REFLEXIVIZATION

Topics & Goals

- Categorial grammar meets derivational syntax: a transparent theory of reflexives
- Deriving the underlying LF-representations from general principles
- Evidence for object language status of λ-binder
- *de re* - *de se* contrasts with reflexive ECM subject

1. TRANSPARENT REFLEXIVES

(1) Mary praised *herself*.

(2) a. *Principle A*
Reflexive pronouns must be bound in their minimal governing category.
b. *Binding*
α binds β iff (i) α is a λ-binder, (ii) α and β are co-indexed, and (iii) α c-commands β.

(3) *Some puzzles for Binding Theoretic analyses of reflexives*
a. Transparent morphemes should be assigned lexical meanings. What is contribution of *self*?
b. Why do anaphors require antecedents? (Ideally, answer is related to answer to (3)a).
c. Locality: why does the domain of reflexivization by and large match A-movement?
d. What blocks multiple reflexivazation (**She showed herself to herself*)?

Reflexive anaphors have been analyzed as (lecture notes by Giorgos Spathas, 2017)

(4) a. ***arity reducers*** that turn two-place relations into one-place predicates (*Categorial Grammar:* Bach & Partee 1980; Steedman 1985; Keenan 1987/1989; Szabolcsi 1987/1989; non-categorial treatments: Schlenker 2005; Lechner 2007/2012; Reuland 2011; Spathas 2010; i.a.)
b. ***individual variables*** whose syntax forces them to be obligatorily bound (Chomsky 1981; Heim and Kratzer 1998; Büring 2005; i.a.)
c. items imposing an identity (or part of) ***presupposition*** on two individuals (Reinhart and Reuland 1993; Reuland 2001; Dechaine and Wiltschko 2012; Patel-Grosz 2013; Sauerland 2013; Ahn 2015; McKillen 2016)

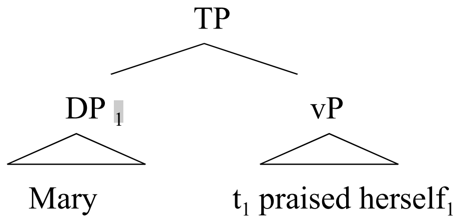
(5) Mary praised *herself*.
☞ a. $[\![\text{(her)self}]\!]_{<<e,<e,t>>,<e,t>>}$ = $\lambda R_{<e,<e,t>>}.\lambda x.R(x)(x)$ (*self* as arity reducer)
b. $[\![\text{(her)self}_1]\!]^g{}_e$ = $g(1)$ (*self* as designated variable)
c. $[\![\text{(her)self}]\!]_{<<e,<e,t>>,<e,<e,t>>>}$ = $\lambda R_{<e,<e,t>>}.\lambda x.\lambda y.R(x)(x)\text{: } x = y$ (':' marks presupposition)

Spathas (2017): Languages vary w.r.t. (5).

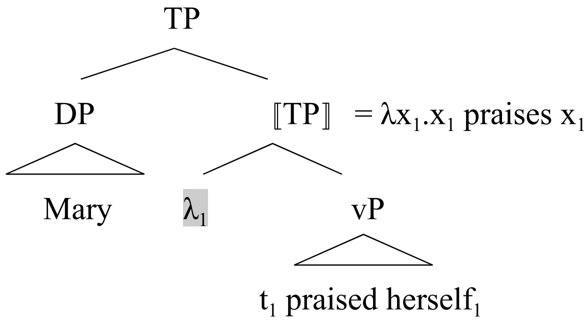
(6) *Transparent reflexivization* (Lechner 2007, 2012)
a. Reflexives are arity reducers in English
b. The logical syntax underlying the arity reduction operator *self* is produced by principles of natural language syntax.

(7) *Assumptions*
a. The pronominal part of the anaphor (*her* in *herself* ...) expresses presupposition that ensures Φ-feature match with the antecedent (Cooper 1983; Heim 2005; Sauerland 2005)
b. Movement creates λ-abstract over the movement trace (Heim & Kratzer 1998)
c. Index Reanalysis ((8))

(8) a. Mary [$_{vP}$ t_1 praised herself$_1$]



b.

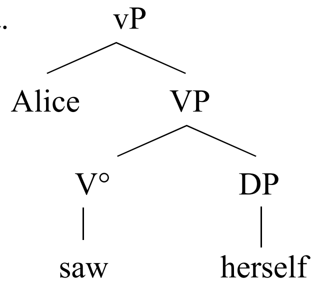


1.1. Transitive Contexts

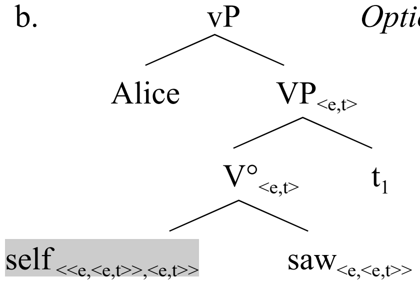
self incorporates ((10)b) or covertly raises ((10)a; *anaphor cliticization;* Chomsky 1992; Pica 1987; Safir 1998).

(9) Alice saw herself.

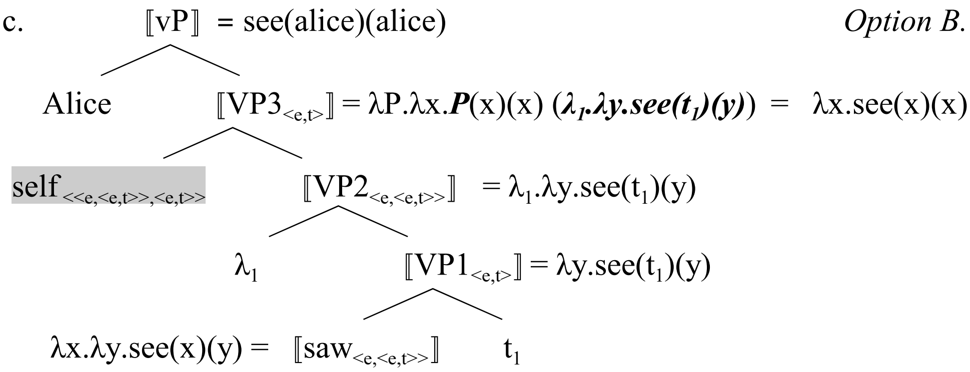
(10) a.



b. *Option A. incorporation of 'self' (trace semantically inert)*



c. *Option B. VP-adjunction of 'self'*



(11) *Observation*: Reflexivization applies ***before*** the antecedent joins the semantic computation. Thus, the order in which Functional Application combines the items is *self* ≺ antecedent.

