COPiL CAMBRIDGE OCCASIONAL PAPERS *in* LINGUISTICS
Volume **10**, Article 4: 66–87, 2017 | ISSN 2050-5949

Control into infinitival relatives*

Jamie Douglas
University of Cambridge

Abstract This paper focuses on a novel English construction involving control and infinitival relatives. Examples such as *this is John's book to read* have a head noun (*book*) modified by an infinitival relative clause (*to read*) and a prenominal possessor (*John's*). I argue that there is a control relation between the prenominal possessor and the PRO subject of the infinitival relative. I show that this control relation bears the structural hallmarks of obligatory control whilst at the same time permitting PRO to be interpreted as arbitrary. This paradoxical behaviour is puzzling for many current theories of control in various ways and so may offer important empirical and theoretical insights to this field. I attempt an analysis of this construction using Landau's (2015) Two-Tiered Theory of Control.

1 Introduction

This paper will be concerned with examples of the form in (1), which to my knowledge have not been described or studied before.

(1) a. This is John's book to read.
b. That is the school's decision to make.
c. It is her game to lose.

I will argue that these are instances of infinitival RCs (henceforth, IRCs) and are interesting because of the relationship between the prenominal possessor attached to the RC head and the IRC subject, which I will argue is a case of control. As we will see, these constructions are challenging in various ways for many existing theories of control. They may thus offer important empirical and theoretical insights to control theory, whilst simultaneously giving us a new perspective on the structure of IRCs.

The structure of this paper is as follows: in Section 2, we show that the examples in (1) are IRCs and not object purpose clauses, which superficially look the same. In Section 3, we establish that the relation between the prenominal possessor and

* Thanks to Ian Roberts, Michelle Sheehan and Diane Massam for advice and encouragement, and to the audiences at the Rethinking Comparative Syntax project meeting (28th January 2015, University of Cambridge), the Manchester Forum in Linguistics (6th November 2015, University of Manchester), the UCL Postgraduate Conference (13th November 2015, UCL), and especially to the audience at the Non-Finite Subjects Conference (1st April 2016, University of Nantes). This paper forms Chapter 5 of my doctoral dissertation (Douglas 2016) which was funded by the Arts and Humanities Research Council grant no. 04271.

IRC subject is one of control and consider what type of control it is. In Section 4, we evaluate the extent to which current theories of control are successful or not in predicting/accounting for the properties uncovered in Section 3. We then propose an analysis of control into IRCs based on Landau's (2015) Two-Tiered Theory of Control (TTC). Section 5 is a brief note on a superficially similar construction found in Polynesian languages, and Section 6 concludes.

2 Infinitival relative clauses or object purpose clauses?

The infinitival clauses in the examples in (1) look superficially similar to object purpose clauses (henceforth, OPCs). It is widely known that there is control into OPCs (see, e.g., Bach 1982; Jones 1991; Landau 2000, 2013). An example is given in (2).

(2) a. I bought the book to read.
b. I bought John's book to read.

(3) I_i bought the/John's book [PRO_i to read]

The surface string *the/John's book to read* is also found in the IRCs in (4).

(4) a. This is the book to read.
b. This is John's book to read.

However, there are various ways to show that IRCs and OPCs are syntactically (as well as semantically) distinct. We apply these diagnostics, where applicable, to the examples in (2a,b) and (4a,b), demonstrating that (4a,b) are examples of IRCs.

First, in OPCs, the infinitival object can appear as a pronoun, as in (5). This is impossible in IRCs, as in (6).

(5) OPCs
a. I bought the book to read (it).
b. I bought John's book to read (it).

(6) IRCs
a. This is the book to read (*it).
b. This is John's book to read (*it).

The appearance of a pronoun in OPCs is not entirely free: when a pronoun is present, it is necessarily referential. Thus compare (5) with (7).

(7) a. I didn't buy any books to read (*them) on holiday.
b. I bought every book (on the Bestseller's List) to read (*it).

Quantificational expressions are not referential and are incompatible with an overt pronominal infinitival object. We can thus conclude that OPCs can modify

both referential and non-referential expressions, with overt pronominal infinitival objects only being compatible with the former.

IRCs, on the other hand, are always incompatible with such overt pronouns. Given the significance of (non-)referentiality in determining the availability of pronouns in OPCs, we can say that IRCs (like restrictive RCs generally) simply cannot modify referential expressions. This is confirmed by the fact that OPCs can modify pronouns and proper names (referring expressions), as in (8), whilst IRCs cannot, as in (9) (see Bach 1982; Faraci 1974; Jones 1991).

(8) OPCs

a. I bought it to read.
b. I brought Bill to talk to.

(9) IRCs

a. *This is it to read.
b. *This is Bill to talk to.

A second difference can be seen in the linear ordering of OPCs and IRCs with respect to finite RCs. When a finite RC and an OPC co-occur, the OPC appears to the right of the finite RC, but when a finite RC and an IRC co-occur, the IRC appears to the left of the finite RC (Jones 1991). Applying these diagnostics shows that our examples pattern with IRCs, not OPCs.

(10) OPCs

a. ??I bought John's/the book [to read] [that I was about to sell].
b. I bought John's/the book [that I was about to sell] [to read].

(11) IRCs

a. That is John's/the book [to read] [that I was about to sell].
b. ??That is John's/the book [that I was about to sell] [to read].

