description of the intention associated with the buying (coming from the matrix VP) is that Mary (in (186b)) or John (in (186a)) can use the book. Equating these two partial descriptions of the contents implies that the indirect object *Mary* controls PRO in (186a) and the subject John does in (186a). This result follows without there being any appreciable difference in the syntactic structure of

between the two. In particular, the adjunct clause is relatively low, inside the complement of Voice, in both cases (Landau (2021).) This is another instance of a kind of control shift.[83]

These are the fancier cases of OC into adjunct clauses that bear a 'so that' relationship to the main clause, where what thematic roles are expressed in the matrix clause and the embedded clause has an effect. What then about the canonical cases in which one simply has subject control, as in (187)?

(187) a. John$_k$ took medicine [(in order) PRO$_k$ to not get sick].
b. Mary$_k$ went to town [(in order) PRO$_k$ to buy coffee and sugar].

The simplest hypothesis is that these examples are not materially different from (182); here too the connection is forged by the benefactive role of the resulting state of the main clause and of the intended event described in the adjunct clause. This benefactive meaning may not be wired into the lexical meaning of the main verb, the way it is for 'ask' and 'advise' and perhaps 'pay'. But it is a normal human assumption that agents intend to benefit from their own actions. Therefore, it is easy to envision adding ben(e)=x as a predicate of the resulting state of the taking event or the going event and having ben(e)=PRO as well as agent(e)=PRO in the formula for the adjunct clause. In this case, the resulting state of (say) the medicine taking is simpler, without a further modal component. Therefore, I assume that the adjunct clause has no additional covert modal head either (like the complement of 'force' or 'claim'). The formula for the adjunct clause is (187a) is then (188a), for the matrix VP it is (188b). The two combine to give (188c), which collapses to (188d).

(188) a. CP: λQ λx λe . Q(e, x) & ∃e′ [intention(e′) & content(e′)=[λw ∃e′′ e′′ is in w & Q(e, x)] & content(e′)= [λw′ ∃e3 e3 is in w′ & e→e3 & not.get.sick(e3) & ben(e3)=PRO]]
b. ProcP: λy λe stay.home-proc(e) & ∃e2 [e→e2 & ben(e2)=x].
c. ProcP′: λx λe . stay.home-proc(e) & ∃e2 [e→e2 & ben(e2)=x] & ∃e′ [intention(e′) & content(e′)=[λw ∃e′′ e′′ is in w & stay.home-proc(e′′) & ∃e3 [e′′→e3 & ben(e3)=x]] & content(e′)= [λw′ ∃e3 e3 is in w′ & e→e3 & not.get.sick(e3) & ben(e3)=PRO]]
d. ProcP′: λx λe . stay.home-proc(e) & ∃e2 [e→e2 & ben(e2)=x] & ∃e′ [intention(e′) & **content(e′)=[λw ∃e′′ e′′ is in w & stay.home-proc(e′′) & ∃e3 [e′′→e3 & <u>ben(e3)=x</u> & not.get.sick(e3) & <u>ben(e3)=PRO</u>]]]**

Here there are two descriptions of the content of the intention that is associated with the taking event. One is a relatively spare one that comes from the main clause, saying that the result of taking medicine will benefit the agent (this content is derived from the meaning of ResP, as above). The other is a richer one, saying that PRO will not get sick, to the benefit of PRO. I assume that the result of a taking event is underspecified, such that it is compatible with many other event descriptions. In particular, an event can be both a not-getting-sick event and an event that results from a taking of medicine. Therefore, the two content descriptions can be combined.

[83] Indeed, one might say that there is a double instance of OC in these examples, with the subject *John* controlling the subject PRO and the object *a book* controlling a null operator in (186a) (*John$_i$ bought a book$_k$ [Op$_k$ [PRO$_i$ to read t$_k$]]*), this kind of null operator sometimes being identified with PRO. The idea would be that "X owns Y" is the same state (or almost the same state) as "A can use B" if and only if both X=A and Y=B. If this is double OC in English, it replicates the fact that double control is possible in ghostly operator constructions—for example the agent of 'tell' controlling Sp and the goal of 'tell' controlling Ad in an indexical shift example in Magahi. (Consequential SVCs are another possible instance of double control of two matching arguments.)

Then thematic uniqueness on the benefactive role of this event implies that *John,* the agent of taking, controls PRO in the adjunct clause. This then covers all the major cases.

In this brief discussion of subject control and object control across a range of purposive-type adjunct clauses in English, I have emphasized thematic and lexical semantic factors rather than structural factors. This is animated by a desire to treat controller choice in this domain as much like controller choice with complement clauses as possible, and for complements the position of the clause is not a factor, in that CPs in the same structural position can have their PRO controlled by the subject or the object. This is also true for object purposive clauses like those in (186a,b), where the adjunct clause behaves like it is inside VP regardless of whether PRO is controlled by the subject or the indirect object of the main clause. But in other cases there does seem to be a structural difference between object control examples and subject control examples, and this seems to be an odd thing for a syntactician to downplay. Landau (2021) shows that subject purposive clauses that undergo object control like those in (174a,b) behave like they are inside the VP for traditional VP-constituency tests like VP ellipsis, VP-fronting, and pseudoclefting. (189) gives a fairly typical paradigm (my judgments).