1.2. Double object constructions

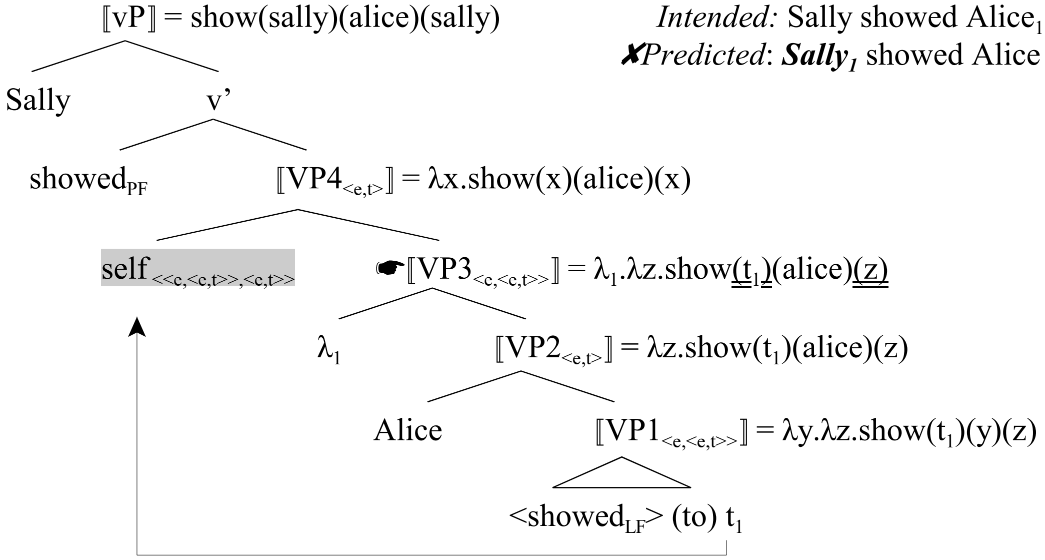
Observation: Binding among internal arguments ((12)) poses complications for reflexivization analysis (Szabolcsi 1987; for Büring 2005: 43f ditransitives represent an argument against ?).

(12) Sally showed ***Alice*** to ***herself***.

(13) *1st attempt: 'self'-movement to lowest possible landing site*

Intended: Sally showed Alice$_1$ to herself$_1$

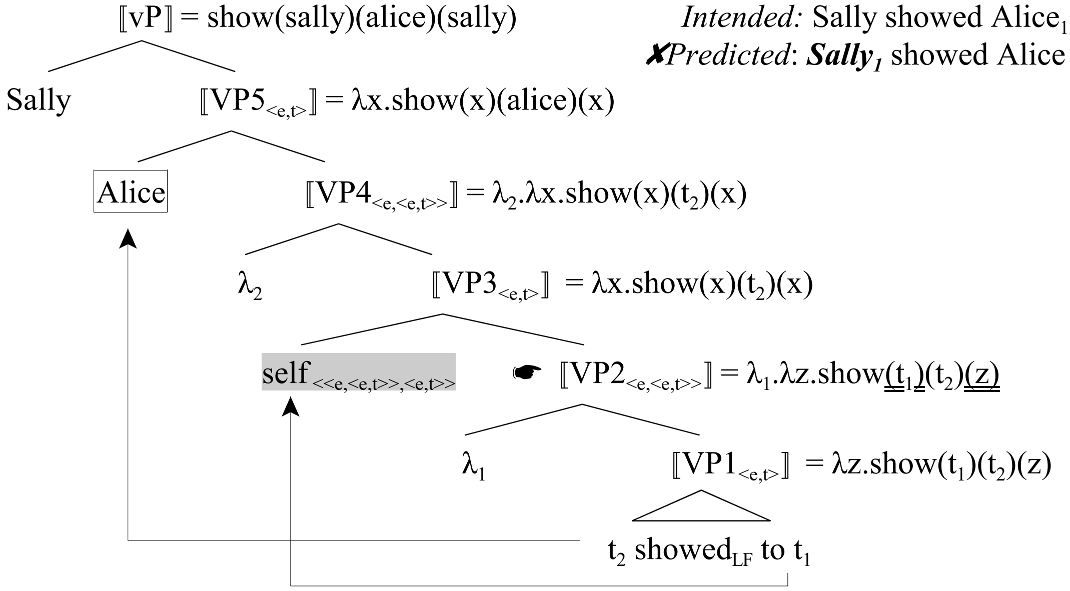
✘*Predicted*: ***Sally$_1$*** showed Alice to ***herself$_1$***



(14) *2nd attempt: 'self'-movement and movement of antecedent below subject*

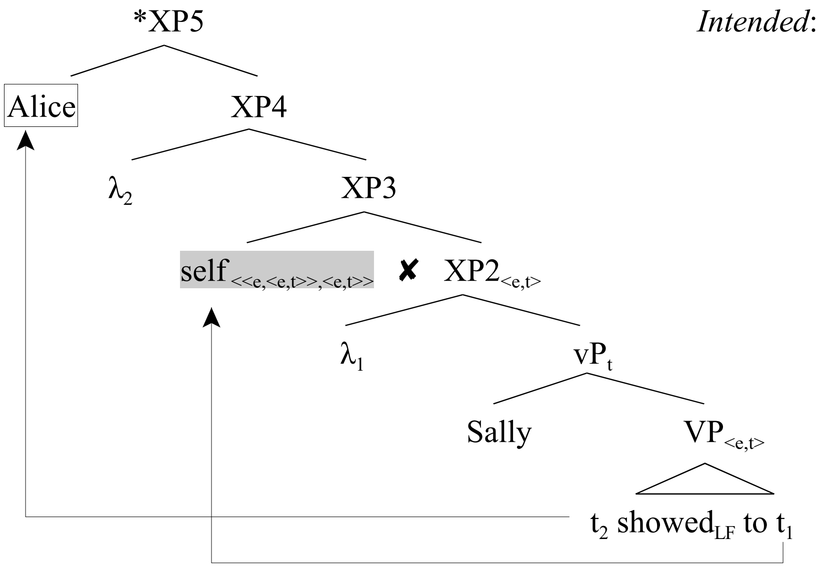
Intended: Sally showed Alice$_1$ to herself$_1$

