

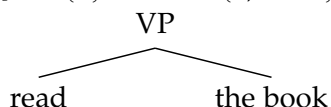
AM2 — Syntax: theories and models

Week 4: Implicit arguments, Part I (raising and control)

1 Our theory so far

Our theory states that all arguments are assigned a θ -rôle by a functional head. Properly, θ -rôle assignment is something that happens at the interface of syntax and semantics, given that the process that mediates the assignment is λ -abstraction, which is itself one of the fundamental tools of formal semantics. Consider the case of θ -rôle assignment to the subject by v . We begin by looking at the output of the previous derivational step, which has constructed a VP (for the sake of this exercise, ignore whether the verb can be decomposed into more basic pieces). The VP is a fully saturated semantic object, whose meaning is that there is an event e of reading and *the book* is the theme of that event.

$$(1) \quad \exists e[\text{read}(e) \wedge \text{THEME}(e, \text{book})]$$

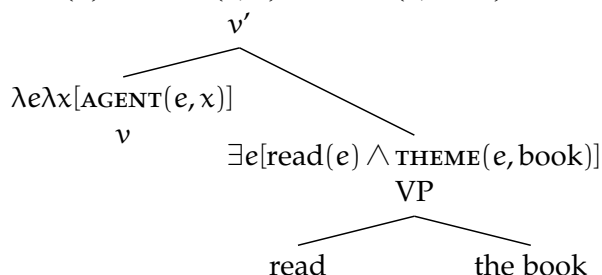


In the next derivational step, the v head introduces the external argument, which bears the θ -rôle of **AGENT**. But what does it mean to introduce a new argument? Here is where λ abstraction becomes useful. λ abstraction is simply a process that turns a saturated object into an unsaturated one. In this particular case, λ abstraction turns the VP into a constituent that requires an extra argument. Furthermore, we can specify λ abstraction to tell us precisely what kind of relation is going to hold between the required argument and the existing semantic object. Given this much, we just need to say that v is the embodiment of the kind of λ abstraction responsible for the introduction of the agent of an event. Formally, we say that

$$(2) \quad \llbracket v \rrbracket = \lambda e \lambda x [\text{AGENT}(e, x)]$$

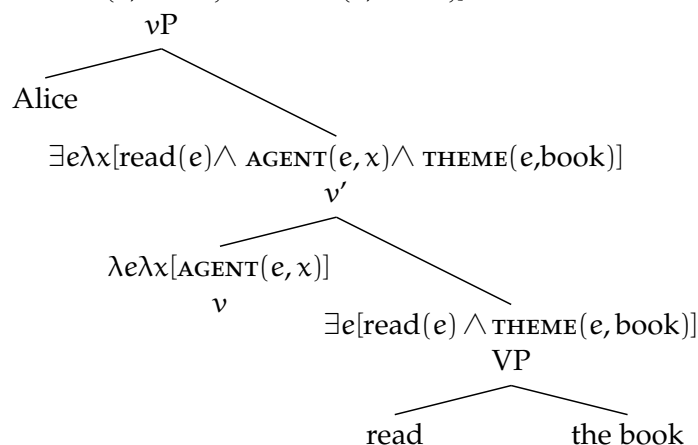
In words, v is a function that takes an event e and an individual x and returns a constituent where x is the **AGENT** of e . Upon merging v in the structure, VP provides the necessary event.

$$(3) \quad \lambda x [\text{read}(e) \wedge \text{AGENT}(e, x) \wedge \text{THEME}(e, \text{book})]$$



Finally, by merging the external argument, we saturate the λx term. The result is an expression that denotes an event of reading, the **AGENT** of which is *Alice* and the **THEME** of which is *the book*.

(4) $\exists e[\text{read}(e) \wedge \text{AGENT}(e, \text{Alice}) \wedge \text{THEME}(e, \text{book})]$



There are however, a few constructions in which either we seem to be missing an argument, or the argument in question doesn't seem to be related to the predicate from which it receives a θ -rôle. The most famous of this cases is perhaps the passive, where most of the time there is no visible AGENT. However, we can still tell that an AGENT rôle is being assigned, because passive clauses can be modified by AGENT-oriented adverbials like *on purpose*.

(5) The flowers were watered on purpose.

