Nominal (re)centering: From Kalaallisut to UC_1

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(W1: July 30, 2009)

Plan for today

- Outline of CCG+UC_1 theory
- Definition of UC_1 (see handout)
- drt-notation (DRT-like, see handout)
- From Kalaallisut text, via UC_1, to empirically testable prediction

Outline of CCG + UC_1

- language-specific lexicon + universal CCG-rules (both to be given on **M2**) translate NL-syntax into UC_1-syntax
- A UC_1-model $M = \langle \{D_a | a \in \Theta\}, \|\cdot\| \rangle$ assigns to each constant of type a, $A \in Con_a$ a value of type a, $\|A\| \in D_a$.
- Given model $M = \langle \{D_a | a \in \Theta\}, \|\cdot\| \rangle$ and assignment g, UC_1-semantics
  - i. extends $\|\cdot\|$ to $\|\cdot\|^g$, which assigns value $\|A\|^g$ to each UC_1-term A
  - ii. defines *default state* of infotention: $c_0 = \{\langle \langle\,\rangle, \langle\,\rangle \rangle\}$ (no objects available for anaphora)
- Truth definition:
  A UC_1-drs K is *true* in M, $M \models K$, iff $\forall g$: $c_0\|K\|^g \neq \varnothing$
  (c_0 updated with $\|K\|^g$ is not the absurd state).

- e.g. English

  (1) *A man saw an enemy.*

  to UC_1

  (1′) $[\mathbf{x}|\ man\ \mathbf{x}]; ([y|\ enm^{of}\langle y, \top\rangle]; [see\langle \top, \bot\rangle])$

Outline of CCG + UC_1

- CCG-rules (to be given on **M2**) translate NL-syntax into UC_1-syntax

- A UC_1-model $M = \langle \{D_a | a \in \Theta\}, \|\cdot\| \rangle$ assigns to each constant of type a, $A \in Con_a$ a value of type a, $\|A\| \in D_a$.
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  A UC_1-drs K is *true* in M, $M \models K$, iff $\forall g$: $c_0\|K\|^g \neq \varnothing$
  (c_0 updated with $\|K\|^g$ is not the absurd state).

- e.g. here is a possible model (call it M_0)

$$D_e = \{\mathrm{M}, \mathrm{M}'\}$$
$$\|man\| = \chi\{\mathrm{M}, \mathrm{M}'\}$$
$$\|enm^{of}\| = \chi\{\langle \mathrm{M}, \mathrm{M}'\rangle, \langle \mathrm{M}', \mathrm{M}\rangle\}$$
$$\|see\| = \chi\{\langle \mathrm{M}, \mathrm{M}'\rangle\}$$

(Notation: $\chi\{\ldots\}$ stands for the *characteristic function* of $\{\ldots\}$)

Outline of CCG + UC_1

•CCG-rules (to be given on **M2**) translate NL-syntax into UC_1-syntax

•A UC_1-model $M = \langle\{D_a \mid a \in \Theta\}, \|\cdot\|\rangle$ assigns to each constant of type a, $A \in Con_a$ a value of type a, $\|A\| \in D_a$.

• Given model $M = \langle\{D_a \mid a \in \Theta\}, \|\cdot\|\rangle$ and assignment g, UC_1-semantics

i. extends $\|\cdot\|$ to $\|\cdot\|^g$, which assigns value $\|A\|^g$ to each UC_1-term A

ii. defines *default state* of infotention:

$c_0 = \{\langle\langle\,\rangle, \langle\,\rangle\rangle\}$

(no objects available for anaphora)

•Truth definition:

A UC_1-drs K is *true* in M, $M \models K$, iff $\forall g$: $c_0\|K\|^g \neq \varnothing$

(c_0 updated with $\|K\|^g$ is not the absurd state).