✘*Predicted*: ***Sally$_1$*** showed Alice to ***herself$_1$***



(15) *3rd attempt: movement lands above the subject*

Intended: Sally showed Alice$_1$ to herself$_1$



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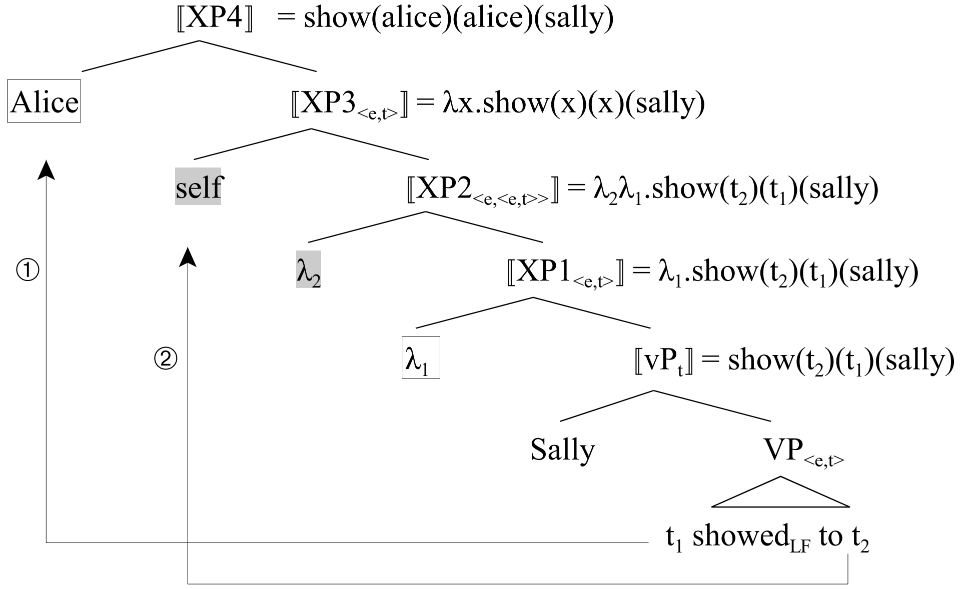
(16) *Successful deriviation of 'Sally showed Alice$_1$ to herself$_1$' in terms of* ***Parasitic Scope***



1.3. Interlude: more on Parasitic scope

Movement creates derived *one-place* predicates (von Stechow 1993; Heim & Kratzer 1998; i.a.):

(17) a. Sally read every book$_{<<e,t>,t>}$
b. LF: every book$_{<<e,t>,t>}$ [$_{<e,t>}$ λ_1 Sally read t_1]

In contexts where α combines with a *two-place* relation, α lands inbetween a previously moved β and its λ-binder (Sternefeld 1998; Nissenbaum 1998; Beck & Sauerland 2000; Bhatt & Takahashi 2007; Kennedy 2009).

(18) a. [$\alpha_{<\sigma,<\tau,t>>,<\varepsilon,t>>}$ ... β_ε]
b. *Move β*: [$\boxed{\beta_\varepsilon}$ [$_{<\tau,t>}$ $\boxed{\lambda_\beta}$ ... [$\alpha_{<\sigma,<\tau,t>>,<\varepsilon,t>>}$ ... $t_{\beta,\tau}$]]]
c. *Move α*: [$\boxed{\beta_\varepsilon}$ [$\alpha_{<\sigma,<\tau,t>>,<\varepsilon,t>>}$ [$_{<\sigma,<\tau,t>>}$ λ_α [$_{<\tau,t>}$ $\boxed{\lambda_\beta}$ ... [$t_{\alpha,\sigma}$ ... $t_{\beta,\tau}$]]]]]

Barker's (2007) analysis of *internal*, bound interpretation of *different* (Beck 2000; Carlson 1987; i.a.).

(19) a. All the boys read a *different* book.
b. $\forall x,y[\text{boy}(x) \wedge \text{boy}(y) \wedge x \neq y \rightarrow \iota z.\text{book}(z) \wedge \text{read}(z)(x) \neq \iota z.\text{book}(z) \wedge \text{read}(z)(y)]$
'No two boys read the same book.'

different combines with two-place relation between property choice functions and predicates.

(20) *Choice Function, property version (Winter 2001; Reinhart 2006)*
f is a *choice function* (f_{choice}) iff for any non-empty X: f(X) ⊆ X

(21) ⟦**different**⟧ = $\lambda F_{<<et,et>,<et>>}.\lambda X_e \forall f_{\text{choice}} \forall x_e,y_e[x \leq_p X \wedge y \leq_p X \wedge F(f)(x) \wedge F(f)(y) \rightarrow x = y]]$

(22) ***Parastic Scope derivation of (19)a***

a. All the boys read a different book. [Barker 2007: (55)]

b. *Step 1: move antecedent*
[$\boxed{\text{all the boys}}$ [$_{<et>}$ $\boxed{\lambda_1}$ [$t_{1,e}$ read a [different book]]]]

c. *Step 2: move 'different'*
[$\boxed{\text{all the boys}}$ [different [$_{<<et,et>,<et>>}$ λ_2 [$_{<et>}$ $\boxed{\lambda_1}$ [$t_{1,e}$ read a [$t_{2,<et,et>}$ book]]]]]]

d. $\forall f \forall x,y[x \leq_p {*}\text{boy} \wedge y \leq_p {*}\text{boy} \wedge \text{read}(a(f(\text{book})))(x) \wedge \text{read}(a(f(\text{book})))(y)] \rightarrow x = y]]$
'No two boys read the same book.'

1.4. DERIVING THE C-COMMAND CONDITION OF CONDITION A

Assumption (Lechner 2007, 2012): Parasitic scope is regulated by syntactic principles.

(23) ***Syntactic requirement: move higher node first***
 a. Feature on functional head attracts antecedent and reflexive ('tucking-in'; Richards 2001).
 b. Movement economy dictates order of movements and functionally determines landing site: higher node moves first, second movement tucks in.

NB: The same results can be obtained without features by using the Strict Cycle (Lechner 2012).

