Thomas McFadden* and Sandhya Sundaresan

Reducing *pro* and PRO to a single source[1]

Abstract: The goal of this paper is to provide novel theoretical and empirical evidence that the null subjects traditionally labelled as *pro* and PRO, rather than being inherently distinct, are manifestations, differentiated in the course of the derivation, of what is underlyingly a single underspecified nominal pro-form, which we will call UPro. Included under this UPro are *pro*, OC PRO and also the various types of 'non-obligatory control' (NOC) PRO, including arbitrary PRO (PRO_{arb}). The interpretive and distributional distinctions lurking behind these labels result from how UPro interacts with its structural environment and language-specific rules of morpho-phonological realization. Specifically, OC PRO labels a rather specific interpretation that arises in embedding contexts where a syntactic OC relationship with an antecedent can be established. Different types of *pro* and NOC PRO, on the other hand, involve 'control' by (typically) silent representations of discourse-contextual elements in the clausal left periphery. Finally, PRO_{arb} arguably involves the failure to establish a referential dependence, which we will formalize in terms of a failure to Agree in the sense of Preminger (2014). Crucial evidence motivating the approach proposed here will be adduced from Sundaresan's (2014) "Finiteness pro-drop Generalisation", which reveals an otherwise unexpected complementarity of OC PRO and *pro*.

Keywords: *pro*, PRO, control, OC, NOC, finiteness, Case, Agree, left periphery

1 Background

Whenever two otherwise similar grammatical elements display distinct properties and appear in distinct environments, we have in principle two analytic possibilities. One is to posit that they are indeed two underlying elements with inherently distinct

1 The authors are both responsible in equal measure for the work presented here and appear in alphabetical order.

***Corresponding author: Thomas McFadden,** Leibniz-Zentrum Allgemeine Sprachwissenschaft, email: mcfadden@leibniz-zas.de
Sandhya Sundaresan, Institut für Linguistik, Universität Leipzig, email: sandhya.sundaresan@uni-leipzig.de

properties, and that these properties lead to them having different distributions — we'll call this the *Inherent* view. The other is to posit a single underlying element with a broad distribution, with the grammatical distinctions arising from the different contexts in which that element appears — we'll call this the *Derived* view. As an illustration of the difference, consider a simple pattern of subject-verb agreement:

(1) a. *The book looks heavy.*
b. * *The book look heavy.*
(2) a. * *The books looks heavy.*
b. *The books look heavy.*

Under an Inherent account, one might propose that there are two lexical items *looks* and *look*, with distinct inherent ϕ-feature specifications. These specifications derive the distribution of the two forms in (1) and (2), ruling out the cases where the features don't match with those of the subject. A Derived account, on the other hand, would posit that there is a single abstract underlying lexical item LOOK, which has an unvalued set of ϕ-features and thus can readily combine with any kind of subject. Once it does so, its ϕ-features are valued accordingly, and this then determines the appropriate, distinct surface forms in (1) and (2). In many cases it is not clear a priori whether an Inherent or Derived approach is correct. Accounts of both kinds can often handle the basic patterns for a given phenomenon, as in this agreement example, and deciding between them requires careful theoretical and empirical argumentation.

One place where this analytic tension is played out is in the analysis of non-overt subjects in certain characteristic contexts — what are commonly referred to as obligatorily controlled (OC) PRO and (little) *pro*. Superficially, these two grammatical elements have a great deal in common. They are both silent, categorially 'nominal' pro-forms (i.e. they are functional, not lexical), and they both occur most typically in subject position. At the same time, they are systematically distinguished with respect to their interpretive properties. OC PRO is characterized by the "OC Signature" from Landau (2013) (see also Stiebels 2007 for a crosslinguistic overview of PRO in complements), defined as follows:[2]

(3) THE OC SIGNATURE
In a control construction [...X_i...[$_S$ PRO$_i$...]...], where X controls the PRO subject of the clause S:

2 The definition in (3) is reproduced from Landau (2013, p. 29), with two brief additions (in square brackets) to explain what Landau means by 'co-dependent' and 'or part of it'. We will bring NOC PRO into the picture in due course, especially in Sections 5 and 7.

a. The controller(s) X must be (a) co-dependent(s) [argument or adjunct] of S.
b. PRO (or part of it) [this caveat subsumes cases of partial control as a sub-species of OC] must be interpreted as a bound variable.

The import of the definition in (3), in particular (3b), is that OC PRO is obligatorily coreferent with its antecedent ("controller") and can only have sloppy identity readings under *v*P ellipsis. To this we can add that, at least in relevant attitude contexts, it is interpreted obligatorily *de se*.[3] Little *pro* can be negatively defined with respect to the same criteria: it yields not just sloppy but also strict readings under ellipsis, can but need not be coreferent with a local antecedent, and can but need not be interpreted *de se* in attitude contexts. Relatedly, the two nominals also have distinct distributions. To a first approximation (to be corrected as we proceed), OC PRO must appear as the subject of a non-finite clause, so it cannot be an object as in (5), nor can it be the subject of a prototypical finite clause as in (6):

(4) *Sue$_i$ wanted [$_{CP}$ PRO$_i$ to hate Jane].*
(5) * *Sue$_i$ wanted [$_{CP}$ Paul$_j$ to hate PRO$_i$].*
(6) * *Sue$_i$ exclaimed [$_{CP}$ that PRO$_i$ hated Jane].*

The availability of OC PRO also does not seem to be a point of cross-linguistic variation. Little *pro*, on the other hand, appears typically as the subject of finite clauses, though some languages additionally allow it in non-subject position, as in the Tamil example in (7) with pro-dropped subject, direct object and indirect object. Furthermore, its availability is a well-known and widely discussed point of variation across languages, as exemplified by the ungrammaticality of the English example in (8):

(7) *pro$_i$ pro$_j$ pro$_k$ kuḍ̪ŭ-tt-aa[.* *(Tamil)*
give-PST-3FSG
'She$_i$ gave it$_j$ to [him/her/them/me/us/you]$_k$.'
(8) * pro *gave it to him. (English)*

It is probably safe to say that it is standard in the recent literature to take an Inherent approach to the OC PRO vs. *pro* distinction (e.g. Martin 2001; Hornstein 1999; Landau 2004, 2013). The general idea under this view is that PRO is underlying like a kind of anaphor with some additional syntactic properties (related e.g. to binding, Case or ϕ-features) that derive its peculiar distribution. In contrast, *pro* is

3 We depart somewhat from Landau (2013) on this point, as will be discussed in Section 3.3 below.

a pronoun, and its special distribution within and across languages has something to do with its silence, though there is little agreement on what. There have, however, been a number of Derived proposals (e.g. Chomsky 1982; Borer 1989; Manzini 2009; Kissock 2014; Duguine 2015; Fischer 2017) which have argued that the differences between these elements fall out, not from distinctions that are inherent to them, but due to contextual differences in their structural environments. The goal of this paper is to provide novel theoretical and empirical evidence supporting a version of this idea.

In particular, we will argue that OC PRO and *pro* are just labels for different manifestations of what is underlyingly a single underspecified nominal pro-form, which we will call UPro.[4] Included under this UPro will also be the various types of 'non-obligatory control' (NOC) PRO, including arbitrary PRO (PRO_{arb}). The interpretive and distributional distinctions lurking behind these labels will be seen to derive from how UPro interacts with its structural environment and language-specific rules of morpho-phonological realization. Specifically, OC PRO labels a particular interpretation that arises in embedding contexts where a syntactic OC relationship with an antecedent can be established. Different types of *pro* and NOC PRO, on the other hand, involve 'control' by (typically) silent representations of discourse-contextual elements in the clausal left periphery. Finally, PRO_{arb} arguably involves the failure to establish a referential dependence, which we will formalize in terms of a failure to Agree building on ideas of Preminger (2014).

The crucial evidence that motivates the Derived approach proposed here will be adduced from the "Finiteness *pro*-drop Generalisation" of Sundaresan (2014):

(9) **Finiteness/pro-drop generalization (Fin-*pro*G):**
For (at least a non-trivial set of) pro-drop languages with subject-verb agreement, pro-drop is disallowed in the subject position of a prototypically non-finite clause.

What Sundaresan (2014) observes is that, in a number of languages with *pro*-drop, in particular syntactic contexts where we might expect either OC PRO or *pro* to be able to appear, the null subjects that we find crucially display the fingerprint of OC PRO, and not of *pro*. The apparent impossibility of *pro* comes as a surprise, because these are environments where referentially indepedent, overt DPs are possible.

4 The new label is introduced to avoid confusion with other analyses and also to get away from the use of capitalization to distinguish different categories. The U can be thought of as standing for 'unmarked', 'underspecified' or 'unpronounced' (though we will argue that UPro is not always silent), and Pro is meant to suggest both PRO and *pro*, as well as 'pronominal' or 'pro-form' (none of which should be understood as contrasting with 'anaphoric' in the GB binding-theoretic sense).

Under an Inherent approach, where OC PRO and *pro* constitute two underlyingly distinct entities, some stipulation has to be made to explain why *pro* is blocked. But under a Derived approach, where PRO and *pro* are contextual variants of the *same* underlying element, we predict that they should be in complementary distribution. In any place where OC PRO is possible, *pro* should be excluded, and thus we can formulate an explanation for Sundaresan (2014)'s otherwise puzzling Fin-*pro*G.

The paper is structured as follows. In Section 2, we set up the basic set of questions surrounding the distribution of different subject types, including overt DPs, PRO and *pro*, how these may or may not relate to Case and finiteness, and a particular puzzle presented by certain non-finite clause types in subject pro-drop languages that allow both overt and covert subjects. In Section 3, we review the evidence that the null subject alternant in such clauses exclusively bears the interpretive hallmarks of PRO rather than *pro*. Section 4 discusses how Sundaresan's Fin-*pro*G analyzes these facts and then lays out how that generalization clearly favors a Derived approach to the distinction between OC PRO and *pro* over an Inherent one. In Section 5, we then lay the groundwork for such a Derived approach, based on two main observations: first, that the properties of OC PRO are a proper subset of those typically attributed to *pro*; and second, that there are important parallels, observed elsewhere in the literature, between *pro* and NOC PRO. While OC PRO is subject to strict structural conditions, NOC arises when these conditions fail, as an Elsewhere. Section 6 introduces our proposal of a single underspecified nominal UPro which underlies the elements that are variously labelled as OC PRO, NOC PRO and *pro*, and then explores the way in which OC is derived in different contexts. Section 7 then turns to what happens when OC fails, covering the distribution and interpretation of NOC PRO and *pro*. Finally, Section 8 summarizes the main consequences of our proposal, including how it derives (an updated version of) the Fin-*pro*G, and ties up some loose ends.

2 A puzzle regarding subject distribution

The puzzle we will start with comes from alternations between null and overt subjects in certain prototypically non-finite embedded clauses, like the adjunct clause in the Tamil sentence in (10):[5]

5 As discussed by Sundaresan & McFadden (2009) and Sundaresan (2014), this type of clause can be interpreted with either a purposive or temporal relation to the matrix clause. For simplicity we only give translations with the purposive interpretation, since the distinction is not relevant for our concerns.

(10) *Raman [(Vasu) puuri-jæ porikk-œ] maavŭ*
Raman.NOM (Vasu.NOM) puuri-ACC fry-INF flour.ACC
vaaŋg-in-aan.
buy-PST-M.3SG
'Raman bought flour [(for Vasu) to fry puuris].'

Note that while the verb *vaaŋginaan* in the matrix clause inflects for tense and subject agreement, *porikkœ* in the adjunct clause bears a simple infinitive suffix with no further inflection, so this is clearly a non-finite clause. It crucially allows either an overt subject — here the proper name *Vasu* — or a silent one. The basic question we would like to answer is what the identity of that silent subject is. Given that Tamil is a pro-drop language, we might expect the null subject alternant to be *pro*. On the other hand, given that the embedded clause is non-finite, we might expect it to be PRO instead. It will be instructive to consider what standard theories of the distribution of subject types predict (or fail to predict) in this situation, in order to set up the following empirical discussion.

2.1 Case, finiteness and subject types

A central tenet of GB and Minimalism has been that DPs can be partitioned in part according to their needs with respect to abstract Case. Simply put, overt DPs and *pro* require (normal) abstract Case, whereas PRO either doesn't require Case at all, or requires a special "null" Case (Chomsky & Lasnik 1993; Martin 2001). Clauses are then distinguished according to whether they have a T that can assign structural nominative Case to a DP in the subject position. The T in prototypical finite clauses assigns nominative, thus licensing overt DPs and *pro* as subjects. In prototypical non-finite clauses, T assigns either no Case or the special null Case, thus licensing PRO.[6] This yields the following simple bijection between clausal finiteness and the type of subject licensed:

(11) Bijection of Subject-Type to Clause-Type:
i. PRO ↔ Non-Finite Clause
ii. *pro*/overt DP ↔ Finite Clause

One attractive aspect of this account, in addition to its simplicity, is that it provides us with a ready means for predicting whether the subject position of a given clause

6 Under certain special circumstances, something other than T can assign (non-null) Case to the subject position, licensing an overt DP, e.g. ECM verbs like *believe* and the prepositional complementizer *for* in English.

type will be occupied by PRO or *pro* — no small advantage, given that these elements are silent and thus can't be told apart based on surface form. If we observe a null subject in a finite clause, we can expect it to be *pro*, whereas if we observe it in a non-finite clause, we can expect it to be PRO. We might hope that the pattern summarized in (11) would provide us with insight into what is going on in examples like (10), and in particular what kind of null subject it might contain.

However, the simple one-to-one mapping in (11) has been called into question in recent decades. First, a Case-based approach to the distribution of OC PRO has been shown to fail empirically on a number of points (see Sigurðsson 1991; McFadden 2004; Landau 2006; Sigurðsson 2008, and many others). For one thing, there is good evidence from a number of languages that PRO bears entirely normal Case (i.e. it is neither Caseless nor does it bear a special null Case):

(12) OC PRO WITH CASE, NUMBER, AND GENDER: ICELANDIC
Strákana *langaði til* *[$_{CP}$* PRO *að komast allir* *í*
boys-the.ACC wanted for PRO to get all.M.PL.NOM to
veisluna]
party.the
'The boys$_i$ wanted [$_{CP}$ PRO$_i$ to all get to the party].'

In (12), the embedded floating quantifier *allir*, which bears M.PL.NOM, is associated with the embedded PRO subject, thus crucially diagnoses the presence of these same features on PRO. Furthermore, this nominative Case on PRO cannot be dismissed as an instance of Case transmission from the finite T in the matrix clause (though such transmission may take place in other examples), since the case on the matrix subject (a quirky case assigned by the matrix verb *langa* 'want') is accusative, not nominative. That is, the subject of the embedded clause in (12) clearly bears run-of-the-mill nominative Case, and yet it can only be realized as PRO. Thus we cannot reduce the distribution of PRO versus overt DPs to Case.

Second, the bijection in (11) depends on a straightforward binary division between finite and non-finite clauses with a clear cut in their subject-licensing behavior. However, the currently available evidence goes against this. A number of languages exhibit clause types that display some morphological properties of finiteness, yet have OC, as in (13) (from Darzi 2008, formatting ours):

(13) FINITE OC PRO: PERSIAN
Žian *mi.tun.e* *[(ke)* PRO *be.r.e]*
Jian DUR.be.able.3.SG (that) PRO SUBJ.go.3SG
'Jian can/is able to go.'

Note that the verb form *bere* in the embedded clause is marked for 3sg agreement just as *mitune* in the matrix clause is, i.e. we would judge both to finite. Yet

Darzi (2008) shows that this embedded clause has an OC PRO subject. See also e.g. Iatridou (1993) and Landau (2004) for similar data in Greek and Hebrew, respectively, and Landau (2013, section 4.1) for a cross-linguistic overview of how finiteness relates to the distribution of OC PRO. Facts like these make it difficult to maintain a simple version of the idea that the choice between overt DP subjects and OC PRO is tied to the finiteness of the clause.

In fact, it turns out that data like (10) itself, repeated here as (14), present a serious challenge for the bijection. Examples like this are found in a wide range of languages, where various types of non-finite clauses allow overt, clearly non-controlled subjects, at least in certain contexts (see e.g. Sundaresan & McFadden 2009; Diercks 2012; Landau 2013, and many others).