- e.g. in M_0, for any g, we derive:
- $\top$-list update: add a man

$c_0\|[\mathbf{x} \mid man\ \mathbf{x}]\|^g$

$= \{\langle\langle \text{M}\rangle, \langle\,\rangle\rangle,$
$\langle\langle \text{M}'\rangle, \langle\,\rangle\rangle\}$

$=: c_1$

- $\bot$-list update: add an enemy of the $\top$-man

$c_1\|[y \mid enm^{of}\langle y, \top\rangle]\|^g$

$= \{\langle\langle \text{M}\rangle, \langle \text{M}'\rangle\rangle,$
$\langle\langle \text{M}'\rangle, \langle \text{M}\rangle\rangle\}$

$= c_2$

- test: the $\top$-man saw the $\bot$-enemy

$c_2\|[see\langle\top, \bot\rangle]\|^g$

$= \{\langle\langle \text{M}\rangle, \langle \text{M}'\rangle\rangle\}$

- $c_0\|[\mathbf{x} \mid man\ \mathbf{x}];\ \dots\ ;\ \|[see\langle\top, \bot\rangle]\|^g$

$= \{\langle\langle \text{M}\rangle, \langle \text{M}'\rangle\rangle\}$

Outline of CCG + UC_1

•CCG-rules (to be given on **M2**) translate NL-syntax into UC_1-syntax

•A UC_1-model $M = \langle\{D_a \mid a \in \Theta\}, \|\cdot\|\rangle$ assigns to each constant of type a, $A \in Con_a$ a value of type a, $\|A\| \in D_a$.

• Given model $M = \langle\{D_a \mid a \in \Theta\}, \|\cdot\|\rangle$ and assignment g, UC_1-semantics

i. extends $\|\cdot\|$ to $\|\cdot\|^g$, which assigns value $\|A\|^g$ to each UC_1-term A

ii. defines *default state* of infotention:

$c_0 = \{\langle\langle\,\rangle, \langle\,\rangle\rangle\}$

(no objects available for anaphora)

• A UC_1-drs K is UC_1-*true* in M, written $M \models K$, iff $\forall g$: $c_0\|K\|^g \neq \varnothing$ (i.e. iff the default state c_0 updated with $\|K\|^g$ is not the absurd state).

- e.g. given that in M_0, for any g,

$c_0\|[\mathbf{x} \mid man\ \mathbf{x}];\ \dots\ ;\ [see\langle\top, \bot\rangle]\|^g$

$= \{\langle\langle \text{M}\rangle, \langle \text{M}'\rangle\rangle\}$

$\neq \varnothing$

UC_1 (1′) is UC_1-*true* in the model M_0,

i.e. $M_0 \models$ (1′).

- Empirically testable prediction:

English

(1) *A man saw an enemy.*

(represented by UC_1 drs

(1′) $[\mathbf{x} \mid man\ \mathbf{x}]$; $([y \mid enm^{of}\langle y, \top\rangle]$;
$[see\langle\top, \bot\rangle])$)

will be judged *intuitively true* in (the situation represented by) the model M_0.

Once upon a time in the N. Kal (1) → UC_1 syn, …

Model M_1 with $D_e = \{\text{M}, \text{M}', \text{K}, \text{K}'\}$

$\|man\| = {}^{\chi}\{\text{M}, \text{M}'\}$

$\|enm^{of}\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}', \text{M}\rangle\}$

$\|kayak\| = {}^{\chi}\{\text{K}, \text{K}'\}$

(*pos* for 'inalienable-possessor-of')

$\|pos\|(\text{K}) = \text{M}$, $\|pos\|(\text{K}') = \text{M}'$

$\|use\| = {}^{\chi}\{\langle \text{M}, \text{K}\rangle, \langle \text{M}', \text{K}'\rangle\}$

$\|lie.in.wait\| = {}^{\chi}\{\text{M}, \text{M}'\}$

$\|approach\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}, \text{K}'\rangle\}$

$\|see\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}', \text{M}\rangle,$
$\langle \text{M}, \text{K}'\rangle, \langle \text{M}', \text{K}\rangle\}$

$\|int.to.harpoon\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}', \text{M}\rangle\}$

$\|forestall\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$

$\|harpoon\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$

$\|capsize\| = {}^{\chi}\{\text{M}\}$

$\|die\| = {}^{\chi}\{\text{M}\}$

$\|kill\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$

$\|go.hm\| = {}^{\chi}\{\text{M}'\}$

$\|tell.story\| = {}^{\chi}\{\text{M}'\}$

(1) Long ago) there was a man who had (an) enemy(ies).