(24) *Deriving Parasitic Scope by tucking-in (?)*

Step 1 (move antecedent): $\boxed{\text{Alice}_1}$ [X°$_{[A]}$ [John [t_1 showed to self]]]]

Step 2 (Index re-analysis): $\boxed{\text{Alice}}$ [$\boxed{\lambda_1}$ [X°$_{[A]}$ [John [t_1 showed to self]]]]

Step 3 (*self*-movement): $\boxed{\text{Alice}}$ [self$_2$ [$\boxed{\lambda_1}$ [X°$_{[A]}$ [John [t_1 showed to t_2]]]]]]

Step 4 (Index re-analysis): $\boxed{\text{Alice}}$ [self [λ_2 [$\boxed{\lambda_1}$ [X°$_{[A]}$ [John [t_1 showed to t_2]]]]]]

(25) ***Semantic requirement: move antecedent first***
Step 2: [$\boxed{\text{antecedent}_e}$ [$_{<e,t>}$ $\boxed{\lambda_1}$ [... t_1 ... reflexive ...]]]
Step 4: [$\boxed{\text{antecedent}_e}$ [self$_{<<e,<e,t>>,<e,t>>}$ [$_{<e,<e,t>>}$ λ_2 [$_{<e,t>}$ $\boxed{\lambda_1}$ [... t_1 ... t_2 ...]]]]]

(26) ***Corollary***: (23) and (25) derive the c-command restriction of Condition A.

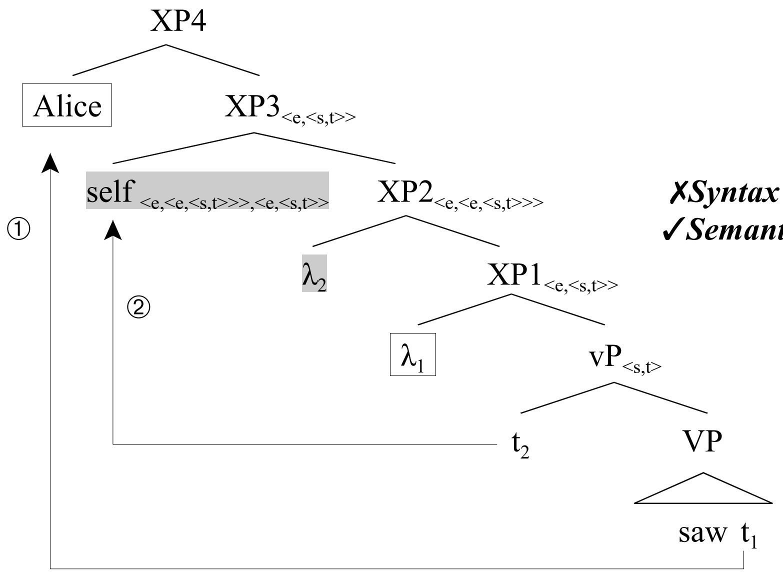
(27) *Sheself/herself saw Alice.

For expository convenience, I will switch to simpler transitive sentences, which also implicate anaphor movement - once the event argument (or the situation/world argument) is factored in:

(28) $[\![\textbf{self}]\!] = \lambda R_{<e,<e,<s,t>>>}.\lambda x.\lambda e.R(x)(x)(e)$

Derivation (29) violates the syntactic requirement that higher nodes are attracted first.

(29)

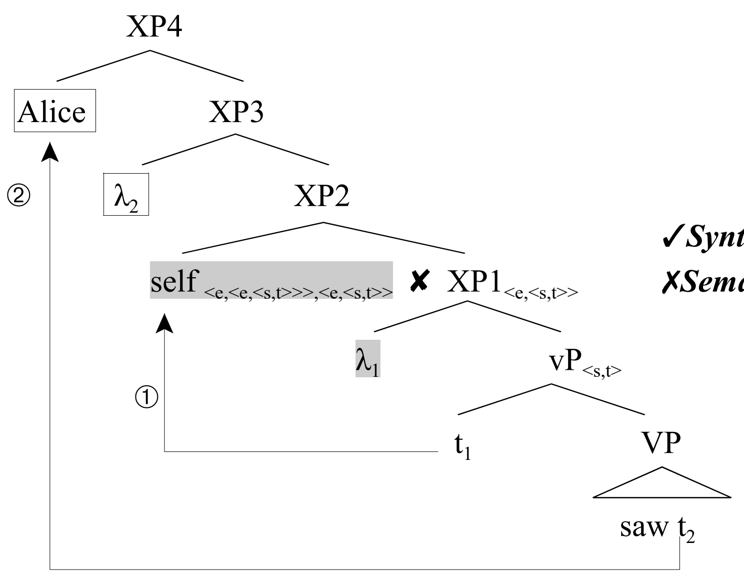


**She/herself saw Alice*

✗***Syntax*** (violates Shortest)
✓***Semantics***

Derivation (30) is consistent with movement calculus, but the representation is not interpretable.

(30) *She/herself saw Alice*



✓Syntax
✗Semantics (type mismatch)

(31) ***Parasitic Scope Generalization (PSG)***
In environments where movement of α provides the semantic context for type driven movement of β, the base position of α c-commands the base position of β.

Problem. The syntactic requirement should be suspended in relative clause. This is incorrect.

(32) *I met the man OP_2 ***he/himself***$_{NOM}$ liked t_2.
a. $[_{<e,t>}$ (OP) $[\lambda_2$ [self liked t_2]] (*self*-movement)
b. $[_{<e,t>}$ self $[_{<e,<e,t>>}$ λ_1 $[\lambda_2$ [t_1 liked t_2]]]]] (abstraction by silent relative pronoun)

Analysis. English reflexives are not arity reducers after all, but introduce identity condition by presupposition. Then, the whole relative clause is of the wrong type (<e,et>) to combine with the head noun.

(33) $[\![\text{self}]\!]_{<<e,<e,t>>,<e,<e,t>>>}$ = $\lambda R_{<e,<e,t>>}.\lambda x.\lambda y.R(x)(x)\text{: } x = y$

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2. Some empirical consequences

2.1. Locality

Locality of anaphor licensing matches that of quantifier scope.

Finite clauses. Scope and binding must not cross finite clause boundaries.

(34) a. #***Someone*** said [that ***every man*** is married to Sue]. ($\exists \succ \forall$ / *$\forall \succ \exists$)
b. #***Someone*** said [that Sue is married to ***every*** **man**]. ($\exists \succ \forall$ / *$\forall \succ \exists$)

(35) a. ****John*** said [that ***himself*** saw Mary].
b. ****John*** said [that Mary saw ***himself***].

Raising to subject. Raising subjects can be within the scope of QPs inside raising complements, experiencers cannot. Raising subjects can bind into raising complement, experiencers cannot.