(189) a. They rushed Mary$_i$ to the hospital [PRO$_i$ to be examined by a doctor].
b. *What they did [PRO$_i$ to be examined by a doctor] was rush Mary$_i$ to the hospital.
c. ?I predicted that they would rush Mary to the hospital, and rush her$_i$ to the hospital they did [PRO$_i$ to be examined by a doctor].
d. ?*The nurse sent Mary$_i$ to the hospital to be protected from an infection, and the doctor did [PRO$_i$ to be examined by a specialist].
e. ?*[PRO$_i$ to be examined by a doctor], they rushed Mary$_i$ to the hospital.

In contrast, subject-controlled purposive clauses other than object purposives can behave like the adjunct clause is outside VP for this range of tests. This includes control-shifted examples like (182) as well as canonical examples like (186). (190) gives a relevant paradigm.

(190) a. John$_i$ stayed home [(in order) PRO$_i$ to not get sick].
b. What John$_i$ did [(in order) PRO$_i$ to not get sick] is stay home.
c. I predicted John would stay home, and stay home he$_i$ did, [(in order) PRO$_i$ to not get sick].
d. Mary stayed home to avoid running into Bill, and John did [?(in order) PRO$_i$ to not get sick].
e. [?(in order) PRO$_i$ to not get sick], John stayed home on Friday.

This contrast could be taken as showing that something like the classic Minimal Distance Principle is at work here, with PRO being controlled by the closest c-commanding DP. This is the object for adjuncts inside VP but the subject for higher adjuncts, adjoined to VoiceP.

However, I do not adopt this as a primary factor in OC, even for adjunct clauses. We already know that subjects rather than objects can control PRO for a clause inside VP from both complement clauses and object purposive clauses. Also, suppose that it is true that subject-controlled rationale clauses are merged with (say) VoiceP rather than VP. Why what that be true? What sort of theory could we build around that observation? The natural idea, I suppose, would be that the meaning of this kind of adjunct clause interacts with the meaning of the Voice/Init that introduces the agent in some crucial way; perhaps both are predicates of an initiating event in the terms of Ramchand (2008) (this is what I assumed for 'so that' clauses in Ibibio and Magahi above). At first this seems plausible. But considering a wider range of examples begins to undermine this plausibility. Consider for example (191). On the one hand, this is an instance of

subject control, like (182) and (187); on the other hand, it is thematically and semantically very similar to the object control example in (190a), it being the passive version of that sentence.

(191) Mary$_i$ was rushed to the hospital [PRO$_i$ to be examined by a doctor].

Here there is no necessary relationship between the one(s) who intend the events to happen and the controller or the controllee (see Landau 2021: 40). Mary here could very well be unconscious, not intending to go to the hospital nor to be examined by the doctor. So we cannot build into the complementizer C some kind of meaning that links the shared intender to the controller and the controllee in this case, as could be tempting for examples like (187). On the contrary, the semantic and thematic connections seem identical in (190) and (191). Nevertheless, the adjunct clause in (191) behaves like it does not need to be inside VP, as shown in (192). In this respect, (191) is structurally more like (190a) than like (189a).[84]

(192) a. ??What Mary was [PRO$_i$ to be examined by a doctor] was rushed to the hospital.
b. I predicted that Mary would be rushed to the hospital, and rushed to the hospital she was, [(in order) PRO$_i$ to be examined by a doctor].
c. Mary was rushed to the hospital to be protected from an infection, and Sue was [(in order) PRO$_i$ to be examined by a specialist].
d. [?(in order) PRO$_i$ to be examined by a doctor], Mary$_i$ was rushed to the hospital.

Indeed, for this reason Landau (2021: 40) classifies examples like (191) as having rationale clauses rather than subject purposive clauses like (189a). But I do not see any difference in the semantics of the adjunct clause or its relationship to the matrix clause to relate this to. I wonder, then, if the difference in possible attachment site isn't an effect of the difference in control rather than a cause of the difference in control. This would be true if the generalization in (193) is a consequence of the grammatical knowledge of the English speaker.

(193) An adjunct clause A that is first-merged inside VP can extrapose from VP if and only if no DP inside A is controlled by a DP that is solely inside VP.

This is what I tentatively assume, especially for the minimal pairs in (191)-(192) versus (189). It is perfectly possible that English also has a second infinitival purposive complementizer whose lexical semantics forces it to be first-merged with VoiceP and induces control of the agent/subject of the adjunct clause by the agent/subject of the matrix clause. That should be compatible with my general approach to control. However, I do not see how adding that would increase the empirical coverage, at least over the range of adjunct clauses considered here. We would still need an account of control-shift phenomena for adjunct clauses that may or must be merged inside VP, which is my primary interest. Once we have that, we may not need anything more.

