Direct Variable Binding and Agreement in Obligatory Control

Idan Landau
Ben Gurion University
idanl@bgu.ac.il

Abstract

Standard semantic theories of Obligatory Control (OC) capture the obligatory *de se* reading of PRO but fail to explain why it agrees with the controller. Standard syntactic theories of OC explain the agreement but not the obligatory *de se* reading. A new synthesis is developed to solve this fundamental problem, in which the controller directly binds a variable in the edge of the complement. The associated semantics utilizes the idea that *de se* attitudes can be modelled as a special case of *de re* attitudes. The specific interaction of feature transmission and phase-based locality derives a striking universal asymmetry: Inflection on the embedded verb blocks OC in attitude complements but not in nonattitude complements. A semantic benefit is a straightforward account for "unexpected" binding between PRO and *de re* reflexives/pronouns.

1. Introduction

Imagine that Kelly is planning a birthday party. She is not sure how much alchohol she wants in the party because she is worried that some of the guests might get drunk and become rude and unpleasant. Kelly's friend, Sue, calms her down. She tell Kelly not to worry: "Nobody will get that drunk, and anyway, I know all the people you invited. They will behave themselves at the party, I promise". Sue does not, in fact, plan to attend the party, as she has travel plans for the day before. But Kelly was not aware of these plans, so she did, in fact, send Sue an email invitation to the party (which Sue has not opened yet).

In this scenario, Sue made a promise about a group of people, which, unbeknowst to her, includes herself. Consider the following reports of this situation.

(1) a. Sue_i promised [that she_i would behave herself at the party].
     b. Sue_i promised [PRO_i to behave herself at the party].

(1a) has a true reading under this scenario, although admittedly it is not salient. This is known as the *de re* construal of the pronoun *she*. (1b), on the other hand, is clearly false in the given scenario. Sue made no first person commitment in promising what she did to Kelly, since she was not aware of the fact that she is one of the invitees. This is described as an obligatory *de se* construal of the silent PRO subject of the infinitival complement. That PRO in Obligatory Control (OC) displays this unambiguous reading (as opposed to the lexical pronoun in (1), which is ambiguous) has been known since Morgan 1970, and taken to be the fundamental explanandum of formal semantic treatments of OC (see Chierchia

1990, Percus and Sauerland 2003a, Schlenker 2003, von Stechow 2003, Anand 2006, Stephenson 2010, Pearson 2013, to appear). Call this *Fact 1*.

Another observation, much more elementary, is that PRO in OC agrees with the controller in all ϕ-features. This can be seen indirectly in the shape of agreeing reflexives, like *herself* in (1b). Importantly, the agreement cannot be reduced to semantic coherence (i.e., matching the natural gender of coreferential expressions). This is because *behave oneself* is only formally reflexive, not notionally so; its object is not referential, hence not subject to any constraints on denotation. Nor can its shape be blamed on default morphology, which is masculine in English, not feminine. It seems that the nonreferential *herself* in (1b) must formally agree with its binder PRO, which must formally agree with its matrix controller. Furthermore, the agreement *overrides* semantic considerations, as Schlenker (2011) pointed out.

(2)   John, a transsexual, hopes [PRO to become a woman
        and PRO to buy himself/*herself a car].

Although John is a woman in each of the contexts compatible with his hopes, and so is the buyer (= the second PRO), the masculine gender feature must be inherited from the matrix controller. This seems to be a result of a semantically opaque rule of morphological agreement. Call this *Fact 2*.[1]

Put together, these two facts set up what I call the "problem of form and meaning in OC", which is stated in (3c).

(3)   *The problem of form and meaning in OC*
        a.   <u>Fact 1</u>: In attitude contexts, PRO must be construed *de se*.
        b.   <u>fact 2</u>: In all OC contexts, PRO agrees with the controller.
        c.   The standard semantic explanation for (a) and the standard syntactic explanation
                for (b) are *incompatible*.

The first part of this paper (sections 2 and 3) lays out this problem in detail. Briefly, we will see that the prevailing semantic analysis of OC is based on the property/centered-worlds theory, which involves a syntactic configuration that is incapable of mediating agreement, for principled reasons. Conversely, the prevailing syntactic analysis of OC is based on direct variable binding between the controller DP and PRO, and this syntax is incapable of ensuring the *de se* construal. This dilemma is fundamental, although seldom acknowledged. Resolving it is the main goal of this paper.

My proposal, in essence, will be to enrich the variable binding analysis with grammatical machinery that has been fruitfully employed elsehwere, in a such a way that both Fact 1 and

---

[1] There is a narrowly circumscribed class of exceptions to Fact 2: Inflected infintives that display partial control in Brazilian Portuguese may (and sometimes must) carry plural agreement although the controller is singular (Modesto 2010, 2013). This is due to the intervention of additional syntactic material in the complement (see discussion in Landau, to appear). I do not discuss partial control in this paper.

Fact 2 will follow from a single, coherent model. This is really a revival of an old idea. For a short while in the 1970s, after the demise of the Equi-NP Deletion theory and before the rise of the property theory of OC in Montague Grammar, it was thought that OC PRO is a variable directly bound by the controller (Morgan 1970, Fodor 1975, Partee 1975). The evidence seemed straightforward. First, PRO can be bound by quantified expressions (4a); second, it gives rise to a sloppy reading, and excludes a strict reading, in the scope of *only* (4b) and in VP-ellipsis contexts (4c)

(4) a. [Every contestant]$_i$ expected [PRO$_i$ to win].
         (≠ *every contestant expected every contestant to win*)
     b. [Only Richard]$_i$ hated [PRO$_i$ to play hip-hop].
         (≠ *Richard is the only one who hated Richard's playing hip-hop*)
     c. Mary$_i$ hoped [PRO$_i$ to get a new car] and Claire did too.
         (≠ *Claire hoped for Mary to get a new car*)

Compelling as it initially seemed, the direct variable binding approach was soon abandoned due to its failure to capture the "holy grail" of OC, Fact 1. This had the unfortunate consequence of losing Fact 2, which is no less fundamental. The bound variable interpretation of PRO was then handled very differently; not in the syntax, but in the semantics of the attitude verb, which associates the referent of the controller with its doxastic counterparts in each of the alternative worlds/contexts that the verb quantifies over. The basic question, then, is this: Is the bound variable interpretation of PRO *syntactically* represented or not? By giving a positive answer to this question, my proposal is aligned with the earlier generative approaches to OC as well as with the more recent syntactic treatments. However, it simultaneously takes full account of the need to accommodate Fact 1 within any solution. The second part of this paper (sections 5-7) provides novel arguments for this approach, over and above the resolution of the dilemma in (3).

The structure of the paper is as follows. Section 2 presents the mainstream generative view on the syntax of OC. This view readily explains Fact 2 but fails to explain Fact 1 (worse, it predicts systematic *de re* construal in OC). Section 3 presents the mirror-image problem with the formal semantic view of OC: it explains Fact 1 but not Fact 2. Four different implementations of this view are considered, two of which recognize the agreement problem and attempt to address it. I argue that the solutins offered are far from satisfactory. Section 4 lays out the present proposal, the Two-Tiered Theory of Control (TTC). This theory integrates the results of several strands of research: The treatment of *de se* as a special kind of *de re*, the formalism of concept generators (Percus & Sauerland 2003a), the syntactic encoding of discourse information in the clausal left periphery, the notion of minimal pronouns, feature transmission and feature deletion. Two types of control are distinguished, in attitude and nonattitude contexts (*logophoric* and *predicative* control, respectively). I argue that logophoric control is constructed as a second tier above predicative control, hosting a variable that is directly bound by the controller DP.

Section 5 presents a novel argument in favor of the TTC from a crosslinguistic pattern: Embedded inflection disrupts logophoric but not predicative control. This effect is shows to be rooted in the syntax of Feature Transmission and provides a novel argument in favor of this device over other devices that were proposed to handle the cancellation of the presuppositional import of ϕ-features on bound pronouns. Section 6 consideres a beneficial outcome of the analysis – a straightforward account for "unexpected BT effects", where PRO binds a *de re* reflexive/pronoun. Section 7 concludes the paper by comparing the overall explanatory advantage of the TTC over the standard semantic accounts of OC.

2. The syntactic analysis: Getting agreement but not *de se*

Although there has been much dispute over the syntax of OC constructions, some basic assumptions are shared across most of the popular approaches. In particular, those approaches that take OC complements to be clausal assume that PRO is an anaphor-like element, bound by the controller.[2] The S-structure in (5a) is mapped to the LF in (5b), which is associated with the semantic representation in (5c).

(5)   The standard syntactic analysis of OC

      a. $John_i$ expected [PRO_i to be elected]
      b.   [$_{TP}$ John [$_{T'}$ λx [t_x expected [PRO_x to be elected]]]]
      c.   ($\lambda x.x$ expected x to be elected)(j)

Agreement between PRO and the controller follows from this analysis straightrforwardly, given a couple of standard assumptions. First, predication is a vehicle of agreement. Since the T' node in (5b) is predicated of the subject controller *John*, the features of the subject are copied onto this predicate. These features are then shared on the λ-abstractor at the edge of the predicate, similarly to the agreement effect between a relative head and the relative pronoun. Next, the λ-abstractor transmits these features to any variable it binds, assuming some version of the Feature Transmission mechanism of Heim 2008 and Kratzer 2009. Since PRO is bound by the λ-abstractor, it comes to agree with the controller DP with which the λ-abstractor agrees.

This account of agreement in OC is principled insofar as it relies on agreement mechanisms independently operative in the grammar. The problem arises, however, on the semantic side. Put succintly, the bound variable corresponding to PRO (i.e., the second bound *x* in (5c)) is construed *de re* and not *de se*.

To see this, consider "The drunken politicians" scenario from Percus & Sauerland 2003, (6a). The analysis in (5) assigns the LF (6c) to the sentence (6b) in this context.

---

[2] See Chomsky 1980, 1981, Manzini 1983, Bouchard 1984, Koster 1984, Borer 1989, Sag and Pollard 1991, Wyngaerd 1994, Landau 2000.

(6)   a.   "A group of drunken election candidates watching campaign speeches on television do not recognize themselves in the broadcast. John, the only confident one, thinks "I'll win", but does not recognize himself in the broadcast. Bill and Sam, both depressive, think "I'll lose", but are impressed by the speeches that happen to be their own and are sure "*that* candidate" will win. Peter, also depressive, happens to be impressed not by his own speech but by John's".

      b.   Only John expects to be elected.

      c.   only(j)(λx.x expected x to be elected)

As Percus & Sauerland (P&S) point out, this LF necessarily generates falsity in the given scenario. Not only John, but also Bill and Sam satisfy the property *[λx.x expected x to be elected]*. But (6b) does have a true reading here; it is simply not captured by (6c).

The problem is that the specific acquaintance relation holding between the attitude holder (AH) and himself is left unspecified here. Thus, the second occurrence of the bound variable *x* need not satisfy the *de se* relation that is characteristic of OC. Any kind of *de re* relation – including misidentification of the 'self' – would be sufficient to render (6c) true. In the semantic literature this result is taken to imply that the syntax of OC must be more complex than direct variable binding. Although I will argue below that the conclusion is too strong, it should be clear that the standard syntactic analysis falls short of explaining the obligatory *de se* reading in OC. In the analysis to be developed below, the syntactic account is explicitly augmented to capture this fundamental semantic fact

3. The semantic analysis: Getting *de se* but not agreement

As noted in the introduction, the most popular view of OC constructions in the formal semantic literature involves quantification over properties or, equivalently, over centered worlds. This view correctly captures the obligatory *de se* reading but leaves the agreement between the controller and PRO unexplained. In a nutshell, the problem arises because PRO is not bound by the controller on this view; rather it is bound by an operator introduced by the attitude verb, which bears no syntactic relation to the controller.

To illustrate this problem, I will sketch two representative exemplars of this view, Chierchia 1990 and Stephenson 2010 (section 3.1). Then I will turn to two attempts at dealing with the agreement challenge, von Stechow 2003 and Pearson 2013, and show why they are unsatisfactory (section 3.2). Finally, I will indicate why I think the agreement problem poses such a fundamental challenge to the semantic analyses, which is not likely to be solved without a substantial revision of basic assumptions (section 3.3).

3.1 OC complements as sets of properties or centered-worlds

The property theory of OC is most commonly associated with Chierchia's work (1984, 1990). The theory can be summarized as follows. A sentence like (7a) is mapped to the S-structure (7b); a null operator, attached at the left edge of the complement, binds the subject variable (=PRO) and turns the propositional denotation of the complement into a property. This property serves as the first argument of the control (attitude) verb, while the controller DP serves as the second one, as in the logical structure (7c). Meaning postulates, inherent in the verb's lexical entry, generate a meaning along the lines of (7d).

(7)   *Chierchia's (1990) analysis of OC*

      a.   Pavarotti promised to restrain himself.
      b.   S-Structure: Pavarotti$_i$ promised [Op$_i$ [PRO$_i$ to restrain himself]].
      c.   Logical structure: **promise** (P, [$\lambda x.x$ restrain x])
      d.   Paraphrase: Pavarotti promised that the actual world will be located in a spatiotemporal region where he has the property self-restraint.

Note that the self-ascriptive meaning in (7d) guarantees the *de se* relation: The property of self-restraint is ascribed to that individual which Pavarotti takes himself to be in his 'promise'-worlds, namely, his doxastic counterpart.

Consider now how agreement works. Chierchia suggests that the null operator in (7b) must be coindexed with an antecedent in order to be identified, and agreement ensues from coindexing. But this coindexing does not express any semantic relation. The property *[$\lambda x.x$ restrain x]* is not predicated of Pavarotti, but rather of Pavarotti's doxastic counterpart. If *Op* just needs to be syntactically bound, *any* matrix argument may fit the bill. Separating the agreement requirement from the semantics thus incorrectly predicts nonexisting mismatches.

(8) *Pavarotti promised Olga$_i$ [Op$_i$ [PRO$_i$ to restrain herself]].

In (8), the semantic composition would proceed as in (7), associating PRO with Pavarotti's doxastic counterpart. Crucially, this interpretation is not represented via syntactic coindexing, being obtained in the semantics only. Syntactically, however, *Op* needs identification, and so searches for a c-commanding antecedent. The matrix object is perfectly suitable – in fact, favored over the subject for locality reasons. Coindexing with the object provides *Op*, and consequently PRO, with the necessary φ-features. The fact that they do not match the features of the semantic controller is not registered anywhere along the way, since, as noted, the *Op* is "uninformed" as to the identity of that controller. The semantic and the syntactic computations do not contact in any way that can block this undesired result.[3]

---

[3] The problem is not due to a semantic clash between the gender features of the (doxastic counterpart of) Pavarotti and the reflexive *herself*. First, φ-features on bound reflexives are uninterpreted (Heim 2008, Kratzer

The semantic type of properties, in intensional semantics, is $<s,<e,t>>$. It is easy to see that the semantic type $<<s,e>,t>$ is isomorphic to it. But $<<s,e>,t>$ is just the semantic type of sets of centered worlds. Thus, the property theory of OC can be recast as a centered world theory of OC. This is the essence of Stephenson's (2010) proposal, to which I now turn.