A third difference relates to extractability of the modified nominal. Extraction is permitted in the case of OPCs, as in (12), but is prohibited in the case of IRCs, as in (13).[1]

[1] Note that, whilst it is not possible to *wh*-extract the RC head, as in (13), it does seem to be possible to question the possessor, which pied-pipes the RC head (*who* is to be interpreted as the IRC subject).

(i) a. This is John's book to read.
b. Whose book is this to read?
(ii) a. This is John's book to write in.
b. Whose book is this to write in?

However, even if the RC head is pied-piped by the possessor, the result is degraded if the IRC is introduced by a *wh*-relative pronoun.

(iii) a. This is John's book in which to write.
b. ??Whose book is this in which to write?

I am unsure how to account for these data at present.

(12) OPCs

a. What did you buy to read?
b. What did you buy to write in?

(13) OPCs

a. *What is this to read?
b. *What is this to write in?

The differences so far can be accounted for in terms of the structural position of OPCs and IRCs relative to the nominal they are modifying (see, e.g., Jones 1991).

A fourth difference concerning the internal structure of the infinitival clause relates to the acceptability of *wh*-relative pronouns (Faraci 1974). OPCs cannot be introduced by *wh*-relative pronouns, as in (14), but IRCs can, as in (15) (note that in IRCs with *wh*-relative pronouns, the relative pronoun obligatorily pied-pipes a preposition).

(14) OPC
*I bought John's/the book in which to write my thoughts and feelings.

(15) IRC
This is John's/the book in which to write his thoughts and feelings.

To summarise, I have shown that examples such as (4a,b), repeated below in (16), are IRCs and not OPCs. Consequently, I will use examples of this form in what follows.[2]

(16) a. This is the book to read.
b. This is John's book to read.

I will leave aside the interesting question of why the string *the/John's book to read* in (16a,b) is interpreted as an IRC, but apparently not as an OPC (and conversely for the examples in (2a,b)).

3 Control

This section will be concerned with whether the relation between the possessor and the IRC subject is one of control, and, if so, what type of control relation it is.

[2] Another difference is that IRCs, but not OPCs, are incompatible with *in order to*.

(i) a. I bought the book in order to read it.
b. *This is the book in order to read it.

However, as Jones (1991) observes, there are a number of differences between *in order to* clauses and (O)PCs, so this difference may not be directly relevant. Nevertheless, it clearly shows that IRCs are incompatible with the 'purpose' semantics contributed by *in order to*.

3.1 Is it control?

PRO, i.e. the element being controlled by some antecedent/controller, is virtually always a subject. If we are dealing with control, we would expect that the possessor can only be interpreted as the IRC subject and should never be interpreted as any internal argument of the IRC (unless that internal argument is a derived subject). This is exactly what we find.

(17) a. This is the book (for John) to read to Mary.
b. This is John's book to read to Mary.
c. *This is Mary's book (for John) to read to.

(18) a. That is the general (for the Emperor) to give a slave to.
b. ?That is the Emperor's general to give a slave to.
c. *That is the slave's general (for the Emperor) to give to.

(19) a. This is the patient (for the new surgeon) to operate on.
b. This is the new surgeon's patient to operate on.
c. #This is the old patient's surgeon to operate on.

(20) a. This is the man to fix the sink.
b. *This is the sink's man to fix.

The (a) examples are the baseline IRCs, i.e. examples without prenominal possessors. (17b) and (18b) show that the prenominal possessor can easily be interpreted as the IRC subject. In contrast, (17c) shows that the prenominal possessor cannot be interpreted as the IRC indirect object. Similarly, (18c) shows that the prenominal possessor cannot be interpreted as the IRC direct object either (see also (20b)). (19c) is odd precisely because world knowledge tells us that surgeons operate on patients and not vice versa, showing that the prenominal possessor is being interpreted as the IRC subject. It thus looks as if we are dealing with a control relation, i.e. the prenominal possessor is capable of controlling the IRC subject PRO.

A clear consequence of this is that such a control interpretation should be impossible in subject IRCs, as in (20b), since the IRC subject position here is linked with the RC head, not the prenominal possessor attached to the RC head. The same reasoning applies to passivised IRCs.

(21) This is John's book to be read.

(21) is a (derived) subject IRC. Therefore, even if there is a PRO rather than an A'-trace/copy (see Bhatt 1999), this will be interpreted as the RC head *book* and not as the prenominal possessor *John*. The prenominal possessor cannot be interpreted as the implicit external argument of *read* either, consistent with a control analysis.

So far, we have simply been assuming that there is a PRO subject in IRCs. That PRO is present in IRCs is plausible for *wh*-IRCs, i.e. IRCs introduced by an overt *wh*-relative pronoun (with obligatory preposition pied-piping) since this type contains

at least some portion of the C-domain (see Douglas 2016, Chapter 3). It is not immediately obvious whether Ø-IRCs, i.e. IRCs introduced by neither a *wh*-relative pronoun nor the complementiser *for*, should have a PRO subject. Douglas (2016, Chapter 3) proposes that Ø-IRCs may lack a C-domain altogether, but does not make any claims about whether Ø-IRCs have a full T-domain or not. However, as we will see, the relation between the prenominal possessor and IRC subject does not seem to be affected by the presence or absence of a *wh*-relative pronoun. I take this to indicate that both *wh*-IRCs and Ø-IRCs have a PRO subject. Note that in standard English, the complementiser *for* appears if and only if there is an overt subject in subject position (PRO and subject traces are not permitted with *for*). *For*-IRCs, i.e. IRCs introduced by the complementiser *for* are thus incompatible with the phenomenon at issue.[3]

Further evidence for the presence of PRO in both *wh*-IRCs and Ø-IRCs can be seen from the fact that anaphors are permitted in IRCs.