K. *angut-qar-pu-q* *akiraq-lik-mik.*
man-have-DEC$_{iv}$-3S enemy-with-MOD

UC_1 drs

$[y \mid man\ y]$; $-{\downarrow}[y \mid enm^{of}\langle y, \bot\rangle]$

UC_1 sem:

Step 1:

$c_0\|[y \mid man\ y];\ {\downarrow}[y \mid enm^{of}\langle y, \bot\rangle]\|^g$

$= c_0\|[y \mid man\ y]\|^g\|{\downarrow}[y \mid enm^{of}\langle y, \bot\rangle]\|^g$ D6.x.;

Step 2:

Compute each update in turn.

Once upon a time in the N. (1): sample computation

Model M_1 with $D_e = \{\text{M}, \text{M}', \text{K}, \text{K}'\}$

$\|man\| = {}^{\chi}\{\text{M}, \text{M}'\}$

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$\|approach\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}, \text{K}'\rangle\}$

$\|see\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}', \text{M}\rangle,$
$\langle \text{M}, \text{K}'\rangle, \langle \text{M}', \text{K}\rangle\}$

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$\|harpoon\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$

$\|capsize\| = {}^{\chi}\{\text{M}\}$

$\|die\| = {}^{\chi}\{\text{M}\}$

$\|kill\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$

$\|go.hm\| = {}^{\chi}\{\text{M}'\}$

$\|tell.story\| = {}^{\chi}\{\text{M}'\}$

(1) man-have-DEC$_{iv}$-3S enemy-with-MOD
$[y \mid man\ y]$; $-{\downarrow}[y \mid enm^{of}\langle y, \bot\rangle]$

1. $c_0\|[y \mid man\ y]\|^g$
2. $c_0\|\lambda I \lambda j.\ \exists y \exists i(j = (y \cdot i) \wedge Ii \wedge man\ y)\|^g$ T2.iii
3. $\|\lambda I \lambda j.\ \exists y \exists i(j = (y \cdot i) \wedge Ii \wedge man\ y)\|^g(c_0)$ D6.ln3
4. ${}^{x}\{\langle \top i, d \cdot \bot i\rangle \mid i \in c_0\ \&\ d \in {}^{\{\}}\|man\|\}$ D6.sem
5. ${}^{x}\{\langle \top i, d \cdot \bot i\rangle \mid i \in \{\langle\langle\,\rangle, \langle\,\rangle\rangle\}\ \&\ d \in {}^{\{\}}\|man\|\}$ D7.c_0
6. ${}^{x}\{\langle \top i, d \cdot \bot i\rangle \mid i = \langle\langle\,\rangle, \langle\,\rangle\rangle\ \&\ d \in {}^{\{\}}\|man\|\}$ set thr
7. ${}^{x}\{\langle\langle\,\rangle, \langle d\rangle\rangle \mid d \in {}^{\{\}}\|man\|\}$ elim. i
8. $\{\langle\langle\,\rangle, \langle \text{M}\rangle\rangle,$ df. M_1. $\|man\|$
$\langle\langle\,\rangle, \langle \text{M}'\rangle\rangle\}$

$=:$ c_1 df. c_1

Once upon a time in the N. Kal (1) → UC_1 syn, sem

Model M_1 with $D_e = \{\text{M}, \text{M}', \text{K}, \text{K}'\}$

$\|man\| = {}^{\chi}\{\text{M}, \text{M}'\}$

$\|enm^{of}\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}', \text{M}\rangle\}$

$\|kayak\| = {}^{\chi}\{\text{K}, \text{K}'\}$

(*pos* for 'inalienable-possessor-of')