Stephenson defines, for every centered world $<w,j>$, the individual J, the "center" of the world, such that w is experienced from J's point of view. Furthermore, PRO denotes just that center, (9a). Doxastic alternatives are defined as in (9b); note that the center of each such alternative world is just the doxastic counterpart of the AH. The meaning of (9c) is represented in (9d).

(9) a. PRO $=_{def}$ J
     b. $WANT_{x,w} = \{<w',y>$: it is compatible with what x wants in w for x to be y in w'$\}$
     c. ⟦Sue wants [PRO$_J$ to go on the roller coaster]⟧^{w,j} =
     d. ⟦*wants*⟧ $(\lambda w'.\lambda j'.$⟦PRO$_J$ to go on the roller coaster⟧$^{w',j'}$)(**Sue**) =
         1 iff $\forall <w',y> \in WANT_{w,Sue}$: y goes on the roller coaster in w'.

Once again, the *de se* relation is guaranteed by the way centered worlds are defined and linked to the actual world; the embedded property is predicated of the doxastic counterpart, as desired.[4]

How is agreement established between the controller and PRO on this proposal? Stephenson remains silent on this point, and indeed, it is hard to imagine a plausible answer. PRO and *Sue* in (9c) bear no syntactic relation to each other. PRO is bound by *λj'*, which is associated with *Sue* via the semantics of *want*; the choice of the doxastic alternative and its center is made on the basis of who the AH (Sue) is in the real world. But this is not a syntactic relation that can mediate agreement.

As in Chierchia's property theory, we are left with two options: Either agreement is allowed to "interpret" semantic representations and recognize "AH" and "world center" as possible relata; or agreement is confined to the syntax, as in the standard view, but then the controller and PRO remain unrelated, and agreement unexplained.

3.2 Two attempts to capture agreement

Although the formal semantic literature is generally brief or even silent on the problem of agreement in OC, two proposals explicitly attempt to solve it. I discuss and evaluate them in this section.

2009). Second, the problem remains even when the reflexive is nonargumental (hence, its ϕ-features are necessarily inert): *Pavarotti promised Olga to behave/perjure herself*.

[4] Stephenson's account of OC is incomplete insofar as it fails to extend to *de te* attitudes with communication verbs (e.g., *John told Mary to stay home*), where the controller is not the world center; see Landau (forthcoming) for discussion.

The first proposal is by von Stechow (2003). In this analysis, attitude verbs are treated as quantifiers over <individual,world,time> triplets, and introduce λ-binders that bind embedded variables (of types e, w and t, respectively). To guarantee the binding of PRO, it is endowed with the features [log] and [loc]; jointly they ensure that PRO is bound by the closest attitude verb. von Stechow also assumes that ϕ-features on bound pronouns are unintepreted. Rather than transmitting them at PF (as in Heim's and Kratzer's proposals), they are removed at LF by *Feature Deletion*. Variable binding, then, is contingent on ϕ-matching, followed by deletion of the variable's ϕ-features.[5] An OC construction like (10a) receives the LF in (10b) (world and time variables in the complement are suppressed). Doxastic alternatives are defined as in (10c), and the semantics of the attitude verb involves the standard universal quantification over these alternatives. The *de se* reading is obtained by taking the doxastic counterpart, *x'*, to be the mental target of the attitude.

(10) a.   John wants to win the lottery.
      b.   John$_{[3rd]}$ λ$_i$ want$_{[3rd]}$ λ$_{[log]}$<x$_{[3rd]\text{-}j}$,w$_k$,t$_n$> [PRO$_{[loc,log,\cancel{3rd}]\text{-}j}$ win the lottery].
      c.   WANT$_{x,w,t}$ = {<x',w',t'>| x' has in w' at t' every property x hopes for himself in
             w at t}

Agreement between PRO and *John* is obtained as follows: (i) The attitude verb *want* agrees with its subject, *John*; (ii) The ϕ-features on *want* are inherited by the individual λ-binder it introduces; (iii) PRO must be bound by this binder in virtue of its [log/loc] features; (iv) binding requires ϕ-matching.

This analysis raises a number of problems, not only for agreement. First, the locality of binding in OC is encoded (by [loc]) and not explained. Second, it is implied that PRO is inherently specified as a logophoric pronoun, whereas in fact it is found in a variety of non-attitude contexts (e.g., *The paintings managed [PRO to make the place a little brighter], This tool is [PRO to be used with caution]*). The fact that PRO in attitude complements is a locally bound variable should emerge from properties of the construction itself and not be written into its lexical entry.

Third, and most relevant to our present concerns, the postulated agreement between the attitude verb and the AH is not syntactically grounded. It cannot be made parasitic on subject-verb agreement because the congruence between "subject" and "AH" is accidental. Object control verbs like *persuade* introduce attitudes that are keyed to the matrix *object*'s doxastic alternatives. Worse, the controller does not even have to be the AH, e.g. with communication verbs (*tell, recommend, urge*, etc.).

Furthermore, prevalent syntactic accounts take the locus of "verbal agreement" to be a functional head (little *v*) rather than the lexical stem, the locus of the intensional quantifier.

---

[5] The ϕ-matching condition is lifted in languages with indexical shift, allowing 1st person embedded pronouns to be semantically bound by 3rd person matrix DPs.

The sharing of ɸ-features between the two is not trivial. At any rate, the purported "middleman" in the agreement chain - the attitude verb - never manifests the ɸ-features of the AH *as such* (although it may or may not manifest subject agreement, an independent relation).

Finally, controllers may be oblique arguments, which never trigger verbal agreement elsewhere (e.g*., John pleaded **with Mary** to forgive him*, dative experiencer controllers, etc.). Why would they trigger (invisible) agreement only on control verbs?

A second, more recent attempt to integrate agreement into a formal semantic analysis of OC is presented in Pearson 2013:147. Following Chierchia 1990, an individual abstractor is generated at the edge of the attitude complement, (11b). Doxastic alternatives are defined as in (11c). The semantics of an attitude verb like *intend*, with an irrealis complement, involves quantification over <individual,world,time> triplets as well as a temporal shift to the future, (11d). The *de se* reading is achieved in the by-now familiar way.

(11) a.   John intends to win the lottery.
      b. $[\lambda x \; [PRO_x$ to win the lottery]
      c. $INTEND_{x,w,t} = \{ <y,w',t'> \mid$ it is compatible with what x intends in w at t for
            x to be y in w' and for t to be t'}
      d. $[\![intend]\!]^{g,c} = \lambda P.\lambda x.\lambda t.\lambda w. \forall <w',t',y> \in INTEND_{x,t,w}$,
            $\exists t'': t' <_{precedes} t'' \; \& \; P(y)(t'')(w')$

As for agreement, Pearson recognizes the unfortunate reliance of von Stechow's analysis on subject-verb agreement. To overcome it, she defines the *designated argument* of an attitude verb: It is the individual whose doxastic counterpart is identified with the individual coordinate of the world-time-individual triple quantified over by the predicate (e.g., subject of *promise*, object of *persuade*). A special feature, dubbed [att], serves to establish agreement between the verb and this argument; ɸ-agreement piggybacks this relation. As in von Stechow's analysis, the individual λ-binder picks these ɸ-features. PRO must be bound by the individual abstractor, and binding requires ɸ-matching (followed by Feature Deletion).[6] Thus, PRO comes to agree with the designated argument, which is the controller.

In this analysis, agreement with PRO is correctly dissociated from subjecthood of the controller. However, it is still tied to the *de se* center (the designated argument). This leaves out control by the addressee under communication verbs.

---

[6] Adapting a proposal by Percus and Sauerland (2003b), Pearson (2003:536) speculates that the abstractor is just PRO itself, having moved from the subject position. This simplifies the process in that ɸ-matching between PRO and its binder reduces to copy identity under movement. The problems listed below, however, remain unchanged.

Second, the feature [att], which solves the subject-oreintation problem, introduces a new problem. It looks like a tailor-cut feature for the problem at hand, not otherwise attested. In fact, [att] re-encodes a purely semantic relation in the morphology, bypassing syntax.

Third, the inheritance of φ-features from the attitude verb to the individual λ-binder is even less transparent than it is in von Stechow's analysis. There, the λ-binder was introduced immediately below the verb, in the matrix clause; agreement could be argued to operate within the extended V-projection. Here, on the other hand, the individual λ-binder is located at the edge of the complement. There is no automatic feature sharing mechanism between V and [Spec,CP] of its complement, although Pearson's analysis seems to rely on some such mechanism.

Finally, two problems inherent in von Stechow's analysis carry over to Pearson's: The alleged agreement relation between the attitude verb and the designated argument is never manifested as such; and controllers are often oblique arguments, which never trigger verbal agreement elsewhere.

In sum, while most of the formal semantic accounts of OC disregard the problem of agreement, the few that do address it fail to provide a satisfactory account. The failure, I believe, is not incidental, but rather reflects a fundamental shortcoming that cannot be overcome without a radical reoreintation of the entire approach.[7]

3.3 Why is the agreement problem so fundamental?

Why do the standard semantic accounts of OC, framed within the property theory or the centered worlds theory, fail to capture the agreement between PRO and the controller? The reason is simple and principled: The syntactic configurations required by these theories are patently unsuitable to mediate agreement. More concretely, the two semantic relata – the controller and PRO – are *not* syntactic relata; either they are completely unrelated in the syntax, or they are indirectly related by a series of arbitrary links that cannot be justified on syntactic grounds.[8]

---

[7] The four semantic proposals discussed here invoke either Feature Transmission or Feature Deletion to explain the absence of the standard presuppsoitional import of φ-features on bound pronouns. It is well-known that other accounts exist that rely on assigning bound pronouns nonstandard denotations (Sudo 2014). The agreement problem, however, is deeper than the distinctions among these camps, which all rely on the premise that agreement requires coindexing. But on the standard semantic analysis of OC, PRO is not essentially coindexed with the controller DP; rather, it is coindexed with a local operator. Hence, *all* these approaches to φ-features on bound pronouns fail to extend to OC. Nevertheless, a crucial crosslinguistic generalization about the distribution of OC complements will turn out to favor the Feature Transmission approach; see section 5.4.

[8] The semantic literature, by and large, does not acknowledge the problem of agreement in OC. A notable exception is Schlenker (2003, 2011): "In a nutshell, the difficulty is that even though PRO is bound by an operator in the embedded clause, it still inherits its morphological features from an argument of the matrix clause. The details are somewhat stipulative on every account" (Schlenker 2011:1575).

This state of affairs can can lead to one of two conclusions. One option is to make substantial changes in the theory of agreement. Most importantly, agreement would have to be able to operate postsyntactically, and even post-LF, at the semantic component. In particular, Agree (x,y) would have to be defined over pairs <x,y> such that "y binds the individual variable that is the doxastic counterpart of x". Although possible in principle, such a move seems very undesireable. Even ignoring the characterization of the dependency itself, the very idea that agreement applies to semantic representations goes against the grain of much work in generative grammar. In fact, current work suggests, quite plausibly, that agreement is a PF process, since its input is affected by morphological operations (Bobaljik 2008, Sigurðsson 2006, 2009, Chung 2012) and its output fails to affect semantic interpretation (Heim 2008). In particular, an argument of the latter type was made that agreement in OC must be a PF phenomenon (Landau to appear).

A second option is to make substantial changes in the formal semantic analysis of OC; specifically, develop an analysis that invokes an "agreement-friendly" syntax. This syntax must *simultaneously* support (i) agreement between the controller and PRO, using straightforward and independently justified agreement mechanisms, and (ii) an account of the obligatory *de se* reading in OC that is also streamlined with some general approach to the semantics of attitudes. The analysis below was developed with these two goals in mind.

4. The two-tiered theory of control (*de se* as a special *de re*)

The conclusion of the last section adumbrates the outlines of the theory I propose.

The syntax of OC constructions will employ direct variable binding between the controller DP and PRO, or more precisely, between the controller DP and a variable that co-varies with PRO. This will allow straightforward ϕ-agreement by Feature Transmission. The question posed in section 1 will receive a positive answer: The bound variable interpretation of OC PRO *is* syntactically represented.

The semantics of OC constructions will employ an analysis of *de se* attitudes as a special case of *de re* attitudes. That is, a presupposition associated with the head of the complement will guarantee that the *de re* variable is acquainted to the AH via the 'self' relation. This will rule out the unwanted *de re* readings that standard syntactic accounts of OC invariably let in (as noted in section 2).

In section 4.1 I present the general syntax-semantics format for *de re* attitudes, based on Percus & Sauerland 2003a. In section 4.2 I derive the *de se*-version of that analysis and integrate it with the syntax of OC constructions. In section 4.3 I turn briefly to OC under nonattitude verbs, suggesting that it is mediated by simple predication.

4.1 *De re* attitudes: A general syntax-semantics format

As a starting point, I assume that information about the speech/thought context of the matrix clause is represented syntactically in the C-system of the attitude complement, a conclusion emerging from a long research tradition.[9] For simplicity, all the matrix coordinates will be compressed as a tuple on C, although more articulated projections are consistent with everything that follows.

The complementizer of an attitude complement introduces a *context tuple*, or, to use Bianchi's (2003) term, a *logophoric center*, consisting of the author of the speech/mental event, an optional addressee, the time and the world of the matrix event. This context is represented as a variable, *i*, whose coordinates are extracted by designated functions.

(12) *Attitude complementizers*
    a.   <u>Version I</u>: $C(omp)_i$: <AUTHOR(i),ADDRESSEE(i),TIME(i),WORLD(i)>
    b.   <u>Version II</u>: $C(omp)_i$: <pro_x,pro_y,TIME(i),WORLD(i)>
        Presuppositions: pro_x = AUTHOR(i), pro_y = ADDRESSEE(i)

The two versions are semantically equivalent but differ syntactically. In version I, the individual coordinates contain the (syntactcially present) functions AUTHOR and ADDRESSEE. In version II, the indexical content is supplied by presuppositions on C and the individual coordinates are pure variables, represented as null, unvalued pronouns. For reasons to become clear soon, we adopt the latter.

The null coordinate pronouns are minimal in the sense of Kratzer 2009. For concreteness, assume the following lexical entry ($[u\phi]$ stands for unvalued ϕ-features).

(13) *A minimal pronoun*
    X is a minimal pronoun if and only if X=[D,$u\phi$].

Within different derivations, X can become a reflexive, a bound lexical pronoun, a resumptive pronoun, a *pro* element identified by local agreement, a relative pronoun, or indeed, as we will see below, a controlled PRO. The choice among these options is determined by a combination of the syntactic context and the lexical inventory of the language. Very often, minimal pronouns are bound and consequently ϕ-valued by Feature Transmission from their binder. I return to this point in section 5.2, where I discuss the interaction of OC and agreement.

---

[9] See Koopman and Sportiche 1989, Bianchi 2003, Sigurðsson 2004, 2011, Speas 2004, Adesola 2005, Baker 2008, Giorgi 2010, Sundaresan 2012.

