PRO as a lambda operator

Background Mainstream syntactic approaches to control (see, e.g., Landau 2000) hold that obligatorily controlled PRO is semantically an individual variable with a largely syntactically constrained choice of antecedent, subject to binding constraints (Chomsky 1980) or movement constraints (Hornstein 1999). Semantic approaches (back to Jackendoff 1972) hold that PRO essentially corresponds to an unsaturated argument position. The denotation of the argument is resolved in a relation with the matrix verb on the basis of some semantic process of argument sharing. The syntactic approach naturally leads to the idea that control infinitives are CPs that map to propositions (1); control infinitives in the semantic approach, on the other hand, are vPs that map to properties (2) (e.g., Chierchia 1989). In this talk, we provide novel evidence in favor of a mixed approach, under which control infinitives are CPs that map to properties. The evidence is drawn from previously unobserved behavior of wh-subjects in modal existential wh-constructions.

Proposal The main claim of this talk is that PRO reduces to a lambda-operator (Λ) which binds the closest argument variable, see (3). This has two direct consequences: (i) control infinitives map to properties rather than propositions and (ii) control infinitives are CPs, i.e. standard operator-hosting structures.

Evidence The subject of (typically infinitival) modal existential wh-constructions (MECs; Grosu 2004) is an obligatorily controlled PRO, (4). In a number of languages (e.g. Spanish, Portuguese, Hebrew) PRO can be avoided iff (i) the MEC is in the subjunctive (rather than in the infinitive) and (ii) the wh-word coincides with the embedded subject; see (5). The crucial observation is that *only wh-subjects* can replace PRO, non-wh-subjects are ruled out, even if the subjunctive is used, see (6). A comparable restriction can be found in Hungarian and Czech, see (7), in which the empty subject of subjunctive MECs is obligatorily controlled (7a), unless the subject is the wh-word (7b). These observations lead to the following **generalization:** *the MEC subject is disjoint from the matrix subject iff the MEC subject coincides with the wh-operator.* In other words, wh-subjects and PROs are in complementary distribution.

Account Under the present proposal PRO is semantically indistinguishable from the wh-subject (assuming that wh-words map to lambdas and contribute domain restriction presuppositions; Heim & Kratzer 1998): both abstract over the closest argument variable. This derives their complementary distribution. Non-wh-subjects are not allowed, even if they are operator-like (such as quantifiers), since they can never map to lambdas only. The matrix verb is decomposed into two heads (following Pancheva-Izvorski 2000, and in line with Kayne's 1993 decomposition of HAVE)—AT and BE (9), whose meaning we formulate in terms of event semantics (à la Ramchand 2008). AT comes in two flavors: AT_{PRO} (8a), selecting an ordinary PRO-abstract ($\approx$ Spanish infinitive), and AT_{wh} (8b), selecting the wh-abstract ($\approx$ Spanish subjunctive). **PRO scenario** (10): AT_{PRO} takes the control infinitive (property derived by PRO-abstraction) as its first argument and the controller as its second argument, identifying it with the embedded subject and thus executing control in semantics. After that wh-movement takes place, triggering abstraction, and the result is fed into BE, a predicate which existentially closes off the variable introduced by the wh-word. **WH scenario** (11): AT_{wh} takes the control infinitive, derived by wh-abstraction (which replaces the PRO abstraction). This time, the external argument of AT is not identified with the embedded subject, rather, the abstraction over the variable is passed over to a higher level, AtP, which is again selected by BE. Examples of the derived truth conditions are given in (12) and (13) for (4) and (5) respectively. Finally, we will show that there is more (cross-linguistic) variation related to the AT head: Russian AT_{wh} blocks the external argument, disallowing matrix subjects disjoint from wh-subjects, (14); Czech and Slovenian lack AT altogether, resulting in a raising structure.

