Getting your to-do list under control:
Imperative semantics and the grammar of intending

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1. Introduction

Two central questions for control theory are the distribution question (1a) and the interpretation question (1b).

(1) a. Where can PRO appear?
    b. How is PRO interpreted?

It is well known that the answers to both of these questions must in some way implicate the choice of the embedding predicate. The data in (2) illustrate this point for the distribution question, showing that some predicates like begin force PRO to the exclusion of an overt embedded subject, other predicates like believe force an overt embedded subject to the exclusion of PRO, and still other predicates like want permit both options. In parallel fashion, the data in (3) illustrate this point for the interpretation question, showing that when there is more than one potential controller in the matrix clause, some control predicates give rise to object control, others give rise to subject control, and still others permit both options.

(2) a. John began [PRO/*Bill to be happy].
    b. John believed [*PRO/Bill to be happy].
    c. John wanted [PRO/Bill to be happy].

(3) a. John₁ persuaded Bill₂ [PRO₁/₂ to leave].
    b. John₁ promised Bill₂ [PRO₁/₂ to leave].
    c. John₁ proposed to Bill₂ [PRO₁/₂ to leave].

*I would like to thank the audience at NELS 45 for their helpful feedback on the content of this paper.

I assume following Perlmutter (1970) that aspectual predicates like begin are control/raising-ambiguous.
As expected given these observations, great headway has been made on the interpretation question by paying careful attention to the lexical semantics of control predicates like *persuade* and *promise*: see, among many others, Růžička (1983), Comrie (1984), Farkas (1988), Sag & Pollard (1991), Panther & Köpke (1993), Rooryck (2000), Jackendoff & Culicover (2003). On the other hand, lexical semantics has played a much more peripheral role in work on the distribution question, where the predominant view is that PRO is licensed by formal features of the clause it appears in. The semantics of the embedding predicate typically plays an indirect role, imposing restrictions on the temporal and/or modal properties of its complement which in turn have consequences for the formal features that the distribution of PRO is sensitive to: see, e.g., Stowell 1982, Pesetsky 1992, Bošković 1997, Martin 2001, Landau 2004, and see also Wurmbrand 2014 for conclusions that undermine some aspects of this kind of approach. A broad goal of the work described here is to make headway on the distribution question in a way that (a) centralizes the role of the lexical semantics of the embedding predicates and (b) is informed not only by lexical semantic and syntactic work on control but also by work on control in the formal semantic tradition, represented especially by Chierchia (1984, 1990), Dowty (1985), Stephenson (2010), Pearson (2013, 2015).

The specific empirical starting point for this paper is the observation that aside from control predicates like *want* and *begin* that allow and disallow overt embedded subjects, respectively, straddling this divide are predicates like *intend*, which, as illustrated in (4), admit overt embedded subjects only with a special semantics that suggests an underlying control structure, whereby the matrix argument is interpreted as the causer of the event described by the complement clause. As far as I know, this observation was first made in the generative literature by Perlmutter (1968), and has been independently noted by Jackendoff & Culicover (2003) as well. In both of these works, the proposal is that *intend* semantically selects for a controlled complement, and superficial counterexamples like (4) actually do involve control, either via an embedded silent causative predicate that hosts a controlled subject (Perlmutter 1968) or via a coercion mechanism that results in a control semantics (Jackendoff & Culicover 2003). (See also Boeckx et al. 2010:230–237 for critical remarks.)

(4) John **intended** (for Bill) to leave. [≈ John intended (to get Bill) to leave.]

With an eye toward ultimately explaining the distribution of PRO on semantic grounds, this paper focuses on the behavior of *intend*, arguing for a formal connection between the semantics of intending and Portner’s (2004, 2007) semantics for imperatives.

The core proposal — as well as the organization of the rest of the paper — runs as follows. First, following Portner (2004), I adopt the view that imperative clauses denote properties that get added to the Addressee’s (Public) To-Do List, and I furthermore argue that objects of intention form a set that constitute an individual’s Private To-Do List and therefore also denote properties (section 2). Because objects of intention are properties, and controlled complements denote properties, *intend* is straightforwardly equipped to combine with a controlled complement (section 3), but can combine with a non-controlled (proposition-denoting) complement only via coercion (section 4). After providing some independent support for this approach (section 5), I speculate on how these results might
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be embedded into a broader typology of control predicates (section 6). Finally, section 7 concludes.