(14) *Raman [(Vasu) puuri-jæ porikk-æ] maavŭ*
Raman.NOM Vasu.NOM puuri-ACC fry-INF flour.ACC
vaaŋg-in-aan.
buy-PST-M.3SG
'Raman bought flour [(for Vasu) to fry puuris].'

What the version of (14) with *Vasu* shows us is that it is entirely possible for a non-finite clause to have an overt subject, even in the absence of a c-commanding ECM verb or prepositional complementizer like English *for*. Under standard Case theory and the bijection in (11), the non-finite T of such a clause should only be able to assign null Case or no Case at all, and thus only OC PRO should be licit as subject. Such patterns — which Sundaresan & McFadden (2009) report also for Sinhala, Malayalam, Latin, Irish, and Middle English — thus further undermine the bijection in (11). These types of data serve as an exercise in caution. They tell us, in brief, that we cannot judge a subject by its case, or a clause by its finiteness. While overt DPs, nominative Case and finite clauses are often found together, we also find silent OC PRO subjects of finite clauses, as in (13), overt referentially independent DP subjects of nonfinite clauses, as in (14), and nominative Case independent of overtness, as in (12).

2.2 The challenging alternations

If the diagnostic power of Case and finiteness is undermined, then we lose our handy metric for distinguishing between PRO and *pro* via the bijection in (11). This will make matters tricky in structures involving an alternation between overt and null subjects in pro-drop languages. Consider first for comparison the English examples in (15):

(15) a. *[$_{GerP}$ Alex$_j$ having no idea how to get home], Sue$_i$ had to ask for directions.*

b. *[$_{GerP}$ EC$_i$ having no idea how to get home], Sue$_i$ had to ask for directions.*

We have here embedded gerundival clauses, which allow a straightforward alternation between overt and null subjects. Now, in such cases, the identity of the null subject hasn't been thought to be a big issue for the simple reason that English doesn't have clear cases of standard pro-drop, i.e. it isn't thought to have *pro* in its inventory of grammatical formatives.[7] Thus whenever we see null subjects in English (perhaps with the exception of imperatives and implicit demoted subjects in passives), we simply take them to be instances of PRO, as there is no other alternative.

The real problem presented by these kinds of alternations arises with languages like Tamil which *do* allow pro-drop.[8] Consider again the variant of (14) with a null subject in the adjunct clause, repeated here as (16):

(16) *Raman$_i$* *[EC$_{\{i,*j\}}$* *puuri-jæ* *porikk-æ]* *maavŭ*
Raman.NOM puuri-ACC fry-INF flour.ACC
vaaŋg-in-aan.
buy-PST-M.3SG
'Raman$_i$ bought flour [EC$_{\{i,*j\}}$ to fry puuris].'

Given the availability of *pro* elsewhere in the language, we cannot simply assume that the null subject here is PRO, and its identity becomes an open and much more interesting question. Similar questions arise in Spanish, a fairly typical consistent null subject language which allows covert, definite subjects of all person and number combinations in normal finite clauses. These covert subjects, like the embedded

7 We restrict our attention here to non-reduced spoken and written varieties of English, i.e. we are setting aside reduced registers of the language like those found in diaries, where a restricted type of pro-drop is possible (see e.g. Weir 2012).

8 In this paper we will set aside partial pro-drop languages like Brazilian Portuguese, Finnish and Marathi, which have been argued to have null subjects that don't behave quite like OC PRO, NOC or *pro* (see e.g. Holmberg et al. 2009). These are clearly relevant for our concerns, and may well provide further support for the kind of Derived approach we will be pursuing here — the greater the number of slightly different readings we identify for null subjects, the more attractive it becomes to derive them from the effects of small (but independently observable) differences in the context, as opposed to positing the full array of underlyingly distinct flavors of *pro*/PRO/UPro etc. necessary for an inherent approach. However, properly dealing with these phenomena will take us too far afield for the current paper, so we will leave a proper treatment of partial pro-drop for future research.

EC in (17), show all the interpretive hallmarks of *pro* as a free variable, as opposed to OC PRO, a bound one:

(17) *Carlos*$_i$ *pens-ó* [$_{CP}$ *que* **EC**$_{i,j}$/**María**$_j$ *mostra-ba* *los*
Carlos$_i$ think-3SG.PST [$_{CP}$ that EC$_{i,j}$/María$_j$ show-IMPF.3SG the
primeros síntomas de la gripe]
first symptoms of the flu]
'Carlos$_i$ thought [$_{CP}$ EC$_{i,j}$/María$_j$ was showing the first symptoms of the flu]'

For example, this EC can refer either to the matrix subject *Carlos* or to some other discourse-salient entity, i.e. unlike OC PRO, it does not need to be controlled by a local antecedent. Non-finite clauses are more complicated, however. While infinitival complement clauses typically only allow null subjects in the language, certain infinitival adjunct clauses allow an alternation between overt and covert subjects, yielding minimal pairs like the following:

(18) [$_{CP}$ *A-l* *mostra-r* *EC*$_{\{i,*j\}}$ *los primeros síntomas de la*
At-the show-INF EC the first symptoms of the
gripe], *Carlos*$_i$ *se* *vacun-ó.*
flu, Carlos$_i$ ANAPH vaccinate-PST
'[Showing the first symptoms of flu], Carlos got vaccinated.'

(19) [$_{CP}$ *A-l* *mostra-r* *María*$_i$ *los primeros síntomas de la gripe*],
At-the show-INF María$_i$ the first symptoms of the flu,
Carlos$_j$ *se* *vacun-ó.*
Carlos$_j$ ANAPH vaccinate-PST
'[$_{CP}$ (With) Maria$_i$ showing the first symptoms of flu], Carlos$_j$ got vaccinated.'

Again, the question is whether we should identify the 'EC' in examples like this as *pro* or (OC) PRO, and what makes things interesting is that what we think we know leads to contradictory expectations. On the one hand, since it is in alternation with an overt non-controlled subject, we might expect it to be *pro*. On the other, since the clause is non-finite, we might expect it to be PRO.[9] Since our theoretical

9 As an anonymous reviewer reminds us, Spanish also has so-called 'personal infinitives', which look much like (18), but have a 1st or 2nd person reflexive clitic on the embedded verb. As argued e.g. by Rigau (1995), in such cases, the null embedded subject is uncontroversially *pro*, since e.g. it need not be coreferent with an argument of the matrix clause. We will restrict our attention here to cases without such a reflexive clitic, where the status of the null subject is less obvious. Ultimately we will need to integrate these personal infinitives into our approach, specifically to determine what exactly the presence of a reflexive clitic

expectations are no help in settling this matter, we must look elsewhere, and fortunately, there are empirical means available.

2.3 Background on the diagnostics

As we mentioned above in connection with Landau (2013)'s OC signature, OC PRO and *pro* are associated with systematically distinct interpretive properties. Thus if we can develop diagnostics for the different interpretations, we should be able to use them in order to identify whether a particular null subject should be analyzed as PRO or *pro*. Sundaresan (2014) considered precisely this question in contexts like (16) and (18). She ran a series of diagnostics for the presence of OC PRO in constructions where a null subject is in alternation with an overt subject in a series of pro-drop languages including Tamil, Spanish, Italian, Hindi-Urdu, Hungarian, Romanian and Japanese. We will thus largely be able to content ourselves with reproducing the results that Sundaresan reports. She applies the following three diagnostics for the distinction between PRO and *pro*:

Obligatory coreference: OC PRO should be obligatorily coreferent with a local antecedent, which acts as its controller.[10] On the other hand, *pro*, as a free variable, should be capable of independent reference, under the right discourse conditions.

Obligatory sloppy readings under ellipsis: As a bound variable, OC PRO should yield only sloppy readings under *v*P ellipsis, while *pro* can yield both strict and sloppy readings in such a scenario.

Obligatory *de se* interpretation: In attitude contexts, OC PRO should be obligatorily interpreted *de se* (relative its controller) (see Chierchia 1989; Pearson 2013, a.o.). No such restriction holds of *pro* which may be interpreted *de se* or *de re* in such contexts.

We can add a fourth diagnostic for the distinction here, with data from Tamil originally discussed in Sundaresan & McFadden (2009):

---

has to do with the licensing of a *pro*-type interpretation in a context where, as we will see, otherwise only OC PRO is possible. We speculate that it has something to do with the special properties of 1st and 2nd person and however these interact with the restrictions imposed by the reflexive itself, as in the presence of a 3rd person reflexive clitic we apparently only get the OC PRO reading.

10 We are abstracting away, for the moment, from whether such obligatory coreference is exhaustive or partial; see Landau (2000, et seq.) for arguments that partial control instantiates a species of OC.

PRO-gate (obviation of WCO violations): Jaeggli & Safir (1989) observe that OC PRO can amnesty a Weak Crossover (WCO) violation, while *pro* cannot.

The results from these tests all point to the same conclusion: the null subject in these alternating contexts bears the fingerprint of OC PRO, not *pro*. As we will discuss in the later portions of the paper, this is a puzzling result, again given that *pro* is available elsewhere in these languages and that an overt subject alternant is available in the same structural context. First, however, we will illustrate the result by reviewing some of the crucial data for each diagnostic.

3 Illustrations of the diagnosis of pro

In this section we demonstrate the application of the four tests for the status of the null subject in non-finite clauses that allow an alternant with an overt subject, based primarily on data from Sundaresan & McFadden (2009) and Sundaresan (2014). We do not intend to make an extended case for the diagnosis of PRO with an exhaustive presentation of the facts (for which we refer the reader to the works cited), but rather to give enough examples to illustrate the how the diagnostics work and the basic findings.

3.1 Obligatory Coreference effects

To begin with obligatory coreference, in the overt subject variant in (19), matrix and embedded subjects are, of course, trivially non-coreferent. In the covert subject variant, Sundaresan shows that the embedded subject must always be coreferent with the matrix, and that this is not merely a discourse-pragmatic effect, as "setting up a context favoring a non-coreferent interpretation of the embedded subject . . . simply renders the sentence pragmatically marked" (Sundaresan 2014, 75), rather than actually allowing that interpretation. In (20), a non-coreferent entity (e.g. *María*) is added to the sentence in (18) as a hanging topic, which pragmatically encourages a non-coreferent interpretation of the sentence. However, as the co-indexing indicates, such non-coreference is still disallowed: the null subject seems to demand strict coreference with the matrix subject, regardless of pragmatic factors:

(20) *Según María$_j$, [a-l mostra-r EC$_{\{i,*j,*k\}}$ los primeros*
According.to María, at-the show-INF EC$_{\{i,*j,*k\}}$ the first
síntomas de la gripe], Carlos$_i$ se vacun-ó.
symptoms of the flu, Carlos$_i$ ANAPH vaccinate-PST
'According to Maria$_j$, EC$_{\{i,*j,*k\}}$ showing the first symptoms of flu, Carlos$_i$ got vaccinated.'

3.2 Sloppy readings under ellipsis

Moving now to different types identity readings, bound variable pronouns have been observed to yield obligatorily sloppy identity readings when c-commanded by definite DPs such as R-expressions (Reinhart 1983). In contrast, regular pronouns may take split antecedents and may yield bound-variable sloppy readings, as well as strict readings under definite DPs, due to their ability to refer discourse-pragmatically. This contrast is illustrated below:

(21) *Only Sue$_i$ wanted [PRO$_{\{i,*j\}}$ to ride the roller-coaster].*
   a. BOUND-VARIABLE ✓: $\forall x.[Want(x, RideRollerCoaster(x)) \rightarrow (x = Sue)]$
   b. STRICT ✗: $\forall x.[Want(x, RideRollerCoaster(Sue)) \rightarrow (x = Sue)]$

(22) *Only Sue$_i$ thought [she$_{\{i,j\}}$ was riding the roller-coaster].*
   a. BOUND-VARIABLE ✓: $\forall x[Think(x, RideRollerCoaster(x)) \rightarrow (x = Sue)]$
   b. STRICT ✓: $\forall x[Think(x, RideRollerCoaster(Sue)) \rightarrow (x = Sue)]$

The crucial reading is the strict one. (22b) reflects the (possible) interpretation of (22) where Sue was the only one who thought that Sue was riding the roller-coaster. The parallel reading laid out in (21b) — where Sue is the only one who wanted Sue to ride the roller-coaster — is not available for (21). Instead, (21) can only mean that Sue is the only one who wanted herself ride the roller coaster, as in (21a).

A similar distinction obtains under ellipsis. When a bound variable is part of structure that is elided, only sloppy identity readings obtain for that variable. But when a string containing a free variable is elided, strict as well as sloppy readings may obtain. This can be used to test the identity of null subjects as OC PRO or *pro*, since the former but not the latter should behave obligatorily as a bound variable. Sundaresan (2014) shows then that when the embedded null subject in sentences like (18) is in an elided structure, only sloppy readings are possible, as in (23). A strict reading is ruled out.

(23) SLOPPY READING UNDER CLAUSAL ELLIPSIS — SPANISH:

Al mostrar los primeros síntomas de la gripe el año
At-the show-INF the first symptoms of the flu the year
pasado, Carlos se vacun-ó, y el año siguiente,
past, Carlos ANAPH vaccinate-PST, and the year following,
(entonces) María también.
(then) María too

'EC$_{\{i,*j\}}$ showing the first symptoms of the flu last year, Carlos$_i$ then got vaccinated. And [$_{CP}$ EC$_{\{j,*i\}}$ ~~showing the first symptoms of the flu~~ this year], María$_j$ (then) did too.'
SLOPPY READING: ✔ And once María showed the first symptoms of the flu this year, then María got vaccinated too.
STRICT READING: ✘ And once Carlos showed the first symptoms of the flu (presumably again) this year, then María got vaccinated too.

This again indicates that that the null subject has the status of a bound variable, i.e. PRO rather than *pro*.

3.3 Obligatory *de se* interpretation

Let us now consider data on *de se* and *de re* interpretations. Pearson (2016, 694, Ex. 8) defines an attitude *de se* as "an attitude — a belief, desire, expectation, etc. — that has the following properties: (i) the attitude is about the attitude holder (aboutness condition) and (ii) the attitude holder is aware that the attitude is about herself (awareness condition)". It has long been observed that *de se* readings are associated with OC PRO, and indeed it has been claimed that PRO is interpreted obligatorily *de se*. Landau (2013, p. 32–34), based partly on unpublished data from Ken Safir, argues that this is a misconception, and that OC PRO can and even must have a *de re* reading under certain circumstances.

Assuming that this is correct, this means that the availability of *de re* readings cannot, by itself, be taken as evidence that a given null subject should be identified as *pro* rather than PRO. However, we think that the logic of the situation does allow the use of *de se* as a diagnostic in the *opposite* direction: i.e. if a null subject in a given attitude context is obligatorily interpreted *de se* and does not allow *de re* construals, then this points strongly towards its being PRO rather than *pro*. In other words, while obligatory *de se* is not a necessary condition for the identification of PRO, it may be a sufficient one. We will thus apply it here.

First, however, there is a bit of a potential confound for applying the *de se* test to the kinds of null subjects that Sundaresan (2014) analyzes, having to do with the fact that they are often found in adjunct clauses. The relevant alternations between

null and overt subjects in non-finite clauses appear to be most common in adjunct clauses, as discussed extensively by Sundaresan & McFadden (2009). Infinitival complements in Spanish, e.g., seem to uniformly display OC with no possibility for overt subjects that are referentially independent of matrix arguments. Adjuncts are especially tricky, however, as Landau (2013, p. 33) notes that they represent one of the main contexts where OC PRO can (and sometimes must) have a *de re* interpretation. Example (25), under the scenario in (24), presents one such case:

(24) SCENARIO: "John's computer has been hacked, and some secret files have been copied from it by a business competitor. John's company holds an urgent meeting to decide on the necessary measures. John has no idea that his own computer was the one that was hacked, but he is determined to punish any careless workers who failed to protect their computers..." (Landau 2013, p. 32)

(25) *John$_i$ was furious mad [despite PRO$_i$ being the careless worker himself].*

That is, there is no problem understanding (25) in a way that is consistent with (24), such that the PRO in the adjunct clause is coreferent with and indeed controlled by *John*, but John himself is unaware of his own guilt. In other words, the adjunct clause is not interpreted as a *de se* thought that John has about himself as the PRO subject.