(22) a. These are the sweets on which PRO_i to gorge yourselves$_i$.
b. These are the sweets PRO_i to share with each other$_i$.

Successful binding of anaphors in IRCs suggests that the IRC subject is a PRO, rather than an implicit argument, since implicit arguments cannot bind (see Wurmbrand 2001).[4]

To summarise, the prenominal possessor can be interpreted as the IRC subject but not as any other IRC-internal argument. We thus conclude that the relation between the prenominal possessor and the IRC subject is one of control.

3.2 OC or NOC?

We now turn to the question of what type of control is involved. Since Williams (1980), a distinction has been made between Obligatory Control (henceforth, OC) and Non-Obligatory Control (henceforth, NOC), and further distinctions have since been recognised, including Exhaustive Control and Partial Control. There is disagreement in the literature about how these further distinctions relate to the OC/NOC distinction. The reason appears to be definitional: different authors assume different definitions or defining characteristics of OC and NOC, which in turn leads to differences in the way the empirical phenomena are categorised (see Landau 2000, 2013) for a thorough overview of approaches to control and for extensive discussion of various OC/NOC diagnostics that have been proposed).

For concreteness and because they are widely recognised and adopted, we use the OC/NOC diagnostics given in Landau (2000: 31):

[3] In varieties where *for* can appear without an overt subject in subject position, e.g. Belfast English, we would expect this is *John's book for to read* to be possible.

[4] The issue is more complicated than this. Landau (2013: 183ff) argues that implicit arguments can enter into Binding Conditions B and C, but cannot bind anaphors. However, arbitrary implicit arguments seem to be able to bind arbitrary anaphors, at least in some contexts, e.g. *Such privileges should always be kept to oneself* (Ian Roberts, p.c.) (see also Baker, Johnson & Roberts 1989; Williams 1985, 1987).

(23) The OC/NOC Categories

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

These diagnostics are illustrated below for the general control cases. Examples are (slightly adapted) from Landau (2000: 34–36).

(24) Arbitrary Control

a. John tried [$\text{PRO}_{\text{John/*arb}}$ to be quiet]. (OC)
b. It is dangerous for babies [PRO_{arb} to smoke around them]. (NOC)

(25) Long-distance Control

a. *Mary knew that John dared [PRO_{Mary} to perjure herself]. (OC)
b. John said that Mary thought that [PRO_{John} shaving himself] would bother Sue. (NOC)

(26) Strict reading of PRO

a. John tried [PRO_{John} to leave early], and Bill did <try [$\text{PRO}_{\text{Bill/*John}}$ to leave early]> too. (OC)
b. John thinks that [PRO_{John} feeding himself] will be difficult, and Bill does <think that [$\text{PRO}_{\text{John/Bill}}$ feeding himself] will be difficult> too. (NOC)

(27) *De re* vs. *de se*
Context: an amnesiac sees a TV programme describing his own exploits and is impressed by that person's courage thinking him worthy of a medal, though he does not realise he himself is that person.

a. The amnesiac expects that he will get a medal.
b. The amnesiac believes that [PRO getting a medal] would be boring. (NOC)
c. The amnesiac expects [PRO to get a medal]. (OC)

(27a,b) are true in the context given, but (27c) is false. This shows that PRO in (27c), the OC example, must be interpreted *de se* (and cannot be interpreted *de re*), whilst in (27b), the NOC example, PRO can be interpreted *de re*.

We now turn to our IRC examples, applying these diagnostics where applicable to see whether the control relation between the prenominal possessor and IRC subject is one of OC or NOC. As we will see, the results are intriguingly conflicting.

Turning first to the *de re*/*de se* diagnostic, we have been unable to apply this to IRCs because it is not possible to insert the necessary attitude predicate between the prenominal possessor and the IRC subject since the prenominal possessor is directly attached to the RC head which is directly modified by the IRC.

The second diagnostic involves strict/sloppy interpretations. As can be seen in (28), the strict reading of PRO is impossible in IRCs, i.e. under ellipsis, PRO can only be interpreted sloppily.

(28) This is John's book to read and that is Mary's.

a. This is John's book to read and that is Mary's <book PRO_{Mary} to read>.
b. *This is John's book to read and that is Mary's <book PRO_{John} to read>.

This holds even in a context where various people (including Mary) are choosing books for John to read. In order to express such an interpretation, an overt subject with *for* is required, as in (29) with the structure in (30). In such cases, the overt subject is in the antecedent of the ellipsis.

(29) This is $John_i$'s book for him_i to read and that is Mary's.

(30) This is $John_i$'s book for him_i to read and that is Mary's <book for him_i to read>.

The evidence from (28) thus strongly suggests that the relation between the prenominal possessor and the IRC PRO subject is OC.

The third diagnostic involves long-distance control. As (31) shows, long-distance control is impossible in IRCs.

(31) a. This is John's book PRO_{John} to read.
b. Mary said this is John's book $PRO_{John/*Mary}$ to read.

This holds even in a context where John has chosen a book for Mary to read. To express such an interpretation, an overt subject with *for* must be used instead.

(32) $Mary_i$ said this is John's book for her_i to read.

This diagnostic thus also suggests that we are dealing with OC. If the reference of PRO were free, the long-distance restriction would be unexpected.