Before proceeding, a disclaimer is in order. This paper does not argue for the correctness of the view that superficially non-controlled complements to *intend* actually do instantiate control (with the exception of the remarks in section 5.1 below). Instead, it follows Perlmutter (1968), Jackendoff & Culicover (2003) in assuming that this is correct, and explores a way of making sense of it that draws a formal connection to imperative semantics. In other work (Grano 2015b), I explicitly engage with the question of whether this kind of approach is indeed the best way of understanding the interpretive properties of superficially non-controlled complements to *intend*, and in fact, I come to a very different conclusion there. Lost in that alternative approach, though, is the (in my view) theoretically attractive connection between intentions and imperatives, as well as the handle on the variation facts discussed in section 5.1 below. Consequently, I invite readers to consider both the approach here and the one laid out in Grano 2015b and come to their own conclusion about which approach is more convincing.

2. Private and Public To-Do Lists

Portner (2004) proposes that each of the three major clause types — declaratives, interrogatives, and imperatives — corresponds to a distinct semantic type and relates to a distinct discourse component that is equipped to handle that type. Declarative clauses denote propositions, and, following Stalnaker (1974, 1978), successfully making an assertion amounts to adding a proposition to the Common Ground, which denotes a set of propositions. Interrogatives, in turn, denote sets of propositions (Hamblin 1973, Karttunen 1977), and successfully asking a question amounts to adding a question to the Question Set (Ginzburg 1995, Roberts 1996), which on this view denotes a set of sets of propositions. Finally, Portner’s focus is imperatives: Portner proposes that imperative clauses denote properties, and that successfully issuing an imperative amounts to adding a property to the addressee’s To-Do List. The To-Do List function is a function from individuals to sets of properties. According to Portner, “The To-Do List of an agent *α* is a set of properties, and the participants in the conversation mutually assume that *α* will try to bring it about that he or she has each of these properties” (Portner 2007:352).²

The Common Ground — i.e., the set of propositions taken for granted by the participants in the discourse — finds a very natural private counterpart in individual belief. This is apparent from the infelicity of b’s response in the dialogue in (5): it is infelicitous to publicly accept a proposition and then deny a corresponding belief.

(5)

a. It’s raining outside.

b. OK. #But I don’t believe it is.

The question that I want to engage with here is whether Portner’s To-Do List also has a

²For other approaches to the semantics of imperatives, see, among many others, Aloni 2007, Kaufmann 2012, Starr 2013.
private counterpart. Portner (2004) suggests that the private counterpart of the To-Do List is desire. Ninan (2005), on the other hand, suggests that the private counterpart of the To-Do List is intention. Here I side with Ninan, based on the novel observation that — even as the different kinds of imperative flavors considered by Portner (2007) are put to the test — it is always infelicitous to accept an imperative will denying the corresponding intention, though denying the corresponding desire is never infelicitous.

(6) a. Sit down right now! (order)
   b. OK. #But I don’t intend to. (Cf.: OK. But I don’t want to.)

(7) a. Have a piece of fruit! (invitation)
   b. OK. #But I don’t intend to. (Cf.: OK. But I don’t want to.)

(8) a. Talk to your advisor more often! (suggestion)
   b. OK. #But I don’t intend to. (Cf.: OK. But I don’t want to.)

I take these facts as evidence that there is a very tight connection between imperatives and intentions and in particular that the former is the public counterpart of the latter.

3. A semantics for intend

Suppose Portner is correct that the (Public) To-Do List (henceforth PubTDL) is a set of properties. Then the default expectation is that the Private To-Do List should be a set of properties as well. Let PrivTDL ( = “Private To-Do List”) be a function from individuals to the set of properties that that individual is privately committed to making true of herself. (Here and throughout, by “private” I mean “personal” or “non-interactional” rather than “secret”: one’s intentions can of course be known to others.) Then I propose that the denotation for intend is that in (9).

(9) \[\text{intend} = \lambda P \langle x \rangle \lambda x. P \in \text{PrivTDL}(x)\]

According to (9), intend denotes a relation between properties and individuals, returning true if and only if the property is a member of the individual’s Private To-Do List.

Following Chierchia (1990), Pearson (2013) (cf. also Stephenson 2010), I assume that controlled complements denote properties whose unsaturated argument position is linked to the subject, achieved by having PRO trigger lambda-abstraction. Then by (9), intend is straightforwardly equipped to combine with a controlled complement, since its first argument is a property. Consequently, we get values like that in (10) for simple intention reports: John intended to leave is true if and only if the property [\(\lambda x. x\) leave] is on John’s Private To-Do List.

