Notes on Heim 1983a,b
Updating Local Contexts Subject to Definedness

In what follows we assume the dynamic system defined in the Appendix, which combines *satisfaction-based* and *anaphoric* theories of presupposition. It draws primarily on the satisfaction-based theory of Heim 1983**a**, **b** and extends it with some ideas from Heim 1982 (anaphoric presupposition of definites), Kamp & Reyle 1983 (proper names, numeral phrases), and van der Sandt 1992 (anaphoric *other*, *too*, *back*, etc).

Note that the theory assumed here is intensional, like Heim 1983**b**, to facilitate comparison with Gazdar 1979. However, *new* discourse referents (dref's) are construed as dref's that are newly added to the context (as in Heim 1983**a**, with partial assignments), not as dref's that are already present in the context but not yet associated with any shared information (as in Heim 1983**b**, with total assignments). Following Muskens 1996, we indicate new dref's with superscripts and old dref's, with subscripts (e.g. $[\text{a cat}]^1$, $[\text{the cat}]_1$). For the present, we ignore accommodation.

0. OVERVIEW OF KEY RESULTS

Correct predictions

- *Presup's satisfied in local context ⇔ local update defined*

(1) (a) John_2 owns $[\text{a cat}]^5$.
Presup: (i) $x_2 = \textit{john}$

(b) It_5 likes him_2.

(c) John_2 is fond of $[\text{his}_2\ \text{cat}]_5$ $\text{too}_{5,2}$
Presup: (i) x_2 has a cat, (ii) x_5 is a cat of x_2, (iii) x_5 is fond of x_2

(d) He_2 $\text{also}_{2,5}$ owns $[\text{another}_5\ \text{cat}]^3$.
Presup: (i) x_2 owns x_5, (ii) x_5 is a cat
| (d′) He_2 doesn't own $[\text{any other}_5\ \text{cat}]^3$.
Presup: x_5 is a cat.

(e) $[\text{This cat}]_3$ doesn't like $[\text{the other}_3\ \text{cat}]_5$.
Presup: (i) x_3 is a cat, (ii) x_5 is a cat $\wedge$ $x_5 \neq x_3$
| (e) # $[\text{This cat}]_3$ doesn't like $[\text{the other}_3\ \text{cat}]_5$.
Presup: as on the left

(2) Somebody^2 curtsied. (no binding problem)
Presup: x_2 is female.

- *Cancellation only apparent, due to updates that guarantee satisfaction in local context*

(3) If $[\text{a bishop}]^1$ meets $[\text{another}_1\ \text{bishop}]^2$, he_1 blesses him_2. (Kamp)
Presup: x_1 is a bishop

(4) If John_2 has $[\text{a cat}]^5$, he_2's fond of $[\text{his}_2\ \text{pet}]_5$.
Presup: x_2 has a pet.

(5) John_2 called Mary_3 a Republican, and she_3 insulted him_2 back.
Presup: x_2 insulted x_3

Problematic predictions

- *Universal presup's due to bound dref's*

(6) (a) John_0 invited $[\text{several people}]^1$.
(b) $[\text{One}_1\ \text{man}]^2$ brought $[\text{a cat}]^3$.
PREDICT: *Presup*: (i) $x_2 \in X_1$, (ii) $|X_1| > 1$ **Correct**

(7) (a) John_0 invited $[\text{several people}]^1$.
(b) $[\text{One}_1\ \text{man}]^2$ brought $[\text{his}_1\ \text{cat}]^3$.
PREDICT: *Presup*: Every man John invited was a cat-owner. **Wrong**

1. PRESUPPOSITIONS AS DEFINEDNESS CONDITIONS

Consider the left-hand version of discourse (1):

(1) (a) John_2 owns $[\text{a cat}]^5$.
(b) It_5 likes him_2.
(c) John_2 is fond of $[\text{his}_2\ \text{cat}]_5$ $\text{too}_{5,2}$
(d) He_2 $\text{also}_{2,5}$ owns $[\text{another}_5\ \text{cat}]^3$.
(e) $[\text{This cat}]_3$ doesn't like $[\text{the other}_3\ \text{cat}]_5$.

To interpret this discourse, we need two things:

- a model $M = \langle W, D, \{I_w: w \in W\}\rangle$, where W is the set of possible worlds, D the set of individuals (assumed to be the same throughout W), and for any world $w \in W$, I_w maps every constant to its extension in w.
- an initial state of information s_0 that satisfies the presupposition of 'John_2' in (1a). Suppose the initial common ground is $W_0 \subseteq W$ (i.e. W_0 are the initial live options for the world we may be in) and suppose John is prominent in the initial context. Formally,
$s_0 = \{\langle w, \{\langle 2, I_w(\text{John})\rangle\}\rangle: w \in W_0\}$

The Heimian LF of (1a) is

(1′) (a) $[_S\ [_{NP2}\ \text{John}]\ [_S\ [_{NP5}\ \text{a cat}]\ [_S\ \_{}_2\ \text{owns}\ \_{}_5]]]$

This gives rise to three successive updates of s_0 as follows:

- s_1
$= s_0\llbracket[_{NP2}\ \text{John}]\rrbracket^M$
$= s_0$ if $\forall\langle w, a\rangle \in s_0(2 \in \text{Dom } a \wedge a_2 = I_w(\text{John}))$
$= s_0$
$= \{\langle w, \{\langle 2, I_w(\text{John})\rangle\}\rangle: w \in W_0\}$

- s_2
$= s_1\llbracket[_{NP5}\ \text{a cat}]\rrbracket^M$
$= s_0\llbracket[_{NP5}\ \text{a cat}]\rrbracket^M$
$= \{\langle w, a \cup \{\langle 5, d\rangle\}\rangle: \langle w, a\rangle \in s_0 \wedge d \in I_w(\text{cat})\}$ if $\forall\langle w, a\rangle \in s_0(5 \notin \text{Dom } a)$
$= \{\langle w, a \cup \{\langle 5, d\rangle\}\rangle: \langle w, a\rangle \in s_0 \wedge d \in I_w(\text{cat})\}$
$= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle\}\rangle: w \in W_0$
$\wedge\ d \in I_w(\text{cat})\}$

- s_3
$= s_2\llbracket[_S\ \_{}_2\ \text{owns}\ \_{}_5]\rrbracket^M$
$= \{\langle w, a\rangle: \langle w, a\rangle \in s_2 \wedge \langle a_2, a_5\rangle \in I_w(\text{own})\}$ if $\forall\langle w, a\rangle \in s_2(2, 5 \in \text{Dom } a)$
$= \{\langle w, a\rangle: \langle w, a\rangle \in s_2 \wedge \langle a_2, a_5\rangle \in I_w(\text{own})\}$
$= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle\}\rangle: w \in W_0$
$\wedge\ d \in I_w(\text{cat})$
$\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{own})\}$

Next, s_3 is updated with the meaning of the Heimian LF of (1b)

(1′) (b) $[_S\ \text{it}_5\ \text{likes him}_2]$

as follows:

- s_4
$= s_3\llbracket[_S\ \text{it}_5\ \text{likes him}_2]\rrbracket^M$
$= \{\langle w, a\rangle: \langle w, a\rangle \in s_3 \wedge \langle a_5, a_2\rangle \in I_w(\text{like})\}$ if $\forall\langle w, a\rangle \in s_3(5, 2 \in \text{Dom } a)$
$= \{\langle w, a\rangle: \langle w, a\rangle \in s_3 \wedge \langle a_5, a_2\rangle \in I_w(\text{like})\}$
$= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle\}\rangle: w \in W_0$
$\wedge\ d \in I_w(\text{cat})$
$\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{own})$
$\wedge\ \langle d, I_w(\text{John})\rangle \in I_w(\text{like})\}$

Next s_4 is updated with the meaning of the Heimian LF of (1c)

(1′) (c) $[_S\ [_{NP2}\ \text{John}]\ [_S\ [_{NP5}\ \text{his}_2\ \text{cat}]\ [_S\ \_{}_2\ \text{is fond of}\ \_{}_5\ \text{too}_{5,\ 2}]]]$

- s_5
  $= s_4\llbracket[_{NP2}\ \text{John}]\rrbracket^M$
  $= s_4$ if $\forall\langle w, a\rangle \in s_4(2 \in \text{Dom}\ a \wedge a_2 = I_w(\text{John}))$
  $= s_4$
  $= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle\}\rangle: w \in W_0$
  $\wedge\ d \in I_w(\text{cat})$
  $\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{own})$
  $\wedge\ \langle d, I_w(\text{John})\rangle \in I_w(\text{like})\}$

- s_6
  $= s_5\llbracket[_{NP5}\ \text{his}_2\ \text{cat}]\rrbracket^M$
  $= s_5$ if $\forall\langle w, a\rangle \in s_5(2, 5 \in \text{Dom}\ a \wedge \langle a_5, a_2\rangle \in I_w(\text{cat\_of}))$
  $= s_5$
  $= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle\}\rangle: w \in W_0$
  $\wedge\ d \in I_w(\text{cat})$
  $\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{own})$
  $\wedge\ \langle d, I_w(\text{John})\rangle \in I_w(\text{like})\}$