With this syntactic machinery in place, we can turn to the semantic analysis of *de re* attitudes.[10] The core intuition, inherited from the philosophical literature, is that *de re* attitudes imply an acquaintance relation between the AH and some *res* (the individual who the belief is about); this relation is sometimes called "the description of the *res* for the AH". In Percus & Sauerland's (2003a) insightful implementation, the acquaintance relation is introduced via a concepot generator, and attitude complements are analyzed as functions from concept generators to propositions. The following characterization is adapted from their work.

(14) *Concept generators*

   $G_{<e,<\kappa,e>>}$ is a concept generator iff:

   a. $[\![G]\!]^{g,c} = \lambda res.\lambda i'.\iota(r_e)$: r is picked by description G of the *res* for the AH (=the AH's concept of the *res*) in context i' (r is the "counterpart" of the *res*).
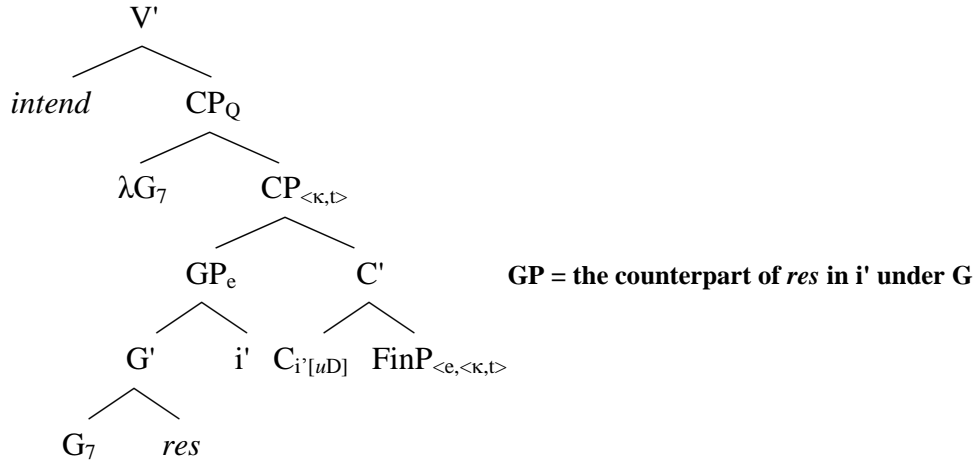
   G must be suitable, where a concept generator is *suitable* for x, an AH, in context c, iff:

   b. <u>Acquaintance</u>: $\forall y \in Dom(G)$, x is acquainted with y in c.
   c. <u>Uniqueness</u>: $\forall y,z \in Dom(G)$, $y \neq z \rightarrow G(y) \neq G(z)$.

As noted, the attitude complement, on this analysis, is a function from concept generators to sets of contexts (=propositions), type $<<e,<\kappa,e>>,<\kappa,t>>$ (where κ is the type of contexts and contexts are coordinate tuples). Applied to a given *res*, the concept generator returns the counterpart of the *res* in the AH's doxastic alternatives; the embedded property is then predicated of this individual counterpart. Syntactically, I assume that the property-denoting constituent is a FinP (we will shortly see how this denotation is derived) and the individual counterpart is hosted in [Spec,CP]. This gives us the following general structure.

---

(15) *de re*: a general format

```
                              V'
                         _____
                      intend      CP_Q
                               _____
                             λG₇       CP_<κ,t>
                                     _____
                                   GP_e        C'
                                  _____     _____
                                 G'   i'   C_i'[uD]  FinP_<e,<κ,t>
                               _____
                              G₇   res
```

GP = the counterpart of *res* in i' under G

The selectional [uD] feature on C requires a nominal specifier (we may call this kind of complementizer a *transitive* C). This is where the *res* is projected and mapped by G to the counterpart individual, in the attitude context i'. C predicates its complement FinP on its specifier GP, producing a proposition. The following is a partial semantic composition.

(16) a. $[\![CP]\!]^{g,c} = \lambda i'.[\![FinP]\!]^{g,c}(g(7)(res)(i'))(i')$

   b. $[\![CP_Q]\!]^{g,c} = \lambda G_7.\lambda i'.[\![FinP]\!]^{g,c}(G_7(res)(i'))(i')$

   c. $[\![intend]\!]^{g,c} = \lambda Q.\lambda x.\lambda w.\exists G$ for x in w $\wedge$ G is suitable $\wedge$ $\forall i'\in INTEND_{x,w}$, $Q(G)(i') = 1$

   d. $[\![[intend\ CP_Q]]\!]^{g,c} = \lambda x.\lambda w.\ \exists G$ for x in w $\wedge$ G is suitable $\wedge$ $\forall i'\in INTEND_{x,w}$, $[\![FinP]\!]^{g,c}(G(res)(i'))(i') = 1$

To illustrate, given the sentence *Ralph intended for Betty to join the club*, this treatment yields the following paraphrase: There is a concept generator for Ralph in the actual world, that establishes a suitable acquaintance relation between Ralph and Betty under some description, and in all of the contexts that conform to Ralph's intentions, the person picked by that description joins the club.

The next step is to construct a representation of this form for *de se* attitudes.

4.2 *De se* as a special case: Logophoric OC

As several authors observed, the cognitive relation between the AH and the *res* establishes an egocentric perspective that can serve as the basis of *de se* attitudes (Percus and Sauerland 2003a, Schlenker 2003, Anand 2006, Maier 2011). *De se* would be that special case of *de re* where *res*=AH and the reflexive acquaintance relation is AUTHOR ("This is me!" / "This person is the author of my thoughts!"). Notice that this possibility comes for free and is in fact inevitable, given the general characterization in (14). The fact that it provides an elegant solution to the syntactic problem of agreement in OC was never taken as an argument in its

14

favor, simply because from the semantic point of view, this possibility needs no special advocacy. The convergence between the syntactic and the semantic considerations, therefore, is all the more compelling.

Let us state this option more formally. We define two concpet generators, G_{SELF} and G_{THOU}, that yield a self-identification relation (*de se*) and an addressee-identification relation (*de te*), respectively.

(17) *De se/te as a special kind of de re*

    a. $G_{SELF} =_{def} G: \forall y \in Dom(G), G(y) = $ AUTHOR.
        For any individual z: $[\![G_{SELF}]\!]^{g,c}(z) = \lambda c'.$AUTHOR$(c')$

    b. $G_{THOU} =_{def} G: \forall y \in Dom(G), G(y) = $ ADDRESSEE
        For any individual z: $[\![G_{THOU}]\!]^{g,c}(z) = \lambda c'.$ADDRESSEE$(c')$

G_{SELF} and G_{THOU} are constant functions. Because of the uniqueness condition (14c) on suitable Gs, their domains are singletons. Thus, every individual is paired with a unique G_{SELF} and a unique G_{THOU}, which map it to the AUTHOR and ADDRESSEE functions, respectively.

What is special about OC (attitude) contexts, then, is that the acquaintance relation between AH and himslef is fixed as G_{SELF}, and not by any other conceivable G.[11] This bit of semantic information cannot be part of the meaning of the attitude verb itself, which, of course, accommodates all kinds of *de re* ascriptions. The natural locus for this information is rather the OC complementizer, C^{OC}; it is only in combination with this complementizer that attitude verbs generate obligatory *de se* readings. This intuition is rendered below as a presupposition triggered by C^{OC}. I will call this type of control *logophoric*.

Consider now how logophoric OC complements are constructed syntactically. Following the general format of *de re* complements (15), a predicative FinP is embedded under a logophoric C, C^{OC}, which projects the AH's doxastic counterpart. At this point we should address the question of how a clausal projection, FinP, comes to denote a property. A standard was of achieving this result is by operator movement to the edge of the projection (e.g., *tough*-constructions, relative clauses etc.). In the case at hand, the operator is no other than PRO. By moving from [Spec,TP] to [Spec,FinP], PRO creates an operator-variable configuration that is interpreted as as property (for earlier incarnations of this idea, see Chomsky 1980, Hendrick 1988 and Clark 1990). In order to force this movement, we assume that the Fin head in OC complements, just like C^{OC}, is a transitive head, endowed with a selectional feature [uD] that attracts PRO to its specifier.

---

[11] From this point on I focus on *de se* and assume that *de te* is amenable to a parallel treatment.

Note that PRO is nondistinct from the coordinate *pro*$_x$ (the different labels are merely a convenience); both are generated as minimal pronouns. Precisely because it is a contentless element − virtually, a numerical index - PRO does not saturate the λ-predicate formed by its movement. In other words, the radical impoverishment of a minimal pronoun allows it to turn into an operator, once moved. The trace of PRO, equally devoid of content, serves as the variable abstracted over.

The diagram below illustrates the syntactic derivation of a simple attitude subject control sentence; object control receives a parallel treatment, except that $C_{i'}$ projects *pro*$_y$ instead of *pro*$_x$. *pro*$_y$ would be associated with G_{SELF} under psychological object control and with G_{THOU} under communicative object control.

(18) *Derivation of logophoric control*
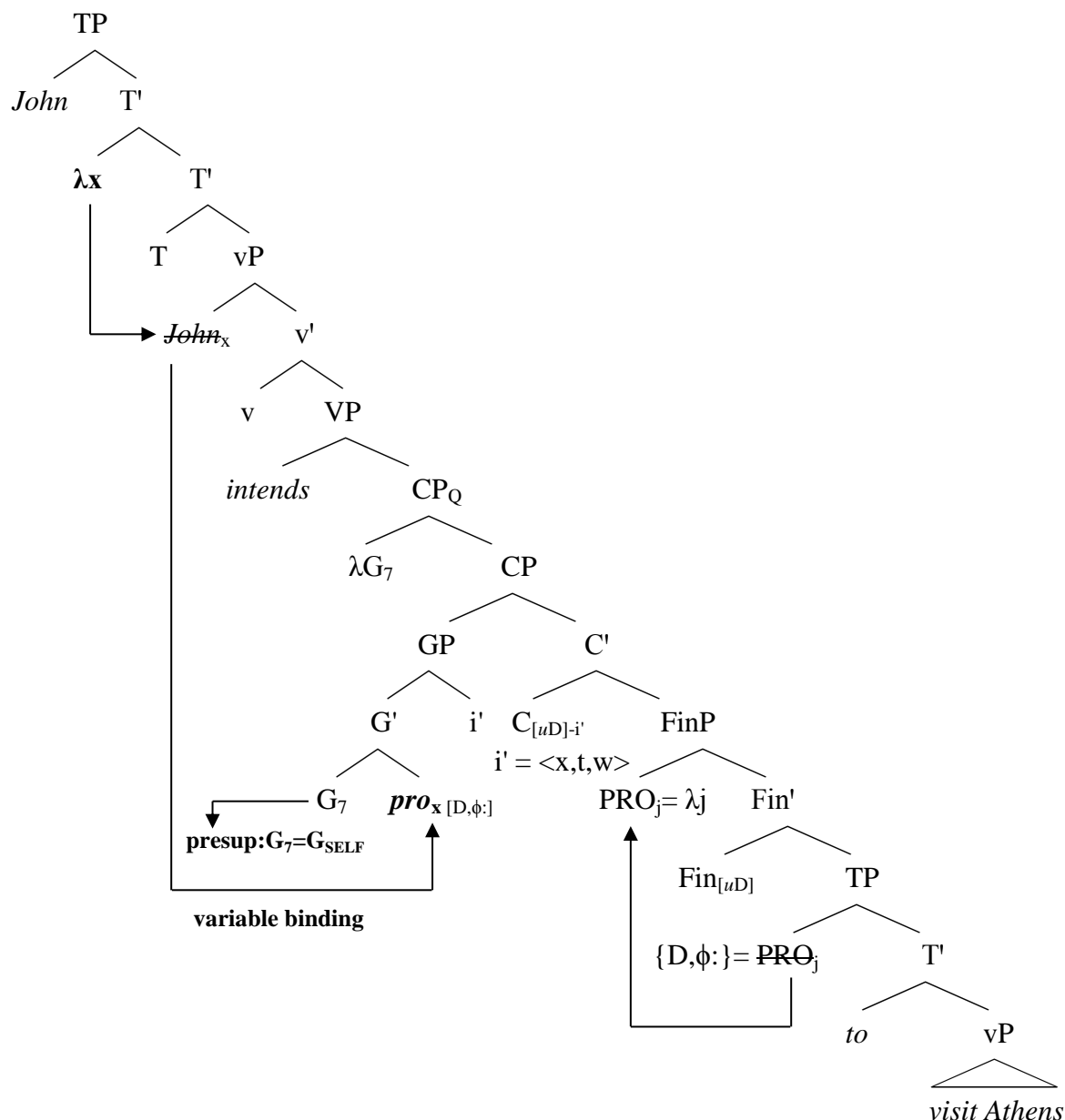
As we shall see below, this structure supports an explicit semantic composition of the obligatory *de se* reading. It has significant additional benefits as well.

First, the subjecthood of PRO is derived. Because of the Minimal Link Condition, $Fin_{[uD]}$ attracts to its Spec the closest nominal (D-bearing element), namely the subject. Thus, the unsaturated position in the complement must be the subject position. Note also that a lexical DP in this position would render the structure uninterpretable, since FinP would be a saturated proposition which cannot be predicated of the nominal in [Spec,CP] (see the denotation of C^{OC} in (19b)).

Second, obligatory *de se* is dissociated from PRO and pinned to C^{OC}, the head of attitude OC complements. This is just the right result. As indicated in the next section, OC PRO fails to display obligatory *de se* in nonattitude contexts (e.g., *John failed to win the prize, We forced John to wake up*), while controlled lexical pronouns, in languages like Korean and Hungarian, show it in attitude contexts (Madigan 2008, Szabolcsi 2009). The property only arises in attitude OC complements because it is specifically written into the lexical entry of their head, C^{OC}. It arises as a presupposition attached to an argument of the head, just like run-of-the-mill lexical presuppositions do.[12]

Third, controller choice is left open; *some* coordinate must be projected, but neither the matrix V nor C^{OC} dictate which one it is *at the level of LF*. Again, this is just right. Controller choice is sensitive to a variety of pragmatic considerations that are better handled outside core syntax (see Landau 2013:124-148).

Fourth, the locality of binding is derived without stipulative diacritics on PRO. The PRO-predicate applies to a function of pro_x and pro_x is mapped to the AUTHOR of the local (embedded) context because it is an *argument* of that context.