Again, however, we think that this only undermines the possibility of using the availability of *de re* readings to conclusively identify a null subject as *pro*. Clearly, OC PRO is compatible with *de re* readings under certain circumstances in certain types of adjunct clauses. In this case it seems reasonable to think (as Landau himself hints) that the adjunct is not interpreted within the intensional scope of the matrix attitude predicate *furious mad*. Indeed, it arguably doesn't present an attitude of John's at all, but rather reports on the perspective of the speaker. If we modify the adjunct so that it is understood within the scope of John's anger, as in (26), the interpretation is crucially different:

(26) *John$_i$ was furious mad [due to PRO$_i$ being the careless worker himself].*

The adjunct here is clearly part of an attitude that John has, which is about himself, and which he is aware is about himself. In other words, it seems that PRO is indeed interpreted obligatorily *de se*. Now, a more systematic understanding of when *de re* interpretations are available or required for PRO in adjunct clauses goes beyond the scope of what we want to accomplish here. What matters for us is, again, that we expect such interpretations to always be available for *pro*. Thus, if we find that a null subject is obligatorily interpreted *de se* in some type of adjunct clause, we can take that as evidence that that null subject is PRO and not *pro*.

Consider in this light the interpretation of our Spanish example, repeated in (28), under the scenario laid out in (27), as reported by Sundaresan (2014):

(27) Scenario: Carlos is a doctor and all the doctors in his hospital have to undergo compulsory testing for the flu before flu season. These tests, which are anonymized, are then analyzed by random doctors in the hospital. Carlos actually ends up analyzing his own sample, unknowingly, and finds out that this sample has flu symptoms. So he decides to get vaccinated, just to be safe, because someone in the hospital probably has the virus.

(28) *⌊CP A-l mostra-r EC{i,∗j} los primeros síntomas de la*
At-the show-INF $EC_{\{i,*j\}}$ the first symptoms of the
gripe⌋, Carlosi se vacun-ó
flu, $Carlos_i$ ANAPH vaccinate-PST
'Showing the first symptoms of flu, Carlos got vaccinated.'

(28) is judged not to be an appropriate report of what is described in (27). The interpretation it has is not that Carlos got vaccinated because someone had the flu, who just *happened* to be him. Rather, it implies that Carlos got vaccinated, crucially being *aware* that he himself is the person showing signs of the flu. But this is of course just the same as saying that the embedded null subject must be interpreted *de se* with respect to the matrix. The *de re* interpretation, which would acurately reflect the background described in (27), is simply not available. We thus have *obligatory de se* and a further piece of evidence that the null subject here is OC PRO.

For those who are still concerned about the reliability of *de se* as a diagnostic in adjunct control, we can present some additional data from complement clauses. Though the alternations between overt and covert subjects in non-finite clauses discussed by Sundaresan & McFadden (2009); Sundaresan (2014) are, as we have noted, especially common in adjuncts, there are some languages that allow them in the complements of a restricted set of verbs, especially ones with meanings like 'want'. This is demonstrated for Hindi-Urdu by the examples in (29).[11]

(29) a. *Ramᵢ ⌊CP Amitⱼ-kaa toffee khaa-nii⌋ caah-tii hai*
Ram [Amit-GEN toffee eat-INF] want-HAB be.PRES.3SG
'Ram wants Amit to eat toffee.'

b. *Ramᵢ ⌊CP ECᵢ,∗ⱼ toffee khaa-nii⌋ caah-tii hai*
Ram [$EC_{i,*j}$ toffee eat-INF] want-HAB be.PRES.3SG

11 These are based on Sundaresan (2014)'s examples (30a) and (30b), but with some small changes suggested by Rajesh Bhatt (p.c.) to avoid confusion with a reading where the genitive-marked *Amit-kaa* in (29a) is interpreted as the possessor of the following object rather than as the subject of the embedded clause, as is intended.

'Ram wants to eat toffee.'

The embedded null subject in (29b), in addition to being obligatorily coreferent with the matrix subject *Ram*, must be interpreted *de se*. Thus, for instance, it would be inappropriate as a description of the scenario in (30):

(30) ***de re* Scenario:** Ram has competed in a contest and does not know yet that he has won third place. Before the announcement of the results, there is a dispute over what the prizes should be for the top three finishers. He thinks first prize should be a samosa, second prize should be a slice of pizza, and third prize should be a piece of toffee, because that's his order of preference for those three treats. He thus wants the person who comes in third — who he himself happens to be, though he doesn't know it yet — to eat toffee, even though he himself would rather eat a samosa or a slice of pizza.

The embedded clause in (29b) describes an attitude that Ram consciously has about himself, i.e. it is an attitude *de se*, and thus does not accurately reflect what is going on in (30). Again, we have evidence that the null subject that alternates with overt subjects in a type of non-finite clause is PRO rather than *pro*, even though Hindi-Urdu, like Spanish and Tamil, is a pro-drop language.

3.4 PRO-gate

A final diagnostic for distinguishing PRO from *pro* is the so-called PRO-gate effect (Higginbotham 1980; Jaeggli & Safir 1989). This is the observation that OC PRO — but not pronouns, including *pro* — can obviate Weak Crossover (WCO) effects. In structures that would normally involve a WCO violation, PRO seems to function as a "gate", rendering the relevant movement grammatical. This is shown for English by the contrast in (31):

(31) a. * $[_{CP}$ *Who(m)$_i$ did* $[_{DP}$ *John$_i$/him$_i$ washing the car] upset e$_i$]?*
b. $[_{CP}$ *Who(m)$_i$ did* $[_{DP}$ PRO$_i$ *washing the car] upset e$_i$]?*

In (31a), the A-bar movement of the overt wh-object pronoun *whom*, which 'crosses over' the coindexed subject *John/him*, renders the sentence ungrammatical. The minimally varying (31b) shows that when this same *wh*-object moves across a PRO subject, the cross-over is tolerated, and the sentence is grammatical. Jaeggli & Safir (1989) show that the same contrast obtains in pro-drop languages like Spanish, between *pro* and OC PRO. Moving a coindexed expression across *pro* induces a WCO violation, just as in (31a), whereas no violation obtains when the movement

is across PRO. Thus we can use the behavior of a null subject with respect to WCO as a diagnostic for whether it should be analyzed as OC PRO or *pro*.

Sundaresan & McFadden (2009) implement this WCO diagnostic for Tamil, using sentences like the following:

(32) * *Jaar-œ$_i$ ⌈avan$_i$ tann-ooḍœ$_i$ car-œ alambinadŭ⌋ t$_i$*
who-ACC$_i$ him$_i$ self-GEN$_i$ car-ACC wash.PTC
sandooʃappaḍŭtt-ittŭ?
make.happy-PST.3N.SG
'[$_{CP}$ Who(m)$_i$ did [$_{DP}$ him$_i$ having washed his$_i$ car] make happy?]'

(33) *Jaar-œ$_i$ ⌈EC$_{\{i,*j\}}$ tann-ooḍœ$_i$ car-œ alambinadŭ⌋ t$_i$*
who-ACC$_i$ self-GEN$_i$ car-ACC wash.PTC
sandooʃappaḍŭtt-ittŭ?
make.happy-PST.3N.SG
'[$_{CP}$ Who(m)$_i$ did [$_{DP}$ PRO$_i$ having washed his$_i$ car] make happy?]'

In (32) the object *jaarœ* ('whom') has moved across the coindexed pronoun subject *avan* ('he'), and this leads to a WCO violation, rendering the sentence is ungrammatical. This shows that WCO effects do indeed apply in cases where we might expect them in the language. But when the same movement of *jaarœ* crosses the null subject in (33), the WCO violation is amnestied, and the sentence is grammatical. As argued by Sundaresan & McFadden (2009), this diagnostic provides further evidence that the null subject in non-finite clauses allowing an alternation between silent and overt subjects, like (33), is indeed PRO and not *pro*. As we have already observed, Tamil, like Spanish, allows pro-drop for the subject. Thus the finding that, in non-finite clauses that allow both overt and null subjects, the null version is PRO and not *pro*, is puzzling for precisely the same reasons as it was in the Spanish case.

4 The Finiteness/pro-drop generalization

4.1 Summary of results

We have illustrated Sundaresan (2014)'s conclusions with data from three languages — Spanish, Hindi-Urdu, and Tamil — all of which are similar in that they combine the following two properties:

(34) i. They allow subject pro-drop
ii. They have non-finite clause types where an overt subject may alternate with a null one

This constellation raises contradictory expectations. The availability of a null subject in a non-finite clause is nothing special, as this is a fairly robust pattern crosslinguistically. Indeed, we might even regard null subjects as the default for non-finite clauses. However, when combined with the less common possibility of an overt subject alternant in the same clause types and the independent availability of subject pro-drop, this raises the possibility that the null subject might be *pro* rather than PRO. To test for this, Sundaresan capitalizes on the clear interpretive differences between OC PRO and *pro* — obligatory coreference, sloppy identity under ellipsis, *de se* readings in certain attitude contexts, and the PRO-gate test. The data and discussion above have revealed that, *with respect to each of these tests*, the null subject alternant in the non-finite clause bears the fingerprint of OC PRO rather than *pro*. Sundaresan (2014) further reports results on these tests for a range of additional languages which share the two properties described in (34) — namely Italian, Japanese, Romanian, and Hungarian — and shows that, in all them, the null subject alternant bears the fingerprint of OC PRO, not *pro*. It is on this basis that Sundaresan proposes the Fin-*pro*G, repeated in (35):

(35) **Finiteness/pro-drop generalization:**
For (at least a non-trivial set of) pro-drop languages with subject-verb agreement, pro-drop is disallowed in the subject position of a prototypically non-finite clause.

4.2 The import of the generalization

Let us turn then to what the Fin-*pro*G means for a theory of the status of PRO vs. *pro*, and in particular what it means for whether we adopt an Inherent or Derived approach to address the distinctions between them. Under an Inherent approach, i.e. where PRO and *pro* correspond to two underlyingly distinct lexical items in the grammar, the impossibility of a *pro* subject in the types of clauses just considered presents a challenge. It cannot be attributed to Case-licensing, since these same clauses can host (non-coreferent) overt subjects. Nor can it be attributed to a parametric unavailability of *pro*, since these languages do allow subject pro-drop elsewhere. The fact that the grammar seems to *always and only* allow OC PRO in alternation with an overt non-coreferent subject in these non-finite clauses is thus truly puzzling.[12] On the other hand, a Derived approach has the means to

12 Sundaresan (2014) tentatively suggests that the Fin-*pro*G in (35) is a language-internal instantiation of the rich agreement hypothesis as applied to pro-drop (originally due to Taraldsen 1978). The idea is that the availability of *pro* is inversely proportional to the

make sense of the generalization. If (OC) PRO and *pro* are contextually determined interpretive variants of a single underlying element, we expect them to show up in complementary distribution. Whatever it is that regulates the distribution of the two variants, whenever the OC interpretation is available, as in these clause types, we will expect it to essentially block the interpretation(s) associated with *pro*.

We thus need to develop an account with the following properties. OC PRO and *pro* should commence their life-cycle as identical elements, and the superficial differences between them should be derived in the course of the grammatical derivation, such that they are in complementary distribution. The mechanisms for deriving the interpretations should make the right cut in general, and in particular should ensure that OC is derived and required in contexts like those discussed by Sundaresan (2014). Ideally, the proposed properties of the underlying element and of the mechanisms that operate on it should yield some insight into the particular readings that arise, such that we do not have to just stipulate their nature and distribution.

5 Two guiding observations

Here we will shape the beginnings of a Derived approach with these key characteristics. The model we will ultimately motivate and present in Sections 6 and 7 below is guided by two central observations about our key players, PRO and *pro*. In particular, as we will lay out in this section, their interpretations are related in a systematic way that provides insight into how we might derive them from a unified source.

5.1 Subset-superset relations: pro vs. *pro*

Our first observation is that the interpretations available to OC PRO are a proper subset of those available to *pro*. As we've noted throughout, OC PRO has a very specific and restricted interpretation as a bound variable. It is obligatorily coreferent with a local antecedent (the controller), gets only sloppy readings under ellipsis, and is obligatorily *de se* when it appears in certain attitude contexts. On the other hand, *pro* is far less picky, showing flexibility on each of these points. That is, *pro*

degree to which finite agreement is realized in the structure where the *pro* is merged. However, as Sundaresan herself admits, this is more of a descriptive observation, which we might hope will lead to a theoretical explanation, not an explanation itself.

can be, but crucially need not be, coreferent with another local DP, can get a sloppy reading or a strict one under ellipsis, and can be interpreted either *de se* or *de re* in attitude contexts.

It is important to understand that the interpretation of *pro* is not just more flexible in some vague way than that of PRO, but that this really is a subset-superset relationship. The interpretations available for PRO are all generally available to *pro* as well, but *pro* has additional interpretations that are *not* available to PRO. We can thus think of the two as part of a pair, where PRO is the restricted, highly specified variant and *pro* is the underspecified general case.

5.2 Specific and Elsewhere: OC vs. NOC

Our second observation is that the OC PRO/*pro* relation finds a parallel in the phenomenon of non-obligatory control (NOC), which presents a challenge for standard Inherent approaches. Certain non-finite clauses have silent elements, which are traditionally also labelled PRO, but which do not exhibit the interpretive characteristics of OC, leading to the term "non-obligatory control/NOC" (Williams 1980). As its name suggests, NOC is perhaps best seen not as a unified phenomenon, but a collection of patterns, negatively defined relative to OC. Landau (2013, with references) provides important discussion on terminological confusion in Williams and much subsequent work and on the proper delineation of NOC from OC. Without going into too much detail, OC refers to the obligatoriness of a controlled interpretation for a PRO appearing in a particular context. This is crucially distinct from the question of whether a particular verb requires a complement clause with a controlled subject. English *try* and *want* differ on this point, for example — the former requires a control complement, as shown by the contrast in (36), while the latter allows a complement with either a controlled null subject as in (37a) or a non-controlled overt subject as in (37b):

(36) a. *Laurie$_i$ tried [*PRO$_{i/*j}$ *to play goalie].*
b. * *Laurie$_i$ tried [(for) Fry$_{*j}$ to play goalie].*

(37) a. *Laurie$_i$ wants [*PRO$_{i/*j}$ *to play goalie].*
b. *Laurie$_i$ wants [(for) Fry$_{*j}$ to play goalie].*

But this distinction between *try* and *want* is orthogonal to that between OC and NOC. With both verbs, if the complement clause is an infinitive with a null PRO subject, this PRO obligatorily gets the controlled interpretation with the OC signature and everything that goes along with that.

True NOC has rather different properties, which we can observe in (38) and (39):

(38) *Stevie$_i$ talked with Jackie$_j$ about [*PRO$_{i/j/k}$ *driving to Texas].*

*(39) [*PRO *to run out of beer] would be a crying shame.*

The silent nominal in such sentences bears none of the characteristics of Landau (2013)'s OC Signature. For one thing, it is *not* obligatorily coreferent with a specific syntactic controller. The PRO in (38) could refer to either the matrix subject *Stevie*, or the matrix adjunct *Jackie*, or potentially someone else not even named in the sentence. And in (39), there is no participant represented in the matrix clause, with the PRO occurring in the embedded clause able to potentially refer to the speaker, some salient referent in the discourse or to an arbitrary person. The PRO in NOC contexts also allows strict readings under ellipsis, as in (40), from Landau (2013, p. 33):

(40) *John$_i$ thinks that [*PRO$_i$ *behaving himself] will please his mother, and she$_j$ does too ~~think that [*PRO$_i$ *behaving himself] will please her~~.*

That is, (40) allows the reading where John's mother also thinks that it will please her if John behaves himself. Finally, NOC PRO allows both *de se* and *de re* readings in attitude contexts (see Landau 2013, p. 234 for data and discussion). All of this means that we need to distinguish carefully between NOC and OC versions of PRO, in addition to *pro*, and our choice between Inherent and Derived approaches will have to take this into account.