(10) \[\text{[John intended to leave]} = [\lambda x. x\) leave] \in \text{PrivTDL}(j)\]
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At the heart of this analysis is the intuition that it is a deep rather than a superficial property of imperatives, members of Private and Public To-Do Lists, and objects of intention that they are properties rather than propositions: all involve commitment to action, and an action that an agent is publicly or privately committed to undertaking necessarily includes that agent as a participant (Sag & Pollard 1991, Jackendoff & Culicover 2003). The grammar cashes this out by treating the relevant object as a property, the unsaturated argument being left open as a place-holder for the committed agent.

It is also worth pointing out that intend is but one member of a class of control predicates that share the same core semantics. In particular, Sag & Pollard (1991) identify a class of control predicates that all involve commitment to action. Echoing Jackendoff & Culicover’s (2003) distinction between predicates of obligation and predicates of intention, I divide Sag & Pollard’s commitment class into two subclasses depending on whether the predicate involves public commitment or private commitment. Some representative predicates from each subclass are given in (11). The suggestion here is that the predicates in (11a) all have denotations that make use of PubTDL and and the predicates in (11b) all have denotations that make use of PrivTDL.

(11) a. Predicates of public commitment: promise, swear, agree, contract, pledge, vow, threaten, propose, offer
    b. Predicates of private commitment: try, intend, choose, decide, endeavor, aim

Further reinforcing the connection between the semantic type of imperative clauses and the semantic type of the argument that predicates like intend select for is the observation that this same kind of connection is very familiar for the other two major clause types: declarative clauses denote propositions, and correspondingly, predicates of belief like believe as well as predicates that describe attempted updates to the Common Ground like assert are ordinarily analyzed as selecting for propositions. By the same token, interrogative clauses denote sets of propositions, and correspondingly, predicates like wonder (which describe private interrogation) as well as predicates like ask (which describe public interrogation) are ordinarily analyzed as selecting for sets of propositions (see Uegaki 2015 and references therein). The table in (12) summarizes the proposed system.

(12) Relationship between semantic types, clause types, and selecting predicates

<table>
<thead>
<tr>
<th>SEMANTIC TYPE:</th>
<th>SELECTED FOR BY:</th>
<th>CORRESPONDING CLAUSE TYPE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>proposition</td>
<td>public</td>
<td>private</td>
</tr>
<tr>
<td>set of propositions</td>
<td>ask</td>
<td>wonder</td>
</tr>
<tr>
<td>property</td>
<td>promise</td>
<td>intend</td>
</tr>
</tbody>
</table>
This table follows Portner in taking each of the major clause types to correspond to a distinct semantic type, and the novel idea here is that for each of those types one can identify “public” and “private” variants of predicates that select for that type.

4. Coercion

If non-controlled complements (i.e., complements with an overt embedded subject) denote propositions rather than properties, then a sentence like (13) creates a type mismatch.

(13) John intended [for Bill to leave].

Consequently, the suggestion here is that the grammar repairs the mismatch via the silent causative predicate in (14) which combines with a proposition p and returns a property [λx.x bring it about that p] (cf. Perlmutter 1968, Jackendoff & Culicover 2003 for similar ideas). As a result, (13) has a meaning like (15): the sentence is true if and only if the property of bringing it about that Bill leave is on John’s Private To-Do List. (Cf. Copley & Harley 2009 for a discussion of have-causatives, which may come close to instantiating an overt counterpart of (14).)

(14) [[\text{\textsc{cause}}]] = λpλx.x bring it about that p

(15) [[John intended for Bill to leave]]
    = [λx.x bring it about that Bill leave] ∈ PrivTDL(John)

A few words are in order on the correlation that I claim here — articulated in (16) — between whether a complement is controlled or not and whether a complement is property-denoting or proposition-denoting.