Fifth and most importantly, this structure provides a principled explanation for agreement in OC, which was the fundamental hurdle for the standard semantic accounts. The variable binding dependency between the controller and pro_x and the predicative relation between pro_x and the PRO-derived predicate, jointly mediate Feature Transmission between the controller and PRO. No special assumptions or ad-hoc mechanisms are invoked; PRO agrees with the controller for the same reason that bound pronouns agree with their binders and relative pronouns agree with relative heads. Crucially, the syntax just sees a simple variable, pro_x, and a simply operator, PRO, both of which need φ-valuation. The semantics, however,

---

[12] One might object that writing *de se* into lexical meanings does not explain it; but this objection, of course, equally holds of the standard accounts. Natural language privileges *de se* attitudes and this design feature must ultimately be reflected in lexical inventories. Still, the clear advantage of the current proposal is that it does not posit systematically ambiguous lexical entries for attitude verbs, one for *de re* and one for *de se*. Rather, there is a single *de re* verbal entry, and distinctions in possible values for the concept generator are specified on the different complementizers the verb may take (which are anyway distinguished in form).

sees $G_{SELF}(g(x))(i')=$AUTHOR(i'), which delivers the *de se* reading. Our initial challenge is met: The syntax of OC simultaneously supports the right semantics and the right morphology.[13]

At this stage we can verify that the structure in (18), combined with the general *de re* semantics in (15), delivers the desired *de se* interpretation. Note, in particular, the role of the "major player", C^{OC}: it introduces the G_{SELF} presupposition, predicates its complement of its specifier, and abstracts over contexts. The G_{SELF} presupposition projects all the way to the matrix clause.

(19) *John intends to visit Athens*

  a. $[\![\,[_{FinP}$ PRO to visit Athens$] \,]\!]^{g,c} = \lambda z.\lambda c'.[\![$visit Athens$]\!]^{g,c}(z)(c')$

  b. $[\![\, C_{i'}^{OC} \,]\!]^{g,c} = G_7=G_{SELF}: \lambda P.\lambda y.\lambda i'.P(y)(i')=1$

  c. $[\![C']\!]^{g,c} = [\![\, C_{i'}^{OC} \,]\!]^{g,c}([\![FinP]\!]^{g,c}) = \lambda y.\lambda i'.G_7= G_{SELF} : [\![$visit Athens$]\!]^{g,c}(y)(i')=1$

  d. $[\![GP]\!]^{g,c} = g(_7)(g(x))(i')$

  e. $[\![CP]\!]^{g,c} = [\![C']\!]^{g,c}([\![GP]\!]^{g,c}) = \lambda i'.G_7=G_{SELF} : [\![$visit Athens$]\!]^{g,c}(g(_7)(g(x))(i'))(i')=1 = \lambda i'.G_7=G_{SELF} : [\![$visit Athens$]\!]^{g,c}(G_{SELF}(g(x))(i'))(i')=1$

  f. $[\![CP_Q]\!]^{g,c} = \lambda G_7.[\![CP]\!]^{g,c} = \lambda G_7.\lambda i'.G_7=G_{SELF} : [\![$visit Athens$]\!]^{g,c}(G_{SELF}(g(x))(i'))(i')=1$

  g. $[\![intend]\!]^{g,c} = \lambda Q.\lambda x.\lambda w.\exists G$ for x in $w \wedge G$ is suitable $\wedge \forall i'\in$INTEND$_{x,w},Q(G)(i') = 1$

  h. $[\![\,[intend$ CP$_Q] \,]\!]^{g,c} = \lambda x.\lambda w.G=G_{SELF} : \exists G$ for x in $w \wedge G$ is suitable $\wedge \forall i'\in$INTEND$_{x,w}$, $[\![$visit Athens$]\!]^{g,c}(G_{SELF}(g(x))(i'))(i')=1$

The existential quantification over G is superflous, given that its value is fixed as G_{SELF}, yielding (19i). Since there is always a suitable choice of G_{SELF}, this is simplified as (19j); and since G_{SELF} maps its argument to AUTHOR, we obtain (19k).

(19) i. $= \lambda x.\lambda w.G_{SELF}$ is suitable $\wedge \forall i'\in$INTEND$_{x,w}$, $[\![$visit Athens$]\!]^{g,c}(G_{SELF}(g(x))(i'))(i')=1$

   j. $= \lambda x.\lambda w.\forall i'\in$INTEND$_{x,w}$, $[\![$visit Athens$]\!]^{g,c}(G_{SELF}(g(x))(i'))(i')=1$

   k. $= \lambda x.\lambda w.\forall i'\in$INTEND$_{x,w}$, $[\![$visit Athens$]\!]^{g,c}($AUTHOR$(i'))(i') = 1$

(19k) captures the right *de se* semantics, as desired.[14] We now turn to provide a brief account of OC under nonattitude predicates.

---

[13] Sauerland (2013) sketches a solution to the agreement problem of *de se* pronouns that invokes a *de re* component in them. This component, however, unlike pro_x in the present account, does not enter any syntactic relation with the controller; rather, it is locally bound by an operator at the left edge of the complement. Hence, the same difficulties arise as on the other semantic approaches discussed in section 3.

[14] The analysis in (18) is much inspired by Percus and Sauerland (2003b) treatment of *de re* attitudes. It should be noted, though, that P&S propose a different LF for OC complements, involving pronoun-movement, which derives the obligatory *de se* reading as in the property view of Chierchia 1990. The agreement problem, therefore, extends to their analysis as well.

4.3 Predicative control

Although the obligatory *de se* (or *de te*) reading is often taken to be criterial of OC and PRO itself, this cannot be true. OC is attested in a number of nonattitude environments, where the *de re*/*de se* distinction is irrelevant. Predicates that select such complements belong to four classes: modal, aspectual, implicative and evaluative (see Landau 2013:33-34). For reasons to become immediately clear, I label this type of OC as *predicative control*.

(20)   *Predicative (nonlogophoric) control*
    a.   John is able [PRO to swim faster than you run].   *modal*
    b.   Mary started [PRO to draw a picture].   *aspectual*
    c.   Bill managed [PRO to finish on time].   *implicative*
    d.   It was rude of Paul [PRO to make this suggestion].   *evaluative*

Standard tests (e.g., *de dicto* readings of definite descriptions, opacity for existential entailments) indeed confirm that the complements in (20) are not attitude contexts. Control, therefore, cannot be mediated by any of the mechanisms discussed in sections 4.1-4.2. The formal semantic literature, in fact, shows little interest in how control is achieved in these cases (see Grano 2015 for a notable exception). I discuss them in the present context not because they pose the same kind of agreement puzzle (they do not), but rather because they set certain constraints on the proper analysis of logophoiric control.

The most obvious constraint is that PRO should be a truly minimal pronoun, and in particular, should not be tagged with any inherent "logophoric" feature, to guarantee its *de se* interpretation. Any such feature, invoked in logophoric control, must be absent from PRO in predicative control (which lacks the *de se* reading). This would imply an ambiguous entry for PRO, a highly undesireable result, given the plain observation that the distinction is fully recoverable from the grammatical environments in which PRO occurs.

In nonattitude control, the complement's property is directly predicated of the matrix controller. This direct predication relation is represented at LF. Semantically, it has the consequence that some real-world entailment is licensed. For example, (20c,d) entail that Bill finished on time and that Paul made the suggestion, respectively. (20b) entails that Mary engaged in the beginning of the action of drawing the picture, and (20a) entails that John possesses some physical quality that enables him to swim faster than you run.

The predicative analysis of OC has, of course, a long pedigree, starting from Williams 1980. A natural execution of this analysis is the restructuring hypothesis, which takes the complement to be a subclausal, VP projection, denoting an unsaturated property (Wurmbrand 2003). Indeed, modal, aspectual and implicative verbs are the core members of restructuring predicates in Romance and Germanic languages. This syntactic option, however, cannot be the only one, since many languages without any grammatical evidence

for restructuring employ predicative control. For these languages, there must be a way of turning the clausal projection of the complement into an unsaturated property.

In the analysis of logophoric control we have already introduced this device - operator movement to [Spec,FinP], realized by PRO. The natural conclusion is that complements of predicative control are bare FinP projections, lacking the CP layer. This makes sense since the C projection, by hypothesis, precisely encodes the information that is not registered in such (nonattitude) complements, about the participants of the speech/thought event.

The diagram below illustrates the general syntactic format of predicative control with an implicative verb. Predicative control is also attested with a few object control verbs (e,g,, *force*). For those, we assume that the complement is embedded inside a causative small clause and predicated of the causee.

(21) *Derivation of predicative subject control*
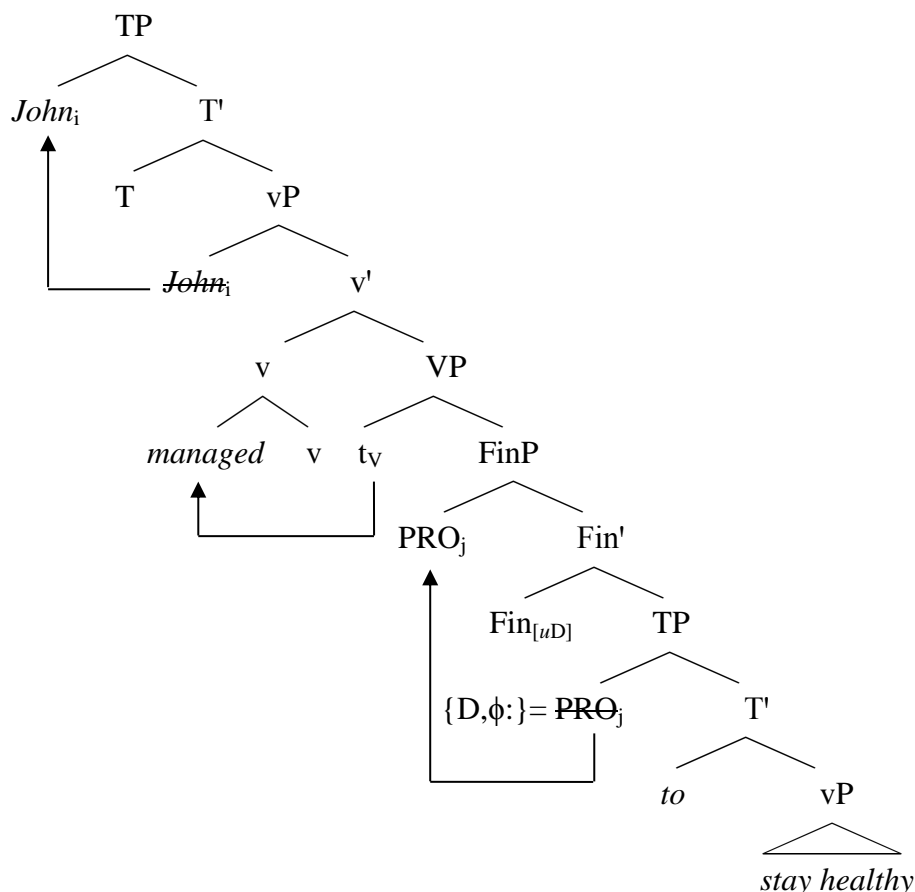
Note that the core properties of interest are derived. The abstracted-over position must be the subject, due to the Minimal Link Condition, as before. No lexical DP is allowed in that position for semantic type reasons (the matrix verb selects an unsaturated property). The

locality of control is ensured by the strict locality of predication (e.g., mutual m-command).[15]

Agreement between the controller and PRO boils down to agreement under predication. The unvalued PRO-operator that forms the λ-abstract inherits the φ-features of the controller DP by standard Agree. Note that Feature Trsnsmission under variable binding is not involved here. This difference will provide the key to a striking crosslinguistic asymmetry between the distribution of the two types of OC complements, the topic of the next section.

5. The selective effect of inflection on OC

The treatment of logophoric OC in terms of direct variable binding naturally accounts not only for the agreement between PRO and the controller, but also for the effect of agreement between PRO and the verbal inflection in the complement on the control relation itself. The data and the crosslinguistic generalization that emerges from them are described in section 5.1. Section 5.2 lays out the formal mechanism of feature sharing and characterizes the agreement profile of predication and variable binding. Section 5.3 applies these syntactic devices to the (predicative and logophoric) OC configurations to derive the crosslinguistic generalization from section 5.1. Finally, section 5.4 highlights the theoretical implications of this results to the debate within the semantic literature surrounding the proper treatment of φ-features on bound pronouns.

5.1 The OC-NC generalization

Crosslinguistic studies have revealed many languages in which OC is attested with inflected complements (e.g., subjunctive, inflected infinitive, nominalized complement). In all those cases, however, inflection is possible only in a subset of OC complements. Outside that subset, inflection cancels OC and licenses an embedded referential *pro* subject, that is, no control (NC). While Landau (2004, 2006, 2013) characterizes this subset in terms of the temporal properties of the complement, Landau (forthcoming) argues that the true criterion is whether the complement is an attitude context or not. The interaction of inflectional agreement in the complement ([+Agr]) and its semantics is stated below.

(22) *The OC-NC Generalization*
      [+Agr] blocks OC in attitude complements but not in nonattitude complements.

Equivalently, a complement clause whose head is inflected for φ-features may either display predicative control or no control at all, but may not display logophoric control. We illustrate the effects of this generalization in the data sample below; for

---

[15] Other important contrasts between logophoric and predicative control also follow, like the tolerance to partial, split or implicit control. I also do not elaborate here on the specific semantics of nonattitude control verbs, although there are obvious differences between the different subclasses in (20). These matters are discussed in Landau, forthcoming.

the full picture, the reader is referred to the cited works.[16] In all cases, OC is diagnozed in the relevant sources not just by obligatory coindexing but by additional standard tests (e.g., no strict reading under ellipsis). NC is diagnozed either by free pronominal reference or a lexical DP in the embedded subject position.

(23) **OC in [–Att,-Agr] complements**
Mary$_i$ managed [PRO$_{i/*j}$/*Bill to finish in time].

(24) **OC in [–Att,+Agr] complements**
Greek subjunctives (Varlokosta 1993)

O	Yanis	tolmise	na	figi	(*o Giorgos).
the	John.NOM	dared	PRT	leave.3SG	(*the George.NOM)

'John dared (*for George) to leave.'

(25) **OC in [+Att,–Agr] complements**
a. Mary$_i$ planned/hated [PRO$_{i/*j}$/*Bill to lock the door].

b. *Welsh uninflected infinitives* (Tallerman 1998)

Gwnaeth	Elen	gytuno	[i / *iddi		ddarllen	y	llyfr].
did		Elen	agree	to / *to.3Fem.SG	read		the book

'Elen agreed to read the book.'

(26) **NC in [+Att,+Agr] complements**
a. *Greek subjunctives* (Varlokosta 1993)

O	Yanis	elpizi	na	figi	(o Giorgos).
the	John.NOM	hopes	PRT	leave.3SG	(the George.NOM)

'John hopes to leave' / 'John hopes that George would leave.'

b. *European Portuguese inflected infinitives* (Raposo 1987)

Eu penso/afirmo	[ter-em	os	deputados	trabalhado	pouco].
think /claim.1SG	to.have-3PL	the	deputies	worked	little

'I think that the deputies have worked a little bit.'

c. *Welsh inflected infinitives* (Tallerman 1998)

Disgwyliodd	Aled	[iddi	hi/*pro*	fynd].
expected		Aled	to.3FSG	she/*pro*	go

'Aled expected her to go.'

Sometimes the effect of agreement (on logophoric control) can be seen with the same matrix verb, as in the following minimal pair from Turkish (Słodowicz 2007).

---

[16] The notation [±Att] is merely intended to label the semantic type of the complement and should not be thought of as a grammatical feature.