Now, the details of how NOC works are not particularly well resolved, but there is more or less general agreement in the literature that, while the OC relationship is subject to strict structural conditions, NOC interpretations of PRO can arise only when the structural conditions for OC are not met. In other words, NOC behaves distributionally as an Elsewhere with respect to OC. Under an Inherent view to the distinctions between OC PRO, NOC PRO and *pro*, this would have rather inelegant implications. If the strict interpretive requirements on OC PRO come from its underlying lexical properties, we would expect them to hold no matter where it appears. Since NOC PRO does not have these strict requirements, it must then actually be a distinct underlying element from OC PRO, and this interpretive distinction would have to somehow derive the distributional ones. This means we actually end up with a three-way underlying distinction among OC PRO, NOC PRO and *pro*. Alternatively, still under the Inherent view, we could assimilate NOC PRO to *pro*, but keep them both distinct from OC PRO (see Bouchard 1984; Hornstein 1999, and others for such a view). But note that positing an inherent difference between OC and NOC PRO is even more suspect than one between PRO and *pro*, because we can't point to apparent parametric differences in availability. I.e. while there is no shortage of languages that are thought to lack pro-drop, we are not aware of any without NOC PRO.

The Derived approach, however, can deal with NOC straightforwardly, assuming that it reflects a further distinct manifestation of the single element that also underlies OC PRO and *pro*. Under such a view, one can simply propose that OC involves a strict syntactic relationship that derives a specific and restricted interpretation of the controlled element. NOC, in contrast, occurs when this relationship cannot be established, yielding a less restricted interpretation, which is plausibly closer to the interpretation associated with *pro*. As we saw for *pro* in Section 5.2, this less restricted interpretation in fact subsumes the one associated with OC and thus can be understood as an Elsewhere that obtains when OC fails. In the remainder of this paper, we will motivate a formal proposal within the Derived approach that bears these properties.

6 Deriving OC and where it obtains

6.1 The fundamentals of the proposal

We posit, first and foremost, that the 'control' of OC is built on a structural dependency that is formed in the syntax. Given the broadly Minimalist framework we adopt here, we make the default assumption that this means it should be implemented in terms of Agree (Landau 2000, 2004; Fischer 2017, etc.).[13] The most important consequence of this assumption is that OC will be subject to the structural restrictions on Agree, including at least c-command, (phase)-locality and minimality. The feature or features Agreed for are what is responsible for the syntactic side of determining the referential status of the controlled element, with the semantic reflex that the controlled element is interpreted as a variable bound by the controller. The specific identity of the feature involved is contentious. Some candidates from prior work on control, anaphora and pro-drop include ϕ, D, ID and DEP (see e.g. Heinat 2008; Sundaresan 2012; Landau 2015, with references). For now, we will not concern ourselves too deeply with the identity of the feature, since

13 Note that, in more recent work (e.g. Landau 2015), Landau has moved away from the idea that control is built on Agree, opting instead for a predication relation. In the end it is not absolutely crucial to us that it is specifically Agree that is the formal basis for the control relation, but it must be some dependency, which is sensitive to standard notions of c-command, minimality and locality, and which applies obligatorily in the narrow syntax whenever its conditions are met. Since Agree is the only standard mechanism available to us that meets these requirements, we adopt it here for concreteness. We will say more about one instance where Agree might have difficulties — OC into adjuncts — in Section 6.3.

what is relevant for current purposes is rather its fate with respect to the Agree relation — specifically, whether the structural conditions that would allow it to Agree in the syntax actually obtain. We will thus simply refer to the feature as F.

Our central proposal then is as follows. There is a *single* unified element UPro, underlying what are traditionally labelled OC PRO, NOC PRO and *pro*. UPro starts out with an unvalued F feature. The different interpretations of UPro arise from what happens to this F, purely as a function of differences in the local syntactic environments where it appears. Specifically, when UPro appears in a position where the structural conditions for OC are met, it applies obligatorily, such that F is valued via Agree with an antecedent, deriving the bound variable interpretation of the OC Signature. When OC is not possible, because there is no antecedent in an appropriate structural position to Agree with UPro, the less specific interpretations traditionally labelled as *pro* and NOC are derived through F being valued by other means (which we will elaborate on below). When all such valuation fails, the interpretation PRO_{arb} arises as the Elsewhere. Again, we will not settle here on a particular identity for the F feature, but in order for our account to work, it must be something that is present (in valued or unvalued form) on all DPs (so that a local, c-commanding DP will always control UPro), as well as on some functional heads.

Setting aside points of detail for the moment, this proposal makes the right broad predictions for the distribution of the interpretation conventionally labelled OC PRO — specifically, the OC reading results when UPro appears as the subject of an embedded, typically non-finite clause that is c-commanded by an argument of the matrix clause.[14] Such clauses are structurally or featurally reduced compared to prototypical finite clauses (see e.g. Wurmbrand 2001; Sundaresan & McFadden 2009; McFadden 2014, and work cited there for discussion of this point). As such, it is reasonable to posit that they don't constitute phases for the purposes of Agree (perhaps in analogy to the *v*P vs. *v**P distinction modelled in Chomsky 2001, et seq.), as also argued by Landau (2004), among others.[15]

We further adopt Landau (2004)'s proposal that the controller can Agree with UPro in two different ways, with the potential for distinct interpretive consequences. The first and simpler possibility is that they Agree directly for the feature F, which

14 We will discuss instances of control into finite clauses momentarily.

15 If one adopts a distinction between strong and weak phases, where strong phases are what is relevant for locality restrictions on Agree, then one could also say that control infinitives are phases, but weak ones. As nothing that we have to say depends on such a weak/strong distinction, we will simply speak of clauses that pose locality boundaries for Agree as being phases, without modification, and those that do not pose such boundaries as not being phases.

yields an exhaustive control interpretation, i.e. where the reference of UPro is identical to the controller. We illustrate this templatically in (41) and show it at work in an English example in (42):[16]

(41) **Exhaustive control**

$\underbrace{\text{DP}_i \text{ V [UPro}_{\{i,*j\}}}$ ...]

(42) $\underbrace{\textit{Susan}_i \textit{ tried [UPro}_{\{i,*j\}}}$ *to down the beer in one greedy gulp].*

In this example, UPro is the subject of the complement of *try*. It has been argued extensively in the literature (Wurmbrand 2001; Landau 2004; Wurmbrand 2014) that the control complement of verbs like *try* is temporally dependent on the matrix, and Cinque (1999); Wurmbrand (2001, et seq.) analyze this in structural terms, proposing that the clausal complement of *try* is *restructured*, i.e. that it is in some way smaller than a full-on CP, leading to structural transparency effects with the matrix clause. Under the current model, we understand this to mean that the complement of exhaustive control predicates like *try* are either actually structurally deficient, i.e. smaller than the full-fledged CPs of other clauses.[17]

The second possibility is that the controller Agrees with UPro via the intervening embedded C head, which can, under the right circumstances, yield a partial control (PC) interpretation, i.e. where UPro is interpreted as referring to a plurality which includes the controller. We follow Landau (2004, etc.) in assuming that it is the mediation of Agree via the "logophoric" C head that enables the referential mismatch between controller and controllee — what we can think of as a subset-superset relation — that is the defining property of PC.[18] As this structural configuration does not lead to actual PC in all cases, we will refer to it more

16 Here and in what follows, we show Agree relations with headless arrows, in order to avoid potential confusion with movement.

17 An alternative that largely yields the same results would be to say that they are not smaller in terms of how much structure is present, but that what is there is featurally defective some way (e.g. lacking specification for marked values) which both leads to the observed temporal dependency and means that they do not induce opacity effects for Agree. It is not easy to find empirical ways to decide between these options, and so for concreteness and simplicity we will stick to the size-based analysis in the main text.

18 The facts of PC are more complex and interesting than we can do justice to here, as a number of important recent works have shown (see Sheehan 2014; Landau 2016b,a; Pearson 2016; Pitteroff et al. 2017, with references). Pitteroff et al. (2017) e.g. argue that two types of PC can be distinguished, one which involves the kind of mechanism proposed by Landau and described here, the other involving exhaustive control plus a null comitative, as adopted by Sheehan (2014) and most adherents of the Movement Theory of Control. According to Pitteroff et al. (2017), the latter type of PC depends primarily on the properties of the embedded predicate, whereas the former type depends primarily on

generally as Mediated OC. This Agree relation is again illustrated templatically in (43) and the implementation shown for an English example where the infinitival clause is the complement of *want* in (44), with the embedded collective predicate *gather* to force the PC reading:

(43) **Mediated OC (logophoric OC)**
DP_i V [C $UPro_{i+}$ . . .]

(44) *Susan$_i$ wanted [C UPro$_{i+}$ to gather at 5 o' clock on the dot].*

6.2 Some more complicated cases

Our proposal, as sketched so far, understands OC as a dependency that arises between two nominals — an R-expression or pronoun (the controller) and UPro — which enter into a successful Agree relation (potentially mediated by a C head) for some feature F in the syntax. The structural environments in which this dependency can obtain follow from general well-formedness conditions on the operation of Agree. As such, our view leads us to certain expectations, on which there should be no flexibility. The first is that, in an OC relation, the controller must c-command the controllee UPro. The second is that, given minimality, if there are two local DPs c-commanding a particular UPro, it should always be the closer of the two DPs that values F on UPro and thus controls it. Both expectations are met *by and large* in straightforward fashion. The c-command restriction explains why, in a structure like (45), UPro must be controlled by *Susan's twin* and not by *Susan*: the former c-commands UPro and thus can Agree with it, but the latter doesn't and thus cannot. The minimality restriction explains why subject control, as in (46), is generally superseded by object control when there is a matrix object, as in (47).

(45) *[[Susan$_j$]'s twin$_i$] tried [UPro$_{\{i,*j\}}$ to down the beer in one greedy gulp].*

(46) *Marie$_i$ asked [C UPro$_i$ to gulp down that beer].*

(47) *Marie$_i$ asked Susan$_j$ [C UPro$_{\{j,*i\}}$ to gulp down that beer].*

those of the matrix predicate. Note that all of this is straightforwardly compatible with the approach we are outlining here, as is a subsequent crucial role for LF considerations in the interpretation of PC, as outlined in Pearson (2016).

However, there are patterns that present challenges to both predictions, many of which are by now fairly well known. First, the c-command requirement seems to be violated in cases of what Landau (2015) calls 'oblique control' like (48):

(48) *Can I impose* $[_{PP}$ *upon you*$_i$ $]$ PRO$_i$ *to share this information with us?*

From a purely structural perspective, the antecedent *you* should not be able to c-command out of the PP it is contained within. That is, while the entire PP *upon you* might c-command UPro in the embedded clause, the DP *you* should not, and thus it shouldn't be able to Agree with and control it, contrary to what we observe. The minimality requirement is (in)famously violated in cases of subject control across an intervening object with verbs like *promise*, as in (49) below, and also in control-shift structures like that in (50):

(49) *Marie*$_i$ *promised Susan*$_j$ *[C UPro*$_{\{i,*j\}}$ *to down the beer in one greedy gulp].*

(50) *Marie*$_i$ *asked Susan*$_j$ *[C UPro*$_{\{i,*j\}}$ *to be allowed to gulp down that beer].*

In both (49) and (50), the matrix subject controls UPro across the intervening matrix object, in apparent violation of Relativized Minimality. (50) is additionally interesting when compared to a sentence like (47) because the matrix clauses are identical, the apparent only difference being in the embedded clauses: that in (50) is a passivized variant of that in (47), with an additional modal element. Crucially this distinction seems to be directly connected to the availability of object vs. subject control in these sentences, respectively (see Sag & Pollard 1991; Stiebels 2007; Landau 2013, for further discussion of control shift).

Under our view that OC is initiated in the Narrow Syntax as a kind of Agree dependency, putative violations of the c-command and minimality conditions like these present a clear challenge. Thus we will ultimately need viable analyses of examples like (48)–(50) showing how Agree relations matching the observed control patterns are possible in such configurations. Again, the patterns mentioned here are rather well known, and they present a challenge (to varying degrees and with somewhat different details) for most theoretical approaches that assume that a strict structural configuration underlies OC. There are thus a variety of proposals on the market for bringing the apparent exceptions to c-command and minimality in line with expectations for the OC relationship (see again Landau 2013, especially Section 5.1, for a thorough overview of relevant data and analyses, with extensive references). For apparently non-c-commanding examples like (48), we can point to the observation that, regardless of how the structures might appear, prepositional objects generally *behave* as though they can c-command out of their PP. We see this e.g. for the purposes of variable binding in (51):

(51) *I imposed [$_{PP}$ upon every student$_i$] to submit her$_i$ paper early.*

For the *promise*-type cases in (49), there is the class of analysis going back to Larson (1991), according to which the matrix object is structurally an indirect object, and this leads leads one way or another to it not counting as an intervener. For Larson this was specifically because, at the relevant stage in the derivation, this indirect object is actually below the embedded clause in the direct object position, such that only the subject c-commands it and thus controls into it. For the control shift patterns we might propose that (47) and (50) correspond to different syntactic structures (perhaps having to do with the availability of a permission reading in the passivized complement of the latter but not in the former), which crucially feed into the different control possibilites (see again Sag & Pollard 1991, and also Petter 1998, for versions of such a view).[19]

Properly integrating these patterns into a general theory of OC dependencies goes well beyond the intent and scope of this paper, and we will not attempt to offer any novel insights here. We have briefly mentioned them here because they will ultimately need to be dealt with in a satisfactory way if an approach along the lines that we are proposing is to succeed. While doing so will not be trivial, we are encouraged by the kinds of proposals that are already available to think that it will in the end be possible. Furthermore, the issues they raise are not unique to our Agree-based approach to OC, but are of concern for movement-based theories and any others that posit a structural relationship between OC PRO and its antecedent that is subject to standard syntactic restrictions. We will devote more attention to the next concern, which is potentially more specifically relevant for our proposal than for others.

6.3 An excursus into adjunct OC

It is particularly important that our approach should have something insightful to say about OC into adjuncts. For one thing, many of the crucial examples used by Sundaresan (2014) to motivate the Fin-*pro*G involved adjunct clauses, where it

19 A reviewer suggests that an alternative way to deal with these facts (adapting ideas of Landau (2000) and others) would be to have the relevant control dependencies go through the matrix V, rather than directly from the matrix DP, which would allow the verb to play some role in deciding which of its arguments behaves as the controller, instead of blind c-command. We are in principle open to an analysis along these lines, though it will still also need to be augmented with means to deal with the sensitivity of control shift to properties of the *embedded* clause, and an account for why minimality is *usually* respected, with verbs like *promise* representing an exception.

seems that alternations between overt and covert subjects are particularly common across languages. This was observed both in the purpose and temporal infinitives (16) in Tamil and in the Spanish example in (18), which were shown to involve OC alternating with overt counterparts in (14) and (19), respectively. Here are two further examples of this phenomenon from Hungarian (reformatted from Sundaresan 2014, p. 79, ex. 31b) and Japanese (reformatted from Sundaresan 2014, p. 80, ex. 33b), respectively.

(52) HUNGARIAN CLAUSAL ADJUNCT OC:

[$_{CP}$ UPro$_{\{i,*j\}}$ zené-t hallgat-ván], Aladdin$_i$
UPro music-ACC listen-PTC Aladdin
könny-ebb-en ébred-t fel.
easy-COMPARATIVE-ADV wake-PST.3SG up

'[UPro$_{\{i,*j\}}$Listening to music], Aladdin$_j$ woke up more easily.'

(53) JAPANESE PURPOSE ADJUNCT OC:

[$_{CP}$ UPro$_{\{i,*j\}}$ piza-o taberu tameni] Mary$_i$-wa tomato-o
UPro pizza-acc eat.INF PURP Mary-TOP tomato-ACC
kat-ta.
buy-PST

'Mary$_i$ bought tomatoes [UPro$_{\{i,*j\}}$ to eat pizza].'

Again, Sundaresan shows that the null subjects in these examples are genuine instances of OC PRO, not *pro*.