(36) a. #John seems to ***someone*** [t to be likely to die in ***every battle***]. ($\exists \succ \forall$ / *$\forall \succ \exists$)
b. ***A soldier*** seems to John [t to be likely to die in ***every battle***]. ($\exists \succ \forall$ / $\forall \succ \exists$) [Fox 2000]

(37) a. *Mary seemed to ***John*** [to like ***himself***].
b. ***John*** seemed to Mary [t to like ***himself***].

Raising to object (ECM). ECM subjects can outscope QPs and be bound by antecedent in matrix clause. Neither option is available for the matrix subject.

(38) a. ***Somebody*** believed [***every man*** to be married to Mary] ($\exists \succ \forall$ / $\forall \succ \exists$)
b. #***Someone*** believed [Mary to be married to ***every man***]. ($\exists \succ \forall$ / $*\forall \succ \exists$)

(39) a. ***John*** believed [***himself*** to win].
b. ****John*** believed Mary [t to have seen ***himself***].

Subject control. Contexts are uninformative, because presence of PRO masks binding options ((40)a/b from Kennedy 1997; Moulton 2007; Truswell 2012; Wurmbrand 2015, to appear).

(40) a. ***At least one American tourist***$_1$ expects PRO$_1$ to visit ***every European*** country this year.
b. ***At least one American tourist***$_1$ hopes PRO$_1$ to visit ***every European*** country this year.
c. ***At least one American tourist***$_1$ hopes PRO$_1$ to marry ***every man*** in this group.
d. ***A different woman***$_1$ promised PRO$_1$ to marry ***every man*** in this group.
(throughout: $\exists \succ \forall / \forall \succ \exists$)

(41) a. ***John***$_1$ expected/hoped/promised [PRO$_1$ to vote for ***himself***$_1$]
b. $[_{<e,<s,t>>} \lambda_2 [_{vP, <s,t>} t_{2, PRO}$ vote for himself$_1$]]
c. [***self*** $[_{<e,<e,<s,t>>>} \lambda_1 [\lambda_2 [_{vP, <s,t>} t_{2, PRO}$ vote for himself$_1$]]
d. $[\![(41)c]\!] = \lambda x.\lambda e.x$ votes_for x in w

Object control & scope. For many speakers, the embedded universals may not scope over the indefinite in any of the object control complements in (42) ((42)d from Wurmbrand to appear, fn. 7).

(42) a. We persuaded ***at least one American tourist***$_1$ [PRO$_1$ to visit ***every European*** country this year].
b. #We asked ***at least one woman***$_1$ [PRO$_1$ to marry ***every man*** in this group].
c. #We convinced ***a different woman***$_1$ [PRO$_1$ to marry ***every man*** in this group].
d. ***Someone*** has persuaded Mary$_1$ [PRO$_1$ to read ***every book*** on the reading list].
(throughout: $\exists \succ \forall / *\forall \succ \exists$)

Object control & reflexives. Reflexivization across object control predicates is impossible.

(43) **John*$_1$ promised/asked/convinced us [PRO$_2$ to vote for ***himself***$_1$].

Double object constructions I. DO can be bound by subject, DO can scope across subject.

(44) a. Mary showed ***John***$_1$ ***himself***$_1$ in the mirror.
b. ***John***$_1$ showed Mary ***himself***$_1$ in the mirror.

(45) a. ***A different*** child gave me ***every book***. ($\exists \succ \forall$ / $\forall \succ \exists$)
b. ***At least two judges*** awarded me ***every medal.*** ($\exists_2 \succ \forall$ / $\forall \succ \exists_2$)

Double object constructions II. In the double object frame, IO - DO orders are scope rigid (Barss and Lasnik 1987; Bruening 2001; Lechner 2009). Thus, QR is order preserving.

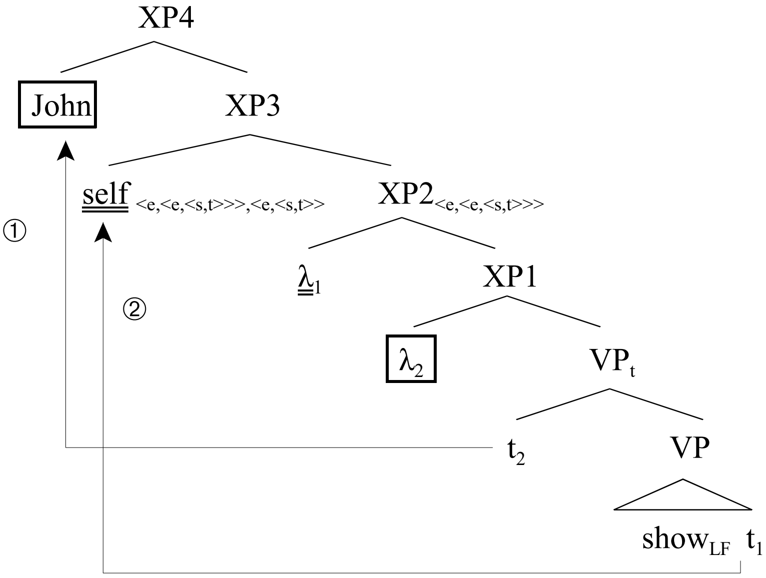
(46) a. I gave ***a child each doll***. ($\exists \succ \forall$ / $*\forall \succ \exists$)
b. The judges awarded ***a (#different) athlete every medal***. ($\exists \succ \forall$ / $*\forall \succ \exists$)

(47) a. [IO$_1$ ... [DO$_2$ ... [t$_1$ ... [t$_2$ ....]]]]
b. *[DO$_2$... [IO$_1$ ... [t$_1$ ... [t$_2$ ....]]]]

Puzzle. If reflexivization implicates anaphor movement of anaphor, and anaphor movement is like QR, why can reflexive raise across IOs?

Analysis. Difference follows from Parasitic Scope derivation: (i) at the point where *self* moves, the potential intervener *John* has already been moved out of the way; (ii) inverse scope results from QR above highest occurrence of narrow scope quantifier - reflexivization is obtained by tucking in *below* the antecedent.