(27) a. **OC in Turkish [+Att,–Agr] nominalized complement**
   Ahmet$_i$ [PRO$_{i/*j}$ düş-mek]-ten kork-uyor-du.
   Ahmet   fall.INF-ABL   fear-PROG-PST.3SG
   'Ahmet was afraid to fall.'

   b. **NC in Turkish [+Att,+Agr] nominalized complement**
   Ahmet$_i$ [pro$_{?i/j}$ düş-me-sin]-den kork-uyor-du.
   Ahmet   fall.INF-3SG-ABL   fear-PROG-PST.3SG
   'Ahmet was afraid that he would fall.'

The OC-NC generalization is a *formal* constraint of the grammar; there does not seem to be any deep semantic reason why agreement on the embedded verb should block control in this selective manner. In order to understand this interaction, we need to have a clear understanding of how agreement operates in the syntactic enviroments of OC.

5.2 Feature transmission, sharing and deletion

In line with a growing body of research, I assume that agreement processes take place at PF (see Bobaljik 2008, Sigurðsson 2006, 2009, Chung 2012 and Landau, to appear). This assumption captures the traditional insight that agreement itself - the insertion of inflectional morphology that registers the interpretable ϕ-features of a nominal elsewhere in the sentence - does not have semantic effects; apparent counterexamples are indeed rare and plausibly involve interpreting "hidden" material rather than the inflectional morphology itself.

Because PF, at least prior to linearization, operates on fully syntactic configurations, agreement may perfectly be subject to structural constraints (c-command, locality etc.). Because PF, however, does not communicate with LF, agreement outcomes may not have semantic consequences. This point is important to bear in mind when we discuss the valuation of PRO below.

Consider first predicative control. It is well known that syntactic predication is a configuration of agreement: If the predicate bears any ϕ-features, they normally match the ϕ-features of the subject. Matching is achieved in one of two ways: (i) feature transmission from subject to predicate, or (ii) feature transmission from predicate to subject. An example of (i) is agreement on adjectival predicates; an example of (ii) is verbal agreement with *pro*, which is likely inserted as a minimal pronoun with unvalued features. Classical GB-style Spec-head agreement is capable of yielding agreement in these two cases. Alternatively, they may be handled by the more current operation Agree, which transmits ϕ-values from valued to unvalued occurrences of features. The choice between these options is not crucial for the present concerns.

Let us see now how this type of agreement is instantiated in predicative control. To recall, a FinP projection is turned into a predicate by the movement of an operator PRO to its specifier, and the predicate applies to the controller DP. Agreement thus piggybacks two syntactic dependencies here: movement and predication.

(28) *ϕ-agreement in predicative control*
  [John[3.SG.M] managed-*v* [FinP PRO[ϕ:3.SG.M]-i Fin [TP ~~PRO~~[ϕ:3.SG.M]-i to stay healthy]]]

      └────────────────────────→↑ └────────────────────→↑
         by predication   **by movement**

The operator PRO is generated as a minimal pronoun; its [ϕ:] bundle is valued at PF by the saturating DP controller, *John*. This step could be the result of a direct Agree (*John*,PRO) operation, or an indirect result of a prior Agree (*John*,Fin) operation. PRO (or Fin) are accessible from the matrix clause, assuming that FinP is not a phase. Even if it is, the edge position of the raised PRO and Fin guarantees accessibility for agreement (Polinsky 2003, Bobaljik and Wurmbrand 2005). The ϕ-values transmitted to the raised PRO are shared by its lower copy, the variable PRO, by virtue of the movement chain (on feature sharing, see Pesetsky and Torrego 2007).

Consider next agreement in logophoric control. FinP is embedded under a "perspectival" CP that encodes the matrix participants. The head of this CP projects a pronominal variable, which simultaneously saturates the FinP predicate and is bound by the matrix controller. Thus, agreement travels along three syntactic dependencies: variable binding, predication and movement.

(29) *ϕ-agreement in logophoric control*
  [John[3,SG,M] λx intends-*v* [CP *pro*x C [FinP PRO[ϕ:3.SG.M]-i Fin [TP ~~PRO~~[ϕ:3.SG.M]-i to visit Athens]]]]

      └──────→↑ └──────→↑ └──────→↑
    by variable binding **by predication**   **by movement**

CP is a phase, but once again, *pro*x, at its edge, is part of the matrix spellout domain and so is accessible to Feature Transmission from the controller DP.

The added component in (29), compared to (28), is variable binding. That variable binding serves as a vehicle for feature transmission has been forcefully argued by Heim (2008) and Kratzer (2009). I will simply assume the correctness of this view, returning to a (novel) argument in its favor in section 5.4. Feature Transmission can be naturally viewed as a PF response to derivations regulated by the following condition.

(30) *Semantic condition on bound pronouns*
     At the semantic interface, bound pronouns must be minimal (i.e., unvalued).

One obvious way of ensuring that bound pronouns are minimal at the semantic interface is to select them as minimal pronouns from the outset. Such null pronouns will then figure throughout the derivation until the LF and PF interfaces. At LF, they are legible by (30). At PF, however, they are *not* legible, assuming that that spellout rules operate with value specifications.[17]

(31) *Output condition on ϕ-features*
      At spellout, ϕ-features must be valued.

Feature Transmission, then, is the grammar's way of dealing with unvalued pronouns at PF that *must* be unvalued at LF because they are bound. Is it the only way? Not necessarily. Once can imagine that bound pronouns can meet condition (30) via Feature Deletion at LF. Such pronouns would be valued both in syntax and at PF ("losing" their ϕ-specifications only at LF), and hence would trivially meet condition (31) as well. We presently turn to this option. Below I propose that both operations are available, but independent principles of a very general character guarantee that their respective jurisdictions are disjoint.

Continuing to focus on Feature Transmission (as a special case of agreement), let us state more formally the input and output of these operations. Agreement is a particularly strong form of matching; arguably, the strongest form. I will employ the notion "feature sharing" as developed in HPSG and adapted in Frampton and Gutmann 2006 and Pesetsky & Torrego 2007 to capture this relation. Upon Feature Transmission, the binder and bindee *share* the very same feature occurrences. What agreement between two feature *occurrences* achieves is elimination of one occurrence and "copying" of the other one into two *instances*. If feature occurrences are individuated by indices, the process can be represented as follows.[18]

(32) *Agreement and feature sharing*
      $F_\alpha[n]\dots F_\beta[\ ] \rightarrow F_\alpha[n]\dots F_\beta[n]$

(33) *Feature Transmission*
      Given a PF containing $[_\Sigma \dots X_{i\,[\alpha]} \dots pron_{i\,[\beta]} \dots]$, where:
      a. Σ is the spellout domain of X and *pron*.
      b.   X binds *pron*.
      c. α and β are the ϕ-sets of X and *pron*, respectively.

      Then (d) holds:
      d. $\forall F_\alpha[n], F_\beta[m], F \in \alpha \cap \beta$: m=n.

---

[17] The existence of "default agreement" does not undermine this condition. On the contrary, default agreement is blocked whenever standard agreement is applicable, precisely because spellout rules favor ϕ-valued inputs.
[18] There is an interesting analogy between the sharing/matching distinction on the PF side and the binding/accidental coindexing on the LF side, whose consequences I cannot pursue here.

In other words, features of the same type that occur both on a pronoun and on its binder must be shared (= have the same indexical address). Sharing is stronger than matching and can only arise from some form of agreement; it follows that the target (or probe) of agreement must be an unvalued item. A pronoun that fails to share its features with some DP cannot be bound by this DP.

Crucially, condition (33a) restricts this outcome to elements occurring in the same spellout domain. Non-local binding is exempt from this condition and is only subject to a weaker, matching requirement, holding at LF.

(34)   *Feature Deletion*
       Given an LF containing […$X_{i\,[\alpha]}$ … *pron*$_{i\,[\beta]}$ …], where:
       a.   X binds *pron*.
       b. α and β are the ϕ-sets of X and *pron*, respectively.

       Then for $\forall F \in \alpha \cap \beta$, delete F_β.

(34) is notably different from (33) in four respects. First, it applies at LF and not at PF. Second, it is not restricted by locality. Third, it operates on specified pronouns (by deleting their features) and not on minimal ones (by endowing them with features). Fourth, it is conditioned by matching and not by sharing; we return to the significance of this last point shortly.

The differences are all rooted in an architectural difference between the interfaces: While spellout is cyclic, semantic interpretation is not.[19] When the binder and bindee are too far apart to "communicate" at PF, they must resort to LF communication. Since feature sharing requires locality, it is unavailble in this situation, and only feature matching can be imposed.

This distinction between locally bound pronouns, which are targeted by Feature Transmission, and non-locally bound pronouns, which are not, is very much in the spirit of Kratzer 2009. Unlike Kratzer, however, the mechanism we invoke for non-local binding is not context-shifting but rather Feature Deletion (as in von Stechow 2003, Reuland 2010).

In effect, then, both minimal and inherently specified pronouns may end up being bound at LF. Each type meets condition (30) in a different way. A minimal pronoun must be bound within its spellout domain so that Feature Transmission may target it. An inherently specified pronoun must be bound from outside of its spellout domain so that Feature Deletion may target it.

---

[19] It is indeed hard to imagine how long-distance, effectively unbounded dependencies of variable binding can be interpreted in a cyclic fashion. I am also not aware of any syntactic evidence for cyclic effects in this area (unlike, say, visible cyclic effects of Ā-movement; see Boeckx 2007).

Importantly, the grammar avoids competition between the two mechanisms. The default mechanism for local binding is Feature Transmission. LF may not "sneak in" a Feature Deletion operation unless necessary, which will only arise in a non-local dependency. This derivational logic has parallel consequences elsewhere, as emphasized in Reinhart 2000, 2006 and Reuland 2010, 2011. Broadly speaking, semantic computation (specifically, λ-binding) may not "sneak in" interpretations that are blocked by the syntactic component (specifically, chain formation/Agree). The present account offers a domain-based rationale for this prohibition: Within a spellout domain, PF operations (like Feature Transmission) take priority over LF operations (like Feature Deletion).

With this conception of agreement in place, we can return to our fundamental puzzle: The source of the OC-NC generalization.

5.3 Deriving the OC-NC generalization

As shown in section 5.1, inflection in the complement has a selective effect on the possibility of control, which is summarized as follows.

(35) *The OC-NC Generalization*
    [+Agr] blocks OC in attitude complements but not in nonattitude complements.

Recall also from (28)-(29) that the controller DP and PRO agree via direct predication in nonattitude complements but via variable binding and predication in attitude complements. In fact, variable binding and predication crucially differ in their agreement properties.

(36) *A difference between agreement in predication and variable binding*
    a.   The formation of a predication relation is *not* contingent on feature matching between the subject and predicate.
    b.   The formation of a variable binding relation *is* contingent on feature matching between the binder and the pronominal variable.

This difference is quite general and completely independent of the present concerns. Beginning with (36a), notice that predication is closely related with agreement only with verbal and adjectival predicates. PP predicates bear no ϕ-features and nominal predicates need not match their subjects in ϕ-features, particularly when their own features are interpreted. Even adjectival predicates may fail to agree, as in quirky constructions.

(37) a.   John is [$_{PP}$ out of his mind].
    b.   Those women$_{[PL.F]}$ are [$_{DP}$ a committee]$_{[SG.N]}$.
    c.   Henni er kalt/*köld /*kaldri.   (*Icelandic*; Sigurðsson 2008)
          she.DAT is cold.NOM.NEUT.SG /*NOM.F.SG /*DAT.F.SG
          'She is cold.'

Although not imposed by predication *per se*, agreement on predicates may be required in specific situations. Clearly, when the predicate is not inherently specified for a given ϕ-value, it must undergo valuation, on pains of condition (31). It is also possible for the predicate to bear formal (uninterpretable) ϕ-features that do not originate on its subject, and then undergo *independent matching* with the subject (see Krazter 2009).

Things are dramatically different with Feature Transmission under variable binding. As Heim (2008) and Kratzer (2009) independently show, variable binding requires ϕ-agreement even in situations where the mismatch in features is semantically warranted.

(38) a. * Nina respects myself.   (uttered by Nina)
         b. * They$_i$ each thought he$_i$ had won.
             [cf. They$_i$ each thought they$_i$ had won]

These facts are readily explained on our assumptions. Specifically, condition (33) excludes (38a) and condition (34) excludes (38b). Feature Transmission in the local depndency of (38a) should generate, and Feature Deletion in the nonlocal dependency of (38b) depends on, matching ϕ-features between and the binder and bindee. Without it, these operations fail to apply and condition (30) is violated.

Given the asymmetry in (36), we can provide a principled account of the OC-NC generalization. Consider first the abstract syntactic relations that mediate agreement in predicative control into an *inflected* complement.