$\|pos\|(\text{K}) = \text{M}$, $\|pos\|(\text{K}') = \text{M}'$

$\|use\| = {}^{\chi}\{\langle \text{M}, \text{K}\rangle, \langle \text{M}', \text{K}'\rangle\}$

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$\|int.to.harpoon\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}', \text{M}\rangle\}$

$\|forestall\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$

$\|harpoon\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$

$\|capsize\| = {}^{\chi}\{\text{M}\}$

$\|die\| = {}^{\chi}\{\text{M}\}$

$\|kill\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$

$\|go.hm\| = {}^{\chi}\{\text{M}'\}$

$\|tell.story\| = {}^{\chi}\{\text{M}'\}$

(1) …there was a man who had (an) enemy(ies)

angut-qar-pu-q *akiraq-lik-mik*

man-have-DEC$_{\text{iv}}$-3S enemy-with-MOD

$[y|\ man\ y]; \downarrow[y|\ enm^{of}\langle y, \bot\rangle]$

<u>⊥-upd: add a man</u>

$\text{c}_0\|[y|\ man\ y]\|^g$

$= {}^{\chi}\{\langle\langle\,\rangle, \langle \text{M}\rangle\rangle, \langle\langle\,\rangle, \langle \text{M}'\rangle\rangle\}$

$=: \text{c}_1$

<u>test: ⊥-man has an enemy</u>

$\text{c}_1\|\downarrow[y|\ enm^{of}\langle y, \bot\rangle]\|^g$

$= {}^{\chi}\{\langle\langle\,\rangle, \langle \text{M}\rangle\rangle, \langle\langle\,\rangle, \langle \text{M}'\rangle\rangle\}$

$=: \text{c}_2$

Once upon a time in the N. Kal (2^1) → UC_1 syn, sem

Model M_1 with $D_e = \{\text{M}, \text{M}', \text{K}, \text{K}'\}$
$\|man\| = {}^{\chi}\{\text{M}, \text{M}'\}$
$\|enm^{of}\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}', \text{M}\rangle\}$
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(*pos* for 'inalienable-possessor-of')
$\|pos\|(\text{K}) = \text{M}$, $\|pos\|(\text{K}') = \text{M}'$
$\|use\| = {}^{\chi}\{\langle \text{M}, \text{K}\rangle, \langle \text{M}', \text{K}'\rangle\}$
$\|lie.in.wait\| = {}^{\chi}\{\text{M}, \text{M}'\}$
$\|approach\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}, \text{K}'\rangle\}$
$\|see\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}', \text{M}\rangle, \langle \text{M}, \text{K}'\rangle, \langle \text{M}', \text{K}\rangle\}$
$\|int.to.harpoon\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}', \text{M}\rangle\}$
$\|forestall\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$
$\|harpoon\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$
$\|capsize\| = {}^{\chi}\{\text{M}\}$
$\|die\| = {}^{\chi}\{\text{M}\}$
$\|kill\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$
$\|go.hm\| = {}^{\chi}\{\text{M}'\}$
$\|tell.story\| = {}^{\chi}\{\text{M}'\}$

(2^1) (Once) when he$^{\top}$ was hunting in a kayak …

qajaq-tur-llu-ni

kayak-use-ELA$_{\top}$-3S$_{\top}$

$[\mathbf{x}|\ \mathbf{x} = \bot]; [y|\ kayak\ y, use\langle \top, y\rangle]; \ldots$

<u>⊤-upd: add ⊥ (i.e. promote ⊥ to ⊤)</u>

$\text{c}_2\|[\mathbf{x}|\ \mathbf{x} = \bot]\|^g$

$= {}^{\chi}\{\langle\langle \text{M}\rangle, \langle \text{M}\rangle\rangle, \langle\langle \text{M}'\rangle, \langle \text{M}'\rangle\rangle\}$