- s_7
  $= s_6\llbracket[_S\ \_{}_2\ \text{is fond of}\ \_{}_5\ \text{too}_{5,2}]\rrbracket^M$
  $= \{\langle w, a\rangle: \langle w, a\rangle \in s_6 \wedge \langle a_2, a_5\rangle \in I_w(\text{fond\_of})\}$ if $\forall\langle w, a\rangle \in s_6(2, 5 \in \text{Dom}\ a$
  $\wedge\ \langle a_2, a_5\rangle \neq \langle a_5, a_2\rangle$
  $\wedge\ \langle a_5, a_2\rangle \in I_w(\text{fond\_of}))$
  $= \{\langle w, a\rangle: \langle w, a\rangle \in s_6 \wedge \langle a_2, a_5\rangle \in I_w(\text{fond\_of})\}$
  $= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle\}\rangle: w \in W_0$
  $\wedge\ d \in I_w(\text{cat})$
  $\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{own})$
  $\wedge\ \langle d, I_w(\text{John})\rangle \in I_w(\text{like})$
  $\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{fond\_of})\}$

We then proceed to update s_7 with the meaning of the Heimian LF of (1d):

(1′) (d) $[_S\ [_S\ [_{NP3}\ \text{an-other}_5\ \text{cat}]\ [_S\ \text{he}_2\ \text{also}_{2,\ 5}\ \text{owns}\ \_{}_3]]]$

- s_8
  $= s_7\llbracket[_{NP3}\ \text{another}_5\ \text{cat}]\rrbracket^M$
  $= \{\langle w, a \cup \{\langle 3, d'\rangle\}\rangle: \langle w, a\rangle \in s_7$ if $\forall\langle w, a\rangle \in s_7(3 \notin \text{Dom}\ a$
  $\wedge\ d' \neq a_5 \wedge d' \in I_w(\text{cat})\}$ $\wedge\ 5 \in \text{Dom}\ a \wedge a_5 \in I_w(\text{cat}))$
  $= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle, \langle 3, d'\rangle\}\rangle: w \in W_0$
  $\wedge\ d \in I_w(\text{cat})$
  $\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{own})$
  $\wedge\ \langle d, I_w(\text{John})\rangle \in I_w(\text{like})$
  $\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{fond\_of})$
  $\wedge\ d' \neq d \wedge d' \in I_w(\text{cat})\}$

- s_9
  $= s_8\llbracket[_S\ \text{he}_2\ \text{also}_{2,5}\ \text{owns}\ \_{}_3]\rrbracket^M$
  $= \{\langle w, a\rangle: \langle w, a\rangle \in s_8$ if $\forall\langle w, a\rangle \in s_8(2, 3 \in \text{Dom}\ a$
  $\wedge\ \langle a_2, a_3\rangle \in I_w(\text{own})\}$ $\wedge\ 5 \in \text{Dom}\ a \wedge \langle a_2, a_5\rangle \in I_w(\text{own}))$
  $= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle, \langle 3, d'\rangle\}\rangle: w \in W_0$
  $\wedge\ d \in I_w(\text{cat})$
  $\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{own})$
  $\wedge\ \langle d, I_w(\text{John})\rangle \in I_w(\text{like})$
  $\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{fond\_of})$
  $\wedge\ d' \neq d \wedge d' \in I_w(\text{cat})$
  $\wedge\ \langle I_w(\text{John}), d'\rangle \in I_w(\text{own})\}$

Finally, we update s_9 with the meaning of the Heimian LF of (1e):

(1′) (e) $[_S [_{NP3}$ this cat$] [_S$ not $[_S [_{NP5}$ the other$_3$ cat$] [_S _{}_3$ like $\_{}_5]]]]$

- s_{10}

$= s_9[\![[_{NP3} \text{ this cat}]]\!]^M$

$= s_9$ if $\forall\langle w, a\rangle \in s_9(3 \in \text{Dom } a \wedge a_3 \in I_w(\text{cat}))$

$= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle, \langle 3, d'\rangle\}\rangle: w \in W_0$
$\wedge\ d \in I_w(\text{cat})$
$\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{own})$
$\wedge\ \langle d, I_w(\text{John})\rangle \in I_w(\text{like})$
$\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{fond\_of})$
$\wedge\ d' \neq d \wedge d' \in I_w(\text{cat})$
$\wedge\ \langle I_w(\text{John}), d'\rangle \in I_w(\text{own})\}$

- s_{11}

$= s_{10}[\![[_S \text{ not } [_S [_{NP5} \text{ the other}_3 \text{ cat}] [_S \_{}_3 \text{ like } \_{}_5]]]]]\!]^M$

$= s_{10} - \{\langle w, a\rangle: \langle w, a\rangle \in s_{10}$
$\wedge\ \exists b(a \subseteq b \wedge \langle w, b\rangle \in s_{10}[\![[_S [_{NP5} \text{ the other}_3 \text{ cat}] [_S \_{}_3 \text{ like } \_{}_5]]]]\!]^M)\}$
if $s_{10}[\![[_S [_{NP5} \ldots] [_S \ldots]]]\!]^M$ is defined

Computing $s_{10}[\![[_S [_{NP5} \text{ the other}_3 \text{ cat}] [_S \_{}_3 \text{ like } \_{}_5]]]\!]^M$:

- s'_{10}

$= s_{10}[\![[_{NP5} \text{ the other}_3 \text{ cat}]]\!]^M$

$= s_{10}$ if $\forall\langle w, a\rangle \in s_{10}(3 \in \text{Dom } a \wedge a_3 \in I_w(\text{cat})$
$\wedge\ 5 \in \text{Dom } a \wedge a_5 \in I_w(\text{cat}) \wedge a_3 \neq a_5)$

$= s_{10}$

- s''_{10}

$= s'_{10}[\![[_S \_{}_3 \text{ like } \_{}_5]]\!]^M$

$= s_{10}[\![[_S \_{}_3 \text{ like } \_{}_5]]\!]^M$

$= \{\langle w, a\rangle: \langle w, a\rangle \in s_{10}$
$\wedge\ \langle a_3, a_5\rangle \in I_w(\text{like})\}$ if $\forall\langle w, a\rangle \in s_{10}(3, 5 \in \text{Dom } a)$

$= \{\langle w, a\rangle: \langle w, a\rangle \in s_{10}$
$\wedge\ \langle a_3, a_5\rangle \in I_w(\text{like})\}$

$= s_{10} - \{\langle w, a\rangle: \langle w, a\rangle \in s_{10}$
$\wedge\ \exists b(a \subseteq b \wedge \langle w, b\rangle \in s''_{10})\}$

$= s_{10} - \{\langle w, a\rangle: \langle w, a\rangle \in s_{10}$
$\wedge\ \langle w, a\rangle \in s''_{10}\}$

$= s_{10} - \{\langle w, a\rangle: \langle w, a\rangle \in s_{10}$
$\wedge\ \langle a_3, a_5\rangle \in I_w(\text{like})\}$

$= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle, \langle 3, d'\rangle\}\rangle: w \in W_0$
$\wedge\ d \in I_w(\text{cat})$
$\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{own})$
$\wedge\ \langle d, I_w(\text{John})\rangle \in I_w(\text{like})$
$\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{fond\_of})$
$\wedge\ d' \neq d \wedge d' \in I_w(\text{cat})$
$\wedge\ \langle I_w(\text{John}), d'\rangle \in I_w(\text{own})$
$\wedge\ \langle d', d\rangle \notin I_w(\text{like})\}$

2. PRESUPPOSITION FAILURE AS UNDEFINED UPDATE

In the context of the right-hand version of discourse (1), where (1d′) crucially replaces (1d), sentence (1e) leads to an undefined update — intuitively, *presupposition failure*:

(1) (a) John_2 owns $[\text{a cat}]^5$.
(b) It_5 likes him_2.
(c) John_2 is fond of $[\text{his}_2\ \text{cat}]_5\ \text{too}_{5,2}$
(d′) He_2 doesn't own $[\text{any other}_5\ \text{cat}]^3$.
(e)# $[\text{This cat}]_3$ doesn't like $[\text{the other}_3\ \text{cat}]_5$.

