Semantic composition: Kalaallisut in CCG+UC$_1$

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Plan for today

- Introduction: Toward syn-sem typology
- CCG+UC$_1$ fragment of Kalaallisut (see hdt)
- Kalaallisut BA.TO.L-traits explained

Syn-Sem typology: Strategy 1

- Look for clusters of traits found in genetically unrelated and geographically distant languages.
- e.g. 'W(ARLPIRI)-type' features (Jelinek 1984: (62a–f)):
  - a) a predicate-AUX complex that constitutes a finite sentence, a verb and its arguments.
  - b) optional, non-argumental nominals.
  - c) a case split; i.e. different systems of case-marking on clitics vs. nominals
  - d) independent pronouns […] that are used for contrastive emphasis
  - e) zero 3rd person marking, with a consequent lack of pleonastic subjects
  - f) adjoined clauses with either a temporal or a relative interpretation

  e.g. in:

  Warlpiri (Pama-Nyungan: Central Australia),
  Tohono O'odham (Uto-Aztecan: Arizona),
  Lummi (North Straits Salish: American Northwest),
  …

Syn-Sem typology: Strategy 2

- *step* 1: identify an initial set of independent traits with syn-sem import
- *step* 2: develop an initial syn-sem theory of each trait
- *step* 3: use the theory and field research to inform each other and in this way develop successively better versions of both,

  i.e. theory (v. 1) –> fieldwork questionnaire (v. 1) –>
  revised theory (v. 2) –> revised fieldwork questionnaire (v. 2) –>
  …

SYN-SEM TRAITS: T1

T1: *Argument type*.

What are the nominal arg's that saturate the verbal predicate?

- SA: *syntactic* argument phrases only (NP subject, NP object, …)

  e.g. English, Hebrew, …
- BA: morphologically *bound* arguments only (bound pronoun, n-root, …)

  e.g. Warlpiri, Tohono O'odham, Lummi, Kalaallisut, …
- LA: *lexical* arg. operations only (in context 'v-pred' = complete s)

  e.g. Japanese, Mandarin Chinese, …
- MA: *mixed* arguments (some combination of SA, BA, LA)

  e.g. Polish (BA subject, SA object), Tamil (BA subject, SA object), …

SYN-SEM TRAITS: T2

T2: *Prominence type*.

What is the most prominent grammatical relation?

- SU: *subject* prominent (grammar primarily contrasts SU vs. DO)
  - English (SU pre-V, DO post-V, constituent tests identify VP = s\SU, passive promotes DO to SU, no anti-passive, …)
  - Polish (SU in NOM case, DO in ACC case, passive promotes DO to SU, no anti-passive, …)
- TO: *topic* prominent (grammar primarily contrasts ⊤ vs. ⊥)
  - Warlpiri (iv-tns TNS-$pn_{\top}$, tv-tns TNS-$pn_{\top}$-$pn_{\perp}$)
  - Kalaallisut (-$3_{\top}$|$3_{\perp}$, -$ELA_{\top\perp}$, -$FCT_{\top\perp}$, …)
  - Mandarin Chinese (⊤-position), …
- BO: *both* contrasts, SU vs DO and ⊤ vs ⊥, equally prominent
  - Japanese (⊤-marker *ga*, SU-marker *no*, and DO-marker *o*, all in a single paradigm)

SYN-SEM TRAITS: T3

T3: *Word order type*.

What determines the linear order of verbal head and dependents?

- S: *syntactic rules* (e.g. S → NP VP, …, leading to 'rigid' order)
  - English (svo default), Mandarin Chinese (svo default), …
  - Jacaltec (vso default), …
- L: *lexical operations* (e.g. H-lift, pre-H lift, post-H lift, …, leading to 'free' order)
  - Kalaallisut (sov default), Polish (svo default), …
  - Warlpiri (AUX second), Tohono O'odham (AUX second), …
- P: *pragmatics of anaphora* (e.g. order anaphor asap after antecedent)
  - Japanese (sov default, 'rigidly' V-final)

T1 (argument type). Bound-Argument languages

BA.i verbal *n*-predicate requires *n* morphologically bound arguments

BA.ii. verbal *n*-predicate + *n* morph. bound arg's constitute a sentence (s)

Warlpiri (K. Hale data)

- iv (1-predicate):

  Parnka-mi ka-rna.

  run-NPST PRS-1S

  I am running.
- tv (2-predicate):

  Nya-nyi ka-rna-ngku.

  see-NPST PRS-1S-2S

  I see you.