(48) (Mary showed $John_1$ $himself_1$)



Small clauses. Scope domain of small clause internal objects does not extend into the superordinate clause:

(49) a. Mary made ***a different representative*** call ***every client*** ($\exists \succ \forall$ / $\forall \succ \exists$)
b. ***A (#different) representative*** made Mary call ***every client*** ($\exists \succ \forall$ / $*\forall \succ \exists$)

(50) a. Bill saw ***some woman*** marry ***every man*** ($\exists \succ \forall$ / $\forall \succ \exists$)
b. #***Someone*** saw Mary marry ***every man*** ($\exists \succ \forall$ / $*\forall \succ \exists$)

2.1. I-WITHIN-I CONDITION

Embedding under NP. QR and *self* movement can cross NP-boundaries

(51) a. John read ***a report*** on ***every suspect***. (inverse linking)
b. John read a report on [***every suspect*** Bill did] (antecedent contained ellipsis)

(52) a. John read a report on ***himself***.
b. Glenn Straub wins right to keep gaming report on ***himself*** secret. [Google, Jan 11 2017]

i-within-i condition. Prohibition on self-reference follows from ban on lowering (Chomsky 1981; Frey 1993; Hoeksema and Napoli 1990; Sauerland 1998: 231, i.a.).

(53) a. *a picture of itself (is always surprising)
b. *a supervisor of himself
c. *friends of each other

(54) a. [a picture of itself] λ_1 [t_1 is surprising]
b. *[a picture of $\boldsymbol{t_2}$] ***self*** [λ_1 [λ_2 [t_1 is surprising]]] (*self* lowering)

Problem 1. i-within-i condition can be violated if anaphor resides within a (reduced) relative clause instead of an argument position (Chomsky 1981: 212, 229; Jacobson 1994; Sauerland 1998: 231):

(55) a. a picture showing itself (cf. (53)a)
b. a man supervising himself (cf. (53)b)
c. der auf sich stolze Mann (Frey 1989: 131)
the of himself proud man/“the man proud of himself”

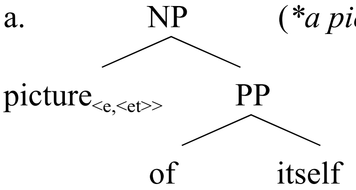
Problem 2. There is an alternative derivation which does not involve lowering.

(56) *a picture of itself

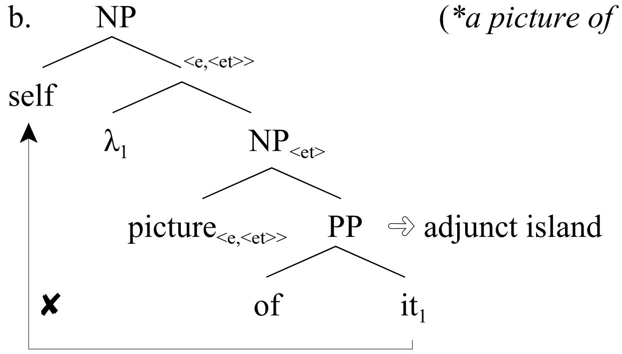
a. [a picture of self] λ_2 [a picture of self]$_1$ (Move antecedent)
b. [a picture of self] λ_2 [picture(x) $\wedge$ of(self)(x) $\wedge$ x = 2] (Variable Insertion)
c. [a picture of self] λ_2 ιx[picture(x) $\wedge$ of(self)(x) $\wedge$ x = 2] (Determiner Replacement)
d. [a picture of self] self λ_1 λ_2 ιx[picture(x) $\wedge$ of(t$_1$)(x) $\wedge$ x = 2] (AR)
e. [~~a picture of self~~] self λ_1 λ_2 ιx[picture(x) $\wedge$ of(t$_1$)(x) $\wedge$ x = 2] (Delete higher copy)
f. $\exists$y[picture(y) $\wedge$ ιx[picture(x) $\wedge$ of(x)(y) $\wedge$ x = y]]

Analysis. self-movement crosses an adjunct island in (57)b, but not in (57)c, where raising applies inside relative clause.

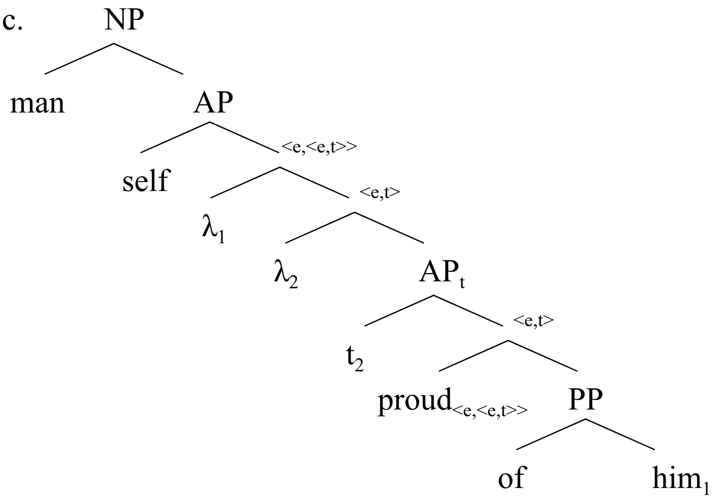
(57) a. (**a picture of itself*)



b. (**a picture of itself*)



c. (*a man proud of himself*)



3. ECM REFLEXIVES

Two types of ECM predicates (Bresnan 1972: 149ff; Pesetsky 1991):

(58) *B-class: subject to object raising*

a. We believe John to win (*during the next race). (simultaneity requirement)
b. John was believed to have won. (passive)
c. *John believes to have won. (no obligatory control)

(59) *W-class: no subject to object raising*

a. Mary wants John to win (during the next race) (no simultaneity requirement)
b. *John was wanted to (have) won. (no passive)
c. John wanted PRO to win. (obligatory control)

Moulton (2005): W-class predicates admit *de re* interpretations for reflexive ECM subjects.

(60) *W-class: de re reflexives*
  a. John wanted *himself* to win. (*de se*/*de re*)
  b. John expected *himself* to win. (*de se*/*de re*) [cf. Chierchia 1989, (26c)]

(61) *B-class: no de re reflexives*
  a. John believed *himself* to win. (*de se*/**de re*) [Chierchia 1989, (26b)]
  b. John considered *himself* to be the winner. (*de se*/**de re*)

Further evidence for contrast.