Given the same model M and initial information state s_0, the interpretation of (1a–c) proceeds just as above, yielding

- s_7
$= s_0\llbracket \text{John}_2\text{b}^M\text{v}[\text{a cat}]^5\rrbracket^M\llbracket \_{}_2 \text{ owns } \_{}_5\rrbracket^M\llbracket [\text{it}_5 \text{ likes him}_2]\rrbracket^M\llbracket \text{John}_2\rrbracket^M\llbracket [\text{his}_2 \text{ cat}]_5\rrbracket^M\llbracket \_{}_2 \text{ is fond of } \_{}_5 \text{ too}_{5,2}\rrbracket^M$
$= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle\}\rangle : w \in W_0$
$\wedge\ d \in I_w(\text{cat})$
$\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{own})$
$\wedge\ \langle d, I_w(\text{John})\rangle \in I_w(\text{like})$
$\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{fond\_of})\}$

In the above discourse we then proceed to update s_7 with the meaning of the Heimian LF of (1d′):

(1′) (d′) $[_{\text{S}} \text{ not } [_{\text{S}}\ [_{\text{NP3}} \text{ any other}_5 \text{ cat}]\ [_{\text{S}} \text{ he}_2 \text{ own } \_{}_3]]]$

- $s_{8'}$

$= s_7\llbracket[_{\text{S}} \text{ not } [_{\text{S}}\ [_{\text{NP3}} \text{ any other}_5 \text{ cat}]\ [_{\text{S}} \text{ he}_2 \text{ own } \_{}_3]]]\rrbracket^M$

$= s_7 - \{\langle w, a\rangle : \langle w, a\rangle \in s_7$
$\wedge\ \exists b(a \subseteq b \wedge \langle w, b\rangle \in s_7\llbracket[_{\text{S}}\ [_{\text{NP3}} \text{ any other}_5 \text{ cat}]\ [_{\text{S}} \text{ he}_2 \text{ own } \_{}_3]]\rrbracket^M)\}$
if $s_7\llbracket[_{\text{S}}\ [_{\text{NP3}} \text{ any other}_5 \text{ cat}]\ [_{\text{S}} \ldots]]\rrbracket^M$ is defined

Computing $s_7\llbracket[_{\text{S}}\ [_{\text{NP3}} \text{ any other}_5 \text{ cat}]\ [_{\text{S}} \text{ he}_2 \text{ own } \_{}_3]]\rrbracket^M$:

- s'_7
$= s_7\llbracket[_{\text{NP3}} \text{ any other}_5 \text{ cat}]\rrbracket^M$
$= \{\langle w, a \cup \{\langle 3, d'\rangle\}\rangle : \langle w, a\rangle \in s_7$ if $\forall\langle w, a\rangle \in s_7(3 \notin \text{Dom } a$
$\wedge\ d' \neq a_5 \wedge d' \in I_w(\text{cat})\}$ $\wedge\ 5 \in \text{Dom } a \wedge a_5 \in I_w(\text{cat}))$
$= \{\langle w, a \cup \{\langle 3, d'\rangle\}\rangle : \langle w, a\rangle \in s_7$
$\wedge\ d' \neq a_5 \wedge d' \in I_w(\text{cat})\}$

- s''_7
$= s'_7\llbracket[_{\text{S}} \text{ he}_2 \text{ own } \_{}_3]\rrbracket^M$
$= \{\langle w, a\rangle : \langle w, a\rangle \in s'_7$
$\wedge\ \langle a_2, a_3\rangle \in I_w(\text{own})\}$ if $\forall\langle w, a\rangle \in s'_7(2, 3 \in \text{Dom } a)$
$= \{\langle w, a \cup \{\langle 3, d'\rangle\}\rangle : \langle w, a\rangle \in s_7$
$\wedge\ d' \neq a_5 \wedge d' \in I_w(\text{cat})$
$\wedge\ \langle a_2, d'\rangle \in I_w(\text{own})\}$

$= s_7 - \{\langle w, a\rangle : \langle w, a\rangle \in s_7$
$\wedge\ \exists b(a \subseteq b \wedge \langle w, b\rangle \in s''_7)\}$

$= s_7 - \{\langle w, a\rangle : \langle w, a\rangle \in s_7$
$\wedge\ \exists d'(d' \neq a_5 \wedge d' \in I_w(\text{cat})$
$\wedge\ \langle a_2, d'\rangle \in I_w(\text{own}))\}$

$= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle\}\rangle : w \in W_0$
$\wedge\ d \in I_w(\text{cat})$
$\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{own})$
$\wedge\ \langle d, I_w(\text{John})\rangle \in I_w(\text{like})$
$\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{fond\_of})$
$\wedge\ \neg\exists d'(d' \neq d \wedge d' \in I_w(\text{cat})$
$\langle I_w(\text{John}), d'\rangle \in I_w(\text{own}))\}$

Finally, we attempt to update $s_{8'}$ with the meaning of the Heimian LF of (1e):

(1′) (e) $[_S [_{NP3}$ this cat$]$ $[_S$ not $[_S [_{NP5}$ the other$_3$ cat$]$ $[_S \_{}_3$ like $\_{}_5]]]]$

- $s_{9'}$
  $= s_{8'}[\![[_{NP3}\text{ this cat}]]\!]^M$
  $= s_{8'}$ if $\forall\langle w, a\rangle \in s_{8'}(3 \in \text{Dom } a \wedge a_3 \in I_w(\text{cat}))$
  undefined otherwise
  $=$ undefined

So we correctly predict that the demonstrative $[_{NP3}$ this cat$]$ is infelicitous in this context.

Note that the alternative anaphora resolution, shown in (e′) below, fares no better:

(1′) (e′) $[_S [_{NP5}$ this cat$]$ $[_S$ not $[_S [_{NP3}$ the other$_5$ cat$]$ $[_S \_{}_5$ like $\_{}_3]]]]$

Now the presupposition of the demonstrative $[_{NP5}$ this cat$]$ is satisfied, but the presupposition of $[_{NP3}$ the other$_5$ cat$]$ cannot be met and thus again leads to undefinedness. We just don't have enough cat-dref's in $s_{8'}$ to satisfy both of these presuppositions — one or the other is bound to fail.

3. APPARENT CANCELLATION AS GUARANTEED LOCAL SATISFACTION

Consider first the apparent cancellation of the presupposition of 'an-other$_1$' in Kamp's famous bishop-conditional:

(3) If [a^1 bishop] meets [an^2-other$_1$ bishop], he$_1$ blesses him$_2$.

Again, we interpret this (one sentence) discourse relative to

- a model $M = \langle W, D, \{I_w: w \in W\}\rangle$, where W is the set of possible worlds, D the set of individuals (assumed to be the same throughout W), and for any world $w \in W$, I_w maps every constant to its extension in w.

- an initial state of information s_0 which here need not satisfy any presuppositions. Suppose the initial common ground is $W_0 \subseteq W$ and there are no salient individuals. Formally,
  $s_0 = \{\langle w, \{\ \}\rangle: w \in W_0\}$

The Heimian LF of (3) is a tripartite structure consisting of a covert *necessity operator* (u), the *restriction* (antecedent clause, abbreviated **A** below), and the *scope* (consequent clause, abbreviated **C**):

(3′) u [if [$_S$ [$_{NP1}$ a bishop] [$_S$ [$_{NP2}$ an^2-other$_1$ bishop] [$_S$ $\_1$ meets $\_2$]]]] [$_S$ he$_1$ blesses him$_2$]
|__________A__________| |____C____|

Updating s_0 with the meaning of this LF we get:

s_1
$= s_0[\![\text{u } \mathbf{A}\ \mathbf{C}]\!]^M$
$= \{\langle w, a\rangle: \langle w, a\rangle \in s_0$ — if $s_0[\![\mathbf{A}]\!]^M$ is defined
$\wedge\ \forall b(a \subseteq b \wedge \langle w, b\rangle \in s_0[\![\mathbf{A}]\!]^M \to \exists c(b \subseteq c \wedge \langle w, c\rangle \in s_0[\![\mathbf{A}]\!]^M[\![\mathbf{C}]\!]^M))\}$ — $\wedge\ s_0[\![\mathbf{A}]\!]^M[\![\mathbf{C}]\!]^M$ is defined

Computing $s_0[\![\mathbf{A}]\!]^M$

- s_1
  $= s_0[\![[_{NP1}\text{ a bishop}]]\!]^M$
  $= \{\langle w, a \cup \{\langle 1, d\rangle\}\rangle: \langle w, a\rangle \in s_0$ — if $\forall\langle w, a\rangle \in s_0(1 \notin \text{Dom } a)$
  $\wedge\ d \in I_w(\text{bishop})\}$
  $= \{\langle w, \{\langle 1, d\rangle\}\rangle: w \in W_0$
  $\wedge\ d \in I_w(\text{bishop})\}$

- s_2 — *presup of* 'another$_1$' *apparently cancelled*
  $= s_1[\![[_{NP2}\text{ another}_1\text{ bishop}]]\!]^M$
  $= \{\langle w, a \cup \{\langle 2, d'\rangle\}\rangle: \langle w, a\rangle \in s_1$ — if $\forall\langle w, a\rangle \in s_1(2 \notin \text{Dom } a$
  $\wedge\ d' \neq a_1 \wedge d' \in I_w(\text{bishop})\}$ — $\wedge\ 1 \in \text{Dom } a \wedge a_1 \in I_w(\text{bishop}))$
  $= \{\langle w, \{\langle 1, d\rangle, \langle 2, d'\rangle\}\rangle: w \in W_0$
  $\wedge\ d \in I_w(\text{bishop})$
  $\wedge\ d' \neq d \wedge d' \in I_w(\text{bishop})\}$

- s_3
  $= s_2[\![[_S\ \_1\text{ meets }\_2]]\!]^M$
  $= \{\langle w, a\rangle: \langle w, a\rangle \in s_2$ — if $\forall\langle w, a\rangle \in s_2(1, 2 \in \text{Dom } a)$
  $\wedge\ \langle a_1, a_2\rangle \in I_w(\text{meet})\}$
  $= \{\langle w, \{\langle 1, d\rangle, \langle 2, d'\rangle\}\rangle: w \in W_0$
  $\wedge\ d \in I_w(\text{bishop})$
  $\wedge\ d' \neq d \wedge d' \in I_w(\text{bishop})$
  $\wedge\ \langle d, d'\rangle \in I_w(\text{meet})\}$