$=: \text{c}_3$

<u>⊥-upd: add a kayak used by ⊤</u>

$\text{c}_3\|[y|\ kayak\ y, use\langle \top, y\rangle]\|^g$

$= {}^{\chi}\{\langle\langle \text{M}\rangle, \langle \text{K}, \text{M}\rangle\rangle, \langle\langle \text{M}'\rangle, \langle \text{K}', \text{M}'\rangle\rangle\}$

$=: \text{c}_4$

Once upon a time in the N. Kal (2^2) → UC_1 (part 1)

Model M_1 with $D_e = \{\text{M}, \text{M}', \text{K}, \text{K}'\}$
$\|man\| = {}^{\chi}\{\text{M}, \text{M}'\}$
$\|enm^{of}\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}', \text{M}\rangle\}$
$\|kayak\| = {}^{\chi}\{\text{K}, \text{K}'\}$
(*pos* for 'inalienable-possessor-of')
$\|pos\|(\text{K}) = \text{M}$, $\|pos\|(\text{K}') = \text{M}'$
$\|use\| = {}^{\chi}\{\langle \text{M}, \text{K}\rangle, \langle \text{M}', \text{K}'\rangle\}$
$\|lie.in.wait\| = {}^{\chi}\{\text{M}, \text{M}'\}$
$\|approach\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}, \text{K}'\rangle\}$
$\|see\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}', \text{M}\rangle, \langle \text{M}, \text{K}'\rangle, \langle \text{M}', \text{K}\rangle\}$
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$\|forestall\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$
$\|harpoon\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$
$\|capsize\| = {}^{\chi}\{\text{M}\}$
$\|die\| = {}^{\chi}\{\text{M}\}$
$\|kill\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$
$\|go.hm\| = {}^{\chi}\{\text{M}'\}$
$\|tell.story\| = {}^{\chi}\{\text{M}'\}$

(2^1) (Once) when he$^{\top}$ was hunting in a kayak …

${}^{\chi}\{\langle\langle \text{M}\rangle, \langle \text{K}, \text{M}\rangle\rangle, \langle\langle \text{M}'\rangle, \langle \text{K}', \text{M}'\rangle\rangle\}$

$=: \text{c}_4$

2 he$_{\text{T}}$ saw another kayak …;

alla-mik *qajaq-si-ga-mi*

other-MOD kayak-see-FCT$_{\top}$-3S$_{\top}$

$[y|\ kayak\ y]; [\bot_2 \in \bot\|]; [\bot \neq \bot_2]; [see\langle \text{T}, \bot\rangle]; \ \ldots$

<u>⊥-upd: add a kayak</u>

$\text{c}_4\|[y|\ kayak\ y]\|^g$

$= {}^{\chi}\{\langle\langle \text{M}\rangle, \langle \text{K}, \text{K}, \ldots\rangle\rangle, \langle\langle \text{M}\rangle, \langle \text{K}', \text{K}, \ldots\rangle\rangle, \langle\langle \text{M}'\rangle, \langle \text{K}, \text{K}', \ldots\rangle\rangle, \langle\langle \text{M}'\rangle, \langle \text{K}', \text{K}', \ldots\rangle\rangle\}$

$=: \text{c}_5$

<u>global test: $\bot_2$ is in ⊥-col</u>

$\text{c}_5\|[\bot_2 \in \bot\|]\|^g$

$= {}^{\chi}\{\langle\langle \text{M}\rangle, \langle \text{K}, \text{K}, \ldots\rangle\rangle, \langle\langle \text{M}\rangle, \langle \text{K}', \text{K}, \ldots\rangle\rangle, \langle\langle \text{M}'\rangle, \langle \text{K}, \text{K}', \ldots\rangle\rangle, \langle\langle \text{M}'\rangle, \langle \text{K}', \text{K}', \ldots\rangle\rangle\}$

$=: \text{c}_6$

(i.e. the antecedent, $\bot_2$, is a kayak)

Once upon a time in the N. Kal (2^2) → UC_1 (part 2)