(62) Ann believes that Ben is taller than he$_3$ is. ($g(3) = \text{Ben}$)

  a. LF: $\lambda w[\text{Ann believes } \lambda w'[\text{that Ben is taller } w' \text{ than he}_3 < \text{is tall } \underline{\underline{w'/w}} >]]$

  b. *contradictory belief* (second occurrenc of 'tall' opaque/*de dicto*)
  $\lambda w.\forall w'[w' \in Dox_{a,w} \rightarrow \iota d.\text{Ben is d-tall in } w' \succ \iota d.\text{Ben is d-tall in } \underline{\underline{w'}}]$

  c. *consistent belief* (second occurrenc of 'tall' transparent/*de re*)
  $\lambda w.\forall w'[w' \in Dox_{a,w} \rightarrow \iota d.\text{Ben is d-tall in } w' \succ \iota d.\text{Ben is d-tall in } \underline{\underline{w}}]$

Substituting the ECM subject by a reflexive remnant in phrasal comparatives bleeds consistent reading (Hellan 1981; Napoli 1983; Heim 1985; i.a.):

(63) Ann believes that Ben is taller than himself.

  a. LF: $\lambda w[\text{Ann believes } \lambda w'[\text{that Ben is taller } \underline{\underline{w'}} \text{ than himself} < \text{tall } \underline{\underline{w'/w}} >]]$

  b. *contradictory belief* (✓Ellipsis Parallelism)
  $\lambda w.\forall w'[w' \in Dox_{a,w} \rightarrow \text{Ben}(\lambda x[\iota d.x \text{ is d-tall in } \underline{\underline{w'}} \succ \iota d.x \text{ is d-tall in } \underline{\underline{w'}}])$

  c. *unattested consistent belief* (✗Ellipsis Parallelism)
  $\lambda w.\forall w'[w' \in Dox_{a,w} \rightarrow \text{Ben}(\lambda x[\iota d.x \text{ is d-tall in } \underline{\underline{w'}} \succ \iota d.x \text{ is d-tall in } \underline{\underline{w}}])$

Only W-class has consistent reading ⇒ only W-class admits *de re* subject reflexives.

(64) *W-class: consistent reading possible*
  a. Ben wants *himself* to be taller than himself. (*de se*/*de re*)
  b. Ben would prefer *himself* to be taller than himself. (*de se*/*de re*)
  c. Ben had expected *himself* to score better than himself. (*de se*/*de re*)

(65) *B-class: inconsistent reading only*
  a. Ben believes *himself* to be taller than himself. (*de se*/**de re*)
  b. Ben considers *himself* to be smarter than himself. (*de se*/**de re*)

Analysis. Weak and strong reflexivity (building on Moulton 2005) and presuppositionality.

(66) *Presuppositional reflexives*

  a. $[\![\mathbf{self_{strong}}]\!] = \lambda x_e.\lambda R_{<e,<e,<s,t>>>}.\lambda y_e.\lambda w_s.R(x)(y)(w)\text{: } \forall w R(x)(y)(w) \rightarrow x = y \text{ in } w$

  b. $[\![\mathbf{self_{weak}}]\!] = \lambda x_e.\lambda w_s.\lambda R_{<e,<e,t>>}.\lambda y_e.R(x)(y)\text{: } x = y \text{ in } w$

Putting identity into the presupposition (in conjunction with a theory that allows the computation to ignore presuppositions in the relevant contexts) accounts for strict readings (Sauerland 2013; cf. McKillen 2015).

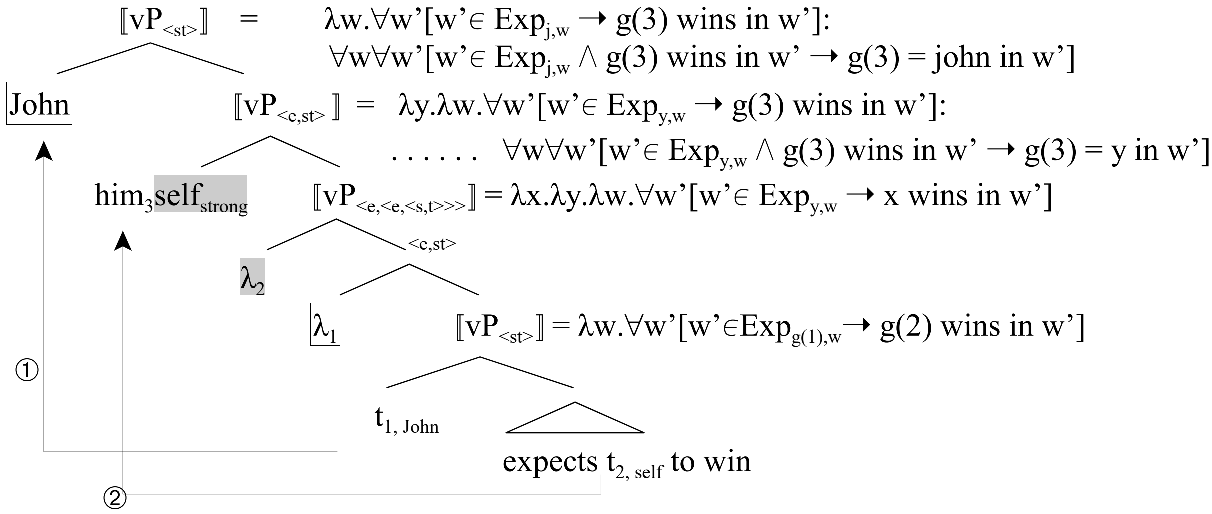
(67) *W-class binding/sloppy and coreference/strict*
a. John expected ***himself*** to win and his wife did, too. (Sauerland 2016, (28))
b. Only John expected ***himself*** to win. (ibid, (29))

(68) *B-class ECM verbs: binding/sloppy and coreference/strict*
a. John believes ***himself*** to be intelligent, but noone else does. (Landau 2013, (127))
b. Only John believes ***himself*** to win.

From the definitions in (66) it follows that the two versions of *self* move to different positions.