The diagnostics so far suggest that prenominal possessor control into IRCs is an instance of OC, not NOC. Before moving on to the final diagnostic, let us consider a few predictions that are made if we are dealing with OC. First, assuming that Partial Control (PC) is a species of OC (Landau 2000, 2008, 2013), we would predict PC readings to be possible in IRC contexts. As the following examples show, this prediction is borne out.

(33) Context: There are tours around the set of the *Fifty Shades of Grey* film. The tour guide is pointing out the various rooms and what Christian Grey uses each room for (censored version!).

a. This is his room to meet in.
b. This is his room to kiss in.
c. This is his room to hug in.

This is his$_{i}$ room PRO$_{i+}$ to meet/kiss/hug in.

All of these examples exhibit PC, i.e. the referent of PRO properly includes the controller (indicated by the index *i+*). Furthermore, verbs like *hug* (and for many speakers *kiss* as well) do not take comitative arguments in English. This shows that the PC interpretation does not (always) arise from a covert comitative argument (*pace* Boeckx, Hornstein & Nunes 2010), at least in English (see footnote 6).

PC can also be seen in the following examples:

(34) This is John's matter to discuss/debate (in parliament).

(35) A: You had to be at school at 7am?!
B: That was the headmaster's time to gather at! It certainly wouldn't have been mine!

The presence of PC in IRCs thus supports the results from the structural diagnostics above.

Second, if OC is at stake, we would expect c-command to be relevant, i.e. if the prenominal possessor controls the IRC subject, we would expect that it must c-command the IRC subject.[5] This expectation is borne out as can be seen by comparing prenominal and postnominal possessors.

(36) a. This is John's book to read.
This is John's book PRO$_{John}$ to read.
b. This is the book of John's to read.
*This is the book of John's PRO$_{John}$ to read.

PRO can be controlled by *John* if *John* is a prenominal possessor, as in (36a), but not if *John* is a postnominal possessor, as in (36b). Independent evidence from Condition C effects confirms that postnominal possessors attached to the RC head do not c-command the IRC subject, whilst prenominal possessors do. Consider (37):

(37) a. *This is his$_{i}$ book for John$_{i}$ to read.
b. This is that book of his$_{i}$ for John$_{i}$ to read.

As (37a) shows, an R-expression as the IRC subject cannot be co-indexed with a prenominal possessor attached to the RC head. This is a Condition C violation. In contrast, an R-expression as the IRC subject *can* be co-indexed with a postnominal possessor, as in (37b).

The contrast between prenominal and postnominal possessors falls out reasonably straightforwardly from most analyses of RCs. On reasonably standard assumptions, the external determiner attached to the RC head has no RC-internal representation since it never reconstructs (see, e.g., Aoun & Li 2003; Bianchi 1999; Kayne

[5] As Landau (2000, 2013) points out, strictly speaking PRO need not be c-commanded by the controller itself, but it must nonetheless be c-commanded by the functional head that introduces the controller. This does not affect the arguments here.

1994; Salzmann 2006, among many others). Furthermore, the external determiner c-commands the RC (either because it takes the RC as its complement or because it scopes over both the RC head and the RC). Now, on the standard assumption that prenominal possessors (except those in compounds such as *men's shoes* or *children's book*) are in SpecDP (see Alexiadou, Haegeman & Stavrou 2007), prenominal possessors are higher than the external determiner and would thus c-command the RC and everything in it, including the IRC subject. Postnominal possessors, however, are contained inside a PP attached to the RC head. They are unable to c-command out of the PP and out of the RC head and into the IRC. They are thus unable to control the IRC subject. This state of affairs would be unexpected if the reference of the IRC subject PRO were free since then we might expect accidental co-reference to be possible between PRO and a possessor regardless of the latter's structural position. These facts thus support the idea that the control relation between the prenominal possessor and the IRC subject is one of OC.

However, the fourth and final diagnostic concerning arbitrary control, which by definition should be impossible with OC, leads to a very different conclusion, namely that control is *not* obligatory. We observe that it is perfectly possible to have a prenominal possessor attached to the RC head whilst simultaneously interpreting the IRC subject as arbitrary PRO. Consider (38):

(38) This is John's book to read.

We already know that this example has an interpretation where the IRC subject is interpreted as *John*. However, it also has an interpretation where PRO is arbitrary. For example, John may have recommended a book for others to read.

(39) This is John's book to PRO_{arb} read.

It is important to note that PRO is interpreted either as co-referential with the prenominal possessor or as arbitrary, i.e. its reference is not free as was seen with the long-distance control diagnostic above in (31b), repeated in (40).

(40) Mary said this is John's book $\text{PRO}_{\text{John/*Mary/arb}}$ to read.

At that point, we pointed out that PRO cannot be interpreted as *Mary* but could be interpreted as *John*. Now, we observe that PRO can also be interpreted as arbitrary.

One possibility that immediately suggests itself is that, whenever the control relation between the prenominal possessor and the IRC subject does not hold, we are actually dealing with a different structure. However, we have already seen that prenominal possessors generally c-command the RC head and the RC. If it were possible for the prenominal possessor to appear in a position that did not c-command the IRC subject (modulo possessors appearing in compounds), we would expect it to be possible to avoid the Condition C violation we saw in (37a) above. However, this does not seem to be possible suggesting that the c-command relations do not change. It thus seems more parsimonious to assume that the structure of these RCs is uniform both in the controlled and non-controlled cases.

To summarise, the structural diagnostics very strongly suggest that we are dealing with OC. However, as far as interpretation is concerned, control is evidently not obligatory. In the next section, we will attempt to account for this paradoxical state of affairs.