Computing $s_0[\![\mathbf{A}]\!]^M[\![\mathbf{C}]\!]^M = s_3[\![\mathbf{C}]\!]^M$

- s_4
  $= s_3[\![[_S\text{ he}_1\text{ blesses him}_2]]\!]^M$
  $= \{\langle w, a\rangle: \langle w, a\rangle \in s_3$ — if $\forall\langle w, a\rangle \in s_3(1, 2 \in \text{Dom } a)$
  $\wedge\ \langle a_1, a_2\rangle \in I_w(\text{bless})\}$
  $= \{\langle w, \{\langle 1, d\rangle, \langle 2, d'\rangle\}\rangle: w \in W_0$
  $\wedge\ d \in I_w(\text{bishop})$
  $\wedge\ d' \neq d \wedge d' \in I_w(\text{bishop})$
  $\wedge\ \langle d, d'\rangle \in I_w(\text{meet})$
  $\wedge\ \langle d, d'\rangle \in I_w(\text{bless})\}$

$= \{\langle w, a\rangle: \langle w, a\rangle \in s_0$
$\wedge\ \forall b(a \subseteq b \wedge \langle w, b\rangle \in s_0[\![\mathbf{A}]\!]^M \to \exists c(b \subseteq c \wedge \langle w, c\rangle \in s_0[\![\mathbf{A}]\!]^M[\![\mathbf{C}]\!]^M))\}$

$= \{\langle w, a\rangle: \langle w, a\rangle \in s_0$
$\wedge\ \forall b(a \subseteq b \wedge \langle w, b\rangle \in s_0[\![\mathbf{A}]\!]^M \to \langle w, b\rangle \in s_0[\![\mathbf{A}]\!]^M[\![\mathbf{C}]\!]^M)\}$

$= \{\langle w, a\rangle: \langle w, a\rangle \in s_0$
$\wedge\ \forall\langle d, d'\rangle(d \in I_w(\text{bishop}) \wedge d' \neq d \wedge d' = I_w(\text{bishop}) \wedge \langle d, d'\rangle \in I_w(\text{meet})$
$\to d \in I_w(\text{bishop}) \wedge d' \neq d \wedge d' = I_w(\text{bishop}) \wedge \langle d, d'\rangle \in I_w(\text{meet}) \wedge \langle d, d'\rangle \in I_w(\text{bless}))\}$

$= \{\langle w, a\rangle: \langle w, a\rangle \in s_0$
$\wedge\ \forall\langle d, d'\rangle(d \in I_w(\text{bishop}) \wedge d' \neq d \wedge d' = I_w(\text{bishop}) \wedge \langle d, d'\rangle \in I_w(\text{meet}) \to \langle d, d'\rangle \in I_w(\text{bless}))\}$

$= \{\langle w, \{\}\rangle: w \in W_0$
$\wedge\ \forall\langle d, d'\rangle(d \in I_w(\text{bishop}) \wedge d' \neq d \wedge d' = I_w(\text{bishop}) \wedge \langle d, d'\rangle \in I_w(\text{meet}) \to \langle d, d'\rangle \in I_w(\text{bless}))\}$

Next, consider the Heimian LF of (4):

(4′) u [if [$_S$ [$_{NP2}$ John] [$_S$ [$_{NP5}$ a cat] [$_S$ $\_\_{2}$ has $\_\_{5}$]]]] [$_S$ [$_{NP5}$ his$_2$ pet] [$_S$ he$_2$ is fond of $\_\_{5}$]
|____________**A**____________| |____________**C**____________|

The initial information state s_0 must satisfy the presupposition that John is salient, but not that he has a pet. To show this, let's take $s_0 = \{\langle w, \{\langle 2, I_w(\text{John})\rangle\}\rangle : w \in W_0\}$ and compute the update with the meaning of (4′):

s_1
$= s_0[\![\text{u } \mathbf{A}\ \mathbf{C}]\!]^M$
$= \{\langle w, a\rangle : \langle w, a\rangle \in s_0$ — if $s_0[\![\mathbf{A}]\!]^M$ is defined
$\wedge\ \forall b(a \subseteq b \wedge \langle w, b\rangle \in s_0[\![\mathbf{A}]\!]^M \rightarrow \exists c(b \subseteq c \wedge \langle w, c\rangle \in s_0[\![\mathbf{A}]\!]^M[\![\mathbf{C}]\!]^M))\}$ — $\wedge\ s_0[\![\mathbf{A}]\!]^M[\![\mathbf{C}]\!]^M$ is defined

Computing $s_0[\![\mathbf{A}]\!]^M$

- s_1
  $= s_0[\![[_{NP2}\text{ John}]]\!]^M$
  $= s_0$ — if $\forall\langle w, a\rangle \in s_0(2 \in \text{Dom } a \wedge a_2 = I_w(\text{John}))$
  $= \{\langle w, \{\langle 2, I_w(\text{John})\rangle\}\rangle : w \in W_0\}$
- s_2
  $= s_1[\![[_{NP5}\text{ a cat}]]\!]^M$
  $= s_0[\![[_{NP5}\text{ a cat}]]\!]^M$
  $= \{\langle w, a \cup \{\langle 5, d\rangle\}\rangle : \langle w, a\rangle \in s_0$ — if $\forall\langle w, a\rangle \in s_0(5 \notin \text{Dom } a)$
  $\wedge\ d \in I_w(\text{cat})\}$
  $= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle\}\rangle : w \in W_0$
  $\wedge\ d \in I_w(\text{cat})\}$
- s_3
  $= s_2[\![[_S \_\_{2}\text{ has } \_\_{5}]]\!]^M$
  $= \{\langle w, a\rangle : \langle w, a\rangle \in s_2$ — if $\forall\langle w, a\rangle \in s_2(2, 5 \in \text{Dom } a)$
  $\wedge\ \langle a_2, a_5\rangle \in I_w(\text{have})\}$
  $= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle\}\rangle : w \in W_0$
  $\wedge\ d \in I_w(\text{cat})$
  $\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{have})\}$

Computing $s_0[\![\mathbf{A}]\!]^M[\![\mathbf{C}]\!]^M = s_3[\![\mathbf{C}]\!]^M$

- s_4 — *presup of* 'his$_2$ pet' *apparently cancelled*
  $= s_3[\![[_{NP5}\text{ his}_2\text{ pet}]]\!]^M$
  $= s_3$ — if $\forall\langle w, a\rangle \in s_3(2, 5 \in \text{Dom } a \wedge \langle a_5, a_2\rangle \in I_w(\text{pet\_of})$
  $\wedge\ \forall n(n \in \text{Dom } a \wedge \langle a_n, a_2\rangle \in I_w(\text{pet\_of}) \rightarrow n = 5))$
  $= s_3$
- s_5
  $= s_4[\![[_S\text{ he}_2\text{ is fond of } \_\_{5}]]\!]^M$
  $= \{\langle w, a\rangle : \langle w, a\rangle \in s_4$
  $\wedge\ \langle a_2, a_5\rangle \in I_w(\text{fond\_of})\}$ — if $\forall\langle w, a\rangle \in s_4(2, 5 \in \text{Dom } a)$
  $= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 5, d\rangle\}\rangle : w \in W_0$
  $\wedge\ d \in I_w(\text{cat})$
  $\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{have})$
  $\wedge\ \langle I_w(\text{John}), d\rangle \in I_w(\text{fond\_of})\}$

$= \{\langle w, a\rangle : \langle w, a\rangle \in s_0$
$\wedge\ \forall b(a \subseteq b \wedge \langle w, b\rangle \in s_0[\![\mathbf{A}]\!]^M \rightarrow \exists c(b \subseteq c \wedge \langle w, c\rangle \in s_0[\![\mathbf{A}]\!]^M[\![\mathbf{C}]\!]^M))\}$

$= \{\langle w, a\rangle : \langle w, a\rangle \in s_0$
$\wedge\ \forall b(a \subseteq b \wedge \langle w, b\rangle \in s_0[\![\mathbf{A}]\!]^M \rightarrow \langle w, b\rangle \in s_0[\![\mathbf{A}]\!]^M[\![\mathbf{C}]\!]^M)\}$

$= \{\langle w, a\rangle : \langle w, a\rangle \in s_0$
$\wedge\ \forall d(d \in I_w(\text{cat}) \wedge \langle I_w(\text{John}), d\rangle \in I_w(\text{have})$
$\rightarrow d \in I_w(\text{cat}) \wedge \wedge \langle I_w(\text{John}), d\rangle \in I_w(\text{have}) \wedge \langle I_w(\text{John}), d\rangle \in I_w(\text{fond\_of}))\}$

$= \{\langle w, \{\langle 2, I_w(\text{John})\rangle\}\rangle : w \in W_0$
$\wedge\ \forall d(d \in I_w(\text{cat}) \wedge \langle I_w(\text{John}), d\rangle \in I_w(\text{have}) \rightarrow \langle I_w(\text{John}), d\rangle \in I_w(\text{fond\_of}))\}$