Whereas OC is possible with purposive-type adverbial clauses, and perhaps a few others, it is not found with other kinds of adjunct clauses. This is true for both ghostly operator constructions and for conventional nonfinite clauses. For the ghostly operators, the generalization is that they can be controlled in 'so that' clauses, but not in temporal, causal or conditional adjuncts. The generalization for control of PRO in nonfinite clauses is broadly

[84] I find (192a) to be degraded because I am not sure how to do a pseudo-cleft based on a passive sentence. This is independent of the adjunct control; *??What Mary was was rushed to the hospital* itself is somewhat uncomfortable.

similar: OC is required in some purposive and result-like constructions, but not in, say, temporal clauses like *after coming to the store*. There are two factors at work in this, from the current perspective. The core idea is that OC takes place if and only if an eventuality associated with the main clause is identified with an eventuality associated with the adjunct clause. This will depend on the lexical semantics of the C or P-like heads that introduce the adjunct clause, whether they have that kind of meaning or not. But it will also depend on the structural position of the adjunct clause. 'So that' clauses allow control because they are semantically predicates of states of intention, suitable for being identified with the intention to act denoted by the main clause Voice/Init. But they also allow control because they are merged at the VoiceP level, before the agent and event arguments of the main clause are discharged. This allows the adjunct clause and the Voice´ to combine via event identification. More generally, clauses that merge with ResP, ProcP, or InitP—inside the greater verb phrase—will have the opportunity to be interpreted by event identification with whatever event that phrase is a predicative of, but clauses that merge in the upper regions of TP will not have this opportunity, once the arguments of the matrix clause have been saturated. This is a way of deriving that lower adjuncts have OC, and higher adjuncts do not.[85]

Indeed, this result should be still broader, generalizing to other cases of clauses that do not merge with a head in the thematic domain of a verb phrase. For example, OC of either ghostly operators or a PRO subject cannot happen in a root clause: these do not merge with anything, so clearly they cannot undergo event identification. Nor can they take place inside a relative clause, which is merged with a non-event-denoting noun. This is my idea about how to derive the fact that OC happens only with clauses in particular syntactic positions, a crucial generalization about control that is encoded in the (G)OCS.[86] This is how the GOCS is derived from deeper linguistic principles, I claim.

However, some nouns are predicates of events, or event-like individuals, and that can lead to a different outcome. I claim that this is where noun complement constructions fit in. We have seen that a ghostly DP in the periphery of the complement of a noun like 'news' or 'rumor' can be controlled by the possessor of the noun. For example, (194) from Ibibio has the possessor of 'news' controlling a LogOp inside the noun-complement.

(194) Ndito̧ e-me-kop mbʌk Emem ke ímọ̀ i-ma-i-due.
children 3.PL-PERF-hear news Emem that LOG 3.LOG-PST-3.LOG-guilty
'The children heard Emem$_i$'s news that he$_i$ was guilty.'
…[news Emem$_i$ [LogOp$_i$ C [he$_i$ was guilty]]]

At an intuitive level, this is possible because the possessor *Emem* is the agent of some kind of news-communicating event, which the CP complement expresses the content of. To capture this, we want the complex DP object in (189) to work very similarly to a sentence like 'Emem said that LOG was guilty.' A simple way to do this is to say that 'news' can be interpreted as an event-

[85] There is a lot to work out about all this. Landau's (2021) generalization for English is roughly that VP internal adjuncts always have OC (if I count the control of null operators as an instance of that), and that higher adverbs always allow NOC. Landau argues that higher adverbs allow OC as well as NOC, but my hope is that the putatively OC structures are simply a special case of NOC (e.g. by denying that NOC PRO always has to refer to a human).
[86] What about sentential subjects? For ghostly operator constructions, there are not enough clear cases of pure CPs (without a carrier noun) in the subject position to be confident of the empirical facts. For PRO-plus-infinitives, it is clear that NOC is possible into sentential subjects. Whether OC is also possible as well then becomes a tricky matter to assess; compare fn. 79 on adjunct clauses (see Landau 2001 for discussion). I leave this for future research.

denoting noun, a predicate that is true of events of sharing some news.[87] The C is a (trivial) predicate of events too, and its projection can undergo event identification with 'news'. Then the agent argument of 'news' in the possessor position is equated with the agent argument of C, and the result is OC. In the end, the event argument of 'news' is bound by an iota operator rather than by an existential, in line with the fact that the whole constituent is a nominal rather than a clause. As a result, it can appear in argument positions, but not alone as a root utterance. A formula for the direct object of (194) is (195).

(195) ɪe news(e) & agent/poss(e)=Emem & C(e) & agent(e)=LogOp & content(e)=[Log was guilty]

Now consider (196), where the LogOp in the noun complement seems to be controlled by the subject of the matrix verb.

(196) Emem a-ma a-dọkkọ Ekpe mbʌk ke ímọ̀ i-ma-i-due.
Emem 3.SG-PST-3.SG-tell Ekpe news that LOG 3.LOG-PST-3.LOG-guilty
'Emem$_i$ told Ekpe$_k$ the news that he$_{i,*k}$ was guilty.'

The root clause here asserts that there was an event of telling. The DP headed by 'news' refers to an event of news-imparting. What is the relationship between these events? A natural view is that they are the same event. In essence, this is the idea that 'tell-the-news' is a kind of light verb construction, in which the verb and the head of its direct object work together to express an event which can also be expressed by the verb or its object alone. I do not go into details about how such predicates are constructed and interpreted (for two classic treatments, see (Jackendoff 1974, Grimshaw and Mester 1988); for current purposes, it is enough just to observe that it is so. We can suppose that the NP headed by 'news' here does not have a definite determiner that corresponds to the iota operator, but remains a predicate of events. It can then combine with the verb 'tell' by event modification—rather than by receiving a theme thematic role, as thing-denoting objects of a verb normally do. Once the arguments and the voice head are added, we get (197).