(16) a. controlled complement ↔ property-denoting
    b. non-controlled complement ↔ proposition-denoting

In particular, this proposed correlation has consequences for the analysis of de se construals of attitude reports. A well known descriptive generalization due to Morgan (1970) is that when an attitude predicate embeds a controlled complement it obligatorily has a de se construal whereas when an attitude predicate embeds a non-controlled complement it optionally has a de se construal. Lewis’s (1979) influential approach to de se construals requires a property analysis for the complement to the attitude predicate, which led Chierchia (1990) to the suggestion that controlled complements always denote properties whereas

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3This approach may also provide an interesting lens through which to analyze the phenomenon of embedded imperatives. (See Medeiros 2015 and reference therein.) Of particular note is Korean, which grammatically distinguishes three different kinds of jussive clauses (promissives, imperatives, and exhortatives), all of which can be embedded (Pak et al. 2007). The imperative/promissive distinction maps onto the public/private distinction proposed here, and the exhortative category (used to encode joint speaker-addressee action as in Let’s go!) may suggest that an even finer-grained typology is needed.
non-controlled complements optionally denote properties, when the right conditions are met. This suggestion contradicts (16). However, there are several approaches to de se construals on the market (see Maier 2011 for discussion), and not all of them entail a property analysis of the complement. Landau (2015), in particular, argues that the approach to de se semantics described by Percus & Sauerland (2003) can be made compatible with the view that the complement to the attitude predicate denotes a proposition. Consequently, the distribution of de se construals need not correlate with the property/proposition distinction, and so the proposed correlation in (16) remains viable.

5. **Independent support**

5.1 **The cross-linguistic picture**

One piece of independent support for the coercion approach to non-controlled complements to intend — and a central reason why Perlmutter first proposed a version of it in his 1968 dissertation — is that in some languages, non-controlled complements to intend are ungrammatical. In particular, Perlmutter presents the following data from Serbo-Croatian. (17a) illustrates that the Serbo-Croatian equivalent of intend admits controlled complements and (17b) illustrates that it does not admit non-controlled complements.

(17) a. Namjeravam da idem.
   intend.1SG.PRES DA go.1SG.PRES
   ‘I intend that I go.’

b. *Namjeravam da Ana ide.
   intend.1SG.PRES DA Ana go.3SG.PRES
   Intended: ‘I intend that Ana go.’ (Perlmutter 1968:84–85)

We can make sense of these facts in terms of cross-linguistic variation in the availability of the coerced causative predicate. In fact, even internally to English, some of the “commitment” predicates listed in (11) above exhibit variation in their tolerance for non-controlled complements. In particular, examples like (18) with try are well known to be unacceptable or marginal in standard English but acceptable in Ozark English (Chomsky & Lasnik 1977). To the extent that it is acceptable in standard English, it has exactly the kind of meaning predicted by the coercion analysis, namely “I tried to bring it about that he go.”

(18) %/?I tried for him to go.

Although it remains to be determined why different languages and dialects — as well as different predicates within particular languages — should vary in this way, we can model this point of variation in terms of the (non-)availability of causative coercion.
5.2 Intending and wanting compared

A piece of support for another dimension of the proposal comes from a comparison between intend and want. In particular, based on data like (19), want has been argue to have a comparative semantics (Villalta 2008, Anand & Hacquard 2013).

(19) a. John wants to leave more than Bill does.
   b. John wants very much to leave.

By contrast, intend does not participate in these kinds of degree constructions, as illustrated in (20).

(20) a. #John intends to leave more than Bill does.
   b. #John intends very much to leave.

The unacceptability of the sentences in (20) is accurately captured on the proposed semantics for intend, repeated in (21): a property is either on one’s Private To-Do List or it is not; there is no room for gradability.

(21) \[
\text{[intend]} = \lambda P_{(st)} \lambda x. P \in \text{PrivTDL}(x)
\]

6. Other kinds of control predicates

6.1 Control-flexible predicates

In contrast with intention, desire and belief do not involve commitment to action, so I take it that the basic denotations for want and believe respectively involve selection for a proposition, as in (22a–b). The denotations in (22) are suitable for sentences like (23) wherein want and believe combine with complements that have an overt embedded subject: no coercion is involved here and so there is no causation semantics. (23a) does not mean that John wants to bring it about that Bill leave, nor does (23b) mean that John believes he’ll bring it about that Bill will leave.

(22) a. \[
\text{[want]} = \lambda P_{(st)} \lambda x. \ldots
\]
   b. \[
\text{[believe]} = \lambda P_{(st)} \lambda x. \ldots
\]

(23) a. John wants Bill to leave.
   b. John believes that Bill will leave.

But want can also combine with a controlled complement, as in (24a), and in some languages like Italian, believe can do so as well, as in (24b).