Model M_1 with $D_e = \{\text{M}, \text{M}', \text{K}, \text{K}'\}$
$\|man\| = {}^{\chi}\{\text{M}, \text{M}'\}$
$\|enm^{of}\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}', \text{M}\rangle\}$
$\|kayak\| = {}^{\chi}\{\text{K}, \text{K}'\}$
(*pos* for 'inalienable-possessor-of')
$\|pos\|(\text{K}) = \text{M}$, $\|pos\|(\text{K}') = \text{M}'$
$\|use\| = {}^{\chi}\{\langle \text{M}, \text{K}\rangle, \langle \text{M}', \text{K}'\rangle\}$
$\|lie.in.wait\| = {}^{\chi}\{\text{M}, \text{M}'\}$
$\|approach\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}, \text{K}'\rangle\}$
$\|see\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}', \text{M}\rangle, \langle \text{M}, \text{K}'\rangle, \langle \text{M}', \text{K}\rangle\}$
$\|int.to.harpoon\| = {}^{\chi}\{\langle \text{M}, \text{M}'\rangle, \langle \text{M}', \text{M}\rangle\}$
$\|forestall\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$
$\|harpoon\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$
$\|capsize\| = {}^{\chi}\{\text{M}\}$
$\|die\| = {}^{\chi}\{\text{M}\}$
$\|kill\| = {}^{\chi}\{\langle \text{M}', \text{M}\rangle\}$
$\|go.hm\| = {}^{\chi}\{\text{M}'\}$
$\|tell.story\| = {}^{\chi}\{\text{M}'\}$

(2^2) he$_{\top}$ saw another kayak …;

alla-mik *qajaq-si-ga-mi*

other-MOD kayak-see-FCT$_{\top}$-3S$_{\top}$

$[y|\ kayak\ y]; [\bot_2 \in \bot\|]; [\bot \neq \bot_2]; [see\langle \top, \bot\rangle]; \ \ldots$

<u>⊥-upd: add a kayak</u>

$\text{c}_4\|[y|\ kayak\ y]\|^g$

$= {}^{\chi}\{\langle\langle \text{M}\rangle, \langle \text{K}, \text{K}, \ldots\rangle\rangle, \langle\langle \text{M}\rangle, \langle \text{K}', \text{K}, \ldots\rangle\rangle, \langle\langle \text{M}'\rangle, \langle \text{K}, \text{K}', \ldots\rangle\rangle, \langle\langle \text{M}'\rangle, \langle \text{K}', \text{K}', \ldots\rangle\rangle\}$

$=: \text{c}_5$

<u>global test: $\bot_2$ is in ⊥-col</u>

$\text{c}_5\|[\bot_2 \in \bot\|]\|^g$

$= {}^{\chi}\{\langle\langle \text{M}\rangle, \langle \text{K}, \text{K}, \ldots\rangle\rangle, \langle\langle \text{M}\rangle, \langle \text{K}', \text{K}, \ldots\rangle\rangle, \langle\langle \text{M}'\rangle, \langle \text{K}, \text{K}', \ldots\rangle\rangle, \langle\langle \text{M}'\rangle, \langle \text{K}', \text{K}', \ldots\rangle\rangle\}$

$=: \text{c}_6$

<u>local test: ⊥ is not $\bot_2$</u>

$\text{c}_6\|[\bot \neq \bot_2]\|^g$

$= {}^{\chi}\{\langle\langle \text{M}\rangle, \langle \text{K}', \text{K}, \ldots\rangle\rangle, \langle\langle \text{M}'\rangle, \langle \text{K}, \text{K}', \ldots\rangle\rangle\}$

$=: \text{c}_7$

<u>local test: ⊤ saw ⊥</u>

$\text{c}_7\|[see\langle \top, \bot\rangle]\|^g$

$\langle\langle \text{M}\rangle, \langle \text{K}', \text{K}, \ldots\rangle\rangle, \langle\langle \text{M}'\rangle, \langle \text{K}, \text{K}, \ldots\rangle\rangle\}$