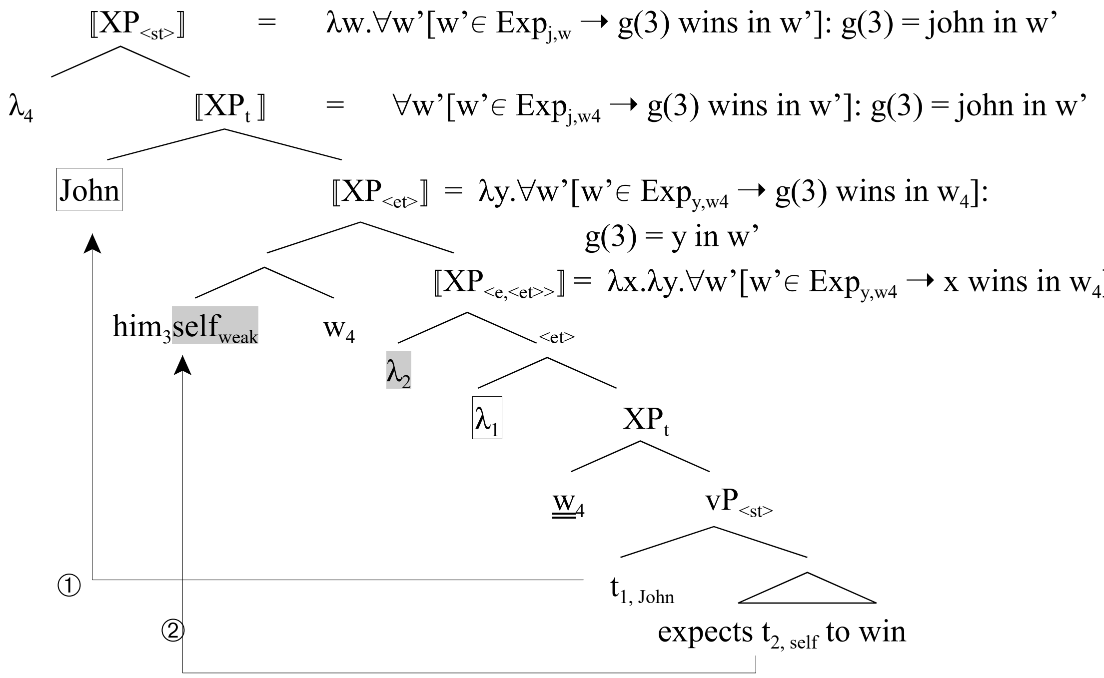
(69) a. *pron-self*$_{strong}$ can be used only if its sister node is of type <e,<e,<s,t>>>
b. *w-pron-self*$_{weak}$ can be used only if its sister node is of type <e,<e,t>>

(70) *Derivation of de se reading of 'John expects himself to win'*



(*self*$_{strong}$ moves to a position **within** vP)

(71) *Derivation of de re reading of 'John expects himself to win'*



(*self*$_{weak}$ moves to a position **above** vP)

(72) For any $x \in D_e$ and world/situation w:
$Exp_{x,w} =_{Def} \{w' | w' \text{ is compatible with x's expectations in w}\}$

(73) $[\![\textbf{expect}]\!] = \lambda P_{<st>}.\lambda w_s.\forall w'[w' \in Exp_{x,w} \rightarrow P(w')]$

Excluding the *de re* reading with B-class verbs

(74) John believed ***himself*** to win. (**de re*)

a. *Step 1, Case driven overt movement of reflexive* (✗Type mismatch)
$[\text{John } [_{vP} \text{ himself}_{weak, <<e,<e,t>>, <e,<e,t>>>} [_{vP<e,<e,<s,t>>>} \lambda_2\, \lambda_1 [t_{1, John} \text{ believed } t_{2, self} \text{ to win}]]]]$

b. *Step 2, covert raising:* (✗Syntax)
$[\text{John } [\text{himself}_{weak, <<e,<e,t>>, <e,<e,t>>>}$
$[_{vP<e,<e,t>>} \lambda_3\, \lambda_4 [_{vP} \underline{\underline{w}} [_{vP<st>} t_{4, John} [t_{3, self} [_{vP<e,<e,st>>} \lambda_2\, \lambda_1 [t_{1, John} \text{ believed } t_{2, self} \text{ to win}]]]]]]]]$

Option A. Freezing effect. Don't move *self* once it has reached its case position.

Option B. Interface economy. Don't move terms covertly that have already satisfied their semantic requirements by overt movement.

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4. PROBLEMS FOR CATEGORIAL ANALYSES OF REFLEXIVES

(75) <x, x, a>-pattern (Subject binds IO)
a. *Alice* showed us$_{DO}$ to *herself*$_{IO}$ (in the mirror)
b. *Alice* showed *herself*$_{IO}$ Bill$_{DO}$

(76) <a, x, x>-pattern (DO binds IO or v.v.)
a. We showed *Alice*$_{DO}$ to *herself*$_{IO}$
b. We showed *Alice*$_{IO}$ *herself*$_{DO}$

(77) <x, a, x>-pattern (Subject binds DO)
a. *Alice* showed *herself*$_{DO}$ to us$_{IO}$
b. *Alice* showed us$_{IO}$ *herself*$_{DO}$

Problem 1: surface oriented categorial analysis only derives pattern (75)a.
Problem 2: even this analysis requires non-standard parse (78)b in which order does not translate into c-command (contra Barss & Lasnik 1987; Larson 1988).

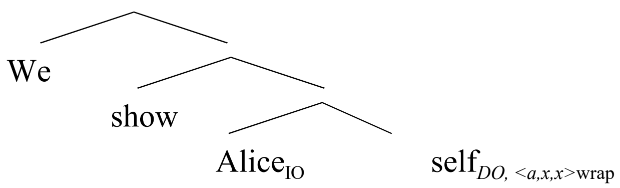
(78) *Alice* showed us$_{DO}$ to *herself*$_{IO}$ (= (75)a)
a. self(show'(us))(alice)
b. Alice [[showed us$_{DO}$] to herself$_{IO}$]

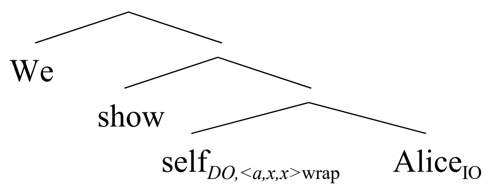
Potential solution: Type polymorphism (type shifting) and Wrap (reordering of arguments)

(79) a. $[\![self_{<a,x,x>}]\!] = \lambda R_{<e,<e,<e,t>>>}.\lambda \wp_{<et,t>}.\lambda x.\wp(\lambda y.R(x)(x)(y)])$ (for (76)a)
b. $[\![self_{<a,x,x>\, wrap}]\!] = \lambda \wp.\lambda R.\lambda x.\wp(\lambda y.R(x)(x)(y))$ (for (76)b)

Problem - overgeneration: (79)b derives (80)a, but also admits ill-formed (80)b. Similar problems affect other members of the family.

(80) a. We showed *Alice*$_{IO}$ *herself*$_{DO}$ b. *We showed *herself*$_{IO}$ *Alice*$_{DO}$





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