(197) ∃e tell(e) & agent(e)=Emem & goal(e)=Ekpe & news(e) & (agent/poss(e)=pro) & C(e) & agent(e)=LogOp & content(e)=[Log was guilty].

This formula says that the agent of the event in question is Emem, and that it is LogOp, so LogOp=Emem by thematic uniqueness, licensing OC. When I discussed this example in Chapter 5, I claimed that 'news' had a null possessor which controls LogOp and is itself controlled by the agent of the verb; this was needed to satisfy the GOCS as a structural condition on OC. That assumption is perfectly possible here as well: a null possessor argument of 'news' will in fact be

[87] However, 'news' (in English, anyway) does not have all the properties that one might expect of an event-denoting noun. It does not allow relevant modifiers, nor can it be the subject of certain kinds of predicates. (I haven't tested this in Ibibio.)

(i) a. Okon's (*quick/*reluctant) news that he won the lottery surprised everyone.
b. #Okon's news that he won the lottery occurred at 9:00pm/lasted five minutes.

It might be that 'news' is not a predicate of events itself, but it is a predicate of something that is closely systematically related to an event, and that is enough.

equated with both LogOp (as in (195)) and with the agent of 'tell'. However, this assumption is no longer necessary, since in this formula the agent and the LogOp will be equated with each other even if they are not each equated with the possessor of noun 'news'.

Now one would like to see that similar forces are at work for the control of PRO in infinitival clauses. And indeed they are. An infinitival clause can be the complement of a noun, with PRO being controlled by a suitable argument of the noun, as in (198).

(198) a. [John$_i$'s promise to Mary [PRO$_i$ to come early]] (was reassuring to everyone).
b. [John's order to Mary$_i$ [PRO$_i$ to come early]] (was upsetting to everyone).

'Promise' and 'order' are (more obviously) event-denoting nouns, with a semantics very similar to that of the corresponding verbs. Therefore, they can participate in analogous processes of event-identification and thematic uniqueness, resulting in OC just as in verbs. They can also form complex predicates with light verbs like 'make' and 'give', as in (199). Here too, arguments of the verb seem to control PRO inside the infinitival complement of the noun in a nonlocal way.

(199) a. John$_i$ made [a promise to Mary [PRO$_i$ to come early]].
b. John gave Mary$_i$ [an order [PRO$_i$ to come early]].

In such examples, the event expressed by the NP headed by 'promise' is the same as the event of making a promise, and the event expressed by the NP headed by 'order' is the same as the event of giving an order. Given this, there are the event identifications that are needed to induce control by thematic uniqueness in accordance with my theory, although I do not work out the details here. [88] Assuming the details do work out, this theory goes a long way to meeting Jackendoff and Culicover's (2003) challenge that a theory of control should be general enough to cover the rather wide range of syntactic constructions that control predicates can appear in, including nominal constructions and larger constructions that contain them.

I conclude that my theory of control has promise for explaining why OC happens in some syntactic configurations but not others, and why the distribution is the same for PRO and for ghostly operator constructions. OC is possible in complements, low adjuncts (ones merged inside the thematic domain), and noun-complements, including nouns involved in light verb constructions. The reason is because these are the environments where two predicates of events can be composed by event identification, which leads to the equating of corresponding arguments of those predicates. In contrast, OC cannot happen in root clauses, most relative clauses, high adjunct clauses, and arguably not in sentential subjects (pending the analysis of more cases). The GOCS has thus been derived in substantial part from more general principles.

8.7 What then is obligatory control?

I close this chapter with some reflection on what my investigation implies about the fundamental nature of obligatory control as a grammatical phenomenon. My emphasis has been to provide an account of the GOCS that captures the similarities between ghostly operator constructions and

[88] One key question to face is whether the nominal versions of words like 'promise' and 'order' decompose into a series of heads like Init, Proc, and Res, as verbal heads do. I don't know why not, and this would be the most straightforward way to generalize my account. However, other ways may be available that do not depend on this articulated syntactic structure being present.

control-infinitive constructions, and to provide a theory of controller choice that accounts for some apparent differences. But there is an opportunity here to consider what this means about the control relation itself.