A different case is that of predicates that take an object only optionally —in the absence of an overt object, the interpretation is that the THEME is a weak indefinite object, roughly paraphrasable as *something*.

(6) Alice ate (\simeq Alice ate something).

Today, we are going to look at a different set of cases, in which an argument associated to an embedded clause appears in a higher clause.

2 Raising vs. control

2.1 Empirical differences

The following are examples of raising and control predicates. In both cases, the embedded clause lacks an overt subject. The position where the subject ought to be is marked with $[__]$.

- (7) Alice $\left\{ \begin{array}{l} \text{seems} \\ \text{appears} \\ \text{is likely} \\ \dots \end{array} \right\} [__] \text{ to be reading a book.} \quad \text{[raising]}$
- (8) Alice $\left\{ \begin{array}{l} \text{tried} \\ \text{wanted} \\ \text{promised} \\ \dots \end{array} \right\} [__] \text{ to read a book.} \quad \text{[control]}$

The fundamental difference between raising and control is the following: in the control cases, the higher predicate (*try, want, promise*) assigns a θ -rôle to its subject, but in the raising cases, it doesn't. Rather, in the raising cases, the θ -rôle of the higher subject is assigned by the lower predicate. There are various pieces of evidence that point towards this conclusion.

Expletives An expletive is a placeholder for an argument position that needs to be filled but which is assigned no θ -rôle. The paradigmatic case of expletives are weather predicates.

(9) It rains/snows/pours/...

All raising predicates allow a variant in which an expletive occupies the matrix subject position, while the lexically contentful subject stays in the lower clause.

(10) It $\left\{ \begin{array}{l} \text{seems} \\ \text{appears} \\ \text{is likely} \\ \dots \end{array} \right\}$ [] that Alice is reading a book. [raising]

However, this is not possible with control predicates.

(11) * It $\left\{ \begin{array}{l} \text{tried} \\ \text{wanted} \\ \text{promised} \\ \dots \end{array} \right\}$ [] that Alice reads a book. [control]

Truth-condition preservation A raising predicate allows passivization of its complement without alteration of its truth conditions, but a control predicate does not. Thus, the control predicate doesn't have the same truth conditions as *The doctor tried to examine Bob*.

(12) The book $\left\{ \begin{array}{l} \text{seems} \\ \text{appears} \\ \text{is likely} \\ \dots \end{array} \right\}$ [] to be being read (by Alice). [raising]

(13) Bob $\left\{ \begin{array}{l} \text{tried} \\ \text{wanted} \\ \text{promised} \\ \dots \end{array} \right\}$ [] to be examined (by the doctor). [control]

Selectional restrictions In raising predicates, only the embedded predicate can establish selectional restrictions on the subject. In control predicates, both the embedded and the matrix predicate impose restrictions on the subject. Thus, raising predicates allow non-human subjects if the lower predicate allows them, but control predicates do not.

(14) The tree $\left\{ \begin{array}{l} \text{seems} \\ \text{appears} \\ \text{is likely} \\ \dots \end{array} \right\}$ [] to have some ripe fruit. [raising]

(15) # The tree $\left\{ \begin{array}{l} \text{tried} \\ \text{wanted} \\ \text{promised} \\ \dots \end{array} \right\}$ [] to have some ripe fruit. [control]

Idioms The subject of a raising predicate can be part of an idiom, but the subject of a control predicate cannot.

(16) The cat $\left\{ \begin{array}{c} \text{seems} \\ \text{appears} \\ \text{is likely} \\ \dots \end{array} \right\}$ [] to be out of the bag. [raising]

“The secret has been divulged”

(17) The cat $\left\{ \begin{array}{c} \text{tried} \\ \text{wanted} \\ \text{promised} \\ \dots \end{array} \right\}$ [] to be out of the bag” [control]

≠ “The secret has been divulged”.

(18) The fat lady $\left\{ \begin{array}{c} \text{seems} \\ \text{appears} \\ \text{is likely} \\ \dots \end{array} \right\}$ [] to have sung. [raising]

“The event in question has finished”

(19) The fat lady $\left\{ \begin{array}{c} \text{tried} \\ \text{wanted} \\ \text{promised} \\ \dots \end{array} \right\}$ [] to sing” [control]

≠ “The event in question has finished”.

Subset relations Control predicates allow a reading in which the subject of the higher predicate is interpreted as a proper subset of the implicit subject of the lower predicate. This is known as *partial control* and is usually indicated by appending a + subscript to the representation of the implicit subject.