(1) $\{\text{ARG}_i\ \text{V}_{cont}\}\ [_{\text{CP}}\ \text{PRO}_i\ \text{V}_{inf}\ (\text{OBJ})]$ $\quad \text{CP} \rightsquigarrow p \in D_{\langle s,t\rangle}$

(2) $\{\text{ARG}\ \text{V}_{cont}\}\ [_{\text{vP}}\ \text{V}_{inf}\ (\text{OBJ})]\ /\ \text{ARG}(\text{V}_{inf}) = \text{ARG}(\text{V}_{cont})$ $\quad \text{vP} \rightsquigarrow P \in D_{\langle e,t\rangle}$

(3) $\{\text{ARG}\ \text{V}_{cont}\}\ [_{\text{CP}}\ \Lambda_i\ [_{\text{vP}}\ \text{t}_i\ \text{V}_{inf}\ (\text{OBJ})]]\ /\ i = \text{ARG}(\text{V}_{cont})$ $\quad \text{CP} \rightsquigarrow P \in D_{\langle e,t\rangle}$

(4) Tienes [MEC con qué escribir]?
have:2SG with what write:INF
'Do **you** have anything with which {**you/*I/*one**} can write?' *Spanish*

(5) No tengo [MEC quién me { ayude /* ayudar}].
NEG have:1SG who me:DAT help:SUBJ.3SG / help:INF
'**I** don't have anyone **who** can help me.' *Spanish*

(6) *No tengo qué leas.
NEG have:1SG what read:SUBJ.2SG
'**I** don't have anything that **you** could read.' *Spanish*

(7) a. Péter van [MEC (* Anna) kit küldjön a postára].
Peter is (Ann) whom send:SUBJ.3SG the post.office.to
'**Peter**$_i$ has someone who {**he**$_i$**/*Anna**} can send to the post office.'
b. Nekem van [MEC ki elmenjen a postára].
I:DAT be:IMPERS who:NOM go:SUBJ.3SG the post.office.to
'**I** have nobody **who** could go to the post office.' *Hungarian*

(8) a. $\text{AT}_{PRO} \rightsquigarrow \lambda P_{\langle e,t\rangle}\lambda x_e\lambda e_s[\text{AT}(e) \wedge \theta(e) = x \wedge P(x)]$
b. $\text{AT}_{wh} \rightsquigarrow \lambda P_{\langle e,t\rangle}\lambda x_e\lambda y_e\lambda e_s[\text{AT}(e) \wedge \theta(e) = x \wedge P(y)]$

(9) $\text{BE} \rightsquigarrow \lambda Q_{\langle e,st\rangle}\lambda e_s\exists e'_s\exists e''_s\exists y_e[\text{BE}(e') \wedge \theta(e') = y \wedge Q(y)(e'') \wedge e = e' \rightarrow e'']$

(10) $[_{\text{BeP}}\ \text{BE}\ [_{\text{MEC}}\ \text{wh-}\Lambda_2\ [_{\text{AtP}}\ \text{SUBJ}\ [_{\text{At}'}\ \text{AT}\ [_{\text{CP}}\ \text{PRO-}\Lambda_1\ [_{\text{vP}}\ \text{t}_1\ [_{\text{VP}}\ \ldots\ \text{t}_2\ \ldots]]]]]]]$

(11) $[_{\text{BeP}}\ \text{BE}\ [_{\text{AtP}}\ \text{SUBJ}\ [_{\text{At}'}\ \text{AT}\ [_{\text{CP}}\ \text{wh-}\Lambda_1\ [_{\text{vP}}\ \text{t}_1\ [_{\text{VP}}\ \ldots]]]]]$

(12) $(4) \rightsquigarrow \lambda e\exists e'\exists e''\exists y[\text{BE}(e') \wedge \theta(e') = y[\text{thing}(y)] \wedge \text{AT}(e'') \wedge \theta(e'') = \text{you} \wedge e = e' \rightarrow e'' \wedge \text{write.with}(\text{you}, y)]$ (question semantics ignored)
'(A set of states where) there is some y such that you have y and you can write with y.'

(13) $(5) \rightsquigarrow \lambda e\exists e'\exists e''\exists y[\text{BE}(e') \wedge \theta(e') = y[\text{human}(y)] \wedge \text{AT}(e'') \wedge \theta(e'') = \text{I} \wedge e = e' \rightarrow e'' \wedge \text{help.me}(y)]$ (negation ignored)
'(A set of states where) there is some y such that I have y and y can help me.'

(14) (* Nam) est' komu robotat'.
we:DAT be:IMPERS who:DAT work:INF
'{***We have/there is**} somebody **who** could work.' *Russian*

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