Finally, consider the Heimian LF of (5):

(5′) $[_S [_{NP2}$ John$] [_S [_{NP3}$ Mary$] [_S __2$ called $\__3$ a Republican$]]]$ and $[_S$ she$_3$ insulted him$_2$ back$]$

Here the initial information state s_0 must satisfy the presuppositions of proper names that John and Mary are salient. But it need not satisfy the presupposition of *back*, that John insulted Mary, if we assume that the initial common ground W_0 entails that calling somebody a Republican is an insult. Formally, we can define s_0 as follows:

$$s_0 = \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 3, I_w(\text{Mary})\rangle\}\rangle: w \in W_0 \\ \wedge\ \forall w' \in W_0(I_{w'}(\text{call\_a\_Republican}) \subseteq I_{w'}(\text{insult}))\}$$

Then updating s_0 with the meaning of the first conjunct of (6′) yields an information state s_3 that serves as the local context for the second conjunct:

- s_1
  $= s_0[\![[_{NP2}\ \text{John}]]\!]^M$
  $= s_0$ if $\forall\langle w, a\rangle \in s_0(2 \in \text{Dom}\ a \wedge a_2 = I_w(\text{John}))$
  $= s_0$
- s_2
  $= s_1[\![[_{NP3}\ \text{Mary}]]\!]^M$
  $= s_0[\![[_{NP3}\ \text{Mary}]]\!]^M$
  $= s_0$ if $\forall\langle w, a\rangle \in s_0(3 \in \text{Dom}\ a \wedge a_3 = I_w(\text{Mary}))$
  $= s_0$
- s_3
  $= s_2[\![[_S\ \__2\ \text{called}\ \__3\ \text{a Republican}]]\!]^M$
  $= s_0[\![[_S\ \__2\ \text{called}\ \__3\ \text{a Republican}]]\!]^M$
  $= \{\langle w, a\rangle: \langle w, a\rangle \in s_0 \wedge \langle a_2, a_3\rangle \in I_w(\text{call\_a\_Republican})\}$ if $\forall\langle w, a\rangle \in s_0(2, 3 \in \text{Dom}\ a)$
  $= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 3, I_w(\text{Mary})\rangle\}\rangle: w \in W_0 \wedge \forall w' \in W_0(I_{w'}(\text{call\_a\_Republican}) \subseteq I_{w'}(\text{insult})) \wedge \langle I_w(\text{John}), I_w(\text{Mary})\rangle \in I_w(\text{call\_a\_Republican})\}$
- s_4 *presup of* 'back' *apparently cancelled*
  $= s_3[\![[_S\ \text{she}_3\ \text{insulted him}_2\ \text{back}]]\!]^M$
  $= \{\langle w, a\rangle: \langle w, a\rangle \in s_3 \wedge \langle a_3, a_2\rangle \in I_w(\text{insult})\}$ if $\forall\langle w, a\rangle \in s_0(2, 3 \in \text{Dom}\ a \wedge \langle a_2, a_3\rangle \neq \langle a_3, a_2\rangle \wedge \langle a_2, a_3\rangle \in I_w(\text{insult}))$
  $= \{\langle w, \{\langle 2, I_w(\text{John})\rangle, \langle 3, I_w(\text{Mary})\rangle\}\rangle: w \in W_0 \wedge \forall w' \in W_0(I_{w'}(\text{call\_a\_Republican}) \subseteq I_{w'}(\text{insult})) \wedge \langle I_w(\text{John}), I_w(\text{Mary})\rangle \in I_w(\text{call\_a\_Republican}) \wedge \langle I_w(\text{Mary}), I_w(\text{John})\rangle \in I_w(\text{insult})\}$

As required, this local context, s_3, entails the presupposition of *back*, that John insulted Mary, so the further update with the second conjunct is defined even though this presupposition is not entailed by the initial context, s_0.

4. PROBLEMATIC UNIVERSAL PRESUPPOSITIONS

Recall the problematic universal presupposition induced by a bound pronoun:

(6) (a) John$_0$ invited [several people]^1.
(b) [One$_1$ man]^2 brought [a cat]^3.
PREDICT: *Presup*: (i) $x_2 \in X_1$, (ii) $|X_1| > 1$ **Correct**

(7) (a) John$_0$ invited [several people]^1.
(b) [One$_1$ man]^2 brought [his$_1$ cat]^3.
PREDICT: *Presup*: Every man John invited was a cat-owner. **Wrong**

Let s_0 be an initial state of information where John is salient and it's taken for granted that we're somewhere in W_0. Formally,

$s_0 = \{\langle w, \{\langle 0, I_w(\text{John})\rangle\}\rangle: w \in W_0\}$

Then updating s_0 with the first sentence, (6a) = (7a), will yield s_3 as the local context for the second sentence.

(6/7′) (a) $[_S [_{NP0}\text{John}] [_S [_{NP2}\text{several people}] [_S \_{}_0 \text{ invited } \_{}_2]]]$

- s_1
$= s_0[\![[_{NP0} \text{ John}]]\!]^M$
$= s_0$ if $\forall\langle w, a\rangle \in s_0(0 \in \text{Dom } a \wedge a_1 = I_w(\text{John}))$
$= s_0$
$= \{\langle w, \{\langle 0, I_w(\text{John})\rangle\}\rangle: w \in W_0\}$

- s_2
$= s_1[\![[_{NP1} \text{ several people}]]\!]^M$
$= s_0[\![[_{NP1} \text{ several people}]]\!]^M$
$= \{\langle w, a \cup \{\langle 1, d\rangle\}\rangle: \langle w, a\rangle \in s_0 \wedge d \subseteq I_w(\text{person}) \wedge |d| > 2\}$ if $\forall\langle w, a\rangle \in s_0(1 \notin \text{Dom } a)$
$= \{\langle w, a \cup \{\langle 1, d\rangle\}\rangle: \langle w, a\rangle \in s_0 \wedge d \subseteq I_w(\text{person}) \wedge |d| > 2\}$
$= \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle\}\rangle: w \in W_0 \wedge d \subseteq I_w(\text{person}) \wedge |d| > 2\}$

- s_3
$= s_2[\![[_S \_{}_0 \text{ invited } \_{}_1]]\!]^M$
$= \{\langle w, a\rangle: \langle w, a\rangle \in s_2 \wedge \forall d \in a_1(\langle a_0, d\rangle \in I_w(\text{invite}))\}$ if $\forall\langle w, a\rangle \in s_2(0, 1 \in \text{Dom } a \wedge a_0 \in D \wedge a_1 \subseteq D)$
$= \{\langle w, a\rangle: \langle w, a\rangle \in s_2 \wedge \forall d \in a_1(\langle a_0, d\rangle \in I_w(\text{invite}))\}$
$= \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle\}\rangle: w \in W_0 \wedge d \subseteq I_w(\text{person}) \wedge |d| > 2 \wedge \forall c \in d\,(\langle I_w(\text{John}), c\rangle \in I_w(\text{invite}))\}$

In (6), the subsequent update of s_3 with the second sentence yields the right result:

(6′) (b) $[_S [_{NP2}$ one$_1$ man$] [_S [_{NP3}$ a cat$] [_S _{}_2$ brought $\_{}_3]]]$

- s_4

  $= s_3[\![[_{NP2}\text{ one}_1\text{ man}]]\!]^M$

  $= \{\langle w, a \cup \{\langle 2, d'\rangle\}\rangle: \langle w, a\rangle \in s_0 \wedge d' \in I_w(\text{man}) \wedge d \in a_1\}$ if $\forall\langle w, a\rangle \in s_0(2 \notin \text{Dom } a \wedge 1 \in \text{Dom } a \wedge a_1 \subseteq D \wedge |a| > 1)\}$

  $= \{\langle w, a \cup \{\langle 2, d'\rangle\}\rangle: \langle w, a\rangle \in s_0 \wedge d' \in I_w(\text{man}) \wedge d' \in a_1\}$

  $= \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle, \langle 2, d'\rangle\}\rangle: w \in W_0$
  $\wedge\ d \subseteq I_w(\text{person}) \wedge |d| > 2\}$
  $\wedge\ \forall c \in d\ (\langle I_w(\text{John}), c\rangle \in I_w(\text{invite}))$
  $\wedge\ d' \in I_w(\text{man}) \wedge d' \in d\}$

- s_5

  $= s_4[\![[_{NP3}\text{ a cat}]]\!]^M$

  $= \{\langle w, a \cup \{\langle 3, d''\rangle\}\rangle: \langle w, a\rangle \in s_4 \wedge d'' \in I_w(\text{cat})\}$ if $\forall\langle w, a\rangle \in s_4(3 \notin \text{Dom } a)$

  $= \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle, \langle 2, d'\rangle, \langle 3, d''\rangle\}\rangle: w \in W_0$
  $\wedge\ d \subseteq I_w(\text{person}) \wedge |d| > 2\}$
  $\wedge\ \forall c \in d\ (\langle I_w(\text{John}), c\rangle \in I_w(\text{invite}))$
  $\wedge\ d' \in I_w(\text{man}) \wedge d' \in d$
  $\wedge\ d'' \in I_w(\text{cat})\}$