(20) Alice $\left\{ \begin{array}{c} \text{wanted} \\ \text{tried} \\ \text{promised} \\ \dots \end{array} \right\}$ []₊ to meet at noon. [control]

In contrast, raising predicates don't allow this kind of reading.

(21) * Alice $\left\{ \begin{array}{c} \text{seemed} \\ \text{appeared} \\ \text{was likely} \\ \dots \end{array} \right\}$ []₊ to meet at noon. [raising]

French clitics French has the partitive clitic *en* ‘thereof/of it’, which can be attached to a DP to indicate a partitive reading.

- (22) a. La préface de ce livre est trop longue.
the preface of this book is very long
b. La préface **en** est trop longue.
the preface thereof is very long

Raising predicates allow the implicit subject to be modified by *en*, but control predicates do not.

- (23) a. L’auteur de ce livre semble être génial.
the.author of this book seems be brilliant

- b. L'auteur semble **en** être génial.
the.author seems thereof be brilliant
- (24) a. L'auteur de ce livre prétend être génial.
the.author of this book pretends be brilliant
- b. * L'auteur prétend **en** être génial.
the.author pretends thereof be brilliant

2.2 Lists of predicates

Some raising predicates

- *Adjectival*: be about, be apt, be bound, be (un)certain, be going, be liable, be (un)likely, be set, be supposed, be (un)sure.
- *Verbal*: appear, become, begin, cease, chance, come, commence, continue, end up, fail, get, grow, happen, impress, keep on, need, persist, proceed, promise, prove, quit, resume, seem, stand, start (out), stay, stop, strike, tend, threaten, turn (out), were, wind up.
- *Modals*: can, could, ought, may, might, must, shall, should, will, would.

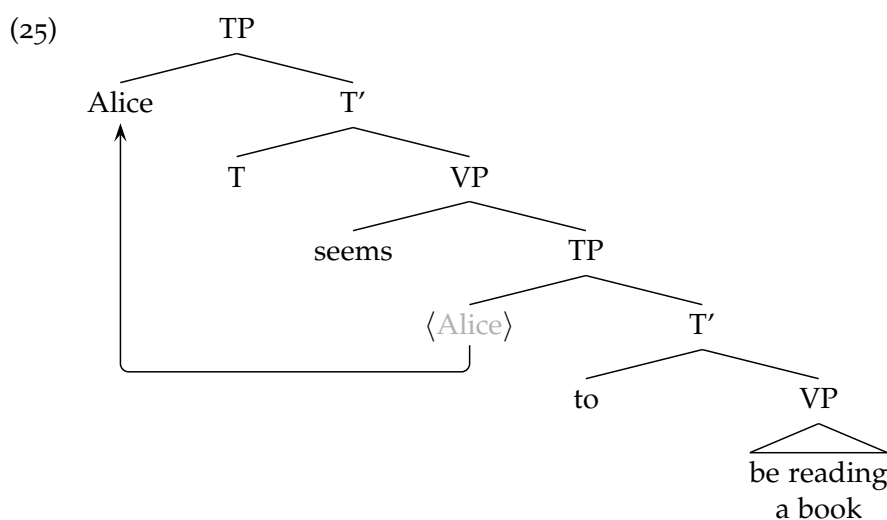
Some control predicates:

- *Adjectival*: be careful, be eager, be reluctant.
- *Verbal*: attempt, condescend, continue, dare, desire, endeavor, fail, forget, help, hope, intend, learn, manage, promise, refuse, remember, try.