4 Analysis

4.1 Problems for existing theories of control

The literature on control is vast and it would go far beyond the scope of this paper to provide a review (see Landau, 2000, 2013 for comprehensive overviews). In fact, despite the size of the control literature, we are not aware of any discussion of the types of example being considered here. Whilst the issue of control involving possessors has been addressed in other contexts, e.g. logophoric extensions and control into nominalisations, we will see that these are very different from the structures we are looking at.

First, Landau (2000: 109ff) notes that a controller seems not to be a direct argument of the matrix predicate in a well-defined set of cases. The following examples are taken from Landau (2000: 109–110):

(41) a. It would help Bill$_i$'s development [PRO$_i$ to behave himself in public].
b. PRO$_i$ finishing his work on time is important to John$_i$'s development.
c. PRO$_i$ finishing his work on time is important to John's friends$_i$.

(42) a. *It would help Bill$_i$'s friends [PRO$_i$ to behave himself in public].
b. It would help Bill's confidence [PRO to plan his itinerary in advance].
c. *It would help Bill's car [PRO to plan his itinerary in advance].
d. [PRO causing an uproar] is important for John's career.

Landau notes that the class of nouns that can contain the controller (as a possessor) is quite small and coherent, denoting abstract notions reflecting the individuality of the controller via actions, characters traits or social attributes (Landau 2000: 110). This class contains nouns like *career*, *status*, *confidence*, *performance*, *development*, *image*, *reputation*, *behaviour*, etc. When a prenominal possessor denoting an individual, call it X, is attached to one of these nouns, Landau calls the result the *logophoric extension of X*. Landau (2000: 111) suggests that the class of logophoric extensions could be assimilated to the class of inalienably possessed nouns. These nouns do not introduce new individuals to the discourse, but rather highlight some aspect of the individual denoted by the possessor. Consequently, Landau suggests that such nouns do not block the index of the possessor (or, alternatively, such nouns inherit the index of their possessors) and so, in a way, the possessor can be considered an argument of the matrix predicate. However, our IRC examples are not amenable to a similar analysis since the prenominal possessor can control the IRC subject regardless of whether or not the RC head belongs to the class of logophoric extensions.

Another instance of control involving possessors comes from control within DPs. This is potentially more relevant since, in our examples, the possessor controls within the DP projected by the external determiner. Hornstein (2003), cited in Landau (2013: 215), notes that possessors can be related to their head nouns in a number of different ways. In some cases, it looks as if we can choose between OC and NOC, which is particularly interesting from our perspective. Consider (43):

(43) [John$_i$'s plan [PRO$_{j\neq i}$ to bury him$_i$ in the pit]] just won't work.

(43) can have an interpretation where PRO is disjoint in reference from *John* (ensured by the Condition B effect). However, Landau points out a potential confound. This interpretation relies on *John* not being interpreted as the thematic agent of plan. However, in such cases, *plan* has a result reading rather than an eventive/process reading. Consequently, in such cases, *plan* does not take genuine arguments. Landau concludes that there is OC within DPs in derived nominals on their event readings (parallel to clauses).

However, in our examples, we cannot base an analysis on the event vs. result distinction since the RC head is clearly not necessarily eventive. Furthermore, the RC head need not be a nominalisation of a canonical control predicate.

(44) This is John$_i$'s book to read to him$_i$.

This example forces disjoint reference between the prenominal possessor and PRO, but this does not seem to be related to any ambiguity relating to the RC head.

Our examples are also problematic for many existing (syntactic) theories of control, which typically rely on movement (e.g. Boeckx et al. 2010; Hornstein 1999; Manzini & Roussou 2000) or Agree (e.g. Landau 2000, 2008, 2013; Sundaresan & McFadden 2015) or some combination of the two (e.g. Sheehan 2014b). The reason our examples are so problematic is that they involve IRCs. Movement out of RCs is generally banned.[6] One might say that the controller does not actually move *out* of the RC, but instead moves to its edge, i.e. the specifier of the external determiner. But even then we would run into an intervention problem since the RC head itself would presumably be an intervener. This problem would also apply to Agree-based approaches. These considerations suggest that the control relation in IRCs is established by some mechanism other than movement or Agree, but which is nonetheless subject to structural constraints and locality.

Our examples are also puzzling for semantic approaches to control (Pearson 2013; Williams 1987), where the control relation is typically argued to be determined by the semantics of the control verb/predicate. The problem posed by our examples is that there is no obvious control verb/predicate unless it is *be* itself. This might account for the following examples:

[6] Partial Control is also very difficult to account for on movement approaches to control, as pointed out by Landau (2000). Null comitatives have been suggested to give the illusion of Partial Control (Boeckx et al. 2010), but this analysis is not correct for English at least (Landau 2016; Sheehan 2014a).

(45) You are to stay there until I return.
You$_i$ are [PRO$_i$ to stay there until I return].

It might also account for why the OPC reading is unavailable in our examples, and conversely why the IRC reading is unavailable with other matrix predicates. Even when the OPC reading would be pragmatically odd, the IRC reading still seems to be unavailable. This suggests that the absence of an IRC reading is not due to a blocking effect by the OPC reading, though more empirical work is required before further conclusions can be drawn.