Under the approach we are pursuing here, the OC dependency in such structures should come about as the result of an Agree relation between the controller in the matrix clause and the null subject in the adjunct. The difficulty is that adjuncts are typically thought to be islands for movement and many other structural dependencies (Ross 1967; Cattell 1976, and much following work), thus it is somewhat controversial to suggest that agreement into them should be possible. Indeed, it was partly for this reason that Landau always resisted assimilating adjunct control into his Agree-based theory of control, suggesting that a distinct mechanism is responsible for the OC effects observed there (Landau 2013), and ultimately using this as part of the motivation for abandoning the Agree model of control more generally (Landau 2015). While we will not pursue a comprehensive solution to this issue here, we would like to argue that it is actually reasonable to posit that Agree in the sense we intend it here is indeed possible out of the types of adjunct clauses where OC is observed.[20]

20 Both Adler (2006) and Fischer (2017) also assume that Agree into adjuncts is possible, precisely to derive OC, though neither of them explores the issue extensively. Adler does

Note, first of all, that what we mean by Agree is the formation of a syntactic dependency for a feature F, initiated by the needs of UPro, and entered into with a c-commanding element. While this must be possible out of the relevant adjunct clauses, it is not necessary for our purposes that this extend to the full range of phenomena that have, at one time or another, been discussed under the rubric of Agree. For example, we are not claiming that ϕ-agreement would be possible in the configurations we are concerned with, nor do we have any strong expectations about movement (though see the discussion surrounding (60) below for a related prediction that we *do* make). While it has been commonly assumed within Minimalism that movement is parasitic on Agree, the precise relationship and mechanism for this remain controversial, with a number of rather different proposals on the market (see e.g. Bošković 2007; Zeijlstra 2012; Bjorkman & Zeijlstra 2017; Wurmbrand 2012, with citations). These proposals differ from one another, among other things, on the directionality of Agree, i.e. whether the probe must c-command the goal, or vice versa, or whether either configuration is allowed. One thing that has come out of this debate is that the details of the dependency that can arise do seem to depend on details of the configuration, however exactly these are captured (see e.g. Baker 2008; Wurmbrand 2012; Bjorkman & Zeijlstra 2017, for various directionality effects on which features can participate in agreement operations in different configurations). What we would like to suggest is that directionality differences may be relevant for control into adjuncts as well. Consider first that, while long distance agreement is famously possible into certain types of infinitival complements, as in the Hindi-Urdu example in (54) from Bhatt (2005), there are no parallel cases of long-distance agreement into adjunct clauses, at least as far as we are aware.

(54) *Vivek-ne [kitaab paṛh-nii] chaah-ii*
Vivek-ERG book.F read-INF.F want-PFV.F.SG
'Vivek wanted to read the book.'

Formally speaking, this would correspond to a configuration where an unvalued feature in the matrix clause would probe downward into an adjunct clause. Such a configuration is apparently ill-formed. Note, however, that what we have with control into adjuncts is something different. Here the unvalued feature is on an element in the adjunct clause, which is probing upward into the matrix clause. Whatever the formal details may be of the configurational restrictions on Agree involving adjuncts, note that the islandhood of relevant types of adjunct clauses has been frequently overstated in the literature. Truswell (2011) brings together a

briefly mention the relevance of data on successful extraction from adjuncts, but does not develop the argument in any detail.

wide range of data from much previous work showing that Ā-movement out of low non-finite adjuncts is actually possible under certain circumstances. Consider the examples in (55):

(55) a. *What$_i$ did John$_j$ go to New York [*PRO$_j$ *to buy t$_i$]?*
b. *What$_i$ did John$_j$ drive Mary crazy [*PRO$_j$ *whistling t$_i$]?*
c. *Who$_i$ did John$_j$ go home [*PRO$_j$ *without talking to t$_i$]?*

We have here (adopting Truswell's terms) a rationale infinitive (55a), a bare participial adjunct (55b) and a prepositional participial adjunct (55c), respectively. All three allow Ā-extraction, at least under certain (somewhat complicated) circumstances. This is a fact that has frequently been noted and discussed over the years, but has just as equally been forgotten or ignored in theoretical discussions of islands and CED effects. Note then, crucially, that these are also contexts where we find OC into adjuncts. Indeed, to these three types that Truswell (2011) focuses on, we can add two more of the adjunct types that Landau (2013) specifically identifies as involving OC, and show that they too allow extraction under the right circumstances:

(56) Result clause:
a. *Mary$_i$ grew up [*PRO$_i$ *to be a famous actress].*
b. *What$_j$ did Mary$_i$ grow up [*PRO$_i$ *to be t$_j$]?*

(57) Goal clause:
a. *Sarah$_i$ worked hard [*PRO$_i$ *to afford college].*
b. *What$_j$ did Sarah work hard [*PRO$_i$ *to afford t$_j$]?*

What should we make of this? First, we should not go too far in tying the possibility of OC in a clause to the possibility of extraction from it. As Truswell (2011) notes, the restrictions on the latter are stronger than those on the former, both within and across languages. English, for example, allows Ā-extraction from a wider range of adjunct clause types than Italian or French, though OC is apparently a possibility in the relevant clause types in all three languages. Furthermore, even in clause types that in principle allow extraction in English, there are cases in which it is ruled out for various reasons. The contrast in (58) e.g. shows that object extraction out of a bare participial clause depends on the identity of the matrix verb, and (59) shows that *wh*-extraction out of a prepositional participial adjunct places restrictions on the kinds of answers that are possible (data again from Truswell 2011):

(58) a. *What$_i$ did John die [whistling t$_i$]?*
b. * *What$_i$ did John work [whistling t$_i$]?*

(59) *Which book$_i$ did John design his garden [after reading t$_i$]?*
a. *An introduction to landscape gardening*

b. # Finnegan's Wake.

Yet, again, in all of these contexts OC succeeds, and is indeed obligatory when the non-finite clause has a null subject. Truswell (2011)'s interpretation of the extraction facts is that adjuncts are, syntactically speaking, weak islands, meaning e.g. that they allow Ā-extraction of DPs but not PPs. On top of this, however, he argues that there is a semantic condition on extraction that is responsible for effects like those in (58) and (59).[21]

For us there are two important points to take away from this discussion of extraction out of non-finite adjuncts and Truswell's account thereof. First, there is the sense that *movement* is subject to additional restrictions, which may not be relevant for other syntactic dependencies. This means that we should not be too quick to conclude on the basis that movement is not possible in a particular context that other syntactic dependencies are also ruled out there. Second, the fact that movement *is* possible out of a particular kind of constituent, even with restrictions, is a clear indication that syntactic dependencies can be formed across that boundary. For present purposes, of course, the relevant syntactic dependency is the Agree relation that underlies OC. One way to think about all of this is that movement builds on a similar syntactic dependency, but involves additional steps and thus has additional restrictions. This derives the observation that movement is possible in a subset of the contexts where OC obtains.

When combined with our view of how OC operates, this way of looking at how movement relates to other syntactic dependencies makes the testable prediction in (60):

(60) In any sentence where there is Ā-movement from an embedded, non-finite clause with a null subject, into the matrix clause, that null subject should be obligatorily controlled by a matrix argument.

For all of the cases we have examined, this prediction is borne out. An interesting confirmation comes from a contrast discussed by Truswell (2011), which goes back at least to Chomsky (1986). The sentence in (61a) is ambiguous between an OC and an NOC-reading, as described below. Strikingly, when we extract the embedded object into the matrix, as in (61b), the NOC reading goes away, and OC is required:

21 This is Truswell's Single Event Condition, which restricts *wh*-movement such that it must occur within a constituent that can be construed as describing a single event. An interesting point to note is that tensed adjuncts, including prototypical finite clause adjuncts, do *not* seem to allow extraction of this kind, i.e they really do behave like islands for Ā-movement. Truswell (2011) attributes this as well to the semantic condition on extraction.

(61) a. *They$_i$ were too angry [*PRO$_{i/j}$ *to hold the meeting].*
✓ OC Readng: The people who are to hold the meeting are too angry to do so.
✓ NOC Reading: Some group of people A is too angry for some other group B (salient in the discourse) to hold a meeting, e.g. there is reason to fear that A would disrupt the meeting if B held it.

b. *Which meeting$_k$ were they$_i$ too angry [*PRO$_{i/*j}$ *to hold t$_k$]?* ✓ OC Reading: The people who are to hold the meeting are too angry to do so.
✗ NOC Reading: Some group of people A is too angry for some other group B (salient in the discourse) to hold a meeting.

How can we make sense of this? The two different readings in (61a) suggest a structural difference. We can essentially follow Chomsky (1986) in assuming that the first involves a relatively low adjunction site, where the adjunct clause is c-commanded by the matrix subject, while the second reading has a higher adjunction site, such that that c-command does not hold. Since this c-command relation is a precondition for Agree and the OC that depends on it, we get the OC vs. NOC distinction. Now, if we left it at that, it would be difficult to show that the low adjunction actually *forces* OC, but what (61b) gives us is precisely this missing piece. The movement operation, again, has c-command as a precondition, and is not possible in the structure with high adjunction (presumably because the high adjunction site is not c-commanded by the landing site for movement in the matrix clause). Movement thus diagnoses the low adjunction structure, and thus we see in (61b) that that structure forces OC, as our approach would predict.

Clearly, a great deal of work is needed here to flesh out our account of control into adjunct clauses. On the empirical side, it remains to be determined whether the one-way correlation between the possibility of $\bar{\text{A}}$-extraction and OC holds up more broadly, and more systematic investigations of which adjunct clause types show OC in languages beyond English are clearly needed. There also needs to be a survey of syntactic and other dependencies that show a similar distribution. All of this will hopefully contribute to the formulation of a clearer theory of the conditions on Agree that could capture this distribution. Adjunct control remains understudied relative to complement control, and we see it as an important joint project and testing ground for ongoing and future work on control from all theoretical angles.[22]

22 A reviewer notes that PC does not seem to be possible into adjuncts. Assuming that this generalization holds up as the properties of adjunct control are further investigated, it might count as support for the idea we adopt here (following Landau's work) that PC requires a particular type of C in the non-finite clause, which must bear something like

7 Where OC cannot obtain

7.1 The distribution of NOC and *pro*

Now that we have discussed the core cases where OC *can* obtain, let us turn to those where it *cannot*. As discussed in section 5.2 above, these crucially have an Elsewhere distribution, in that they are negatively characterized as contexts where the structural conditions for OC are not satisfied. The patterns we will discuss in this section are generally well established and will not come as a surprise to anyone versed in the control literature. Our goal here is simply to demonstrate that the familiar restrictions on the distribution of OC follow straightforwardly in our approach as well. Given that, under the current model, OC is an automatic reflex of Agree between UPro and an appropriate controller, the places where it fails will fall out of contexts where Agree is impossible. Agree of the kind that we are concerned with requires a goal bearing the right kind of feature, which is local to the probe, and c-commands it. Failure on any of these three points will lead to the lack of OC.

First, we expect that OC will not obtain in prototypical finite clauses, e.g. an English *that*-CP like (62):

(62) * *Susan*$_i$ *said that* [$_{CP}$ *C UPro*$_i$ *downed the beer in one greedy gulp].*

This is because such clauses are phases, that is, they include a locality boundary which prevents the potential controller from directly Agreeing with the embedded subject, due to the PIC. This rules out exhaustive OC, as shown in (63a). Furthermore, the C heads in such finite complement clauses are not the special "logophoric" kind of C that can mediate the relationship between controller and controllee —

a selectional relationship with the matrix predicate. Since adjuncts, unlike complements precisely do *not* bear such a relationship with the matrix predicate, we can expect PC, at least of the Mediated OC kind, to be excluded there.

via a kind of successive-cyclic Agree — that is responsible for what we are calling Mediated OC and the characteristic PC readings.[23] This is illustrated in (63b):[24]

(63) a. * *Susan*$_i$ *said* [$_{CP}$ *that UPro*$_i$ *downed the beer in one greedy gulp*].

b. * *Susan*$_i$ *said* [$_{CP}$ *that UPro*$_i$ *downed the beer in one greedy gulp*].

This prediction is indeed generally fulfilled empirically. Sundaresan (2014) contrasts the null subjects of finite CPs with those in non-finite ones in a range of *pro*-drop languages and shows that the former bear the fingerprint, not of OC PRO as in the non-finite clauses previously discussed, but of *pro*. I.e. they do not display bound variable behavior and, as such, need not be obligatorily coreferent with their respective antecedents. This contrast is illustrated below for Hindi-Urdu (reformatted from Sundaresan 2014, 78–79, exx. 30b-c). (64) involves the same non-finite 'want'-class complement that we saw in (29b) above. Mediated Agree via the C head is thus possible, yielding the attested OC pattern with obligatory coreference. (65), on the other hand, involves a full-fledged finite CP, and Agree with UPro by anything in the matrix clause is ruled out, thus barring OC. The null

23 An anonymous reviewer is concerned that we are simply positing phases and escape hatches for PIC effects in response to the observed control patterns, and then using these to explain where control is and is not possible, i.e. that this portion of our account might be circular. This is of course a valid concern in the absence of independent evidence for the structural properties we are attributing to the different clause types. Such evidence is, however, available. Again, we point the reader to Wurmbrand (2001); McFadden (2014) and the long tradition of work cited there for arguments — e.g. from the morphosyntactic expression of tense, aspect, mood and independent subjects and from levels of (in)depence in temporal and referential interpretation — that there is a hierarchy of (embedded) clause types organized according to their size and level of dependence on and interaction with the matrix clause. Included among others these include exhaustive control infinitives, which are structurally reduced and heavily dependent on the matrix, partial control infinitives, which involve somewhat more structure and independence, and prototypical finite clauses, with the most structure and the highest degree of independence from the matrix. The version of this idea that we are adopting here is that exhautive control infinitives are not phases and thus are transparent to the Agree that derives OC, partial control infinitives are phases, but have a special C head that mediates the Agree that derives OC, and prototypical finite clauses are phases without a mediating C, und thus block OC.

24 Additionally, theses clauses may contain functional material in their left peripheries representing discourse information which is itself directly capable of valuing the F feature on UPro and which, due to minimality, takes precedence over any potential antecedent in a higher clause, a point we will turn to below in the context of our discussion of definite *pro*.

subject thus does not display the characteristics of a bound variable and is not obligatorily coreferent with the matrix subject *Ram*.

(64) Non-finite complement: oc ✓
Ram$_i$ *[*$_{CP}$ *UPro*$_{\{i,*j\}}$ *pizza khaa-naa] caah-taa hai.*
Ram[nom] UPro pizza eat-inf want-hab be.pres.3sg
'Ram$_i$ wants [$_{CP}$ UPro$_{\{i,*j\}}$ to eat pizza].'

(65) Finite complement: oc ✗
Ram$_i$*-kaa kahaanaa hai [*$_{CP}$ *ki UPro*$_{\{i,j\}}$ *khaanaa khaay-aa].*
Ram[gen] say be.pres.3sg that UPro$_{\{i,j\}}$ food eat-pst.3sg
'Ram$_i$ says [$_{CP}$ that UPro$_{\{i,j\}}$ ate the food.]'

At the same time, our notion of finiteness must be fine-grained enough to allow the types of "finite oc" that we discussed in Section 2.1 above. Recall the Persian example in (13) above, reformated here as (66) (Darzi 2008).

(66) *Žian*$_i$ *mi.tun.e [(ke) UPro*$_{\{i,*j\}}$ *be.r.e].*
Jian dur.be.able.3.sg (that) pro subj.go.3sg
'Jian can/is able to go.'

As discussed in Section 2.1, such clauses do not show the full independence of prototypical finiteness, and hence they are often compared to non-finite clauses and subjunctives. We will assume that they are indeed more like control infinitives in being structurally reduced compared to fully finite clauses or in having the relevant kind of escape hatch for the establishment of a mediated control relation. Specifically, in a sentence like (66), we will assume that oc is the result of control mediated by a subjunctive C head, as illustrated in (67):[25]

(67) Finite oc in Persian: Mediated Agree via C
Žian$_i$ *mi.tun.e [(ke) UPro*$_{\{i,*j\}}$ *be.r.e].*

25 Two reviewers have voiced concerns that we might predict PC to be possible in finite control clauses where it is, in fact, not possible. We should clarify that the presence of a C head mediating the control-deriving Agree relationship is *necessary* for deriving PC (at least the type of PC that does not involve a null comitative, if we follow Pitteroff et al. 2017), but it is not *sufficient*. Just as in Landau's 2004 system, there are types of C that mediate oc but do not lead to PC. So we do predict that PC of this type will be impossible if there is no intervening C head, but that, when there is such a C head, whether PC is possible or impossible will depend on further factors, including at least the specific type of C and properties of the matrix and embedded predicates.