3 Analysis

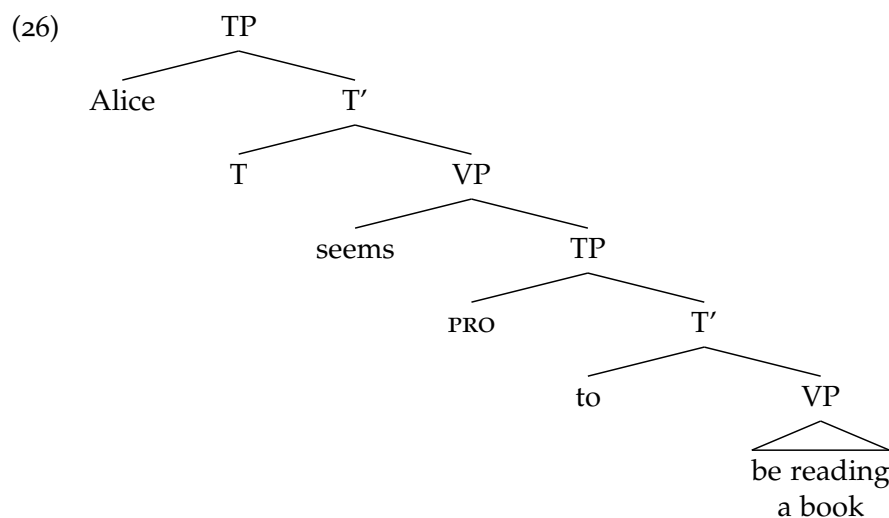
3.1 Raising

The standard analysis of raising predicates is that the implicit subject of the lower predicate is a trace/copy left behind by movement ("raising") of the higher predicate subject (in this tree, I am omitting some projections for simplicity).



3.2 Control

The control analysis is a bit more complicated. We don't really want to say that the implicit subject is a copy/trace, because then we would just be replicating the raising analysis and we wouldn't be able to account for any of the differences. The standard solution is to deny that there is any movement relation, and propose instead that the implicit subject is a silent pronoun called PRO (read either "pro" or "big pro", and not to be confused with *pro*, which is read "little pro").



4 PRO

4.1 What is PRO?

PRO is an odd element on various respects. First of all, it is obligatorily silent, even in languages like English that otherwise don't have null subject pronouns. Second, it is restricted to subject position; a PRO in object position is very ungrammatical, regardless of the language:

(27) * Alice wanted Bob to take PRO out for dinner.

A recurring question in the early years of transformational grammar was whether PRO was assigned a case. The standard answer was "no", on the grounds that non-finite predicates in English don't seem to assign case. However, evidence from other languages has changed this hypothesis. An interesting one is Icelandic. Something that you should know about Icelandic is that it allows *quirky subjects*—that is, subjects whose case is something other than nominative. These quirky cases are dependent on specific verbs.

- (28) a. { ✓ Hana / * Hún } vantaði vinnu.
 she.ACC she.NOM lacked job
 b. { ✓ Henni / * Hún } leiddist.
 she.DAT she.NOM bored
 c. { ✓ Hennar / * Hún } var getið.
 she.GEN she.NOM was mentioned

Additionally, Icelandic requires the floating quantifier *allir* 'all' to agree in case with its host.

- (29) a. Strákarnir komust allir í skóla.
 boys.NOM got all.NOM to school

- b. Strákana vantaði alla í skólann.
boys.ACC lacked all.ACC in school
- c. Strákanum leiddist öllum í skóla.
boys.DAT bored all.DAT in school
- d. Strákanna var allra getið í ræðunni.
boys.GEN was all.GEN mentioned in speech

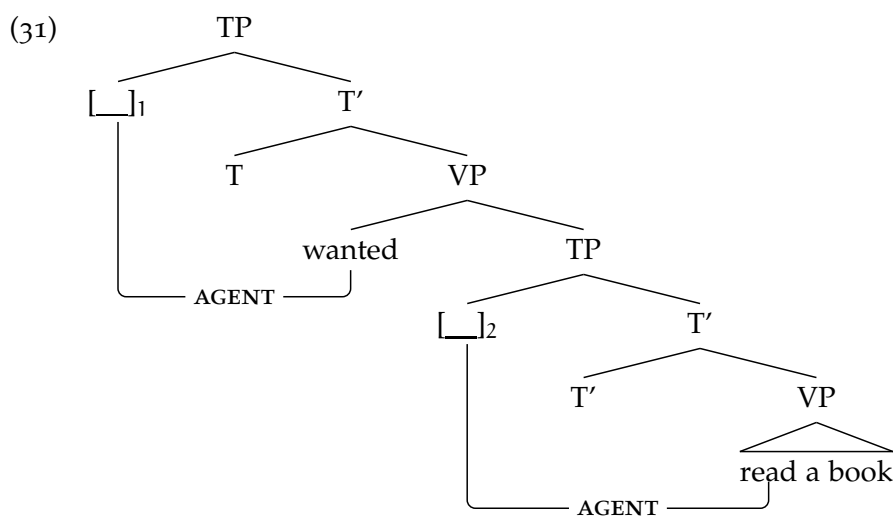
Now, if these sentences are embedded under a control verb like *hope*, the floating quantifier associated with PRO bears the corresponding quirky case. Note that the overt subject carries nominative, as *hope* doesn't assign quirky case.