(24) a. John wants to be tall.
Maintaining the view that controlled complements are uniformly property-denoting, I propose that what happens here is another kind of coercion, whereby the predicate type-shifts in a way that results in a control semantics along the lines of Chierchia 1984, Dowty 1985: the predicate identifies its own external argument with the unsaturated argument of its complement. For example, if (25a) is the basic meaning of believe, then its type-shifted variant would be that in (25b): it recycles the basic meaning of believe by plugging in the subject argument for the unsaturated argument in the complement.\footnote{A question left unanswered by this approach is why controlled complements to control-flexible predicates should have an obligatory de se construal: see the discussion in the final paragraph of section 4 above.}

\begin{equation}
\begin{aligned}
\text{a. } & \left[\text{believe}\right]^w = \lambda p x. \forall w' \in \text{Acc}_{\text{doxastic}}(w, x): p(w') = 1 \\
\text{b. } & \left[\text{believe}'\right]^w = \lambda P x. \left[\text{believe}\right](P(x))(x)
\end{aligned}
\end{equation}

\subsection{Control-rigid predicates}

There is an outstanding puzzle. If this paper’s reasoning is on the right track, then predicates whose semantics demands a property-denoting complement should always be able to coerce a property meaning like intend can. But in fact, not all predicates do so with equal facility: as already mentioned above, try does so only in some varieties of English (26b). Furthermore, object-control predicates are yet further degraded (26c), and aspectual predicates like begin (26d) and evaluative predicates like be stupid (26e) categorically resist overt embedded subjects.

\begin{equation}
\begin{aligned}
\text{a. } & \text{John intended for Bill to leave. } [ = \text{John intended to bring it about that Bill leave.}] \\
\text{b. } & \%\text{John tried for Bill to leave. } [ = \text{John tried to bring it about that Bill leave.}] \\
\text{c. } & ??\text{John persuaded Mary for Bill to leave. } [ = \text{John persuaded Mary to bring it about that Bill leave.}] \\
\text{d. } & \*\text{John began for Bill to leave. } [\text{Intended meaning: John began to bring it about that Bill leave.}] \\
\text{e. } & \*\text{John was stupid for Bill to leave. } [\text{Intended meaning: John was stupid to bring it about that Bill leave.}] 
\end{aligned}
\end{equation}

Preliminary cross-linguistic evidence suggests that this patterning is not an accident of English. Taking want, try and begin as exemplars of predicates that in English fully accept, variably accept, and fully reject overt embedded subjects respectively, the table in (27) summarizes relevant data from French, Mandarin, Greek, Hebrew and Spanish. In all of these languages, it is possible to embed an overt subject under ‘want’ (via finite complementation in the case of French, Greek, Hebrew, and Spanish). As for try, some
languages seem to tolerate embedded subjects and others do not. Finally, *begin* rejects overt embedded subjects in all these languages.

(27) Crosslinguistic availability of overt embedded subjects

<table>
<thead>
<tr>
<th></th>
<th>English</th>
<th>French</th>
<th>Mandarin</th>
<th>Greek</th>
<th>Hebrew</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>want</em></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><em>try</em></td>
<td>%</td>
<td>*</td>
<td>*</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><em>begin</em></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

The stability of these predicates’ behavior across languages that are quite diverse in terms of how their grammars treat embedded clauses suggests a semantic source for the facts rather than something based on morphosyntactic properties. Ultimately, we would like to be able to explain the differences among those predicates as a function of their lexical semantics.

7. Conclusion

The central proposal of this paper is that imperative clauses and object to *intend* both involve commitment to action and consequently both denote properties. Because of this, when *intend* combines with a proposition-denoting complement, coercion obtains, resulting in the characteristic causative flavor of sentences like *John intended for Bill to leave*, wherein the matrix subject controls the complement by being interpreted as the causer of the event described by that complement. I furthermore suggested that this same analysis is warranted for the entire class of what Sag & Pollard (1991) call COMMITMENT predicates which include verbs like *try*, *decide*, and *promise*. As discussed in the penultimate section, an outstanding question for further investigation is why coercion is unavailable for some classes of control predicates including the aspectual class and the evaluative class.

References


Chierchia, Gennaro. 1990. Anaphora and attitudes *de se*. In *Semantics and contextual

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5For judgments, thanks go to Karlos Arregi (Spanish), Itamar Francez (Hebrew), Valentine Hacquard (French). For English, Greek and Mandarin, see Grano 2012, 2015a and references therein.


Grano, Thomas. 2015b. The logic of intention reports. Ms., Indiana University.


Panther, Klaus-Uwe, & Klaus-Michael Köpke. 1993. A cognitive approach to obligatory