OC is also predicted to be impossible in a root clause or in a clause which itself functions as the subject of the matrix clause, because in both of these configurations there simply is no DP in a superordinate clause that can c-command UPro. These predictions are consistently confirmed across languages, and are generally built into existing theories of control and in particular NOC. For root clauses, the exclusion of OC is essentially definitional — there is no superordinate clause, therefore no place for a putative controller to even occur. With important exceptions which we will momentarily turn to, root clauses tend to be finite, and it is well known that languages vary in their ability to have non-overt subjects in prototypical root finite clauses (essentially the traditional pro-drop parameter). In languages like English, non-overt subjects are banned in such structures, as shown in (68).[26] But in pro-drop languages like Tamil, Spanish, Italian, Chinese and Japanese, a null subject *is* licit in this position, as illustrated for Tamil in (69):

(68) * UPro ate the pizza.

(69) *UPro*$_{\{i,j\}}$ *pizza-vœ* *saappiṭṭaaḷ.*
pizza-ACC eat.PST.3FSG
'She ate the pizza.'

Our model predicts that this root null subject should not be OC PRO, given the lack of a c-commanding controller. This prediction is fulfilled, as the null subject in (69) does not bear the properties of OC PRO. I.e. it is not obligatorily coreferent with any other DP, but refers like a free variable or pronoun. Again, it is difficult to see how it could be otherwise, since there is no clause-external DP in the sentence for it to have its reference fixed to, and this pattern can be easily replicated for other null subject languages. With the right interpretation, a root clause may also be non-finite, at least in some languages. In a language like English, this makes a non-overt subject possible, as in (70):[27]

26 Again, this statement is not intended to apply to the reduced registers discussed by Weir (2012) and others that do allow certain instances of pro-drop.

27 This is perhaps because, while the EPP requires an overt subject in languages like English in finite clauses like (68), it does not hold for one reason or another in non-finite clauses. The traditional story is that a null subject is possible in (70) because it can be PRO, which is licensed in infinitives, while it is ruled out in (68), because in a finite clause it would have to be *pro*, which is not available in English. However, the interpretation of the null subject in (70) has a lot more in common with that in (69) than it does with clear instance of OC PRO. This is of course part of the motivation for our derived approach that gives up the underlying division between PRO and *pro*, but it leaves open questions about what conditions on the overtness of subjects, which we will turn to briefly in Section 8.3. See also McFadden & Sundaresan (2018) for some relevant discussion on what determines whether subjects must, may or may not be overt.

(70) *Oh, UPro to be young again!*

As expected, the reference of the null subject in such cases is not fixed relative to any other DP occurring in the sentence, but is to either the speaker, some other salient referent from the discourse, or an arbitrary human referent. These are NOC readings, about which we will say more below.

For clauses that appear in the subject position of a superordinate clause, the prediction is the same, as again there is no higher DP in the matrix clause that could c-command the embedded subject to Agree with the F feature of UPro. Here the cases are more interesting, however, because we can construct examples where the lack of OC is not trivial, i.e. where plausible syntactic controllers are present. Sentences like those in (71) quite nicely allow us to test our predictions. The basic case in (71a) is not much different than (70), since again we have no other DP in the matrix clause which could function as a controller. Again we end up with an essentially arbitrary interpretation, which may well end up being narrowed down by the discourse context.

(71) a. *[UPro$_{arb}$ to run out of hot sauce] would be embarrassing.*
b. *[UPro$_{i/j}$ to run out of hot sauce] would embarrass Shawna$_i$.*
c. *Shawna$_i$ thinks that [[UPro$_{i/j}$ to run out of hot sauce] would be embarrassing].*

More interesting are the examples in (71b) and (71c). In (71b), the non-finite subject clause has a co-argument in the matrix clause, specifically the object DP *Shawna*, thus we can actually imagine what an OC reading would be — one where, among other things, the UPro would obligatorily refer to *Shawna*. However, our approach predicts that this should be ruled out, because the object does not c-command the subject clause, and thus also does not c-command that clause's UPro subject. As indicated by the coindexation, this prediction holds. While coreference with *Shawna* is indeed possible — and even preferred in the absence of a context that would suggest otherwise — it is not at all obligatory. (71b) could for example be uttered about a situation where Shawna has recommended a particular taco truck to someone who she was hoping to impress, based in no small part on the quality and quantity of hot sauce they offer. This flexibility of reference is characteristic of NOC, not OC. In (71c), the entire clause containing a non-finite clause as its subject is further embedded as the complement of *think*. This means that the subject of *think*, again *Shawna*, actually does c-command the subject clause and its UPro subject. However, we still do not expect OC to be possible: *Shawna* here is not a co-argument of the non-finite clause, and there is one non-finite and one fully finite clause boundary between it and UPro, at least one of which should constitute a phase. Even though the c-command condition for Agree is met, the

locality condition is not, and so no OC dependency should be able to be established. Again, this is confirmed. UPro may very well co-refer with *Shawna*, but it is by no means required to. It could just as well be the speaker, some other referent in the discourse, or again an arbitrary, non-specific human.

7.2 Deriving the interpretation of NOC and *pro*

Of course, reconstructing OC in terms of an Agree relation is not novel (in addition to the series of works by Landau, see e.g. Adler 2006; Ussery 2008; Sundaresan & McFadden 2009; van Urk 2013; Fischer 2017). Nor is it new to say that NOC only arises when OC is not possible, i.e. as an Elsewhere case. This idea is also implicit in the Movement Theory of Control (Hornstein 1999; Boeckx et al. 2010, etc.) and in Landau's work (see e.g. Landau 2013, section 7.5 for a nice discussion), among many others. The real innovation of our proposal is in the way we relate the Agree-based model of OC to the interpretations associated with NOC and *pro*. For us this is a matter of how the F feature is valued (or not valued) in instances where OC is not possible and how this interacts with the initially underspecified semantics of UPro. There are arguably several distinguishable readings in such cases, each with its own contextual conditions, and many of them remain seriously understudied, especially outside of English. Still, we can make a few fundamental points here suggesting that our approach may ultimately allow an insightful account.

First, it has been shown that — at least in consistent null-subject languages like Italian — when *pro* gets a definite interpretation, its reference is subject to specific discourse restrictions. Frascarelli (2007) argues for Italian that definite *pro* must be anteceded by an Aboutness-shift Topic, which is represented (silently) in a dedicated position in the left periphery. This translates quite nicely into our account. For us, UPro always starts out with an unvalued F and will be looking for a local DP to Agree with which will then serve as its antecedent. A fully finite clause will contain the representation of the relevant type of topic in the left periphery, which can serve in this way, yielding the definite *pro* interpretation of UPro. (72) is an example from Frascarelli (2007), where the matrix clause sets up *Jim* as the Aboutness-shift Topic, which the *pro* in the embedded clause must thus be coreferent with. An abbreviated analysis of this is outlined in (73), where the silent representation of 'Jim' in the left periphery of the embedded clause is indicated in angled brackets.

(72) *Jim andrà se* pro *si sentirà bene.*
Jim go.FUT.3SG if *pro* ANAPH feel.FUT.3SG well
'Jim$_i$ will go if he$_i$ feels well.'

(73) *Jim andrà [$_{ForceP}$ se [$_{ShiftP}$ <Jim> Shift [UPro si sentirà bene]]]*

Note that there is no direct syntactic dependency here between the overt *Jim* in the matrix clause and the silent representation of the same referent in the embedded ShiftP. The connection between them is handled by the conditions on discourse, not by Agree or anything of the sort. This is why, even in a case like this, where there is an overt DP coreferent with an instance of *pro* in the same sentence, we don't get the restricted bound variable reading. Definite *pro* is (syntactically) fixed with respect to the DP in Spec-ShiftP, but that DP is not (syntactically) fixed with respect to anything else. Rather, its connection to the overt *Jim* in the matrix clause is discourse-pragmatic — *Jim*'s status as subject of the matrix clause sets it up as a highly suitable choice for Aboutness-shift Topic, but this choice is not syntactically fixed. Note furthermore that under this analysis the relevant definite reading of UPro is crucially dependent on the presence of the articulated left periphery, containing a representation of an Aboutness-shift Topic in Spec-ShiftP. In a structurally reduced non-finite clause, we can expect this material to be missing. This will allow UPro to instead Agree with something higher, and if the functional material that creates the phase boundary — e.g. ForceP — is also absent, then DPs in the matrix clause will be sufficiently local. It will thus be forced to Agree directly with the closest of these, yielding OC.

Second, is has long been observed that non-arbitrary NOC PRO shows sensitivity to topicality and logophoricity in its choice of referent (Kuno 1975; Landau 2013, sections 7.3 and 7.4, with references). Consider first the pair in (74) from Kuno (1975), both of which involve an extraposed subject infinitive associated with expletive *it* — another common context for NOC.[28]

(74) a. *John said to Mary$_i$ that it would be easy [UPro$_i$ to prepare herself$_i$ for the exam].*
b. * *John said about Mary$_i$ that it would be easy [UPro$_i$ to prepare herself$_i$ for the exam].*

In (74a), UPro can be co-referent with *Mary*, whereas in (74b) it cannot, even though the structural position of *Mary* is the same in both examples — inside a PP

28 The sentences in (74) force UPro to be coreferent with *Mary* by adding the anaphor *herself*, which leads to ungrammaticality in (74b). Given that what we are looking at here is NOC, in the absence of that anaphor UPro could also e.g. be coreferent with *John* or have an arbitrary reading.

in the matrix clause. The difference seems to be that in (74a), *Mary* is the recipient of the message communicated, and therefore can be thought of as a perspective holder with respect to the content of that message. In (74b), she is instead what the message is about, and therefore we are not invited to interpret what comes after from her perspective. Something similar can be observed in the following pair from Williams (1992):

(75) a. *[UPro$_i$ having just arrived in town] the main hotel seemed to Bill$_i$ to be the best place to stay.*
b. * *[UPro$_i$ having just arrived in town] the main hotel collapsed on Bill$_i$.*

The two examples have identical initial gerundival adjunct clauses, attached too high in the matrix for OC to be possible, but they differ in the details of the matrix clause in ways that are relevant for the reference of the UPro subject in the adjunct clause. In (75a), UPro can be coreferent with *Bill*, which functions in the matrix as an experiencer. In (75b), where *Bill* is instead a theme in the matrix clause, the coreference is out. Again, this seems to indicate the relevance of perspective-holding for the operation of NOC. Bill's mental state is at stake in (75a) and thus he is a good antecedent for UPro, but in (75b) this is not the case.

We can accommodate these facts within our model in a fashion that is entirely parallel to what we said for definite readings of *pro*.[29] There is good precedent for analyzing effects of this type in terms of the syntactic representation of a perspective-holder in the left periphery (see e.g. Bianchi 2003; Speas 2004; Baker 2008; Giorgi 2010; Sundaresan 2012, To appear, with references). Again, we can have this perspective-holder value the F feature on UPro, thus serving as its antecedent, in just those cases where no closer overt antecedent is in the right position to trigger OC. Here's a simplified representation of how this would look for (75a):

(76) *[$_{PerspP}$ <Bill> Persp [UPro having just arrived in town]] the main hotel ...*

Of course, in order to make this account of *pro* and NOC PRO convincing, we need to

29 In fact, as a reviewer suggests, we might consider giving them *exactly* the same account, using a single left-peripheral projection for both definite *pro* readings depending on an Aboutness shift topic and topical/logophoric NOC PRO, rather than adopting ShiftP and PerspP as distinct projections as we do in the main text. This will require a deeper investigation and explicit comparison of the empirical patterns of the two cases to see whether any differences between them could be derived from independent factors, and so for now we will simply adopt the distinct projections proposed in the various works cited here.

ensure that the relevant kinds of topic and/or perspective-holder are *not* represented in the left periphery of clauses where OC is found. This is eminently plausible due to the reduced structure of such clauses, but will of course require some working out given that we see otherwise identical-looking clause types alternate between OC and NOC readings depending on whether they appear as complements or low adjuncts on the one hand or as subject clauses, high adjuncts or in extraposed position on the other. We must leave those details for future work.[30]

A more pressing concern is to explain why Agreeing for F with such left-peripheral material does not yield bound-variable readings of UPro the way that Agreeing for F with matrix arguments does. On this point, note that in the two contexts we have just discussed, we end up with interpretations of UPro that are restricted, but still clearly less restricted than in OC configurations. The reason for this is that, under OC, UPro Agrees for F (either directly, or mediated by an intervening C head) with a specifically identifiable, often overt, DP in an argument position. Its reference is thereby fixed as bound by this DP, with no flexibility. With definite *pro* and logophoric NOC readings, on the other hand, while UPro does Agree for F and is thus co-referent with an element in the left periphery, this element is not overt, is not in an argument position, and is not itself further bound by anything higher. This means that this left-peripheral element has some flexibility in its own reference, and a given overt form of the sentence will typically be consistent with multiple choices for its identity. There are clear restrictions on what can serve as the Aboutness topic or the perspective-holder in a given context, but they are not usually fixed uniquely the way that the controller in an OC context will be fixed as the matrix subject or object.

Let us consider how this plays out to set up clear non-bound variable behavior in a specific example, in this case the availability of both strict and sloppy readings under ellipsis. To do so, we'll take (71c) from above, and embed it in a structure with *v*P ellipsis:

30 Adapting a suggestion by a reviewer, it is also possible that at least some OC clauses *do* have a ShiftP or PerspP in their left peripheries, but that in the relevant cases the null topic or perspective-holder is *itself* obligatorily controlled (i.e. Agreed with) by an argument of the matrix clause, so that we get another kind of mediated OC (distinct from the familiar type introduced by Landau in that here the mediator is not a functional head in the left periphery, but a null DP in the Spec of such a head). Whether such a move would constitute an improvement over the one laid out in the main text would depend on whether it could offer specific benefits, e.g. in the handling of things like control shift, and whether control of the topic or perspective-holder could be constrained in a principled manner in a way that could derive the observed distribution of OC and NOC.

(77) *Shawna thinks that [[UPro to run out of hot sauce] would be embarrassing], and so does Petey ~~think that [[UPro to run out of hot sauce] would be embarrassing]~~*

The descriptive situation here is that we have two instances of NOC, where both UPros *can* be coreferent with the subject of their respective higher clauses, but need not be. Furthermore, if the first UPro is coreferent with *Shawna*, the second UPro can either be coreferent with *Petey* (a sloppy identity reading) or coreferent with *Shawna* (a strict identity reading).[31] How do we derive this flexibility?

The constructions we are looking at here have the infinitival clause as the subject of the clause containing them, which is then further embedded as the complement of *think* in the still higher clause containing *Shawna* or *Petey*, respectively, as the subject. As we discussed in Section 7.1, this means that OC, in the form of a direct syntactic relationship between UPro and some local DP in a normal argument or adjunct position, is impossible. *Petey* and *Shawna* are two clauses up, hence not local to UPro, and anything that might be local, i.e. contained in the *embarrassing* clause, would not be able to c-command into the subject clause. Since the reference of UPro is nonetheless not completely unrestricted here, but is sensitive to what referents might be topical in the current discourse and whose perspective is being presented, we posit that it is again controlled by the silent representation of such a referent in the left periphery. For concreteness, we again posit a Persp head, as in the abbreviated representations for the second conjunct (i.e. the one that will be mostly elided) in (78) and (79):

(78) *. . . and Petey thinks that [[$_{PerspP}$ <Petey> Persp [UPro to run out . . .] . . .]]*

(79) *. . . and Petey thinks that [[$_{PerspP}$ <Shawna> Persp [UPro to run out . . .] . . .]]*

In both cases we assume the scenario where the UPro in the first conjunct is coreferent with *Shawna*. (78) then reflects the sloppy reading, where the second UPro is coreferent with *Petey*, the subject of *think* in this conjunct. This means that the silent representation of the perspective holder in the left periphery of the subject infinitive is *Petey*, and it is this that UPro Agrees with and is bound by. The thing to note is that, while there is a syntactic Agree dependency between these two elements, neither one is in any syntactic relationship with the actual overt occurrence of *Petey* in the higher clause. Rather, the relationship between the

31 It is also possible for both UPros to be coreferent with some third person, perhaps the speaker of the sentence or some other salient individual.

two instances of *Petey* here is a discourse-pragmatic one — because *Petey* is the subject of the attitude predicate *think* in a higher clause, he has been established as a plausible perspective holder for the embedded clause, and so the choice of him as the referent to be represented silently in Spec-PerspP is a natural one. But because there is no syntactic Agree or binding relationship here, that choice is not forced. (79) shows the abbreviated structure for the strict reading, where a different choice has been made. Since *Shawna* was also set up as an attitude holder in the first conjunct, it is entirely plausible to consider the second conjunct from her perspective, i.e. to identify her as the perspective holder represented silently in Spec-PerspP. Since there is no direct syntactic relation between this position and anything higher, there is no conflict with *Petey* being the subject of the higher clause in this conjunct. The lower UPro will then necessarily Agree with *Shawna*, thus rigidly determining its reference, but in a way that does not behave like variable binding with respect to any overt DP or argument position. The strict and sloppy identity readings of (77) thus correspond to two distinct underlying structures, but these structures differ only in the identity of a particular silent DP, which is crucially not determined syntactically.