The primary implication seems obvious: that OC is at its roots a semantic phenomenon of sorts. The fundamental principles that derive what can control what are the possibility of interpreting a structure in which two phrases are merged together as event identification, together with the principle of thematic uniqueness, which implies that two expressions that bear the same thematic role to the same event must be the same. Furthermore, in some cases the thematic roles that have the most influence over which argument of the matrix clause controls a pronominal within the embedded clause are not the ones that determine where in the syntactic structure the arguments are generated. For example, subject-like ghostly DPs like Sp and LogOp can be controlled by DPs that are agents, causers, sources, or experiencers. DPs with any of these roles can be projected in the thematic subject position (Spec VoiceP), and this testifies to the fact that these thematic roles form a natural class—the class of possible initiators. However, DPs with these roles can control Sp and LogOp even when they are not projected in the Spec VoiceP position. For example, we saw in Chapter 4 that in Magahi the experiencers of verbs like 'seem' and 'remember' bear dative case. According to the case theory I proposed for closely related Hindi (Baker In press), this is evidence that those possessors are generated in Spec VP rather than Spec VoiceP. However, they can still control Sp, resulting in indexical shift. So can source expressions that are expressed as 'from' phrases in Ibibio and Magahi, and experiencer objects with causer or idiomatic subjects in Ibibio. As another example, we have seen in this chapter that benefactive roles can have an important influence on controller choice for PRO in English and German, particilarly in control shift examples when the PRO subject of the embedded clause is a benefactee but not an agent (Panther and Köpcke 1993, Jackendoff and Culicover 2003). However, in the crucial cases the benefactive role is not projected as a distinct DP in a Spec ApplP in the way familiar to syntacticians. Rather, it is overlaid on some other argument of the verb as a secondary role: on the agent argument of 'ask' and 'persuade', on the goal argument of 'promise' and 'advise', and on both arguments of 'propose'. It would not be easy, then, to translate the generalizations we have stated in terms of DPs having the same thematic role into generalizations stated in terms of DPs having the same (or similar, parallel) syntactic positions, as is feasible in some other grammatical domains. The conclusion, then, appears to be that OC is something that holds at the conceptual-intentional interface—indeed perhaps deep into the semantic component where syntax has done its job and has quietly faded away. It is probably not impossible to state the OC generalizations over a syntactic representation, but it would take considerable effort and would involve positing a "syntactic" representations of considerable abstractness, bearing a complex relationship to the normal, more directly observable syntax. I do not know of any good reasons for going this way.

At the same time, in other stages of this investigation we have seen some reasons to doubt that OC is purely semantic, without any involvement of the syntax. The clearest is that OC relations have an impact on agreement that is visible at PF. We saw this especially for complementizer agreement in Chapter 2, where I explained the T/Agree Constraint using the broader concept of dependent agreement. My account crucially assumed that OC control relationships are represented as pointers in the syntax, with the controlled item pointing to its controller. When T in the matrix clause triggers Agree-Copy, the phi-features of the pointed-to DP are copied onto all the functional heads that are linked to that DP by a sequence of pointers, This includes not only Agree pointers, but control pointers as well. Crucially, OC dependencies

are visible for Agree-Copy, but ordinary pronoun binding dependencies do not. This is seen most sharply in Ibibio, where we observe the contrast in (200).

(200) a. Emem a-me-kop mbʌk (a-bo) ke ímọ̀ i-ma-i-due.
Emem 3.sg-prf-hear news 3.SG-C that LOG 3.LOG-PST-3.LOG-guilty
'Emem$_i$ heard the news that he$_i$ was guilty.'

b. Emem a-maa-kere ke mbʌk (*a-bo) ke imọ i-ke-due a-maa-kpa owo idem.
Emem 3.SG-PST-think that news 3.SG-C that LOG 3.LOG-PST-guilty 3S-PST-die person body
'Emem$_i$ thinks that the news that he$_i$ is guilty is surprising.'

Both sentences allow *Emem* to be the antecedent of a logophoric pronoun inside the CP complement of 'news' at some syntactic distance. I interpreted this as showing that 'news' can have a null possessor DP which is the local controller of LogOp in the periphery of the CP. This null possessor can then be anteceded by a DP like 'children' in a relatively unconstrained way. However, C-agreement shows a clear difference here: this is possible in the CP complement of 'news' only in (200a), where 'news+CP is the direct object of a verb whose subject is the controller, not in (200b), where 'news+CP' is the subject of a verb in the lower clause. In (200a), not only can the null possessor control SoK and LogOP, but the subject of 'hear' can be the OC controller of the null possessor. This is in line with the GOCS, because the phrase with the controllable pronoun at its edge (NP/DP) is merged directly with the verb that the controller is an argument of.

(201) Emem T heard [pro news [SoK a-bo [LogOp ke [Log won the lottery]]]].
|___agr _____||_____|___agr ____|
control control

This representation does allow the features of SoK to be copied onto C (*bo*): C is linked to the target of agreement from T by a series of pointers, including the Agree pointer from C to SoK and the two OC pointers from SoK to pro and from pro to *Emem*. In contrast, in (200b), the null possessor can control SoK and LogOp, and Emem can be the antecedent of the null possessor, a kind of pro. This is enough for the logophoric pronoun to refer to Emem in this example. But it is not a strong enough connection for C to agree with *Emem*.

(202) Emem T think that [[pro news [SoK a-bo [LogOp ke [Log is guilty]]]] is surprising.
| …… agr .....| |_____| agr
coreference control

I conclude that OC relationships are represented in a way that Agree-Copy can see, influencing the insertion of agreement at PF, whereas mere relationships of pronominal binding are not. This is evidence that control takes place in the narrow syntax after all.[89]

Converging with this conclusion, there is also reason to say that OC is subject to the Phase Impenetrability Condition. As we have seen throughout, OC happens when a null

[89] The fact that OC PRO in the Balkan languages can trigger agreement on T in subjunctive clauses after it gets phi-features from its controller is possible further evidence of OC relationships being visible to agreement. However, this conclusion would be stronger of NOC PRO (if any) in these languages does not trigger agreement on the verb.

pronominal appears at the edge of an embedded clause and is controlled by something in the VoiceP of the matrix clause: the subject, object, or indirect object of that clause. This looks like PIC-style locality, where one element can only establish a relationship with another if the first is at the edge of one phase and the second is contained in the next highest phase, where Voice and C are phase heads (among others). The fact that nothing higher than the matrix subject can control into a CP complement may follow from event identification: that is the highest DP that can bear a thematic role to the event of which both the matrix verb and the CP complement are predicates. But there is still a locality effect to be captured regarding the position of the controlled element PRO. (203a) and (203b) constitute a familar control shift pair.