(46) a. This is John's book to read. (IRC; *OPC)
b. John's book to read is this one. (IRC; *OPC)

(47) a. I bought John's book to read. (#IRC; OPC)
b. John's book to read was bought. (#IRC; *OPC)

(48) a. I sold John's book to read. (#IRC; #OPC)
b. John's book to read was sold. (#IRC; *OPC)

However, problematic for this idea is the fact that the control relation between the prenominal possessor and the IRC subject seems to be established entirely within the DP consisting of the external determiner, the RC head and the RC, i.e. independently of the verb (furthermore, note that the prenominal possessor is not an argument of *be*). We therefore conclude that the control relation itself is established independently of any matrix verb semantics, though the matrix verb semantics plausibly plays a role in the distribution of OPC vs. IRC readings.

4.2 Landau's (2015) Two-Tiered Theory of Control

To try and account for control into IRCs, I adopt Landau's (2015) Two-Tiered Theory of Control (TTC). My reasons for this will become apparent below. According to the TTC, there are two types of (obligatory) control: Predicative Control and Logophoric Control (see also Bianchi 2003). The various types of OC that have been identified in the literature fall under one of these two types as shown in the following table (Landau 2015: 65):

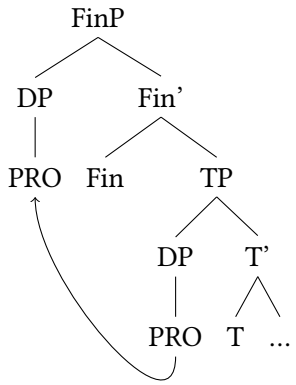
(49) Predicative and Logophoric Control

	Predicative control	Logophoric control
Inflected complement	✓	*
[–human] PRO	✓	*
Implicit control	*	✓
Control shift	*	✓
Partial control	*	✓
Split control	*	✓

As can be gleaned from the terminology, logophoricity plays a central role in Logophoric Control. Interestingly, as Landau notes, logophoricity is also characteristic of NOC. Given the OC/NOC-hybrid nature of our examples, Logophoric Control would seem to be a good candidate to pursue for our analysis of control into IRCs. Further support for this intuition comes from the fact that our examples permit PC readings and PC is categorised as a type of Logophoric Control (see also Bianchi 2003).

But how do Predicative and Logophoric Control work? Let us first consider Predicative Control. The schematic structure is given in (50).

(50)

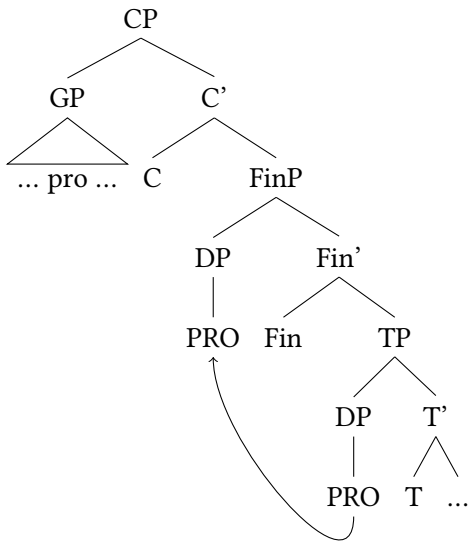


According to Landau, the infinitival clause is too large to be a semantic predicate, i.e. it cannot on its own be interpreted as a semantic property. Therefore, we either need to insert an operator or have movement to create a lambda abstraction or derived predicate (see Chomsky 1980; Heim & Kratzer 1998). Landau proposes that this is done via movement of PRO (a minimal pronoun). To instigate this, Landau proposes that Fin has a [uD] probe. Fin finds PRO as its (closest) goal and PRO moves to SpecFinP. Landau claims that this [uD] probe derives the subjecthood of PRO in a straightforward fashion, though exactly why such a probe should exists remains a stipulation.[7] FinP is then predicated of the matrix controller by means of a Relator head in the sense of den Dikken (2006) (not shown).

The second type of OC is Logophoric Control, which is more complex. Logophoric Control involves Predicative Control plus an additional 'second tier' of structure. This is illustrated in (51).

[7] In other work (Douglas 2016, 2017), I have argued that this movement from SpecTP to SpecFinP would be anti-local. Therefore, we might want to adopt the more traditional analysis where PRO remains in SpecTP. Alternatively, depending on how we derive anti-locality, movement of PRO from SpecTP to SpecFinP might be permitted in cases where movement of an overt DP would be prohibited. I refer the interested reader to Douglas (2016, Chapter 4, Section 3.3.2) for discussion on how to derive anti-locality.

(51)



As can be seen, the FinP structure in Logophoric Control is identical to that of Predicative Control. In other words, the derived predicate is created by movement of PRO from SpecTP to SpecFinP. However, unlike in Predicative Control, this FinP is predicated of a variable *pro* (also a minimal pronoun), a relation mediated by the Relator head C, which according to Landau is perspectival (see also Bianchi 2003; Sundaresan 2016) and phasal.[8] Therefore, PRO is controlled by *pro* in Logophoric Control. In turn, *pro* is bound by the matrix controller via variable binding. To summarise, Logophoric Control is established via predication and variable binding.