We think this way of going about things can account for the central interpretive properties of NOC PRO and *pro*. Important sub-types will arise from the kinds of silent elements represented in the left periphery of different types of clauses and the contexts within which they appear. It is also reasonable to think that there will be cross-linguistic differences in the inventory and behavior of relevant left-peripheral elements. In this way we have some flexibility to account for the various topic-oriented and perspective-oriented readings that have been reported. And yet we do not have so much flexibility that any imaginable pattern could be described, robbing the approach of any explanatory power. Whenever a silent left-peripheral element is posited to implement a particular instance of control, the prediction is that all other phenomena sensitive to Aboutness shift topics or perspective in the local domain must pattern together with the reference of UPro.

Finally, in cases where not even such discourse-determined antecedents are available, the result is the so-called 'arbitrary' interpretation. We have already seen a potential instance of this above in (71a), repeated here as (80):

(80) *[UPro$_{arb}$ to run out of hot sauce] would be embarrassing.*

In the absence of a discourse context where one or more potential referents are made available by being topical or appropriate perspective holders, we can imagine that the embedded clause here simply lacks a silent representation of a DP in Spec-PerspP or some other position in its left periphery. This means that there is literallly nothing in the local, c-commanding syntactic environment that could Agree for the feature F with UPro. One might imagine that this would be a problem

— an unvalued feature causing a crash at the interfaces, but we can make a virtue of it if we adopt the notion that Agree is *fallible* from Preminger (2014). I.e. Agree for F is is obligatory whenever its structural conditions are met for a particular UPro, yielding a restriction on the reference of that UPro relative to whatever element it has Agreed with. But if there is no antecedent in the right structural configuration, Agree simply fails to apply, with no adverse consequences for the syntactic derivation. The consequence for the interpretation is that there is nothing to restrict the reference of that particular UPro. We simply propose then that the 'arbitrary' interpretation traditionally labeled PRO_{arb} is just what is defaulted to in such a case.[32]

This discussion of PRO_{arb} brings into focus our overall approach to how the various interpretations of OC PRO, NOC PRO and *pro* are related to each other and how they are derived from a unified underlying UPro based on the syntactic context. At its base, UPro is referentially deficient, bearing an unvalued F feature that leads it to seek out a higher DP (or mediating functional head) with which it can enter into a syntactic dependency, and which will then determine its interpretation. The different readings we observe fall out of the ways in which this feature is handled, according to the syntactic context. If there is a local, c-commanding, potentially overt DP in an argument position that UPro can enter into an Agree dependency with, then it will do so and be interpreted as a bound variable with respect to that DP. If instead there is a local silent representation of a salient discourse referent in the left periphery of the clause, UPro will Agree with that and be bound to it referentially. But because that referent is silent and not itself syntactically dependent on anything overt or argumental, it will show a certain amount of flexibility in its reference and will not show the hallmarks of a bound variable. Finally, if there is nothing available to Agree with, UPro will default to an arbitrary, essentially non-referential interpretation.

32 Of course an alternative, also noted by a reviewer, would be to say that in such cases the relevant left peripheral projections are syntactically present, but the silent DP representing the topic or perspective-holder is referentially highly underspecified, so UPro ends up being controlled syntactically, but with minimal resulting restrictions on its reference. On the one hand, this would avoid the need for fallible Agree and might give us a handle on the modest referential restrictions that *have* been observed on PRO_{arb} (e.g. that it be [+human], like other types of NOC, Landau 2013, and many others). On the other, we must then ensure that it is reasonable to posit the relevant type of left periphery in all relevant contexts, and we need an account of this referentially underspecified null DP that can appear there.

7.3 The status of (un)grammaticality

Given our proposal that NOC results whenever OC is impossible, and specifically that PRO_{arb} is the result of failed Agree when no controller is available, one might be concerned that we have lost or at least diminished our ability to deal with ungrammaticality. If failing to value the unvalued F feature does not lead to a crash, how can we deal with cases where the failure of a particular kind of control seems to lead not to arbitrary interpretations but to ill-formed sentences? Our answer to this is that we do indeed predict that a sentence should never end up being ungrammatical — in the sense of the derivation crashing — because of the failure to find a controller for UPro. However, we do still expect ungrammaticality to arise in other ways, and our approach has no difficulty in dealing with them. There are two main patterns that are relevant for control examples.

First, we do of course predict that certain *interpretations* will be underivable in certain syntactic configurations, and thus it will frequently be the case that a given sentence is ungrammatical *with a specific LF interpretation*. Thus (81a), essentially repeated from (45) above, is ungrammatical with the interpretation indicated by the coindexation, where it is *Susan* who tries to down the beer.

(81) a. * *[Susan$_i$'s twin]$_j$ tried [UPro$_i$ to down the beer in one gulp].*
b. *[Susan$_i$'s twin]$_j$ tried [UPro$_j$ to down the beer in one gulp].*

This is unproblematic for our account, because the ungrammaticality in these instances has nothing to do with leaving an F feature on UPro unvalued. Rather, it is impossible to derive that coindexation, because it would imply that UPro Agrees with *Susan*, which does not c-command it. The only interpretation possible is the one indicated in (81b), where it is the entire DP *Susan's twin* that controls UPro. This is not only possible but is forced by the workings of the system, since this entire DP is the closest, local, c-commanding element to UPro which bears an F feature, and thus Agree between the two is obligatory. (81a) is thus not ungrammatical due to a crash, but because the derivation will always lead to (81b) instead.

Second, there will of course be structures containing UPro which are ungrammatical for reasons that are entirely independent of what does and does not Agree with UPro's F feature. In some cases, it may appear that the source of ungrammaticality is a failure to find an appropriate controller to Agree with UPro, but our approach predicts that in such cases there should always be some other factor that is causing the problem. One context where these kinds of concerns arise is when OC predicates are passivized, as in (82).

(82) * *It was tried [UPro to use all the hot sauce].*

For us, the ungrammaticality of such a sentence must be due to something other than the lack of a c-commanding DP to control UPro. One way or another, it must clearly be relevant that essentially the same configuration as in (82) is licit with certain other OC verbs, as in (83), and that there is a good deal of cross-linguistic variation in the grammaticality of such structures, as described by Pitteroff & Schäfer (2017).

(83) a. *It was decided [UPro to leave the country immediately].*
b. *It was arranged [UPro to welcome the guests in the garden].*

This is tied up in the discussion of whether and how OC by implicit arguments operates, which goes beyond what we can discuss here — see Landau (2015); Pitteroff & Schäfer (2017) for recent discussion. In any case it seems unlikely that the problem in sentences like (82) would be that no controller is available, since we would expect the passive with *try* to have no less of an implicit agent than that with *decide* or *arrange*, and since similar examples are generally fine with matrix adjectival and nominal predicates, as in (84):

(84) a. *It was difficult [UPro to use all the hot sauce].*
b. *It was a pleasure [UPro to use all the hot sauce].*

It seems more likely that the problem with examples like (82) has a structural source relating to the especially reduced size of infinitival clause that verbs like *try* take as their complements. One possibility is that such reduced infinitives run into difficulties with the requirements placed on associates of expletive *it* in English, as suggested by McFadden (2004).

8 Some consequences and loose ends

8.1 Updating and deriving the Finiteness/pro-drop Generalization

We are now ready to return to the empirical motivation for the proposal we have been exploring here, namely the Fin-*pro*G in (35), repeated below:

(85) **Finiteness/pro-drop generalization (original):**
For (at least a non-trivial set of) pro-drop languages with subject-verb agreement, pro-drop is disallowed in the subject position of a prototypically non-finite clause.

The current proposal derives a version of (85), but relativized and precisified in a crucial way. Specifically, it requires that UPro receive the interpretation of OC PRO

rather than that of *pro* in a prototypical non-finite clause, but only when that clause appears in a syntactic position where a local, c-commanding controller is available, i.e. in complement and low adjunct positions. These are the kinds of configurations that Sundaresan was concerned with, and so (85) is indeed essentially correct, as long as its application is properly restricted. But of course when the structural conditions for OC do not obtain, the various types of NOC reading, among which we can include the readings associated with *pro*, will obtain instead.[33]

The updated version of the Finiteness/pro-drop Generalization should thus read as follows (with the revisions italicized for clarity):

(86) **Updated Finiteness/pro-drop generalization:**
For (at least a non-trivial set of) pro-drop languages with subject-verb agreement, pro-drop is disallowed in the subject position of a prototypically non-finite clause, *where the structural conditions for* OC *are met*.

Consider now how we derive (86). Under the current proposal, OC PRO and *pro* are distinct interpretive outcomes of a unified underlying element UPro, derived by means of Agree with different elements. Since Agree is obligatory when its conditions are met, the two interpretations will thus be in complementary distribution: whenever one of them can apply, it will necessarily block the other. The non-finite embedded clause types that were the focus of Sundaresan (2014) are transparent to OC and appear in positions where a c-commanding antecedent is available, thus OC must apply, and this means that *pro*-like or NOC interpretations are ruled out. Far from being problematic, (86) is thus precisely what we predict.

8.2 Summary with sample structures

To summarize the account we have developed here, we differentiate five superficial types of interpretation, all of which involve the same underlying dependent element, a nominal with an unvalued F feature which we are calling UPro, and which vary from one another solely with respect to the properties of their structural context.

33 Of course, one could still insist on labelling the relevant null subjects as NOC PRO and not *pro*, thus maintaining the literal wording of (85), but this would be missing the point. The insight of (85) is meant to be that certain types of interpretation are unavailable for null subjects in the relevant kind of non-finite clause, even though those interpretations are available elsewhere (i.e. in finite clauses), and they must instead be interpreted as bound variables. Since the non-bound variable interpretations *are* available in non-finite clauses where the conditions for OC are not met — subject clauses and high adjuncts — these must be excluded from the purview of (85) if it is to hold in any meaningful way, regardless of what we decide to call the relevant null subjects.

We list them again here, each with a simplified representation of how the control relationship is or is not established.

(87) **Exhaustive control (direct Agree)**

a. *Marie$_i$ tried [UPro$_{\{i,*j\}}$ to guzzle the beer].*

b. DP V [UPro . . .]

(88) **Mediated OC (mediated Agree via C)**

a. *Marie$_i$ wanted [C UPro$_{\{i,*j\}}$ to guzzle the beer].*

b. DP V [C UPro . . .]

(89) **Definite *pro***

[$_{ShiftP}$ AboutnessTopic Shift^{o} [UPro . . .]]

(90) **Logophoric NOC**

[$_{PerspP}$ PerspHolder Persp^{o} [Y [UPro . . .]]]

(91) **Arbitrary PRO**

a. *[UPro$_{\{i,j\}}$ To run out of hot sauce] would be embarrassing.*

b. [$_{XP}$ Y UPro . . .]

where XP is the left edge of the sentence or a phase boundary, and Y is an arbitrary (perhaps null) amount of structure not containing a locality boundary or the representation of any DP that could Agree for F with UPro.

Note that there is a crucial difference between Mediated OC (involved e.g. in PC and "finite control") in (88) and Logophoric NOC in (90), even though both have been linked to logophoricity. Mediated control, which Landau (2015) analyzes as "logophoric control", involves the mediation of functional material in the left periphery of the clause containing UPro. However, the reference of that functional material is fixed rigidly with respect to a particular DP in the next clause up, based on how the properties of the control verb interact with the syntactic configuration. I.e. the functional material Agrees syntactically with a higher DP. In the case of logophoric NOC, the perspective holder in the left periphery is not syntactically anchored to anything in a higher clause, hence its reference is more free.

The current proposal has a number of theoretical advantages. We will discuss these in comparison with the Movement Theory of Control (MTC) as developed by Hornstein (1999, et seq.) for the relationship between OC and NOC. We have chosen to compare ourselves with the MTC simply because it bears perhaps the closest

resemblance to our story on a number of points, thus making it a bit easier to bring out exactly what is unique to our approach. We rely on Agree to implement OC, whereas the MTC uses movement, but otherwise there are clear parallels. For both, OC is obligatory when the structural conditions are met, NOC and pro-drop are unified, and NOC/pro-drop is only possible when OC is blocked.

Nonetheless, we think that our proposal has some clear advantages. Central among these is that we have a *single* element UPro underlying OC as well as NOC and *pro*, and relatedly a simpler story about how the latter emerge when the former fails. The MTC has to appeal to a last resort mechanism inserting *pro* during processing when OC fails, i.e. not just an additional type of null subject, but also an additional operation. For us, UPro is there from the beginning and receives different interpretations depending on how it is affected by the operation Agree. We also believe we have a more principled account of the relationship between the OC PRO, NOC PRO and *pro* interpretations, in particular the subset-superset relationship. Under the current proposal, these all arise from a single element UPro, which has a basic capacity for a certain class of interpretations, but which can be further specified in the course of the derivation to yield OC PRO. For the MTC, since *pro* is a distinct element, there isn't necessarily any expectation that its interpretation will be related in any way to that of OC PRO — an elsewhere distribution need not imply an elsewhere interpretation.

Related to the last point, we make more accurate predictions about the interpretive properties and referential determination for NOC PRO. Under the MTC, it is just a pronoun, but there are several cases where the interpretation of NOC PRO is more restricted than an overt pronoun in the same context, e.g. the dependence on logophoricity described above (again, see Landau 2013, ch. 7). One could always stipulate these properties about the *pro* that shows up in these contexts, but there is no way to derive them from the basic assumptions of the MTC. For us, the restrictions plausibly fall out of the fact that NOC PRO is just another guise of UPro, which is referentially defective due to its unvalued F feature. It is thus like long-distance anaphors, which are famously logophoric or perspective-sensitive (again, see Sundaresan 2012, with extensive references).[34]

34 A reviewer asks whether our presentation is not a bit unfair to the MTC, and in particular why proponents of the MTC couldn't just adopt the same kind of machinery involving liberal use of silent left-peripheral material as we do in order to achieve the same advantages in modeling the interpretive effects. Indeed, this strategy is available to any approach that is not averse to silent material and a moderate proliferation of projections. However, our main advantage relative to the MTC and several other approaches lies not here, but in the fact that we propose a single element UPro underlying both OC PRO and *pro* as well as NOC PRO, which is what derives the implication between elsewhere

8.3 Conditions on overtness

An important issue that we haven't addressed up to this point, and which we think leads to a lot of confusion in discussions of control phenomena, is what conditions the silence of UPro in both its PRO and *pro* guises. For us, given strict modularity, the question of the morphophonological silence of this element must be distinct from its syntactico-semantic characteristics. That is, it would be incoherent to say that PRO, *pro* or our UPro is inherently silent. Rather, the (typical) silence must be derived somehow from how the contexts in which UPro appears are treated on the branch of the derivation heading to PF.

This is a matter ongoing research, but some suggestive ideas for how to proceed come from Duguine (2015), who argues for an approach related to the one we've outlined here. Her starting point is the analysis of pro-drop in terms of ellipsis (Duguine 2014), which she argues can cover different types of pro-drop by carefully working out the conditions on ellipsis, some of which are parametrized. She then extends this to PRO, partly on the strength of its (roughly) complementary distribution with *pro*: "PRO and *pro* are fundamentally the same linguistic object; the difference in their interpretation derives from independent properties" [p. 8]. An important idea in Duguine's work, which we also adopt, is that the overtness of the pro-forms is orthogonal to both their underlying featural status and their interpretation. For us, UPro is underlyingly an underspecified nominal pro-form, which is in principle consistent with a number of interpretive and phonological realizations. As discussed above, it will be determined in the course of the derivation, based on the availability of a local c-commanding controller, whether it will get a bound-variable interpretation or a less specific pronominal one. It will also be determined, based on the precise context interacting with various language-specific factors, whether and how it will be pronounced.