(39) *Predicative control into an inflected complement: Grammatical*

```
                          vP
                        /    \
              DP[φ:α,β…]        v′
                  ↑           /    \
                  |          v       VP
                  |        /  \     /   \
                  |       V    v   tV    FinP
                  |                     /    \
                  |          PRO[φ:α,β…]-i    Fin′
                  |              ↑          /    \
         independent            |        Fin      TP
         matching               |               /    \
         by predication         |      PRO[φ:α,β…]-i    T′
                                |                      /   \
                    by movement |             T[φ:α,β…]      vP
                                |               by Agree    /   \
                                |                  └──→ PRO[φ:α,β…]-i   v′
                                └────────────────────────────┘
```
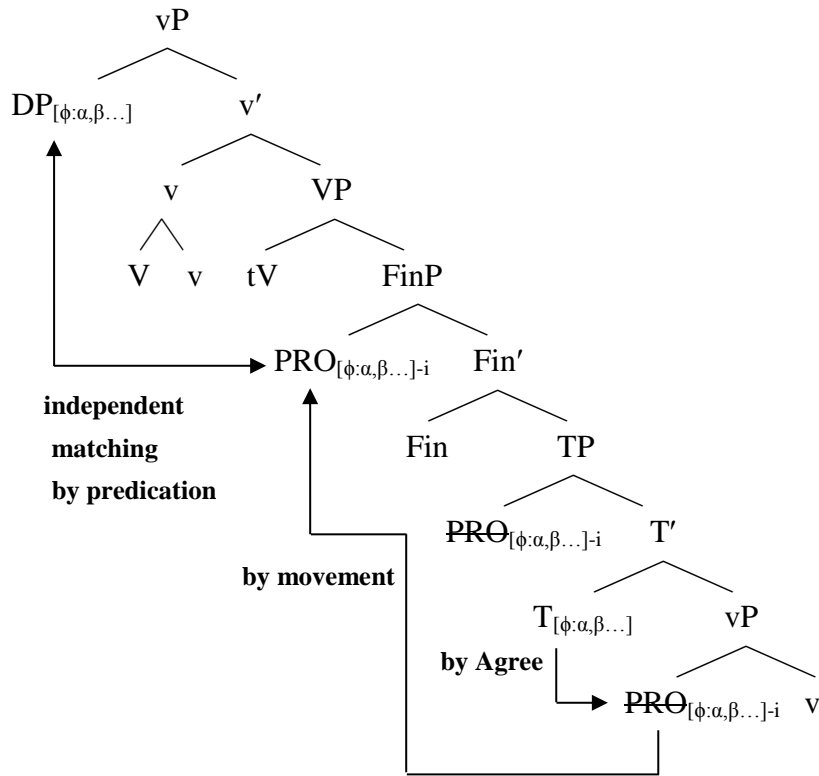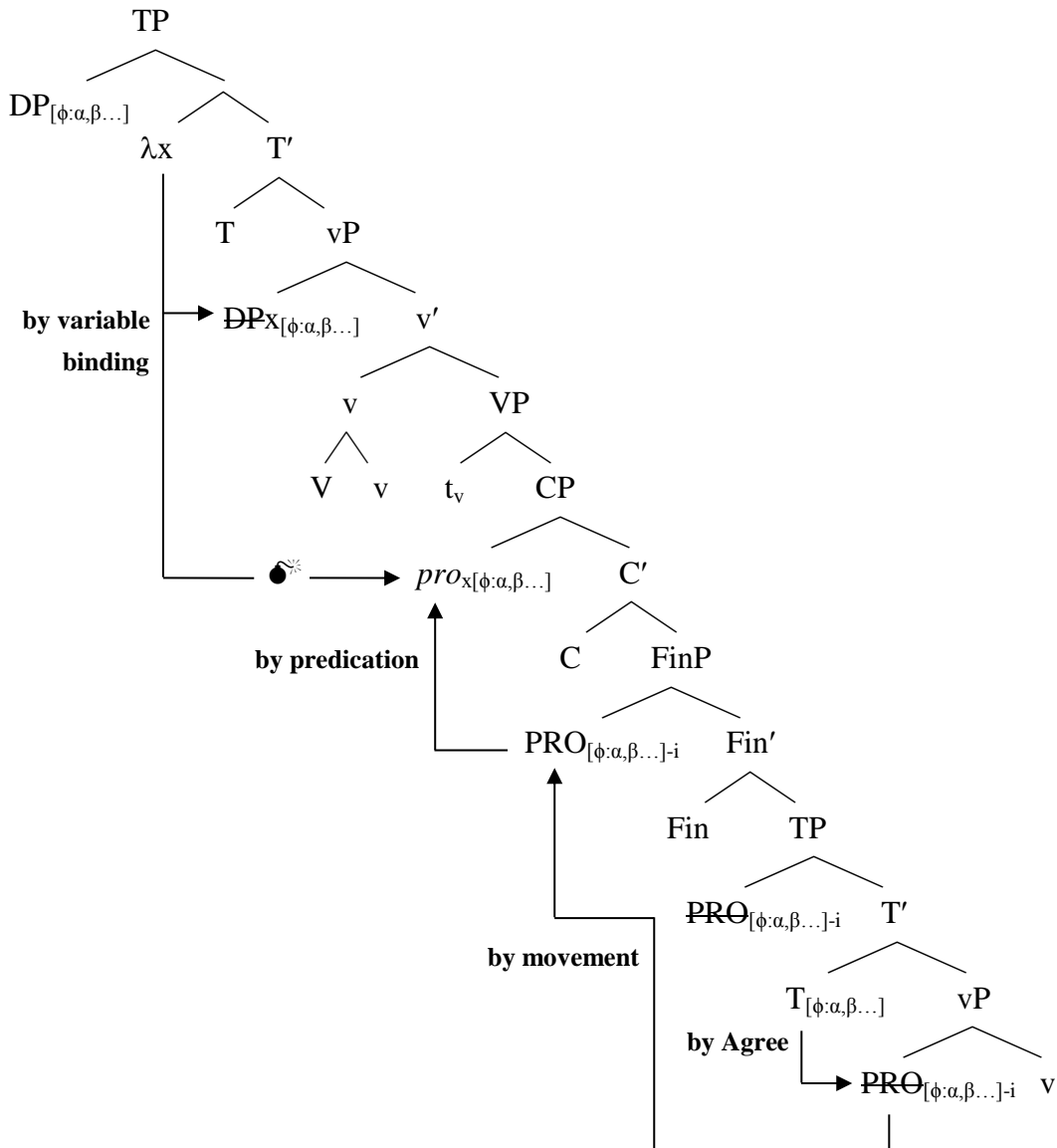
The first, bottom-most relation is established between the φ-bearing embedded T and the lower copy of PRO. Given that PRO is a minimal pronoun, hence, unvalued, valuation proceeds from T to PRO; feature sharing is guaranteed both by agreement and movement. At this point PRO can enter independent matching with the controller DP, given that predication is not contingent on Feature Transmission, the conclusion stated above as (36a).

Alternatively, the embedded T is initially unvalued just like PRO is, and both inherit their φ-values from the controller, via feature sharing. This would be possible if we assume that FinP is not a spellout domain because it is not a complement of a phasal head (see Chomsky 2008 for the idea that feature valuation occurs only at the phase level). On this altrenative, no recourse is made to "independent matching" in predication.

Consider next the abstract syntactic relations that mediate agreement in logophoric control into an *inflected* complement.

(40) *Logophoric control into an inflected complement: Ungrammatical*

$$
\begin{array}{l}
\text{TP} \\
\quad \text{DP}_{[\phi:\alpha,\beta\ldots]} \\
\qquad \lambda\text{x} \qquad \text{T}' \\
\qquad\qquad \text{T} \qquad \text{vP} \\
\textbf{by variable} \rightarrow \cancel{\text{DP}}\text{x}_{[\phi:\alpha,\beta\ldots]} \quad \text{v}' \\
\textbf{binding} \\
\qquad\qquad\qquad \text{v} \qquad \text{VP} \\
\qquad\qquad\qquad \text{V}\ \ \text{v} \quad \text{t}_v \quad \text{CP} \\
\qquad\quad \text{\textbullet} \rightarrow pro_{\text{x}[\phi:\alpha,\beta\ldots]} \quad \text{C}' \\
\textbf{by predication} \qquad\qquad \text{C} \quad \text{FinP} \\
\qquad\qquad\qquad \text{PRO}_{[\phi:\alpha,\beta\ldots]\text{-i}} \quad \text{Fin}' \\
\qquad\qquad\qquad\qquad \text{Fin} \quad \text{TP} \\
\qquad\qquad\qquad\qquad \cancel{\text{PRO}}_{[\phi:\alpha,\beta\ldots]\text{-i}} \quad \text{T}' \\
\textbf{by movement} \qquad\qquad \text{T}_{[\phi:\alpha,\beta\ldots]} \quad \text{vP} \\
\qquad \textbf{by Agree} \qquad \cancel{\text{PRO}}_{[\phi:\alpha,\beta\ldots]\text{-i}} \ \ \text{v}'
\end{array}
$$

The first two steps from the bottom are as in (39): PRO is ϕ-valued by the embedded T. The λ-abstract, FinP, applies to the projected coordinate pro_x in [Spec,CP]. Crucially, the latter is also a minimal pronoun in need of valuation. Merged with a projection that contains a potential goal, it can and must forms an Agree relation with the already-valued PRO. Once again, we assume that predication as such does not require Feature Transmission; nonetheless, in this case the process is induced by the presence of an unvalued element, pro_x. Agreement and valuation obey a cyclic logic and cannot be avoided when applicable.

The last step in (40) is variable binding between the λ-operator associated with the controller DP and pro_x. Here pops the problem. Local variable binding *depends* on Feature Transmission (see (36b)). But no ϕ-values can be transmitted to pro_x because it has already been valued in the complement clause. Therefore the binder (= controller) and bindee (=

pro$_x$) fail to share their features, in violation of condition (33d). Importantly, this condition is enforced because *pro*$_x$ occupies the topmost specifier of the complement clause, which is part of the matrix spellout domain; this conclusion emerges independently and quite convincingly from studies of long-distance agreement (Polinsky 2003, Bobaljik and Wurmbrand 2005) and is consonant with the Phase Impenetrability Condition of Chomsky 2000.

Can top-down valuation succeed instead? Assume that the embedded T is initially unvalued. Then PRO and *pro*$_x$ would also be unvalued at the point of variable binding, hence susceptible to Feature Transmission; feature sharing across the chain controller-*pro*$_x$-PRO-T$_{embedded}$ would produce an inflected, logophoric OC complement, contrary to fact. There is, however, a principled reason why the embedded T cannot be inserted unvalued: it would be unpronounceable. Recall that all features must be valued at the spellout point (condition (31)). The embedded FinP *is* a spellout domain, being the complement of a phase head, C. The φ-features on T must therefore be valued within this domain. Yet PRO is unvalued, and by the time valuation is accomplished – when the controller is merged in the matrix clause – the embedded FinP has already been shipped to spellout. To be licit, the embedded T must "take care of itself" as far as φ-values are concerned.

The only remaining option is for *pro*$_x$ to be a free variable, which yields no control. Note that this result would not be guaranteed on the matching view; on that view, variable binding would not be hindered by the presence of inherent features on the variable as long as they match those of the binder. We thus have an argument for the stronger view that requires feature *sharing* under agreement.

Finally, Feature Deletion at LF, which does apply to bound pronouns in finite complements, is of no help here. Structure (40) is crucially different from (38b) in that the bound pronoun (= the coordinate *pro*$_x$) *does* fall within the spellout domain of the binder/controller. Feature Transmission is applicable, hence mandatory, on the economy considerations discussed above. Notice that no look-ahead or even PF-LF contact is assumed here. In fact, strictly speaking, such a PF-failed derivation might still undergo Feature Deletion at LF, with no redeeming effect on grammaticality.

We can summarize the explanation of the OC-NC generalization as follows: Logophoric control is vulnerable to (embedded) agreement and predicative control is not, because logophoric control implicates variable binding whereas predicative control implicates predication, and variable binding is sensitive to agreement in a way that predication is not.

5.4 A novel argument for feature transmission

The device of Feature Transmission at PF is but one theoretical response to the observation that φ-features on bound pronouns do not contribute their standard (presuppositional) meaning. A second response is the device of Feature Deletion at LF (adopted here for non-

local binding). Yet other responses involve a radical revision in the denotations assigned to bound pronouns or their evaluation procedure (Sauerland 2013, Sudo 2014). Although this debate is usually infomed by semantic considerations, the current discussion offers a fresh perspective on it, from the angle of agreement. Specifically, the interaction of OC with agreement, and the account provided in the preceding section, favor the Feature Transmission solution over its competitors, at least for local binding dependencies.

Let us examine once again the schematic structures of OC, according to the property/centered-world analysis (41a), on the one hand, and according to the present "special *de re*" variable binding analysis (41b), on the other hand. This time, we explicitly add inflection to the embedded T head.

(41) a. *John* λz [t_z *intended* [λx [PRO$_x$ T$_{[\phi:\alpha,\beta...]}$ [$_{vP}$ ...]]]]
      b. *John* λx [t_x *intended* [pro_x [PRO$_i$ [t_i T$_{[\phi:\alpha,\beta...]}$ [$_{vP}$ ...]]]]]

The fundamental problem with the analysis in (41a), as discussed in section 3, is its failure to provide a reasonable account for the mandatory agreement between the controller (*John*) and PRO. The few attempts to do so seem to invoke an extraordinary type of postsyntactic agreement, defined over semantic relations. At this point we can see that the problem is even greater. The selective effect of inflection on control – the OC-NC generalization – is *not even stateable* in terms of such "semantically oriented" agreement. This is because the crucial factor that blocks OC in attitude complements is the presence of overt agreement between PRO and the embedded T. But this agreement is nonsemantic, possibly even a pure PF process. How can this morphological agreement disrupt the semantic composition? Surely it cannot alter the denotation of the control verb itself. Nor can it turn the complement clause into a proposition, for this would also block OC into inflected *predicative* complements, contrary to fact.[20] Embedded inflectional agreement has no semantic value, yet it obviously destroys what is taken to be a semantic relation. This is a brute fact about control that purely semantic approaches have never been able to come to grips with, for deep, architectural reasons.[21]

Consider now the present analysis, (41b). We can ask: Given this analysis, what approach to ϕ-features on bound pronouns can make sense of the OC-NC generalization? We have

---

[20] Nonattitude OC verbs select unsaturated properties. The clearest evidence for this is the fact that these verbs uinversally resist uncontrolled lexical subjects in their complement (Grano 2015), and indeed, it is often impossible to imagine what they could mean with a propositional complement. Yet they often take inflected complements, as in the following Persian example (Darzi 2008).

i.   Mæn$_i$ mi-tun-æm   [(ke) PRO$_{i/*j}$ næ-r-æm$_{[1,SG]}$ xune].
       I   DUR-be.able-1SG   (that) not-go.SUBJ-1SG   home
        'I am able not to go home.'

[21] It should be clear that the selective effect of agreement on control is an inescapable problem for *any* theory of control that is purely semantic (and not just for the property/centered-worlds theory), that is, any theory in which the control dependency is not syntactically represented. For examples of such theories, see Růžička 1999, Jackendoff and Culicover 2003 and Duffley 2014.

already seen that the Feature Transmission approach succeeds in doing just that. On this approach, the embedded inflection values PRO, and consequently pro_x, destroying its "minimal pronoun" status, which is absolutely necessary for variable binding (by the matrix λx) to go through. The point is that nothing similar is available to the alternative approaches. If PRO/pro_x were inherently valued and their features removed by Feature Deletion at LF, one would have to block this operation from applying just in the presence of inflection on T. Similarly, on the semantic approaches that assign nonstandard denotations to bound pronouns, one would have to avoid these denotations just in the presence of inflection on T.

This kind of conditioning, however, is not grammatically plausible. Morphological inflection on T is visible at PF, not at LF, being semantically inert. The grammar cannot condition LF operations, oe worse, choice of semantic values, on the basis of morphological information alone. What grammatical logic could block Feature Deletion or a nonstandard denotation on a pronoun (thereby licensing only the referential denotation) *just in case* the pronoun has undegone prior overt agreement with Infl?

The natural locus of interaction for such effects is PF. Indeed, only on the Feature Transmission approach, but on none of its alternatives, variable binding is rigidly associated with a characteristic PF profile (see (33)). Hence, only this approach is capable of accommodating the curious sensitivity of variable binding (in attitude OC) to other PF phenomena, like clausal inflection.

6. The final argument: bound *de re* reflexives/pronouns

The argument from agreement and the argument from inflected complements show that the "special *de re*" theory of OC is *syntactically* superior to the standard property/centered-worlds theory. They do not purport to claim a *semantic* advantage. There is one empirical domain, however, that appears to provide a semantic argument in favor of the current proposal. The relevant facts are known in the literature as "bound *de re* reflexives/pronouns" or "unexpected Binding Theory (BT) effects" (Heim 1994, Sauerland 2001, Charlow 2009, 2010, Sharvit 2011). They can be described quite simply.

Suppose Palin reads an article by a politician that tremendously impresses her. The politician lays out a reform plan that she promises to implement, once elected. Palin is taken by this vision and is convinced that the politician should be elected. Palin does not realize, though (maybe due to some temporary memory loss), that she herself wrote that article. In this scenario, Palin says (42a) to herself, which can be reported as (42b) but not as (42c).