$=: \text{c}_8$

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Model M_1 with $D_e = \{M, M', K, K'\}$
$\|man\| = \chi\{M, M'\}$
$\|enm^{of}\| = \chi\{\langle M, M'\rangle, \langle M', M\rangle\}$
$\|kayak\| = \chi\{K, K'\}$
(*pos* for 'inalienable-possessor-of')
$\|pos\|(K) = M, \|pos\|(K') = M'$
$\|use\| = \chi\{\langle M, K\rangle, \langle M', K'\rangle\}$
$\|lie.in.wait\| = \chi\{M, M'\}$
$\|approach\| = \chi\{\langle M, M'\rangle, \langle M, K'\rangle\}$
$\|see\| = \chi\{\langle M, M'\rangle, \langle M', M\rangle, \langle M, K'\rangle, \langle M', K\rangle\}$
$\|int.to.harpoon\| = \chi\{\langle M, M'\rangle, \langle M', M\rangle\}$
$\|forestall\| = \chi\{\langle M', M\rangle\}$
$\|harpoon\| = \chi\{\langle M', M\rangle\}$
$\|capsize\| = \chi\{M\}$
$\|die\| = \chi\{M\}$
$\|kill\| = \chi\{\langle M', M\rangle\}$
$\|go.hm\| = \chi\{M'\}$
$\|tell.story\| = \chi\{M'\}$

(2^2) he$_{\top}$ saw another kayak …;
alla-mik *qajaq-si-ga-mi*
other-MOD kayak-see-FCT$_{\top}$-3S$_{\top}$
$[y|\ kayak\ y]; [\bot_2 \in \bot\|]; [\bot \neq \bot_2]; [see\langle \top, \bot\rangle];$ …

$c_7\|[see\langle \top, \bot\rangle]\|^g$
$= \chi\{\langle\langle M\rangle, \langle K', K, \dots\rangle\rangle, \langle\langle\langle M'\rangle, \langle K, K, \dots\rangle\rangle\}$
$=: c_8$

3 approaching it$^{\bot}$ …
urnig-llu-gu
approach-ELA$_{\top}$3S$_{\bot}$
$[approach\langle \top, \bot\rangle, \top \neq \bot]$

local test: $\top$ approached $\bot$ & $\top$ is not $\bot$
$c_8\|[approach\langle \top, \bot\rangle, \top \neq \bot]\|^g$
$= \chi\{\langle\langle M\rangle, \langle K', K, \dots\rangle\rangle,\}$
$=: c_9$

Once upon a time in the N. Kal ($2^{4,5}$) → UC_1 syn, sem

Model M_1 with $D_e = \{M, M', K, K'\}$
$\|man\| = \chi\{M, M'\}$
$\|enm^{of}\| = \chi\{\langle M, M'\rangle, \langle M', M\rangle\}$
$\|kayak\| = \chi\{K, K'\}$
(*pos* for 'inalienable-possessor-of')
$\|pos\|(K) = M, \|pos\|(K') = M'$
$\|use\| = \chi\{\langle M, K\rangle, \langle M', K'\rangle\}$
$\|lie.in.wait\| = \chi\{M, M'\}$
$\|approach\| = \chi\{\langle M, M'\rangle, \langle M, K'\rangle\}$
$\|see\| = \chi\{\langle M, M'\rangle, \langle M', M\rangle, \langle M, K'\rangle, \langle M', K\rangle\}$
$\|int.to.harpoon\| = \chi\{\langle M, M'\rangle, \langle M', M\rangle\}$
$\|forestall\| = \chi\{\langle M', M\rangle\}$
$\|harpoon\| = \chi\{\langle M', M\rangle\}$
$\|capsize\| = \chi\{M\}$
$\|die\| = \chi\{M\}$
$\|kill\| = \chi\{\langle M', M\rangle\}$
$\|go.hm\| = \chi\{M'\}$
$\|tell.story\| = \chi\{M'\}$