4.3 Extension of the TTC to IRCs

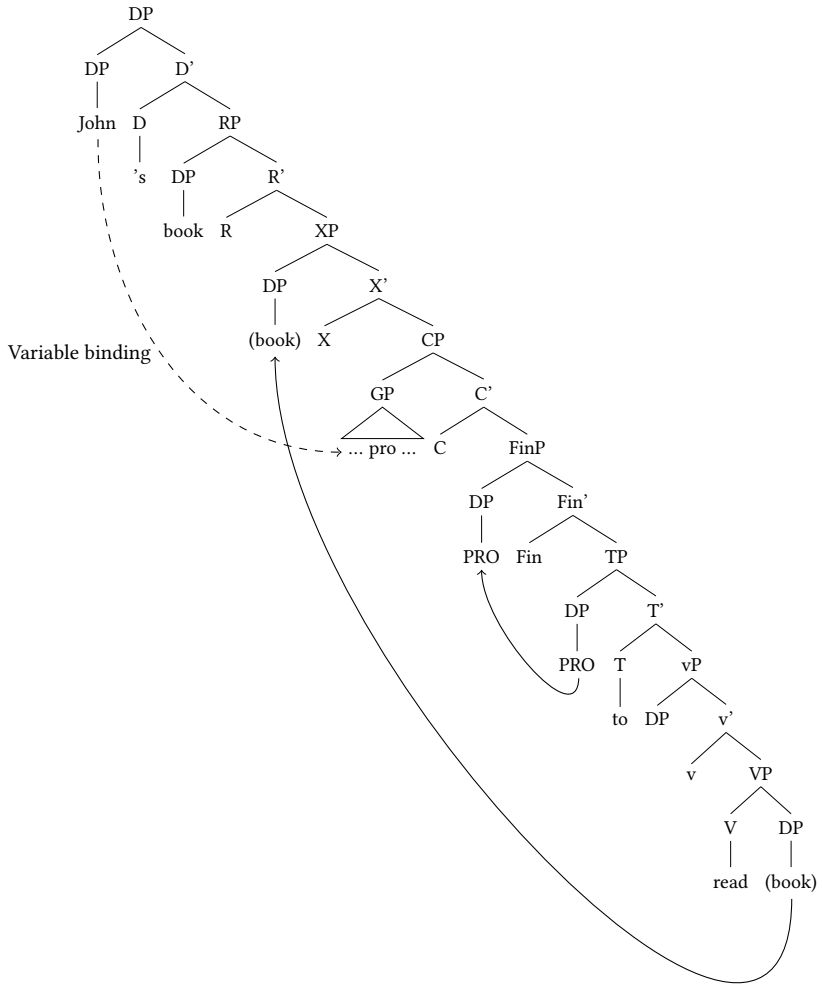
We saw that the OC/NOC-hybrid nature of IRCs, plus the possibility of PC readings, already gives us cause to think Logophoric Control is relevant to IRCs. We also now have a structural reason. If Predicative Control involves PRO being directly predicated of the matrix controller, it follows that we could not have an RC head intervening between PRO and the matrix controller as this would interfere with the predication relation. Therefore, only Logophoric Control has enough structure to be able to accommodate relativisation. By this logic, relativisation would have to target a position higher than what Landau calls CP. If it targeted a lower position in the C-domain, it would presumably interfere with the predication relation between PRO and *pro*.

I also suggest that variable binding, which is responsible for establishing the control relation between the matrix controller and *pro*, is the mechanism (distinct from both movement and Agree (see Kratzer 2009)) required to avoid the intervention problem posed by the RC head.

I thus propose the following structure for our IRC examples:

[8] GP is the Concept Generator Phrase containing *pro*, which is a nominal co-ordinate (author or addressee) projected by the C head. See Landau (2015) for full details.

(52) This is John's book to read.



Relativisation targets SpecXP (ignoring any intermediate landing sites).[9] For Ø-IRCs, as in (52), X is in the C-domain, higher than Fin and C. Note that adverbial fronting is generally disallowed in Ø-IRCs (see Douglas 2016, Chapter 3). This means that X in Ø-IRCs must be lower than Mod, i.e. the head hosting fronted adverbials in its specifier (following Rizzi 2004). For *wh*-IRCs, X is the Foc head (Douglas 2016, Chapter 3). This is higher than Mod, hence fronted adverbials are permitted. This contrast is illustrated in (53).

(53) a. ?This is John's book in which tomorrow to write a message.
b. *This is John's book tomorrow to write a message in.

Alternatively, if we do away with movement of PRO from SpecTP to SpecFinP (see footnote 7), C and Fin could be collapsed.

[9] I adopt the Matching Analysis of RCs (see Douglas 2016) so the representation of the RC head in SpecXP is not spelled out.

Why does the RC head not intervene with the variable binding relation? I propose that the RC head is not available as a binder for *pro* because the RC head is already binding a variable, namely the RC-internal copies of the RC head. If the RC head were to bind *pro* as well, this would violate the Bijection Principle (Koopman & Sportiche 1982).

The question now is how variable binding between the prenominal possessor and *pro* works. Recall from the description of our examples that control between the prenominal possessor and the IRC subject is local but optional (i.e. optional between control and arbitrary interpretations). Since the predication relation between PRO and *pro* is presumably obligatory (and local), we hypothesise that the variable binding relation must be optional (and local).

According to Landau (2015), in local variable binding there must be feature matching between the binder and the pronominal variable. Furthermore, variable binding is a vehicle for feature transmission, i.e. bound variables are assumed to inherit their φ-features from their binders at PF (Heim 2008; Kratzer 2009). As such, bound variables are minimal pronouns as far as the syntax and LF are concerned. In Logophoric Control, *pro* is a bound variable, i.e. a minimal pronoun with unvalued features. Landau assumes that all unvalued features must be valued at spellout. The features of *pro* are valued via feature transmission. Therefore, *pro* must be visible to the controller. In phasal terms and looking at our structure in (52), this means that X and R cannot be phase heads since otherwise *pro* would be spelled out before feature transmission takes place.