- (30) a. Strákarnir vonast til að PRO komast allir í skóla.
boys.NOM hope for to get all.NOM to school
- b. Strákarnir vonast til að PRO vanta ekki alla í skólann.
boys.NOM hope for to lack not all.ACC in school
- c. Strákarnir vonast til að PRO leiðast ekki öllum í skóla.
boys.NOM hope for to bore not all.DAT in school
- d. Strákarnir vonast til að PRO verða allra getið í ræðunni.
boys.NOM hope for to be all.GEN mentioned in speech

Sigurðsson, who first point out this class of data, concludes that they indicate that PRO must be carrying whichever case is assigned to it by the embedded verb. However, this makes PRO even stranger, because now it is really like an actual pronoun, only one that is never pronounced.

4.2 Why do we need PRO?

So, why do we need something like PRO, if it is so weird? The answer goes back to earlier models of transformational grammar that included an intermediate level of D-structure between the Lexicon and Spell Out (which in those days used to be called S-structure). D-structure is a derivational point at which all θ -rôles have been assigned, but no movement operations have been performed yet. Now consider the syntax of a control sentence, where the empty argument positions are numbered just to make it easy to refer to them.



Suppose that we merge a subject in []₂. The requirements of D-structure forbid us from moving it to []₁, because []₁ is a θ position that has to be filled before movement. So, the solution is to merge PRO in []₂ and a normal DP in []₁, and then define a rule that says that the “real” subject and PRO refer to the same individual in the real world. The opposite

configuration (with PRO in []₁ and the real subject in []₂) is ungrammatical. This is not something that one can derive from deeper principles—in those classes of theories, it is something that required a stipulation to that effect.

4.3 Why not PRO?

However, many people have noticed that this kind of analysis is problematic. The main reason is that minimalist syntax has rejected the notion of D-structure, for good reasons (namely, the existence of constructions where it is necessary to move before all θ rôles have been assigned). But if there is no D-structure anymore, then there is no necessity for PRO either! In fact, some people have tried to develop analyses of control where the implicit subject is a trace/copy of the higher predicate subject, just as it is in raising sentences. The only difference between raising and control, then, relies on the fact that raising subjects only receive one θ rôle (namely, the one assigned by the embedded verb), whereas control verbs receive two.

At this point, we have reached one of the limits of current syntactic theory. On the one hand, from the point of view of our theory, there is no reason why something like PRO exists. On the other hand, several languages (including, but not limited to, English) provide pretty good evidence that something like PRO exists. If you are interested in this issue, I recommend that you read the series of papers by Idan Landau and Norbert Hornstein, where they argue in favor and against PRO respectively.

- Hornstein, Norbert. 1999. Movement and control. *Linguistic Inquiry* 30:69–96.
- Landau, Idan. 1999. Elements of control. Doctoral dissertation, MIT.
- Polinsky, Maria, and Eric Potsdam. 2002. Backward control. *Linguistic Inquiry* 33:245–282.
- Hornstein, Norbert. 2003. On control. In Hendrick (ed.) *Minimalist syntax*, 6–81. Oxford: Blackwell.
- Landau, Idan. 2003. Movement out of control. *Linguistic Inquiry* 34:471–498.
- Boeckx, Cedric, and Norbert Hornstein. 2004. Movement under control. *Linguistic Inquiry* 35:431–452.
- Boeckx, Cedric, and Norbert Hornstein. 2006a. Control in Icelandic and theories of control. *Linguistic Inquiry* 37:591–606.
- Boeckx, Cedric, and Norbert Hornstein. 2006b. The virtues of control as movement. *Syntax* 9:118–130.
- Landau, Idan. 2007. Movement-resistant aspects of control. In Davies and Dubinsky (ed.) *New horizons in the analysis of raising and control*, 293–325. Dordrecht: Springer.
- Bobaljik, Jonathan, and Idan Landau. 2009. Icelandic control is not A-movement. *Linguistic Inquiry* 40.