- s_6

  $= s_5[\![[_S \_{}_2\text{ brought }\_{}_3]]\!]^M$

  $= \{\langle w, a\rangle: \langle w, a\rangle \in s_5 \wedge \langle a_2, a_3\rangle \in I_w(\text{bring}))\}$ if $\forall\langle w, a\rangle \in s_2(2, 3 \in \text{Dom } a \wedge a_2, a_3 \in D)$

  $= \{\langle w, a\rangle: \langle w, a\rangle \in s_5 \wedge \langle a_2, a_3\rangle \in I_w(\text{bring}))\}$

  $= \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle, \langle 2, d'\rangle, \langle 3, d''\rangle\}\rangle: w \in W_0$
  $\wedge\ d \subseteq I_w(\text{person}) \wedge |d| > 2\}$
  $\wedge\ \forall c \in d\ (\langle I_w(\text{John}), c\rangle \in I_w(\text{invite}))$
  $\wedge\ d' \in I_w(\text{man}) \wedge d' \in d$
  $\wedge\ d'' \in I_w(\text{cat})$
  $\wedge\ \langle d', d''\rangle \in I_w(\text{bring})\}$

In contrast, in the problematic (7b), we get s'_5 instead of s_5:

(7′) (b) $[_S [_{NP2}$ one$_1$ man$] [_S [_{NP3}$ his$_2$ cat$] [_S _{}_2$ brought $\_{}_3]]]$

- s'_5

  $= s_4[\![[_{NP3[-def]}\text{ his}_2\text{ cat}]]\!]^M$

  $= \{\langle w, a \cup \{\langle 3, d''\rangle\}\rangle: \langle w, a\rangle \in s_4 \wedge \langle d'', a_2\rangle \in I_w(\text{cat\_of})\}$ if $\forall\langle w, a\rangle \in s_4(3 \notin \text{Dom } a \wedge 2 \in \text{Dom } a \wedge \exists c(\langle c, a_2\rangle \in I_w(\text{cat\_of}))\}$

As usual, we try to capture the presupposition of $[_{NP3}$ his$_2$ cat$]$ by universal quantification over world-sequence pairs in the definedness condition. The intuition is that the context must *entail* that x_2 has a cat. But since we're quantifying not just over worlds but also over sequences, we end up requiring that *every contextually salient man* must have a cat — i.e., given s_4 above, every man that John invited. Since s_4 does not satisfy this presuppositional requirement, this update is undefined and so we predict that $[_{NP3}$ his$_2$ cat$]$ should give rise to presupposition failure. But intuitively, there is no presupposition of this sort, so this is a problem for this theory.

APPENDIX: COMBINING SATISFACTION-BASED AND ANAPHORIC THEORIES OF PRESUPPOSITION

In what follows we define a dynamic system which combines *satisfaction-based* and *anaphoric* theories of presupposition. It draws primarily on the mixed theory of Heim 1983**a**, **b** and extends it with compatible ideas from Heim 1982 (anaphoric presupposition of definites), Groenendijk, Stokhof & Veltman 1995 (contextual uniqueness), Kamp & Reyle 1983 (proper names), and van der Sandt 1992 (anaphoric *other*, *too*, etc).

Note that the theory assumed here is intensional, like Heim 1983**b**, to facilitate comparison with Gazdar 1979. However, *new* discourse referents (dref's) are construed as dref's that are newly added to the context (as in Heim 1983**a**, with partial assignments), not as dref's that are already present in the context but not yet associated with any shared information (as in Heim 1983**b**, with total assignments). For the present, we ignore accommodation.

- *Structural input to interpretation*
  Heimian LF's, as defined in Heim 1983a and 1982.

- *Models*
  We assume standard intensional model structures, i.e.,
  - a model is a structure $M = \langle W, D, \{I_w: w \in W\}\rangle$, where W is the set of possible worlds, D the set of individuals (assumed to be the same throughout W), and for any world $w \in W$, I_w maps every constant to its extension in w.

- *Information states and context change potentials*
  Sentential meanings are partial mappings from input information states to output information states, where an information state is modeled as a set of world-sequence pairs. Intuitively, the world coordinates model factual information shared in the context — the *common ground* of Stalnaker 1979, or the intersection of the propositions in Gazdar's 1979 context — while the sequences model contextually salient individuals (salient enough to be referred to by pronouns and other anaphoric expressions)

  Context change, due to updating an input information state with the meaning of a sentence-like LF constituent can involve both updating the factual information (formally, eliminating some worlds from the common ground) and updating the current list of salient individuals (formally, adding new dref's). These operations are defined only for input states of information that satisfy the presuppositions of the sentential constituent. So the context change potential denoted by such a constituent, written as $[\![\ ]\!]^M$, is a partial function..

  If s is an information state and $[\![\phi]\!]^M$ a context change potential of a constituent ϕ such that $[\![\phi]\!]^M$ is defined for s, we write $s[\![\phi]\!]^M$ for the output state that results from updating s with $[\![\phi]\!]^M$.

- *Some basic context change potentials*

For any model $M = \langle W, D, \{I_w: w \in W\}\rangle$,

$s[\![[_{NPn} \text{ John}]]\!]^M$
$= s$ if $\forall\langle w, a\rangle \in s(n \in \text{Dom } a \wedge a_n = I_w(\text{John}))$
$=$ undefined otherwise

$s[\![[_{NPn} \text{ this cat}]]\!]^M$
$= s$ if $\forall\langle w, a\rangle \in s(n \in \text{Dom } a \wedge a_n \in I_w(\text{cat}))$
$=$ undefined otherwise

$s[\![[_{NPn} \text{ the cat}]]\!]^M$
$= s$ if $\forall\langle w, a\rangle \in s(n \in \text{Dom } a \wedge a_n \in I_w(\text{cat}))$
$=$ undefined otherwise

$s[\![[_{NPn} \text{ his}_m \text{ cat}]]\!]^M$
$= s$ if $\forall\langle w, a\rangle \in s(m, n \in \text{Dom } a \wedge \langle a_n, a_m\rangle \in I_w(\text{cat\_of}))$
$=$ undefined otherwise

$s[\![[_{NPn[-\text{def}]} \text{ his}_m \text{ cat}]]\!]^M$
$= \{\langle w, a \cup \{\langle n, d\rangle\}\rangle: \langle w, a\rangle \in s \wedge \langle d, a_m\rangle \in I_w(\text{cat\_of})\}$ if $\forall\langle w, a\rangle \in s(n \notin \text{Dom } a \wedge m \in \text{Dom } a \wedge \exists d(\langle d, a_m\rangle \in I_w(\text{cat\_of})))$
$=$ undefined otherwise

$s[\![[_{NPn} \text{ a cat}]]\!]^M$
$= \{\langle w, a \cup \{\langle n, d\rangle\}\rangle: \langle w, a\rangle \in s \wedge d \in I_w(\text{cat})\}$ if $\forall\langle w, a\rangle \in s(n \notin \text{Dom } a)$
$=$ undefined otherwise

$s[\![[_{NPn} \text{ several cats}]]\!]^M$
$= \{\langle w, a \cup \{\langle n, d\rangle\}\rangle: \langle w, a\rangle \in s \wedge d \subseteq I_w(\text{cat}) \wedge |d| > 2\}$ if $\forall\langle w, a\rangle \in s(n \notin \text{Dom } a)$
$=$ undefined otherwise

$s[\![[_{NPn} \text{ one}_m \text{ cat}]]\!]^M$
$= \{\langle w, a \cup \{\langle n, d\rangle\}\rangle: \langle w, a\rangle \in s \wedge d \in a_m \wedge d \in I_w(\text{cat})\}$ if $\forall\langle w, a\rangle \in s(n \notin \text{Dom } a \wedge m \in \text{Dom } a \wedge a_m \subseteq D \wedge |a_m| > 1)$
$=$ undefined otherwise

$s[\![[_{NPn} \text{ another}_m \text{ cat}]]\!]^M$
$= \{\langle w, a \cup \{\langle n, d\rangle\}\rangle: \langle w, a\rangle \in s \wedge d \neq a_m \wedge d \in I_w(\text{cat})\}$ if $\forall\langle w, a\rangle \in s(n \notin \text{Dom } a \wedge m \in \text{Dom } a \wedge a_m \in I_w(\text{cat}))$
$=$ undefined otherwise

$s[\![[_{NPn} \text{ any other}_m \text{ cat}]]\!]^M$
$= \{\langle w, a \cup \{\langle n, d\rangle\}\rangle: \langle w, a\rangle \in s \wedge d \neq a_m \wedge d \in I_w(\text{cat})\}$ if $\forall\langle w, a\rangle \in s(n \notin \text{Dom } a \wedge m \in \text{Dom } a \wedge a_m \in I_w(\text{cat}))$
$=$ undefined otherwise

$s[\![[_{NPn} \text{ the other}_m \text{ cat}]]\!]^M$
$= s$ if $\forall\langle w, a\rangle \in s(n \in \text{Dom } a \wedge a_n \in I_w(\text{cat}) \wedge m \in \text{Dom } a \wedge a_m \in I_w(\text{cat}) \wedge a_n \neq a_m)$
$=$ undefined otherwise