(203) a. Mary$_i$ promised John$_k$ [PRO$_i$ to promote him before the new year].
b. Mary$_i$ promised John$_k$ [PRO$_k$ to be promoted (by her assistant) before the new year].
c. *Mary$_i$ promised John$_k$ [for her assistant to promote PRO$_k$ before the end of the year].
d. Mary promised John that her assistant would promote him before the end of the year.

In thematic terms, (203a) shows that the agent argument of the embedded verb can be controlled, as long as it is the agent argument of the matrix verb that is the controller. (203b) shows that the theme-benefactive argument of the embedded verb can be controlled, as long as it is the benefactive-goal argument of the matrix verb that is the controller. But (203c) shows that the theme-benefactive argument of the embedded verb can only be controlled if the embedded verb is passive; a thematically identical control relationship is bad if the embedded verb is active. The meaning that (203c) should have is a perfectly sensible one, as shown by the acceptability of (203d) with the coreference of a pronoun rather than the control of PRO. (203c) cannot be bad because of any problem with thematic role matching or thematic uniqueness, given the acceptability of (203b) and the usual assumption that the object of the active sentence has the same thematic role(s) as the subject of the corresponding passive sentence. Therefore, event identification and thematic uniqueness cannot account for the sharp difference between these two sentences. What we have here is the very familiar fact that PRO must be in the subject position of an infinitival clause in English and other languages, a fact that I have had very little to say about until now. It has been common to stipulate this distributional fact by saying that PRO cannot be governed, that it cannot be case marked, or that it needs to receive a special "null" case from infinitival T. However, it is also familiar that these lines of analysis do not hold up well under scrutiny (see Landau 2004 for discussion). In the current context, a more fundamental reason why the (203c) fails is the PIC: PRO here is separated from its thematically eligible controller *John* by two phase heads: the active Voice associated with *promote*, and infinitival C head *for* (or other head in this C-space, perhaps). In contrast, the passive embedded clause in (203b) has PRO move out of the embedded VoiceP, such that at most one phase head intervenes between it and its controller (and possibly none, if control complements in English do not have a C head (Wurmbrand 2014) or if PRO moves on to Spec CP (Landau 2015)). Therefore, the PIC draws the needed distinction between (203b) and (203c).

A PIC account along these lines also captures the contrast between (203c), where control of a null pronoun used as the direct object is ruled out, and the CSVC in (204), where control of a null pronoun used as the direct object is possible (on my analysis, following Collins 1997).

(204) Wo ɖa fufu ɖu. (Ewe) (Collins 1997: 461)
they cook fufu eat
'They cooked fufu and ate it.'

They T voice [$_{VP}$ cook fufu$_i$ [$_{VP}$ eat pro$_i$]]

The OCed empty category in (204) is in a governed, case marked position internal to a VP headed by an active verb and far from any special T that could license it. Yet it is licit, and OC can happen, in that *pro* must be coreferential with 'fufu' here. The crucial difference is that the complement of the main verb is much smaller in (204) than in (203c): it is a VP, rather than a CP. As such, the complement in (204) does not contain phase heads like Voice or C. Therefore, control in (204) is compatible with the PIC, like (203b) but unlike (203c). I conclude from these comparisons that the OC relation is subject to the PIC. But that implies that it is a relation established in the narrow syntax, before the relevant material is shipped off to PF or LF. We do not expect there to be an analog of the PIC at the Conceptual-Intentional interface itself, and indeed semantic relationships like the binding of pronouns as variables are not subject to it.

We have then two reasons to say that OC relationships are established in the narrow syntax and represented in what is sent to PF, despite the fact that semantic relationships that are not represented in syntax play a key role in controller choice. If we stick to a version of the Y-model, then, it seems like we need to say that control happens somewhat freely in the syntax and then is filtered by the semantics, as do Manzini (1983), Landau (2015: 76), and others. Anticipating this, I have spoken of thematic uniqueness as *licensing* OC (or occasionally as *inducing* OC) rather than as constituting OC. Apparently OC relationships can be established apart from the semantics, even if they have to pass muster with the semantics—not only in that the result must be semantically coherent in a very general sense, but in having to be interpreted in a particular way that flows out of event identification and thematic uniqueness.

Does this mean that the syntactic part of OC reduces to some more familiar aspect of syntax, leaving it to the semantics to take care of what is distinctive about OC? Can we say that, from the syntactic point of view, OC is simply the binding of an anaphor, or a certain kind of movement relationship, or a relationship of syntactic predication, or the result of Agree relationships? All of these views have been tried, and each of them can capture some significant percentage of the relevant facts. But Landau (2013: 174) points out that they all fail to account for the phenomenon of split control, in an example like (205).