(42) a.   Palin: "I want to vote for this politician".
      b.   Palin wants to [PRO$_i$ vote for herself$_i$].
      c. * Palin wants [PRO$_i$ to vote for her$_i$].

Note that Palin holds, simultaneously, a *de se* belief about the voter, PRO, and a *de re* belief about the voted-for, *her(self)*. Nevertheless, BT seems to be indifferent to this distinction, and operates in the usual manner. The reflexive is licensed because it is covalued with a local binder in the utterance world; the pronoun is excluded for the same reason.

The problem is that on this mixed reading, the standard property/centered-worlds theory fails to generate covaluation in the complement. The LFs it assigns are the following.

(43) a. * [$_{TP}$ Palin [λx [$_{vP}$ t$_x$ [wants [$_{CP}$ λw'.λy [$_{TP}$ PRO$_y$ to vote$_{w'}$ for herself$_x$]]]]]]
     b.   [$_{TP}$ Palin [λx [$_{vP}$ t$_x$ [wants [$_{CP}$ λw'.λy [$_{TP}$ PRO$_y$ to vote$_{w'}$ for her$_x$]]]]]]

The binder of PRO is a local operator introduced by the attitude verb (see (7b), (9d), (10b), (11b)); this is what guarantees that PRO is associated with the *de se* counterpart of the attitude holder. The binder of the *de re* pronoun/reflexive is the DP corresponding to the attitude holder. Because they are bound by distinct binders, the complement subject and object are not covalued. This falsely predicts ungrammaticality with the reflexive and grammaticality with the pronoun, just the opposite of the pattern attested in (42b-c).[22]

It is important to observe that the "unexpected BT effects" are only unexpected on the assumption that PRO is not a *de re* pronoun. If it is, then just like the embedded object pronoun/reflexive, PRO will be bound by the matrix DP corresponding to the attitude holder. The two *de re* pronouns will differ, of course, in their guises; PRO will be associated with the 'self' acquaintance relation, the object pronoun with a different relation. Still, they would be covalued within a local binding domain (being different guises of the same *res*), as desired. This immediately explains the BT effects, which are now be entirely expected. The TTC incorporates a version of this analysis. Although PRO is not directly bound by the matrix controller, it is covalued with a variable that is, namely, the projected argument *pro$_x$*.

Consider the details. The TTC assigns the LFs in (44) to (42b-c). We continue to assume the concept-generator analysis of *de re* attitudes. As Percus & Sauerland (2003b) anticipate, complements with distinct *de re* descriptions require a distinct concept generator each; this implies that attitude verbs are type-flexible. Note that the value of G$_7$, the concept generator that applies to the projected coordinate *pro$_x$*, is fixed as G$_{SELF}$ by presupposition (see (18)). Finally, I assume that GP inherits the index of its nominal head by percolation.

(44) a.   [Palin [λx [$_{vP}$ t$_x$ [wants [λ_9 λ_7 [$_{CP}$ [$_{GP}$ G$_7$ *pro$_x$* i']$_x$ C$_{i'=<x,t',w'>}$
           [$_{FinP}$ PRO$_j$ (=λj) [$_{TP}$ t$_j$ to vote for [G$_9$ herself$_x$ i']$_x$]]]]]]]]
           (*Presupposition*: G$_7$ = G$_{SELF}$)
     b.   [Palin [λx [$_{vP}$ t$_x$ [wants [λ_9 λ_7 [$_{CP}$ [$_{GP}$ G$_7$ *pro$_x$* i']$_x$ C$_{i'=<x,t',w'>}$
           [$_{FinP}$ PRO$_j$ (=λj) [$_{TP}$ t$_j$ to vote for [G$_9$ her$_x$ i']$_x$]]]]]]]]
           (*Presupposition*: G$_7$ = G$_{SELF}$)

---

[22] Heim's (1994) proposal was to extend the binding domain of the *de re* pronoun/reflexive by deleting PRO and its binder at LF. Charlow and Sharvit independently show that this proposal is untenable.

By λ-conversion we get (45) (the syntactic structure is preserved for perspicuity only).

(45) [Palin [λx [$_{vP}$ t$_x$ [wants [λ$_9$ λ$_7$ [$_{CP}$ C$_{i'=<x,t',w'>}$
[$_{TP}$ [$_{GP}$ G$_7$ pro$_x$ i']$_x$ to vote for [G$_9$ her(self)$_x$ i']$_x$]]]]]]]
(*Presupposition*: G$_7$ = G$_{SELF}$)

Evidently, the subject and object arguments in the complement are covalued with each other (and with the controller). Since they occur in the same binding domain, the object must surface as a reflexive and not as a pronoun.

We thus see that "unexpected" BT effects in OC complements directly follow from the "special *de re*" analysis, with no further assumptions. BT simply does not care about concept generators and their content; it only operates on syntactically visible indices. On the other hand, in order to account for *de re* binding inside OC (attitude) complements within the standard property/centered-worlds theory, significant changes must be introduced in BT itself. Indeed, this is the path taken by Sharvit (2011), who formalizes a disjunctive notion of covaluation: one disjunct covers standard covaluation and the other one covers pairs of variables where one member corresponds to the attitude holder and the other member to his/her 'self' (similarly, for *de te* attitudes, covaluation between the attitude holder's addressee and the 'self's addressee' is allowed). Nothing so powerful is needed on the present approach.

Sharvit (2011), in fact, acknowledges the simple alternative entertained here (which she calls "the pure *de re* theory"), but claims that it faces three challenges. Two of these are conceptual and one is empirical. I believe that all three can be adequately answered.

First, Sharvit claims that the pure *de re* theory must "stipulate that when PRO is a *de re* pronoun embedded under an attitude verb, it can only be interpreted relative to the identity function, while other pronouns may be interpreted relative to other descriptions… we have to stipulate further that PRO is always syntactically *de re*" (p. 96).

This is not the proper characterization of the facts, however, in light of the discussion in section 4.2. PRO is not inherently *de se* (cf., (20)), and conversely, overt pronouns sometimes are inherently *de se* − when occurring as controlled subjects (Madigan 2008, Szabolcsi 2009). The obligatory *de se* construal is tied to attitude OC verbs as such; in the implementation I proposed, it is a presupposition on the complementizer they select (see (19c)). The "stipulation", therefore, is not about which pronouns may or must be associated with which acquaintance relations, but rather about which complement clauses encode the identity relation (namely, the G$_{SELF}$ concept generator).

But note that this is not a stipulation at all insofar as it is a necessary ingredient in any adequate theory of OC. OC attitude complements impose *de se*; OC nonattitude verbs do

not, and attitude non-OC verbs do not either. This empirical landscape is shared by all approaches. On the property/centered-worlds approach it is represented as an ambiguity in the lexical entry of the attitude verb itself. One variant expresses a *de re* attitude, the other one expresses a *de se* attitude (via local operator binding), and crucially, it is *stipulated* that the latter is bi-uinquely associated with OC complemenation. Clearly, this is no less stipulative than the present proposal, and in fact (as we argued), less transparent: The present proposal does not appeal to ambiguity at all. The attitude verb is unambiguously *de re*, and the difference is localized in the C-heads of the different complements it may select, which are clearly distinct (*that*$_C$ encodes no specific G, C^{OC} encodes G_{SELF}).

Sharvit's second conceptual argument is based on an asymmetry between 1st and 3rd person bound reflexives in Free Indirect Discourse (FID): Only the former give rise to the "unexpected" BT effects (3rd person reflexives must be construed *de se*). This, according to Sharvit, shows that the grammar must be able to generate PRO as a locally bound variable in FID contexts (and let it be covalued with a *de re* 1st person reflexive using the extended notion of covaluation with the 'self'). But if this LF is allowed in FID, there is no reason to block it in standard OC complements.

It is actually not clear to me that the local binding solution is forced by the FID data, but even if it is, I see no compelling reason to assume that it is the solution the grammar employs in OC. There is a nontrivial gap between "can" and "does". For example, English employs both "surface" and "deep" anaphora for VPs, as in *John called Mary and Bill did too*, vs. *John called Mary and Bill did it too*, respectively. There is no conceptual reason why the surface anaphora, available with the gap, should not be available with the pronoun *it* (in fact, it is in Danish, see Hauser, Mikkelsen and Toosanvardani 2007). In practice, it is not. Likewise, there is no conceptual reason why verbs should not agree with non-nominative subjects, the way they agree with nominative ones. In practice, they do not. These are all empirical matters. Given that FID is different from standard attitude complements in a number of respects, it should not be surprising to find – if indeed we do – that the syntax of *de se* construal is among those differences.

Sharvit's final argument against the pure *de re* theory is empirical and is based on the "unexpected" Condition B violation in (42c). While the unexpected satisfaction of Condition A in (42b) can be attributed to the availability of the pure *de re* LF (44a), the violation of Condition B in (42c) requires that the grammatical LF (43b) be *un*available in principle. Sharvit reasons that since local operator binding must be an available device of generating *de se* pronouns in the grammar, something else must be invoked to rule out (43b) (namely, her extended notion of covaluation with the 'self').

The argument is valid only if nothing else rules out (43b). In fact, I believe that an independent principle, quite general and demonstrably operative in BT effects, does so. Its first appearance was as "Rule I" in Grodzinsky and Reinhart 1993 and it has since then received various formulations (see Reinhart 2000, 2006, Reuland 2011). This economy

principle chooses between different LFs that yield indistinguishable interpretations. Specifically, it favors A-binding over coreference.[23] Compare the abstract configurations of (43b) and (44b) ($[_{BD} \ldots]$ indicates the binding domain of the embedded object).

(46) a. <u>Variable binding in (43b)</u>
$\lambda x \ldots x \ldots \lambda y [_{BD} y \ldots OBJ_x]$

b. <u>Variable binding in (44b)</u>
$\lambda x \ldots x \ldots (\lambda z. [_{BD} z \ldots OBJ_x) (x)]$

(b) = c. $\lambda x \ldots x \ldots [_{BD} x \ldots OBJ_x]$

On the intended "bound *de re*" reading, the variable *y* in (46a) (corresponding to PRO) and the object variable *x* are covalued in the utterance world (in (42), g(x)=g(y)=Palin). Since this covaluation is *not* achieved by A-binding, it would be blocked by an alternative covaluation that is so achieved. Strictly speaking, (46b) does not appear to be such an alternative, since OBJ_x is A-bound by *z* (= the trace of PRO). However, (46b) readily resolves to (46c) (by λ-conversion), where A-binding does hold in the complement. I would like to suggest that we should interpret Rule I as naturally extending to these cases as well, its ultimate rationale deriving from an output comparison of coreference and binding and not necessarily from how binding is achieved. In fact, this is needed anyway for cases like *John_i, it's unclear whether he_i appreciates him_{*i}*, where the resumptive pronoun *he* functions as a λ-variable.

The upshot is simple. Since LF (43b) loses *anyway* to LF (44b) (owing to Rule I), we only need to worry about ruling out (44b). This is achieved by the standard Condition B. Hence, "unexpected condition B effects" provide no argument in favor of the standard property/centered-worlds analysis or an unorthodox notion of covaluation.

Before concluding, let me point out that Sharvit's solution to the unexpected BT effects reproduces the agreement problem that preoccupied us in section 3. The standard property/centered-worlds analysis does not provide an adequate account of the agreement between PRO and the controller. The source of the problem, to recall, was the fact that the trace of the controller and PRO are bound by distinct λ-operators. The *same* problem arises between PRO and the reflexive in the LF (43a), which Sharvit adopts for (42b). Since covaluation with the 'self' is only detectable in the semantic component, it cannot possibly feed φ-agreement. In fact, formal agreement prevails also in this situation. To observe its effect in isolation, imagine the *de re* scenario presented for (42), with one emphasis: For some reason, Palin comes to believe that the author of the article she has read (who is herself, but she does not know it) is a male. In this context, one still has to use the agreeing *herself* as the bound *de re* reflexive.

---

[23] "Rule I: NP A cannot corefer with NP B if replacing A with C, C a variable A-bound by B, yields an indistinguishable interpretation" (Reuland 2011:57).

(47) Palin wants to [PRO$_i$ vote for herself$_i$/*himself$_i$].

In all of Palin's doxastic alternatives, her 'self' is a female and the author of the article (for whom she wants to vote) is a male. This gender mismatch presumably does not block the extended type of covaluation (with the 'self'), but it does raise the thorny issue of agreement: Why must the reflexive, which denotes a male in Palin's doxastic alternatives, manifest feminine gender, in agreement with PRO, given that they do not stand in any syntactic relation to each other?

In sum: The ability of PRO, a *de se* element, to bind *de re* pronouns/reflexives is a strong argument for the "special *de re*" analysis of OC in attitude contexts, because nothing else is expected on this analysis. In fact, *failure* of covaluation between PRO and a bound *de re* element would be unexpected, not its success. By comparison, the standard property/ centered-worlds theory can only accommodate these facts by complicating BT conditions. Arguments purporting to demonstrate that the grammar must make available a method of generating PRO$_{de\ se}$ via local operator binding are not compelling. That is not to say that we have proven this method not to be available. Rather, as far as the properties of OC are concerned, I am not aware of any fact – semantic, syntactic or morphological – that *requires* this method. By contrast, the interaction of OC with agreement and inflection does require an analysis of PRO$_{de\ se}$ as a special kind of a *de re* pronoun. Parsimony, then, recommends discarding the former option.

7. Conclusion

Classical ideas, long abandoned for more sophisticated theories, sometimes return with a vengeance. The idea that OC PRO is a variable bound by the controller, I believe, is such an idea. It was only the second idea that generative grammar developed to account for OC (the first one was the Equi-NP Deletion analysis, soon understood to be defunct). Although it continued to underlie much of the syntactic work in recent decades, it has practically fallen out of grace in the formal semantic literature as early as the mid-1970s (see Thomason 1974). The reasons for this shift were quite compelling, as we have seen, not the least the realization that direct binding of PRO by the controller fails to explain the characteristic *de se* reading of OC constructions.

My starting point in this study was the claim that this conclusion no longer holds. The combination of a rather basic semantic theorem – that attitudes *de se* can always be expressed as a special case of attitudes *de re* – with a particular LF formalism of attitudes *de re* – the concept generator analysis of Percus & Sauerland (2003b) – allows for a straightforward revival of the direct binding analysis without sacrificing the *de se* semantics. This analysis rests of modern conceptions of the clausal left periphery, in which context coordinates, as pointers to matrix participants, are syntactically represented.

In the proposed analysis, complement control splits into two types. Nonattitude complements denote a property, which is directly predicated of the controller DP. The property is formed by λ-abstraction, where PRO itself serves as the abstractor (upon movement). In attitude contexts, the controller DP directly binds a minimal pronoun in the left periphery of the complement, which is associated with the *de se* presupposition via the complementizer. PRO is again a λ-abstractor that covaries with this pronominal coordinate (forming the predicate that applies to the latter).