$s[\![[_S \text{ he}_n \text{ insulted } \_\_{}_m]]\!]^M$

$= \{\langle w, a\rangle: \langle w, a\rangle \in s \wedge \langle a_n, a_m\rangle \in I_w(\text{insult})\}$ if $\forall\langle w, a\rangle \in s(n, m \in \text{Dom } a \wedge a_n \in D \wedge a_m \in D)$

$= \{\langle w, a\rangle: \langle w, a\rangle \in s \wedge \forall d \in a_m(\langle a_n, d\rangle \in I_w(\text{insult}))\}$ if $\forall\langle w, a\rangle \in s(n, m \in \text{Dom } a \wedge a_n \in D \wedge a_m \subseteq D)$

= undefined otherwise

$s[\![[_S \text{ he}_n \text{ insulted him}_m \text{ too}_{n',m'}]]\!]^M$

$= \{\langle w, a\rangle: \langle w, a\rangle \in s \wedge \langle a_n, a_m\rangle \in I_w(\text{insult})\}$ if $\forall\langle w, a\rangle \in s(n, m, n', m' \in \text{Dom } a \wedge \langle a_n, a_m\rangle \neq \langle a_{n'}, a_{m'}\rangle \wedge \langle a_{n'}, a_{m'}\rangle \in I_w(\text{insult}))$

= undefined otherwise

$s[\![[_S \text{ he}_n \text{ too}_{n'} \text{ insulted him}_m]]\!]^M$

$= \{\langle w, a\rangle: \langle w, a\rangle \in s \wedge \langle a_n, a_m\rangle \in I_w(\text{insult})\}$ if $\forall\langle w, a\rangle \in s(n, m, n' \in \text{Dom } a \wedge \langle a_n, a_m\rangle \neq \langle a_{n'}, a_m\rangle \wedge \langle a_{n'}, a_m\rangle \in I_w(\text{insult}))$

= undefined otherwise

$s[\![[_S \text{ he}_n \text{ insulted him}_m \text{ back}]]\!]^M$

$= \{\langle w, a\rangle: \langle w, a\rangle \in s \wedge \langle a_n, a_m\rangle \in I_w(\text{insult})\}$ if $\forall\langle w, a\rangle \in s(n, m \in \text{Dom } a \wedge \langle a_n, a_m\rangle \neq \langle a_m, a_n\rangle \wedge \langle a_m, a_n\rangle \in I_w(\text{insult}))$

= undefined otherwise

- *Context change potentials for some complex sentences*:

$s[\![[_S\ \phi\ \psi]]\!]^M$

$= s[\![\phi]\!]^M[\![\psi]\!]^M$ if $s[\![\phi]\!]^M$ and $s[\![\phi]\!]^M[\![\psi]\!]^M$ are both defined

= undefined otherwise

$s[\![[_S \text{ not } \phi]]\!]^M$

$= s - \{\langle w, a\rangle: \langle w, a\rangle \in s \wedge \exists b(a \subseteq b \wedge \langle w, b\rangle \in s[\![\phi]\!]^M)\}$ if $s[\![\phi]\!]^M$ is defined

= undefined otherwise

Assume that in every model,

$I_w(\text{u}) = I_w(\text{always}) = I_w(\text{every}) = \{(X, Y): X \subseteq Y\}$

$I_w(\text{never}) = I_w(\text{no}) = \{(X, Y): X \cap Y = \varnothing\}$

$I_w(\text{usually}) = I_w(\text{most}) = \{(X, Y): |X \cap Y| > |X - Y|\}$

Then, for $\alpha \in$ {u, always, usually, never, …} and $\beta \in$ {every, most, no, …}:

$s[\![[_S\ \alpha\ [\text{if } \phi]\ [_S\ \psi]]]\!]^M$

$= \{\langle w, a\rangle: \langle w, a\rangle \in s \wedge (\{b: a \subseteq b \wedge \langle w, b\rangle \in s[\![\phi]\!]^M\}, \{b: \exists c(b \subseteq c \wedge \langle w, c\rangle \in s[\![\phi]\!]^M[\![\psi]\!]^M)\}) \in I_w(\alpha)\}$ if $s[\![\phi]\!]^M$ is defined and $s[\![\phi]\!]^M[\![\psi]\!]^M$ is defined

= undefined otherwise

$s[\![[_S\ \beta\ [_{NPn}\ \phi]\ [_S\ \psi]]]\!]^M$

$= \{\langle w, a\rangle: \langle w, a\rangle \in s \wedge (\{d \in D: \exists b(a \cup \{\langle n, d\rangle\} \subseteq b \wedge \langle w, b\rangle \in s[\![\phi]\!]^M)\}, \{d \in D: \exists b(a \cup \{\langle n, d\rangle\} \subseteq b \wedge \langle w, b\rangle \in s[\![\phi]\!]^M[\![\psi]\!]^M)\}) \in I_w(\beta)\}$ if $\forall\langle w, a\rangle \in s(n \notin \text{Dom } a)$, and $s[\![\phi]\!]^M$ is defined, and $s[\![\phi]\!]^M[\![\psi]\!]^M$ is defined

= undefined otherwise

More Notes on Heim 1983a,b
Apparent Presupposition Cancellation due to Accommodation

0. ACCOMMODATION: INTUITIVE IDEA

Karttunen (1974, p. 191)

"Ordinary conversation does not always proceed in the ideal orderly fashion described earlier. People do make leaps and short cuts by using sentences whose presuppositions are not satisfied in the conversational context … But … I think we can maintain that a sentence is always taken to be an increment to a context that satisfies its presuppositions. If the current conversational context does not suffice, the listener is entitled to extend it as required. He must determine for himself what context he is supposed to be in on the basis of what is said and, if he is willing to go along with it, make the same tacit extension that his interlocutor appears to have made." (Dubbed *accommodation* by Lewis 1979)

1. TOWARD A FORMALLY PRECISE THEORY

Consider again the problematic example (7) from the last handout:

(7) (a) John_0 invited [several people]^1.
(b) [One_1 man]^2 brought [his_1 cat]^3.
PREDICT: *Presup*: Every man John invited was a cat-owner. **Wrong**

Again, let s_0 be an initial state of information where John is salient and it's taken for granted that we're somewhere in W_0. Formally,

$s_0 = \{\langle w, \{\langle 0, I_w(\text{John})\rangle\}\rangle : w \in W_0\}$

Then the presuppositions of the first sentence, (7a), are all unproblematic and do not call for any "tacit extention" of the current conversational context — i.e., s_0 at this point. So the update of s_0 with (7a) can proceed in the by now familiar way:

(7′) (a) $[_S\ [_{NP0}\ \text{John}]\ [_S\ [_{NP2}\ \text{several people}]\ [_S\ \__0\ \text{invited}\ \__2]]]$

- s_1
  $= s_0[\![[_{NP0}\ \text{John}]]\!]^M$
  $= s_0$ if $\forall\langle w, a\rangle \in s_0(0 \in \text{Dom}\ a \wedge a_1 = I_w(\text{John}))$
  $= \{\langle w, \{\langle 0, I_w(\text{John})\rangle\}\rangle : w \in W_0\}$
- s_2
  $= s_1[\![[_{NP1}\ \text{several people}]]\!]^M$
  $= \{\langle w, a \cup \{\langle 1, d\rangle\}\rangle : \langle w, a\rangle \in s_0$
  $\wedge\ d \subseteq I_w(\text{person}) \wedge |d| > 2\}$ if $\forall\langle w, a\rangle \in s_0(1 \notin \text{Dom}\ a)$
  $= \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle\}\rangle : w \in W_0$
  $\wedge\ d \subseteq I_w(\text{person}) \wedge |d| > 2\}$
- s_3
  $= s_2[\![[_S\ \__0\ \text{invited}\ \__1]]\!]^M$
  $= \{\langle w, a\rangle : \langle w, a\rangle \in s_2$
  $\wedge\ \forall d \in a_1(\langle a_0, d\rangle \in I_w(\text{invite}))\}$ if $\forall\langle w, a\rangle \in s_2(0, 1 \in \text{Dom}\ a \wedge a_0 \in D \wedge a_1 \subseteq D)$
  $= \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle\}\rangle : w \in W_0$
  $\wedge\ d \subseteq I_w(\text{person}) \wedge |d| > 2\}$
  $\wedge\ \forall c \in d\ (\langle I_w(\text{John}), c\rangle \in I_w(\text{invite}))\}$

We have seen that if we then try to update s_3 with the second sentence, we get a problem after updating with the subject NP since the resulting local context, s_4, fails to satisfy the presupposition of [his$_2$ cat][3]:

(7′) (b) $[_{S}\ [_{NP2}\ \text{one}_1\ \text{man}]\ [_{S}\ [_{NP3}\ \text{his}_2\ \text{cat}]\ [_{S}\ \_{}_2\ \text{brought}\ \_{}_3]]]$

Without accommodation:

- s_4

$$\begin{aligned}
&= s_3[\![[_{NP2}\ \text{one}_1\ \text{man}]]\!]^M \\
&= \{\langle w, a \cup \{\langle 2, d'\rangle\}\rangle : \langle w, a\rangle \in s_0 \wedge d' \in I_w(\text{man}) \wedge d \in a_1\} \quad \text{if } \forall\langle w, a\rangle \in s_0 (2 \notin \text{Dom } a \wedge 1 \in \text{Dom } a \wedge a_1 \subseteq D \wedge |a| > 1)\} \\
&= \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle, \langle 2, d'\rangle\}\rangle : w \in W_0 \\
&\quad \wedge d \subseteq I_w(\text{person}) \wedge |d| > 2\} \\
&\quad \wedge \forall c \in d\,(\langle I_w(\text{John}), c\rangle \in I_w(\text{invite})) \\
&\quad \wedge d' \in I_w(\text{man}) \wedge d' \in d\}
\end{aligned}$$

- s_5 **Presupposition failure**

$$\begin{aligned}
&= s_4[\![[_{NP3[\text{-def}]}\ \text{his}_2\ \text{cat}]]\!]^M \\
&= \{\langle w, a \cup \{\langle 3, d''\rangle\}\rangle : \langle w, a\rangle \in s_4 \wedge \langle d'', a_2\rangle \in I_w(\text{cat_of})\} \quad \text{if } \forall\langle w, a\rangle \in s_4 (3 \notin \text{Dom } a \wedge 2 \in \text{Dom } a \wedge \exists c(\langle c, a_2\rangle \in I_w(\text{cat_of}))\}
\end{aligned}$$

This problem can be solved by "tacitly extending" the strictly local context, s_4, just enough to satisfy the problematic presupposition:

With local accommodation:

- s_4

$$\begin{aligned}
&= s_3[\![[_{NP2}\ \text{one}_1\ \text{man}]]\!]^M \\
&= \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle, \langle 2, d'\rangle\}\rangle : w \in W_0 \\
&\quad \wedge d \subseteq I_w(\text{person}) \wedge |d| > 2\} \\
&\quad \wedge \forall c \in d\,(\langle I_w(\text{John}), c\rangle \in I_w(\text{invite})) \\
&\quad \wedge d' \in I_w(\text{man}) \wedge d' \in d\}
\end{aligned}$$

- s'_4 **Local accommodation** ($s_4 \rightarrow s'_4$)

$$\begin{aligned}
&= \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle, \langle 2, d'\rangle\}\rangle : w \in W_0 \\
&\quad \wedge d \subseteq I_w(\text{person}) \wedge |d| > 2\} \\
&\quad \wedge \forall c \in d\,(\langle I_w(\text{John}), c\rangle \in I_w(\text{invite})) \\
&\quad \wedge d' \in I_w(\text{man}) \wedge d' \in d \\
&\quad \wedge \boldsymbol{\exists c(\langle c, d'\rangle \in I_w(\textbf{cat_of}))}\}
\end{aligned}$$

- s'_5

$$\begin{aligned}
&= s'_4[\![[_{NP3[\text{-def}]}\ \text{his}_2\ \text{cat}]]\!]^M \\
&= \{\langle w, a \cup \{\langle 3, d''\rangle\}\rangle : \langle w, a\rangle \in s'_4 \wedge \langle d'', a_2\rangle \in I_w(\text{cat_of})\} \quad \text{if } \forall\langle w, a\rangle \in s'_4 (3 \notin \text{Dom } a \wedge 2 \in \text{Dom } a \wedge \exists c(\langle c, a_2\rangle \in I_w(\text{cat_of}))\} \\
&= \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle, \langle 2, d'\rangle, \langle 3, d''\rangle\}\rangle : w \in W_0 \\
&\quad \wedge d \subseteq I_w(\text{person}) \wedge |d| > 2\} \\
&\quad \wedge \forall c \in d\,(\langle I_w(\text{John}), c\rangle \in I_w(\text{invite})) \\
&\quad \wedge d' \in I_w(\text{man}) \wedge d' \in d \\
&\quad \wedge \exists c(\langle c, d'\rangle \in I_w(\text{cat_of})) \\
&\quad \wedge \langle d'', d'\rangle \in I_w(\text{cat_of})\} \\
&= \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle, \langle 2, d'\rangle, \langle 3, d''\rangle\}\rangle : w \in W_0 \\
&\quad \wedge d \subseteq I_w(\text{person}) \wedge |d| > 2\} \\
&\quad \wedge \forall c \in d\,(\langle I_w(\text{John}), c\rangle \in I_w(\text{invite})) \\
&\quad \wedge d' \in I_w(\text{man}) \wedge d' \in d \\
&\quad \wedge \langle d'', d'\rangle \in I_w(\text{cat_of})\}
\end{aligned}$$

- s_6
  $= \quad s_5[\![[_S \_{}_2 \text{ brought } \_{}_3]]\!]^M$
  $= \quad \{\langle w, a\rangle : \langle w, a\rangle \in s_5 \wedge \langle a_2, a_3\rangle \in I_w(\text{bring})\}$ if $\forall \langle w, a\rangle \in s_2(2, 3 \in \text{Dom } a \wedge a_2, a_3 \in D)$
  $= \quad \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle, \langle 2, d'\rangle, \langle 3, d''\rangle\}\rangle : w \in W_0$
  $\wedge\ d \subseteq I_w(\text{person}) \wedge |d| > 2\}$
  $\wedge\ \forall c \in d\ (\langle I_w(\text{John}), c\rangle \in I_w(\text{invite}))$
  $\wedge\ d' \in I_w(\text{man}) \wedge d' \in d$
  $\wedge\ \langle d'', d'\rangle \in I_w(\text{cat\_of})\}$
  $\wedge\ \langle d', d''\rangle \in I_w(\text{bring})\}$

In intuitive terms, local accommodation amounts to interpreting (7b) as "One man *had a cat and* brought his cat".

Local accommodation is one way to explicate Karttunen's intuition of the "current conversational context". Alternatively, we might take a more coarse-grained view of locality, on which sentence-internal updates are invisible. That is, we would enrich the context by accommodation at the same point in the interpretion where we would also enrich it by adding conversational implicatures (if we adapt Gazdar 1979 to the present theory).

On the coarse-grained view, the "current context" would be the context for (7b) as a whole — i.e., s_3. If we try to minimally extend s_3 to satisfy the presupposition of [his$_2$ cat]^3, we would get the following result:

(7′) (a) $[_S [_{NP0} \text{John}] [_S [_{NP2} \text{several people}] [_S \_{}_0 \text{ invited } \_{}_2]]]$
(b) $[_S [_{NP2} \text{one}_1 \text{ man}] [_S [_{NP3} \text{his}_2 \text{ cat}] [_S \_{}_2 \text{ brought } \_{}_3]]]$

With global accommodation:

- s_3
  $= \quad s_0[\![[_{NP0} \text{John}]b^M\ v[_{NP2} \text{several people}]]\!]^M [\![[_S \_{}_0 \text{ invited } \_{}_1]]\!]^M$
  $= \quad \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle\}\rangle : w \in W_0$
  $\wedge\ d \subseteq I_w(\text{person}) \wedge |d| > 2\}$
  $\wedge\ \forall c \in d\ (\langle I_w(\text{John}), c\rangle \in I_w(\text{invite}))\}$
- s'_3 **Global accommodation** ($s_3 \to s'_3$)
  $= \quad \{\langle w, \{\langle 0, I_w(\text{John})\rangle, \langle 1, d\rangle, \boldsymbol{\langle 2, d'\rangle}\}\rangle : w \in W_0$
  $\wedge\ d \subseteq I_w(\text{person}) \wedge |d| > 2\}$
  $\wedge\ \forall c \in d\ (\langle I_w(\text{John}), c\rangle \in I_w(\text{invite}))$
  $\wedge\ \boldsymbol{\exists c(\langle c, d'\rangle \in I_w(\text{cat\_of}))}\}$
- s'_4 **Presupposition failure**
  $= \quad s'_3[\![[_{NP2} \text{one}_1 \text{ man}]]\!]^M$
  $= \quad \{\langle w, a \cup \{\langle 2, d'\rangle\}\rangle : \langle w, a\rangle \in s_0 \wedge d' \in I_w(\text{man}) \wedge d \in a_1\}$ if $\forall \langle w, a\rangle \in s_0(2 \notin \text{Dom } a \wedge 1 \in \text{Dom } a \wedge a_1 \subseteq D \wedge |a| > 1)\}$

So in this case, global accommodation fails prevent presupposition failure — it just shifts the failure to a different point in the interpretative process. This need not be stipulated; we have just derived this result from independently motivated principles of the theory.

On processing grounds, one might expect global accommodation to be easier. Accommodating a missing piece of information between sentences may be less taxing on short term memory than attempting to do that in the middle of a sentence. In keeping with this view, *global accommodation* typically yields the preferred reading whenever it succeeds in preventing presupposition failure, as in the following example:

(8) If I go to London, my sister will meet me at the airport.

Global accommodation: *I have a sister and* if I go to London, she will meet me at the airport. √
Local accommodation: If I go to London, *I will have a sister and* she will meet me at the airport. ??!