(205) Mary$_i$ proposed to John$_k$ [PRO$_{i+k}$ to meet each other at 6:00]. (Landau 2013: 172 (324a))

All of the syntactically reductive approaches to control stumble on this. If PRO is an anaphor, it should not be able to have split antecedents. If PRO is the trace of NP-movement, what was there originally cannot have moved to two different places resulting in two different NPs (Hornstein 1999: 80). A syntactic predicate must have a unique local subject (Landau 2015: 78). Agreeing heads cannot usually sum up the features of two goals which they agree with (Landau 2013: 174). And so on. In contrast, my approach to controller choice using event identification and thematic uniqueness can (with a bit of effort) be generalized to this case, as discussed above in section 8.5, by building the tricky part into the meaning of a verb like *propose* in terms of how the process of proposing relates to the resulting state of a proposing. There also seems to be some systematicity to split control, in that it is only verbs that readily allow both subject control and object control that also allow split control. So I lean into this opportunity afforded by my theory, and claim that OC is a primitive syntactic relationship, not reducible to these other well-studied syntactic relations.

The upshot of this discussion is that OC is stated roughly as follows:

(206) Obligatory control: A minimal pronoun may be linked by pointers to one or more DPs in the same domain. Two DPs that are linked in this way must be interpreted as instances of the same variable and must bear the same thematic relation to some event.

The primary syntactic restriction on this relationship is the PIC, defining precisely the domain that must contain both the controllee and the controller. Other restrictions follow from the condition on how the control relationship is interpreted, notably including the Generalized Obligatory Control Signature, which says that the constituent containing the minimal pronoun must merge directly with a projection of the head which the controller is an argument of. Not even c-command is stipulated in (206). In most cases, the controller does c-command the controllee, but this follows from the condition that both must bear a thematic relationship to the same event. One case in which a DP that is the argument of a verb can nonetheless be embedded in a phrase headed by something other than that verb is PP arguments, and in exactly these cases the controller may not in fact c-command the controllee, as in examples of oblique control (e.g. *Mary imposed upon John [PRO to help her with her taxes]*, cf. Landau (2015: 15)). (206), then, is my final answer as to what OC is. At least for now.[90]

References

Abusch, D. (1985). On verbs and time, University of Massachusetts Amherst. **PhD dissertation**.

Abusch, D. (1988). Sequence of tense, intensionality, and scope. Proceedings of the 7th West Coast Conference on Fromal Linguistics. H. Borer. Stanford, CA, CSLI Publications**:** 1-14.

Alok, D. (2020). Speaker and addressee in natural language: Honorificity, indexicality and their interaction in Magahi. New Brunswick, NJ, Rutgers University. **PhD**.

Baker, M. (1988). Incorporation: a theory of grammatical function changing. Chicago, University of Chicago Press.

Baker, M. (2003). Lexical categories: Verbs, Nouns, and Adjectives. Cambridge, Cambridge University Press.

Baker, M. (In press). Dependent case and the sometimes independence of ergativity and differential object marking. The place of case in grammar. C. Sevdali. Oxford, Oxford University Press.

Baker, M. and L. Camargo Souza (2020). "Agree without agreement: Switch-reference and reflexive voice in two Panoan languages." Natural Language and Linguistic Theory **38**: 1053-1114.

[90] There may, in fact, be reason to question the classic Y-model here in a more fundamental way. It is odd for (206) to stipulate ahead of time what particular semantic principles will be used to interpret the representations it creates. This is arguably a kind of look ahead that violates the spirit of the Y-model. A more radical alternative might be to try to build the possibility of OC into a view of Merge in which instances of Merge have to be locally motivated. In the simplest case, Merge of say V and DP is motivated by DP receiving a thematic role from V, arguably a form of feature checking. OC happens when (say) a verb is merged with an unsaturated expression which the syntax can easily recognize as not being qualified to get a thematic role. These instances of Merge can be motivated if the verb and the phrase it is merged with are both co-predicates of the same argument in a way that syntax can check locally in a preliminary fashion. However, there are challenges for this view too, and I do not try to develop it here.