The need for *pro* to have its features valued at spellout accounts for the locality of variable binding, i.e. the locality condition on the control of *pro*. However, it does not explain the optionality of the control relation. I tentatively propose that feature transmission can fail, i.e. variable binding is a fallible operation (on the fallibility of Agree, see Preminger 2014). When variable binding fails, *pro*'s features must be valued by default. I suggest that the default interpretation is the arbitrary interpretation, ultimately leading to the arbitrary interpretation of PRO.[10]

Finally, there is the issue of selection. Landau (2015) suggests that *pro* in NOC contexts is a free variable because the control clause in such cases is not selected. If the control clause is selected by an attitude predicate, we get Logophoric Control where *pro* is a bound variable, resulting in OC. I tentatively propose that IRCs are intermediate between these two extremes. On the one hand, IRCs (like RCs generally) are not selected by any higher predicate. But on the other hand, RCs are widely thought to be complements of the external determiner D (see, e.g., Bianchi 1999; Kayne 1994; Sternefeld 2006). This is also the head hosting the prenominal possessor in its specifier. So in some sense, the possessor is attached to the element

[10] That the arbitrary interpretation may be a default or elsewhere interpretation is a long-standing idea (see Chomsky 1981, among many others), though it is implemented in a variety of ways. For example, Sundaresan & McFadden (2015) propose that control results when an Agree relation is established, which happens automatically when the correct structural configuration is met. If the Agree relation is not established, i.e. when the correct structural configuration is not met, we get an arbitrary interpretation. However, if our examples really instantiate the same syntactic structures yet still show the option of OC or NOC interpretations, they are problematic for Sundaresan & McFadden's particular account.

selecting the IRC, thus potentially making the presence of an OC relation in IRCs less surprising.

5 A note on Polynesian

The English examples examined here bear a superficial resemblance to so-called genitive subject RCs in Polynesian languages (see, for example, Baker 2006; Besnier 2000; Herd, Macdonald & Massam 2011; Otsuka 2006, 2010), as well as to genitive-marked subjects in Altaic languages (see, for example, Hale 2002; Kornfilt & Whitman 2011; Maki & Uchibori 2008; Miyagawa 2008, 2011).

Genitive subject RCs in Polynesian refer to cases where a non-subject has been relativised and the subject of the RC is expressed as a possessor attached to the RC head.[11] The following examples are from Māori (Herd et al. 2011: 1258):

(54) a. *ka mōhio ahau ki t-ā Hone tangata i kōhuru ai.*
T/A know I to the+Gen John man T/A murder Resprn
'I knew the man that John murdered.'
(lit. 'I knew John's man that murdered.')

b. *ka mōhio ahau ki te tangata a Hone i kōhuru ai.*
T/A know I to the man Pers John T/A murder Resprn
'I knew the man that John murdered.'
(lit. 'I knew the man of John that murdered.')

However, Herd et al. convincingly argue that Māori genitive subject RCs cannot be derived by movement of the subject or by control of a subject PRO. They note that Māori does not permit direct relativisation of direct objects. In order to relativise a direct object, it must first be promoted to subject and then relativised. Consequently, in the examples above we are dealing with a type of subject RC. Interestingly, the external argument of the RC can still be expressed as a possessor attached to the RC head, as the acceptability of both (54a) and (54b) show. The possessor cannot have moved from subject position in the RC since the direct object was promoted to this position, nor can the possessor be controlling a PRO in subject position since the subject position would contain an operator or trace/copy of the RC head. The authors thus propose a mechanism of semantic control by process of elimination, though they admit that the details of such a mechanism remain to be worked out.

A full review and analysis of RCs with genitives and possessors goes far beyond the scope of this article. However, we can already see that constructions in different languages which bear a superficial resemblance to one another may in fact have

[11] Massam (2011) relates genitive subject RCs to unaccusative genitive constructions in Niuean. English also has a superficially similar construction to unaccusative genitives, as Massam points out.

(i) a. His mistake was made (when he left the room).
b. His nap was taken (at 2pm).

In these cases, the possessor is interpreted as the external argument of the passive. It would be interesting in future research to compare these constructions with Control into IRCs.

very different syntactic properties. Although it would be very interesting to look at the variation in such similar-looking constructions, we must leave this for future research.

6 Conclusion

We have focussed on a novel empirical problem, namely the relation between a prenominal possessor attached to an RC head and the PRO subject of an IRC. I showed that this relation is one of control but that it exhibits apparently paradoxical properties, i.e. it bears the structural hallmarks of obligatory control, yet arbitrary PRO interpretations are possible. Furthermore, the RC head does not seem to intervene with the control relation between the prenominal possessor and the IRC subject. I suggested that Landau's (2015) TTC offers useful insights into these problems and extended the TTC, specifically Logophoric Control, to IRCs. This successfully captured various properties of these constructions. I suggested that the control relation involves both predication and variable binding (Landau's Logophoric Control), and that variable binding is fallible. When it succeeds, we get the control reading, but when it fails, we get a default arbitrary interpretation. My analysis represents the first attempt to explore this puzzling construction and inevitably there are several remaining challenges that must be left for future research. Nevertheless, I hope to have shown that control into IRCs is both interesting and intriguing with potentially important ramifications for the theory of control and the structure of infinitival relatives.

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Jamie Douglas
University of Cambridge
jad71@cam.ac.uk