($2^{4,5}$) he$_{\top}$ saw (it was) his$_{\top}$ enemy$^{\bot}$ lying in wait.
taku-pa-a-Ø *akiraq-ni-Ø* *qama-tu-q*
see-DEC$_{tv}$-3S-3S enm-3S$_{\top}$-$^{\bot}$ lie.in.wait-ELA$_{iv\bot}$-3S$_{\bot}$
$[enm^{of}\langle pos\ \bot, \top\rangle]; [y|\ y = pos\ \bot]; [see\langle \top, \bot\rangle, \top \neq \bot]$
$[lie.in.wait\ \bot]$

$c_9\|[enm^{of}\langle pos\ \bot, \top\rangle]\|^g$
$= \{\langle\langle M\rangle, \langle K', K, \dots\rangle\rangle\}$
$=: c_{10}$

$c_{10}\|[y|\ y = pos\ \bot]\|^g$
$= \{\langle\langle M\rangle, \langle M', K', \dots\rangle\rangle\}$
$=: c_{11}$

$c_{11}\|[see\langle \top, \bot\rangle, \top \neq \bot]\|^g$
$= \{\langle\langle M\rangle, \langle M', K', \dots\rangle\rangle\}$
$=: c_{12}$

$c_{12}\|[lie.in.wait\ \bot]\|^g$
$= \{\langle\langle M\rangle, \langle M', K', \dots\rangle\rangle\}$
$=: c_{13}$

Once upon a time in the N. Kal (6) → UC_1 → truth

Model M_1 with $D_e = \{M, M', K, K'\}$
$\|man\| = \chi\{M, M'\}$
$\|enm^{of}\| = \chi\{\langle M, M'\rangle, \langle M', M\rangle\}$
$\|kayak\| = \chi\{K, K'\}$
(*pos* for 'inalienable-possessor-of')
$\|pos\|(K) = M, \|pos\|(K') = M'$
$\|use\| = \chi\{\langle M, K\rangle, \langle M', K'\rangle\}$
$\|lie.in.wait\| = \chi\{M, M'\}$
$\|approach\| = \chi\{\langle M, M'\rangle, \langle M, K'\rangle\}$
$\|see\| = \chi\{\langle M, M'\rangle, \langle M', M\rangle, \langle M, K'\rangle, \langle M', K\rangle\}$
$\|int.to.harpoon\| = \chi\{\langle M, M'\rangle, \langle M', M\rangle\}$
$\|forestall\| = \chi\{\langle M', M\rangle\}$
$\|harpoon\| = \chi\{\langle M', M\rangle\}$
$\|capsize\| = \chi\{M\}$
$\|die\| = \chi\{M\}$
$\|kill\| = \chi\{\langle M', M\rangle\}$
$\|go.hm\| = \chi\{M'\}$
$\|tell.story\| = \chi\{M'\}$

(see handout for (4)-(5))

(6) …the killer$^{\top}$ went home and told the story.
tuqut-si-tuq-Ø *angirlar-ga-mi* *uqaluttuar-pu-q.*
kill-antip-cn\iv-$^{\top}$ go.hm-FCT$_{\top}$-3S$_{\top}$ tell.story-DEC$_{iv}$-3S
$[kill\langle \top_2, \bot\rangle]; [\mathbf{x}|\ \mathbf{x} = \top_2]; [go.hm\ \top]; [tell.story\ \top]$

$c_{25}\|[kill\langle \top_2, \bot\rangle]; [\mathbf{x}|\ \mathbf{x} = \top_2]\|^g$
$= \{\langle\langle M', M, \dots\rangle, \langle M, M', \dots\rangle\rangle\}$
$=: c_{27}$

$c_{27}\|[go.hm\ \top]; [tell.story\ \top]\|^g$
$= \{\langle\langle M', M, \dots\rangle, \langle M, M', \dots\rangle\rangle\}$
$=: c_{29}$

- CONCLUSION: Since $c_{29} \neq \varnothing$ this UC_1 drs is UC_1- *true* in the given model
- PREDICTION: The Kalaallisut text (represented by this UC_1 drs) will be judged *intuitively true* in (the situation represented by) the given model.