Baker, M. and O. T. Stewart (2002). A serial verb construction without constructions. R. University. Rutgers University.
Bowers, J. (1993). "The syntax of predication." Linguistic Inquiry **24**(4): 591-656.
Bresnan, J. (1982). Control and complementation. The mental representation of grammatical relations. J. Bresnan. Cambridge, Mass., MIT Press**:** 282-390.
Carlson, G. (1984). "Thematic roles and their role in semantic interpretation." Linguistics **22**(3): 259-279.
Collins, C. (1997). "Argument sharing in serial verb constructions." Linguistic Inquiry **28**(3): 461-497.
Collins, C. (2002). "Multiple verb movement in Hoan." Linguistic Inquiry **33**(1): 1-29.
Comrie, B. (1984). Subject and object control: Syntax, semantics and pragmatics. Proceedings of the 10th annual meeting of the Berkeley Linguistics Society. C. Brugman. Berkeley, CA, Berkeley Linguistics Society**:** 450-464.
Déchaine, R.-M. (1993). Predicates across categories, University of Massachusetts, Amherst.
Dowty, D. (1991). "Thematic proto-roles and argument selection." Language **67**(3): 547-619.
Driemel, I. and M. Kouneli (To appear). "C-Agree is local subject-verb agreement in Kipsigis." Natural Language and Linguistic Theory.
Elliott, P. (2017). Elements of clausal embedding. London, University College London. **PhD**.
Farkas, D. (1988). "On obligatory control." Linguistics and Philosophy **11**: 27-58.
Foley, W. and R. Van Valin (1984). Functional syntax and universal grammar. Cambridge, Cambridge University Press.
Grimshaw, J. and A. Mester (1988). "Light verbs and q-marking." Linguistic Inquiry **19**: 205-232.
Gruber, J. (1965). Studies in lexical relations, MIT. **PhD**.
Hacquard, V. (2006). Aspects of modality. Cambridge, MA, MIT. **PhD**.
Hacquard, V. (2010). "On the event relativity of modal auxiliaries." Natural Language Semantics **18**: 79-114.
Hornstein, N. (1999). "Movement and control." Linguisitic Inquiry **30**(1): 69-99.
Jackendoff, R. (1972). Semantic interpretation in generative grammar. Cambridge, Mass., MIT Press.
Jackendoff, R. (1974). "A deep structure projection rule." Linguistic Inquiry **6**(1): 53-93.
Jackendoff, R. (1983). Semantics and cognition. Cambridge, Mass., MIT Press.
Jackendoff, R. (1990). Semantic structures. Cambridge, Mass., MIT Press.
Jackendoff, R. and P. Culicover (2003). "The semantic basis of control in English." Language **79**: 517-556.
Kratzer, A. (1996). Severing the external argument from its verb. Phrase structure and the lexicon. J. Rooryck and L. Zaring. Dordrecht, Kluwer**:** 109-138.
Kratzer, A. (2006). Decomposing attitude verbs. U. o. M. Amherst.
Kuno, S. (1987). Functional syntax: Anaphora, discourse, and empathy. Chicago, University of Chicago Press.
Landau, I. (2001). "Control and extraposition: The case of super-equi." Natural Language and Linguistic Theory **19**(109-152).
Landau, I. (2001). Elements of control: structure and meaning in infinitival constructions. Dordrecht, Springer.
Landau, I. (2004). "The scale of finiteness and the calculus of control." Natural Language and Linguistic Theory **22**(4): 811-877.

Landau, I. (2013). Control in generative grammar. Cambridge, Cambridge University Press.
Landau, I. (2015). A two-tiered theory of control. Cambridge, MA, MIT Press.
Landau, I. (2016). "Agreement at PF: An argument from partial control." Syntax **19**(1): 79-109.
Landau, I. (2021). A selectional theory of adjunct control. Cambridge, MA, MIT Press.
Larson, R. (1991). "*Promise* and the theory of control." Linguistic Inquiry **22**: 103-139.
Larson, R., et al. (1997). "Intensional transitive verbs and abstract clausal complementation." Linguistic Inquiry **1997**: xx-xx.
Madigan, S. (2008). Control constructions in Korean, University of Delaware. **PhD**.
Major, T. (2021). On the nature of "say" complementation, UCLA. **PhD**.
Major, T. and H. Torrence (2021). "Say"-chains, not "say"-complementation. Proceedings of the 38th West Coast Conference on Formal Linguistics. Somerville, MA, Cascadilla Proceedings Project.
Manzini, R. (1983). "On control and control theory." Linguistic Inquiry **14**: 421-446.
Moulton, K. (2009). Natural selection and the syntax of clausal complementation, University of Massachusetts Amherst. **PhD**.
Moulton, K. (2015). "CPs: copies and compositionality." Linguistic Inquiry **46**(305-342).
Obenauer, H. (1984). "On the identification of empty categories." The Linguistic Review **4**(2): 153-202.
Ozyildiz, D., et al. (2018). Communicative reception reports as hearsay: Evidence from indexical shift in Turkish. Proceedings of the 36th West Coast Conference of Formal Linguistics. R. Stockwell, M. O'Leary, Z. Xu and Z.-L. Zhou. Somerville, MA, Cascadilla Proceedings Project**:** 296-305.
Panther, K.-U. and K.-M. Köpcke (1993). "A cognitive approach to obligatory control phenomena in English and German." Folia Linguistica **27**: 57-105.
Pearson, H. (2013). The sense of self: Topics in the semantics of de se expressions. Harvard University. **PhD dissertation**.
Perlmutter, D. (1971). Deep and surface structure constraints in syntax. New York, Holt, Rinehart, and Winston.
Ramchand, G. (2008). Verb meaning and the lexicon: A first-phase syntax. Cambridge, Cambridge University Press.
Reinhart, T. and E. Reuland (1993). "Reflexivity." Linguistic Inquiry **24**: 657-720.
Rosenbaum, P. (1967). The grammar of English predicate complement constructions. Cambridge, MA, MIT Press.
Sag, I. and C. Pollard (1991). "An integrated theory of complement control." Language **67**: 63-113.
Sportiche, D. (1988). "A theory of floating quantifiers and its corollaries for constituent structure." Linguistic Inquiry **19**(3): 425-450.
Stewart, O. (2001). The serial verb construction parameter. New York, Garland.
Tenny, C. (1994). Aspectual roles and the syntax-semantics interface. Dordrecht, Kluwer.
Wurmbrand, S. (2003). Infinitives: Restructuring and Clause Structure. Berlin, Mouton de Gruyter.
Wurmbrand, S. (2014). "Tense and aspect in English infinitives." Linguistic Inquiry **45**: 403-447.
Zimmermann, M. and M. Amaechi (2018). Find constuction analyze: Making sense of serial verb constructions. U. o. Potsdam. University of Potsdam.