The main achievement of this theory is a principled explanation of the fact that PRO systematically agrees with the controller DP. This elementary fact poses insurmountable problems for the prevailing semantic approaches that associate PRO with the controller only at some postsyntactic interpretive level. The explanation presently afforded utilizes the mechanism of Feature Transmission at PF, suitably confined to local binding relations (within a spellout domain).

The current theory can claim further advantages over the property/centered-worlds analysis of OC. Significantly, it is capable of explaining a striking asymmetry between attitude and nonattitude OC complements in their vulnerability to inflection (the OC-NC generalization). This selective interaction between agreement and OC points quite conclusively to an ineliminable syntactic substrate over which the control dependency is defined. At the same time, it provides a novel argument in favor of Feature Transmission as the right treatement of φ-features on bound pronouns, as opposed to semantic alternatives that cannot possibly accommodate direct information flow between inflectional agreement and semantic operations.

Finally, the "special *de re*" analysis of OC provides a simple account for "unexpected BT effects" between PRO and *de re* reflexives/pronouns, that proved quite recalcitrant for the standard property/centered-worlds analysis. These effects are fully expected, given that PRO is but a *de re* pronoun itself, albeit restricted to the 'self' acquaintance relation.

We have thus come full circle to the classical ideas of generative grammar about control, but this time they seem much more fertile and trustworthy than they did four decades ago.

References

Adesola, Oluseye. 2005. *Pronouns and Null Operators: Ā-dependencies and Relations in Yoruba*. PhD dissertation, Rutgers University.

Anand, Pranav. 2006. *De De se*. PhD dissertation, MIT.

Baker, Mark. 2008. *The Syntax of Agreement and Concord*. Cambridge: Cambridge University Press.

Bianchi, Valentina. 2003. On Finiteness as Logophoric Anchoring. In *Temps et Point de Vue / Tense and Point of View*, ed. by Jacqueline Guéron and Liliane Tasmowski, 213–246. Université Paris X, Nanterre.

Bobaljik, Jonathan. 2008. Where's Phi? Agreement as a Postsyntactic Operation. In *Phi Theory: Phi-Features Across Modules and Interfaces*, ed. by Daniel Harbour, David Adger and Susana Béjar, 295-328. Oxford, New York: Oxford University Press.

Bobaljik, Jonathan, and Susi Wurmbrand. 2005. The Domain of Agreement. *Natural Language & Linguistic Theory* 23, 809-865.

Boeckx, Cedric. 2007. *Understanding Minimalist Syntax: Lessons from Locality in Long-Distance Dependencies*. Oxford: Wiley-Blackwell.

Borer, Hagit. 1989. Anaphoric AGR. In *The Null Subject Parameter*, ed. by Osvaldo Jaeggli and Kenneth J. Safir, 69-109. Dordrecht: Kluwer Academic Publishers.

Bouchard, Denis. 1984. *On the Content of Empty Categories*. Dordrecht: Foris.

Charlow, Simon. 2009. *De re* anaphors: a new argument for dedicated *de se* LFs. Poster presented at SALT 20, New York University.

Charlow, Simon. 2010. Two Kinds of *de re* Blocking. Handout of a talk given at MIT.

Charlow, Simon, and Yael Sharvit. 2014. Bound 'de re' pronouns and the LFs of Attitude Reports. *Semantics and Pragmatics* 7, 1-43.

Chierchia, Gennaro. 1984. *Topics in the Syntax and Semantics of Infinitives and Gerunds*. PhD dissertation, UMASS, Amherst.

Chierchia, Gennaro. 1990. Anaphora and Attitudes *De Se*. In *Semantics and Contextual Expression*, ed. by Renate Bartsch, Johan van Benthem and Peter van Emde Boas, 1–32. Dordrecht: Foris.

Chomsky, Noam. 1980. On Binding. *Linguistic Inquiry* 11, 1-46.

Chomsky, Noam. 1981. *Lectures on Government and Binding*. Berlin: Mouton de Gruyter.

Chomsky, Noam. 2000. Minimalist Inquiries: The Framework. In *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, ed. by Roger Martin, David Michels and Juan Uriagereka, 89–155. Cambridge, Massachusetts: MIT Press.

Chomsky, Noam. 2008. On Phases. In *In Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud*, ed. by Robert Freidin, Carlos Peregrín Otero and Maria Luisa Zubizarreta, 133–166. Cambridge, MA: MIT Press.

Chung, Sandra. 2012. On Reaching Agreement Late. In *Proceedings of CLS 48*, ed. by. Chicago: University of Chicago.

Clark, Robin. 1990. *Thematic Theory in Syntax and Interpretation*. London: Routledge.

Darzi, Ali. 2008. On the VP Analysis of Persian Finite Control Constructions. *Linguistic Inquiry* 39, 103-115.

Duffley, Patrick J. 2014. *Reclaiming Control as a Semantic and Pragmatic Phenomenon*. Amsterdam: John Benjamins.

Fodor, Jerry A. 1975. *The Language of Thought*. Cambridge, MA: Harvard University Press.

Frampton, John, and Sam Gutmann. 2006. How Sentences Grow in the Mind: Agreement and Selection in an Efficient Minimalist Syntax. In *Agreement Systems*, ed. by Cedric Boeckx, 121-157. Amsterdam: John Benjamins.

Giorgi, Alessandra. 2010. *Towards a Syntax of Indexicality*. Oxford: Oxford University press.

Grano, Thomas A. 2015. *Control and Restructuring*. Oxford: Oxford University Press.

Grodzinsky, Yosef, and Tanya Reinhart. 1993. The Innateness of Binding and Coreference. *Linguisic Inquiry* 24, 69-102.

Hauser, Michael, Line Mikkelsen, and Maziar Toosanvardani. 2007. Verb Phrase Pronominalization in Danish: Deep or Surface Anaphora? In *Proceedings of the 34 Western Conference on Linguistics*, ed. by Erin Brainbridge and Brian Agbayani, 183-195. Fresno, CA: Department of Linguistics, California State University, Fresno.

Heim, Irene. 1994. Puzzling Reflexive Pronouns in *De Se* Reports. Unpublished handout presented at Bielefield. MIT, Cambridge: MA.

Heim, Irene. 2008. Features on Bound Pronouns. In *Phi Theory: Phi-Features Across Modules and Interfaces*, ed. by Daniel Harbour, David Adger and Susana Béjar, 35-56. Oxford, New York: Oxford University Press.

Hendrick, Randall. 1988. *Anaphora in Celtic and Universal Grammar*. Dordrecht: Kluwer.

Jackendoff, Ray, and Peter W. Culicover. 2003. The Semantic Basis of Control in English. *Language* 79, 517-556.

Koopman, Hilda, and Dominique Sportiche. 1989. Pronouns, Logical Variables, and Logophoricity in Abe. *Linguistic Inquiry* 20, 555-589.

Koster, Jan. 1984. On Binding and Control. *Linguistic Inquiry* 15, 417–459.

Kratzer, Angelika. 2009. Making a Pronoun: Fake Indexicals as Windows into the Properties of Pronouns. *Linguistic Inquiry* 40, 187-237.

Landau, Idan. Agreement at PF: An Argument from Partial Control. To appear in *Syntax*.

Landau, Idan. *A Two-Tiered Theory of Control*. Forthcoming, MIT Press.

Landau, Idan. 2000. *Elements of Control: Structure and Meaning in Infinitival Constructions*. Dordrecht: Kluwer Academic Publishers.

Landau, Idan. 2004. The Scale of Finiteness and the Calculus of Control. *Natural Language and Linguistic Theory* 22, 811-877.

Landau, Idan. 2006. Severing the Distribution of PRO from Case. *Syntax* 9, 153-170.

Madigan, Sean. 2008. *Control Constructions in Korean*. PhD dissertation, University of Delaware.

Maier, Emar. 2011. On the Roads to *de se*. In *Proceedings of SALT 21*, ed. by Neil Ashton, Anca Chereches and David Lutz, 392-412. Ithaca: CLC Publications, Cornell.

Manzini, M. Rita. 1983. On Control and Control Theory. *Linguistic Inquiry* 14, 421–446.

Modesto, Marcello. 2010. What Brazilian Portuguese Says About Control: Remarks on Boeckx & Hornstein. *Syntax* 13, 78-96.

Modesto, Marcello. 2013. Inflected Infinitives in Brazilian Portuguese and the Structure of Nonfinite Complements. Ms., Universidade de São Paulo.

Morgan, Jerry L. 1970. On the Criterion of Identity for Noun Phrase Deletion. In *Proceedings of CLS 6*, ed. by Mary Ann Campbell et al., 380-389. Chicago: Chicago University Press.

Partee, Barbara. 1975. Deletion and Variable Binding. In *Formal Semantics of Natural Languages*, ed. by Edward Keenan, 16-34. Cambridge: Cambridge University Press.

Pearson, Hazel. The Semantics of Partial Control. To appear in *Natural Language and Linguistic Theory*.

Pearson, Hazel. 2013. *The Sense of Self: Topics in the Semantics of De Se Expressions*. PhD dissertation, Harvard University.

Percus, Orin, and Uli Sauerland. 2003a. On the LFs of Attitude Reports. In *Proceedings of Sinn and Bedeutung 7*, ed. by Matthias Weisberger, 228-242. Konstanz: Universität Konstanz.

Percus, Orin, and Uli Sauerland. 2003b. Pronoun Movement in Dream Reports. In *Proceedings of NELS 33*, ed. by Makoto Kadowaki and Shigeto Kawahara, 265-284. Amherst: GLSA Publications.

Pesetsky, David, and Esther Torrego. 2007. The Syntax of Valuation and the Interpretability of Features. In *Phrasal and Clausal Architecture: Syntactic Derivation and Interpretation (In Honor of Joseph E. Emonds)*, ed. by Simin Karimi, Vida Samiian and Wendy K. Wilkins, 262-294. Amsterdam: John Benjamins.

Polinsky, Maria. 2003. Non-Canonical Agreement is Canonical. *Transactions of the Philological Society* 101, 279-312.

Raposo, Eduardo. 1987. Case Theory and Infl-to-Comp: The Inflected Infinitive in European Portuguese. *Linguistic Inquiry* 18, 85-109.

Reinhart, Tanya. 2000. Strategies of Anaphora Resolution. In *Interface Strategies*, ed. by Hans Bennis, Martin Everaert and Eric J. Reuland, 295-325. Amsterdam: Royal Academy of Arts and Sciences.

Reinhart, Tanya. 2006. *Interface Strategies: Optimal and Costly Computations*. Cambridge, MA: MIT Press.

Reuland, Eric. 2010. Minimal versus Not So Minimal Pronouns: Feature Transmission, Feature Deletion, and the Role of Economy in the Language System. In *The Linguistics Enterprise: From Knowledge of Language to Knowledge in Linguistics*, ed. by Martin B.H. Everaert, Tom Lentz, Hannah De Mulder, Øystein Nilsen and Arjen Zondervan, 257-282. Amsterdam: John Benjamins.

Reuland, Eric. 2011. *Anaphora and Language Design*. Cambridge, MA: MIT Press.

Růžička, Rudolph. 1999. *Control in Grammar and Pragmatics: A Cross-linguistic Study*. Amsterdam: John Benjamins.

Sag, Ivan, and Carl Pollard. 1991. An Integrated Theory of Complement Control. *Language* 67, 63–113.

Sauerland, Uli. 2001. Correlates of the *de re* and *de se* Distinction. Handout presented at USC workshop on bound pronouns.

Sauerland, Uli. 2013. Presuppositions and the Alternative Tier. In *Proceedings of SALT 23*, ed. by Anca Chereceș, Neil Ashton and David Lutz. Ithaca, NY: Cornell University.

Schlenker, Philippe. 2003. A Plea for Monsters. *Linguistics and Philosophy* 26, 29-120.

Schlenker, Philippe. 2011. Indexicality and *De Se* Reports. In *Semantics: An International Handbook of Natural Language Meaning*, ed. by Klaus von Heusinger, Claudia Maienborn and Paul Portner, 1561-1604. Berlin: Mouton de Gruyter.

Sharvit, Yael. 2011. Covaluation and Unexpected BT Effects. *Journal of Semantics* 28, 55-106.

Sigurðsson, Halldór A. 2004. The Syntax of Person, Tense and Speech Features. *Rivista di Linguistica* 16, 219-251.

Sigurðsson, Halldór A. 2006. Agree in Syntax, Agreement in Signs. In *Agreement Systems*, ed. by Cedric Boeckx, 201-237. Amsterdam: John Benjamins.

Sigurðsson, Halldór A. 2008. The Case of PRO. *Natural Language and Linguistic Theory* 26, 403-450.

Sigurðsson, Halldór A. 2009. Remarks on Features. In *Explorations of Phase Theory: Features and Arguments*, ed. by Kleanthes K. Grohmann, 21-52. Berlin: Mouton de Gruyter.

Sigurðsson, Halldór A. 2011. Conditions on Argument Drop. *Linguisic Inquiry* 42, 267–304.

Słodowicz, Szymon. 2007. Complement Control in Turkish. *ZAS Papers in Linguistics* 47, 125-157.

Speas, Margaret. 2004. Evidentiality, Logophoricity and Syntactic Representation of Ptagmatic Features. *Lingua* 114, 255-276.

Stephenson, Tamina. 2010. Control in Centred Worlds. *Journal of Semantics* 27, 409-436.

Sudo, Yasutada. 2014. Dependent Plural Pronouns with Skolemized Choice Functions. *Natural Language Semantics* 22, 265-297.

Sundaresan, Sandhya. 2012. *Context and (Co)reference in the Syntax and its Interfaces*. PhD dissertation, University of Stuttgart and University of Tromsø.

Szabolcsi, Anna. 2009. Overt Nominative Subjects in Infinitival Complements: Data, Diagnostics, and Preliminary Analyses. In *NYU Working Papers in Linguistics, Vol. 2: Papers in Syntax*, ed. by Patricia Irwin and Violeta Vasquéz Rojas Maldonado. New York: NYU.

Tallerman, Maggie. 1998. The Uniform Case-licensing of Subjects in Welsh. *The Linguistic Review* 15, 69-133.

Thomason, Richmond H. 1974. Some Complement Constructions in Montague Grammar. In *Proceedings of CLS 10*, ed. by M. LaGafy et. al., 712-722. Chicago: Chicago University Press.

Varlokosta, Spyridoula. 1993. Control in Modern Greek. In *University of Maryland Working Papers in Linguistics 1*, ed. by Carol A. Mason, Susan M. Powers and Cristina Schmitt, 144-163.

von Stechow, Arnim 2003. Feature deletion Under Semantic Binding. In *Proceedings of NELS 33*, ed. by Makoto Kadowaki and Shigeto Kawahara, 133-157. Amherst, MA: GLSA Publications.

Williams, Edwin. 1980. Predication. *Linguistic Inquiry* 11, 203-238.

Wurmbrand, Susi. 2003. *Infinitives: Restructuring and Clause Structure*. New York: Mouton de Gruyter.

Wyngaerd, Guido J. vanden. 1994. *PRO-legomena*. Berlin: Mouton de Gruyter.