Consider, for instance, that there are overt pronunciations corresponding to both *pro* and PRO interpretations. What we might call "overt *pro*" are weak overt pronouns in non-pro-drop languages like English, in at least some of the instances where a pro-drop language would have a standard silent *pro*. What we could call "overt PRO" are cases where a clearly controlled subject is still overtly pronounced (typically under contrastive focus) which have been discussed for a number of

distribution and elsewhere interpretation as well as the referential defectivity common to all of these null subjects, as described in this section. This derived approach is *not* available to the MTC, precisely because it derives the distribution of *pro*/NOC PRO from the idea that they appear in contexts where movement is not possible — they thus *must* be something underlyingly distinct from the A-movement trace posited in place of PRO in OC structures.

languages (see e.g. Barbosa 2009; Szabolcsi 2009; Livitz 2014; Sundaresan 2014). The "overt PRO" in Hungarian surfaces e.g. when the OC subject of a non-finite clause is contrastively focussed (Szabolcsi 2009). Crucially, this overt pronoun "acts as a variable bound by the matrix subject; moreover it has the same *de se* interpretation that [subject-]controlled PRO classically receives" (Szabolcsi 2009, 2) — in other words, it bears the fingerprint of OC PRO. The Hungarian example in (92) illustrates this point:

(92) *Senki nem akart csak ő leül-ni.*
nobody not wanted[3SG] only he/she sit-INF
'Nobody wanted it to be the case that only he/she takes a seat.'
CONTEXT: A group of friends are in a crowded bus and there is only one available seat.

The complement of the matrix control verb *akart* 'wanted' is an infinitival clause, this status marked by the verbal suffix *ni*. However, the (focussed) embedded subject, despite bearing the interpretive fingerprint of OC PRO, is pronounced as an overt pro-form.

Note that we are *not* proposing (as at least one reviewer feared) that *all* pronimals are UPro. Indeed, we assume a fairly standard analysis any pronominals that aren't observed to show the syntactically restricted referential properties characteristic of UPro. That is, they start out with valued ϕ-features and no unvalued F, whatever precisely F turns out to be. This will e.g. include most (perhaps all) overt pronouns in typical pro-drop languages as well as many overt pronouns in languages like English aside from the weak pronouns that show a similar distribution to *pro*. What we *are* claiming is that overtness is not a reliable guide to which pronominals fall into this category and which ones are underlyingly UPro. Another way to say this is that an English surface form like *she* is syncretic, and can equally spell out a referentially free, underlyingly fully specified [3, f, sg] pronominal or an instance of UPro in a context where it Agrees with — thus gets (some of) its features valued and is bound by — a higher [3, f, sg] antecedent.

This discussion should make clear that the precise determination of whether UPro will be silent or overt is a complex issue that remains far from resolved. They also suggest that the syntactic and semantic conditions on OC must be kept strictly independent from the morpho-phonological ones affecting their pronunciation. Several factors interact to derive the rather complicated crosslinguistic picture that is actually attested. In other words, we cannot simply say "controlled subjects are silent in non-finite clauses" or "there is a binary null subject parameter". The regulation of whether and under what circumstances a language allows pro-drop is a matter of intense debate and ongoing research (see e.g. Biberauer et al. 2010; Duguine 2014; Sheehan To appear, among many others). What we can say for now

is the following. OC PRO, NOC PRO and *pro* are underlyingly the same thing, namely UPro, which we assume to be available in all languages. The difference between pro-drop and non-pro-drop languages (of different kinds) amounts to differences in the possibility of leaving this element silent in various contexts, in particular as the subject of prototypical finite clauses. This may in the end boil down at least in part to a version of the EPP applying at PF in certain clause types in certain languages (see again McFadden & Sundaresan 2018, for some relevant discussion). What should be clear is that, in the end, what counts for determining whether a given pro-form is subject to OC is not its pronunciation or lack thereof, but its interpretation.

Acknowledgment: We would like to thank audiences at NELS 46, the Pronouns workshop in Salvador (Bahia), GLOW 39, the MaTüBe Workshop *Komplexe Sätze* at ZAS and the Linguistics Colloquium in Göttingen for very helpful discussion of earlier versions of the work presented here, especially Hedde Zeijlstra and Idan Landau. We are also extremely grateful to Rob Truswell and an anonymous *TLR* reviewer for insightful and constructive critiques and suggestions on an earlier draft.

References

Adler, Allison. 2006. *Syntax and discourse in the acquisition of adjunct control*: MIT dissertation.

Baker, Mark C. 2008. *The syntax of agreement and concord*. Cambridge: CUP.

Barbosa, Pilar P. 2009. A Case for an Agree-based theory of control. Lingbuzz: http://lingbuzz.auf.net.

Bhatt, Rajesh. 2005. Long-distance agreement in Hindi-Urdu. *Natural Language and Linguistic Theory* 23. 757–807.

Bianchi, Valentina. 2003. On finiteness as logophoric anchoring. In J. Guéron & L. Tasmovski (eds.), *Temps et point de vue/Tense and Point of View*, 213–246. Nanterre: UParis X.

Biberauer, Theresa, Anders Holmberg, Ian Roberts & Michelle Sheehan (eds.). 2010. *Parametric variation: null subjects in Minimalist theory*. Cambridge: CUP.

Bjorkman, Bronwyn & Hedde Zeijlstra. 2017. Upward agree is superior. To appear in *Linguistic Inquiry*.

Boeckx, Cedric, Norbert Hornstein & Jairo Nunes. 2010. *Control as movement*. Cambridge: CUP.

Borer, Hagit. 1989. Anaphoric AGR. In Osvaldo Jaeggli & Ken Safir (eds.), *The null subject parameter*, 69–109. Dordrecht: Kluwer Academic Publishers.

Bošković, Željko. 2007. On the locality and motivation of Move and Agree: An even more minimal theory. *Linguistic Inquiry* 38. 589–644.

Bouchard, Denis. 1984. *On the content of empty categories*. Dordrecht: Foris.

Cattell, Ray. 1976. Constraints on movement rules. *Language* 52. 18–50.

Chierchia, Gennaro. 1989. Structured meanings, thematic roles, and control. In Gennaro Chierchia, Barbara Partee & Raymond Turner (eds.), *Properties, types, and meaning*, vol. II: Semantic Issues (Studies in Linguistics and Philosophy), 131–166. Dordrecht: Kluwer Academic Publishers.

Chomsky, Noam. 1982. *Some concepts and consequences of the theory of Government and binding*, vol. 6. Cambridge, MA: MIT Press.

Chomsky, Noam. 1986. *Barriers*. Cambridge, Mass.: MIT Press.

Chomsky, Noam. 2001. Derivation by phase. In Michael Kenstowicz (ed.), *Ken Hale: A life in language*, Cambridge, Mass.: MIT Press.

Chomsky, Noam & Howard Lasnik. 1993. The theory of principles and parameters. In Joachim Jacobs, Arnim von Stechow, Wolfgang Sternefeld & Theo Vennemann (eds.), *Syntax: an international handbook of contemporary research*, vol. 1, 506–569. Berlin: Walter de Gruyter.

Cinque, Guglielmo. 1999. *Adverbs and functional heads: a cross-linguistic perspective* (Oxford Studies in Comparative Syntax). OUP.

Darzi, Ali. 2008. On the vP analysis of Persian finite control constructions. *Linguistic Inquiry* 39(1). 103–116.

Diercks, Michael. 2012. Parameterizing Case: Evidence from Bantu. *Syntax* 15. 253–286.

Duguine, Maia. 2014. Argument ellipsis: a unitary approach to pro-drop. *The Linguistic Review* 31. 515–549.

Duguine, Maia. 2015. Unifying null arguments on two levels. Cambridge Comparative Syntax (CamCoS) 4, University of Cambridge.

Fischer, Silke. 2017. On the locality of control and islands in german: Exploring a hybrid theory of control. Ms. Universität Stuttgart.

Frascarelli, Mara. 2007. Subjects, topics and the interpretation of referential *pro*. *Natural Language and Linguistic Theory* 25. 691–734.

Giorgi, Alessandra. 2010. *About the speaker: Towards a syntax of indexicality* (Oxford Studies in Theoretical Linguistics). Oxford: OUP.

Heinat, Fredrik. 2008. *Probes, pronouns and binding in the Minimalist Program*. VDM Verlag.

Higginbotham, James. 1980. Pronouns and bound variables. *Linguistic Inquiry* 11(4). 679–708.

Holmberg, Anders, Aarti Nayudu & Michelle Sheehan. 2009. Three partial null-subject languages: a comparison of Brazilian Portuguese, Finnish and Marathi. In Anders Holmberg (ed.), *Partial Pro-drop*, vol. 63 (Studia Linguistica: Special Issue), 59–97. MA, USA: Wiley-Blackwell.

Hornstein, Norbert. 1999. Movement and control. *Linguistic Inquiry* 30. 69–96.

Iatridou, Sabine. 1993. On nominative case assignment and a few related things. *MIT Working Papers in Linguistics* 19. 175–196.

Jaeggli, Osvaldo & Ken Safir. 1989. Introduction. In Osvaldo Jaeggli & Ken Safir (eds.), *The null subject parameter*, Dordrecht: Kluwer Academic Publishers.

Kissock, Madelyn. 2014. Evidence for 'finiteness' in Telugu. *Natural Language and Linguistic Theory* 32. 29–58.

Kuno, Susumu. 1975. Super Equi-NP deletion is a pseudo-transformation. In *Proceedings of nels 5*, 29–44.

Landau, Idan. 2000. *Elements of control: structure and meaning in infinitival constructions* (Studies in Natural Language and Linguistic Theory). Dordrecht: Kluwer.
Landau, Idan. 2004. The scale of finiteness and the calculus of control. *Natural Language and Linguistic Theory* 22. 811–777.
Landau, Idan. 2006. Severing the distribution of PRO from Case. *Syntax* 9. 32–66.
Landau, Idan. 2013. *Control in generative grammar: A research companion*. CUP.
Landau, Idan. 2015. *A two-tiered theory of control*. Cambridge, Mass.: MIT Press.
Landau, Idan. 2016a. Against the null comitative analysis of partial control. *Linguistic Inquiry* 47. 572–580.
Landau, Idan. 2016b. Agreement at PF: An argument from partial control. *Syntax* 19. 79–109.
Larson, Richard K. 1991. *Promise* and the theory of control. *Linguistic Inquiry* 22(1). 103–139.
Livitz, Inna. 2014. *Deriving silence through dependent reference: Focus on pronouns*. New York: New York University dissertation.
Manzini, Rita. 2009. PRO, pro and NP-trace (raising) are interpretations. In K. Grohmann (ed.), *Explorations of phase theory: features and arguments*, 131–180. Berlin: Mouton.
Martin, Roger. 2001. Null case and the distribution of PRO. *Linguistic Inquiry* 32. 141–166.
McFadden, Thomas. 2004. *The position of morphological case in the derivation: a study on the syntax-morphology interface*: UPenn dissertation.
McFadden, Thomas. 2014. On subject reference and the cartography of clause types: A commentary on the paper by Biswas. *Natural Language and Linguistic Theory* 32. 115–135.
McFadden, Thomas & Sandhya Sundaresan. 2018. What the EPP and COMP-trace effects have in common: Constraining silent elements at the edge. *Glossa* To appear in Special collection: What drives syntactic computation?
Pearson, Hazel. 2013. *The sense of self: Topics in the semantics of de se expressions*. Cambridge: Harvard University dissertation.
Pearson, Hazel. 2016. The semantics of partial control. *Natural Language and Linguistic Theory* 34. 691–738.
Petter, Marga. 1998. *Getting PRO under control*, vol. 8 (LOT International Series). The Hague: HIL, Holland Academic Graphics.
Pitteroff, Marcel, Artemis Alexiadou, Jeannique Darby & Silke Fischer. 2017. On partial control in German. *Journal of Comparative Germanic Linguistics* 20. 139–185.
Pitteroff, Marcel & Florian Schäfer. 2017. Implicit control cross-linguistically. Ms. Universität Stuttgart and Humboldt-Universität zu Berlin.
Preminger, Omer. 2014. *Agreement and its failures*. Cambridge, MA: MIT Press.
Reinhart, Tanya. 1983. *Anaphora and semantic interpretation* (Croon Helm linguistics series: Anaphora). Croon Helm.
Rigau, Gemma. 1995. The properties of the temporal infinitive constructions in Catalan and Spanish. *Probus* 7. 279–301.
Ross, John Robert. 1967. *Constraints on variables in syntax*. Cambridge, MA: MIT dissertation.
Sag, Ivan & Carl Pollard. 1991. An integrated theory of complement control. *Language* 67. 63–113.
Sheehan, Michelle. 2014. Partial control in Romance languages: The covert comitative analysis. In Karen Lahousse & Stefania Marzo (eds.), *Romance languages and linguistic*

theory 2012: Selected papers from 'going romance' leuven 2012, 181–198. Amsterdam: John Benjamins.

Sheehan, Michelle. To appear. Subjects, null-subjects and expletives in Romance. In *Manuals of Romance Linguistics: Grammatical Interfaces*, ed. S. Fischer and S. Gabriel.

Sigurðsson, Halldór Ármann. 1991. Icelandic Case-marked PRO and the licensing of lexical arguments. *Natural Language and Linguistic Theory* 9.

Sigurðsson, Halldór Ármann. 2008. The case of PRO. *Natural Language and Linguistic Theory* 26(2). 403–450.

Speas, Margaret. 2004. Evidentiality, logophoricity and the syntactic representation of pragmatic features. *Lingua* 114(3). 255–276.

Stiebels, Barbara. 2007. Towards a typology of complement control. In B. Stiebels (ed.), *Studies in complement control*, vol. 47, 1–80. Berlin: ZAS Papers in Linguistics.

Sundaresan, Sandhya. 2012. *Context and (co)reference in the syntax and its interfaces*. Tromsø: University of Tromsø and University of Stuttgart dissertation.

Sundaresan, Sandhya. 2014. Making sense of silence: Finiteness and the (OC) PRO vs. *pro* distinction. *Natural Language and Linguistic Theory* 32. 59–85.

Sundaresan, Sandhya. To appear. Perspective is syntactic: evidence from anaphora. *Glossa* .

Sundaresan, Sandhya & Thomas McFadden. 2009. DP distribution and finiteness in Tamil and other languages: selection vs. Case. *Journal of South Asian Linguistics* 2.

Szabolcsi, Anna. 2009. Overt nominative subjects in infinitival complements in Hungarian. In Marcel den Dikken & Robert M. Vago (eds.), *Approaches to Hungarian*, vol. 11 (Papers from the 2007 NYU Conference), John Benjamins.

Taraldsen, Knut Tarald. 1978. On the nic, vacuous application and the that-trace filter. Bloomington, Indiana, University Linguistics Club.

Truswell, Robert. 2011. *Events, phrases, and questions*. Oxford: Oxford University Press.

van Urk, Coppe. 2013. Visser's generalisation: The syntax of control and the passive. *Linguistic Inquiry* 44(1). 168–178.

Ussery, Charlon. 2008. What it means to agree: The behavior of Case and Phi features in Icelandic control. In *Proceedings of WCCFL 26*, 480–488.

Weir, Andrew. 2012. Left-edge deletion in English and subject omission in diaries. *English Language and Linguistics* 16. 105–29.

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

Williams, Edwin. 1992. Adjunct control. In Richard Larson, Sabine Iatridou, Utpal Lahiri & James Higginbotham (eds.), *Control and grammar*, 297–322. Dordrecht: Kluwer Academic Publishers.

Wurmbrand, Susanne. 2001. *Infinitives: restructuring and clause structure*. Berlin: Mouton.

Wurmbrand, Susi. 2012. The syntax of valuation in auxiliary-participle constructions. In *Proceedings of WCCFL 29*, 154–162.

Wurmbrand, Susi. 2014. Tense and aspect in english infinitives. *Linguistic Inquiry* 45. 403–447.

Zeijlstra, Hedde. 2012. There is only one way to Agree. *The Linguistic Review* 29. 491–539.