Kalaallisut (MB data)

- iv (1-predicate):

  Nanu-si-pu-q.

  bear-see-DEC_{iv}-3S

  $He_{\top}$'s seen a bear.
- tv (2-predicate):

  Taku-pa-a-nga.

  see-DEC_{tv}-3S-1S

  $He_{\top}$'s seen me.

T2 (prominence type). Topic-prominent languages

TO.i. Grammar primarily contrasts ᵀ (topic) vs. ⊥ (background).
TO.ii. Optional syntactic dependents used for re-centering.

Warlpiri (K. Hale data)

- iv (1-predicate):

  Parnka-mi ka-Ø (marlu).
  run-NPST PRS-$3S_{(T)}$ (kangaroo)
  It_T|(althe kangaroo^T) is running.

- tv (2-predicate):

  Nya-nyi ka-lu-Ø (marlu)
  see-NPST PRS-$3P_{(T)}$-*3S*$_{(\perp)}$ (roo)
  (ngarrka-patu-rlu).
  (man-PL-ERG)
  $They_T$|(smlthe men^T) see
  $it_\perp$|(althe kangaroo$^\perp$).

Kalaallisut (MB data)

- iv (1-predicate):

  (Ole) nanu-si-pu-q.
  (Ole) *bear*-see-DEC_{iv}-$3S_{(T)}$
  He_T|(Ole^T) has seen a bear$^\perp$.

- tv (2-predicate):

  (Ole-p) (nanuq) taku-pa-a-Ø.
  (O-ERG) (bear) see-DEC_{tv}-$3S_{(T)}$-*3S*$_{(\perp)}$
  He_T|(Ole^T) has seen $it_\perp$|(althe bear$^\perp$).

T3 (word order type). Lexically ordered languages

L.i. 'free' order of verbal head and dependents
L.ii. discontinuous 'constituents', L.iii …

Warlpiri (K. Hale data)

- I_T see althe big kangaroo$^\perp$.

  Marlu ka-rna-Ø nya-nyi
  roo PRS-$1S_{(T)}$-*3S*$_{(\perp)}$ see-NPST
  wiri.
  big.

Kalaallisut (MB data)

- I_T've seen another big bear$^\perp$.

  Angisuu-mik nanu-si-pu-nga
  big-MOD *bear*-see-DEC_{iv}-$1S_{(T)}$
  alla-mik.
  other-MOD

.

T3 (word order type). Lexically ordered languages

L.i. 'free' order of verbal head and dependents
L.ii. discontinuous 'constituents', L.iii …

Warlpiri (K. Hale data)

- Smlthe men^T see althe kangaroo$^\perp$.

  (V AUX ABS ERG)
  Nya-nyi ka-lu-Ø marlu
  see-NPST PRS-$3P_{(T)}$-*3S*$_{(\perp)}$ roo
  ngarrka-patu-rlu.
  man-PL-ERG

  (ABS AUX V ERG)
  Marlu ka-lu-Ø nya-nyi
  roo PRS-$3P_{(T)}$-*3S*$_{(\perp)}$ see-NPST
  ngarrka-patu-rlu.
  man-PL-ERG

Kalaallisut (MB data)

- Ole^T has seen althe bear$^\perp$.

  (ERG ABS V)
  Ole-p nanuq taku-pa-a-Ø.
  O-ERG bear see-DEC_{tv}-$3S_{(T)}$-*3S*$_{(\perp)}$

  (ABS ERG V)
  Nanuq Ole-p taku-pa-a-Ø.
  bear O-ERG see-DEC_{tv}-$3S_{(T)}$-*3S*$_{(\perp)}$

  (ERG V ABS)
  Ole-p taku-pa-a-Ø nanuq.
  O-ERG see-DEC_{tv}-$3S_{(T)}$-*3S*$_{(\perp)}$ bear

.

T3 (word order type). Lexically ordered languages

L.i. 'free' order of verbal-head & dep's, L.ii. discontinuous 'constituents',
L.iii. 'scrambling' ✓within | *across clause boundaries

Warlpiri (K. Hale data)

I_T'm looking for the bmrng$^\perp$ you gave me

✓*Karli-ki ka-rna-rla warri-rni*
bmrng-DAT PRS-1S-D seek-NPST
yangka-ku kuja-npa-ju yu-ngu.
that-DAT [CMP-2S-1S give-PST].

* *Karli-ki ka-rna-rla yu-ngu*
bmrng-DAT PRS-1S-D give-PST
yangka-ku kuja-npa-ju warri-rni.
that-DAT [CMP-2S-1S seek-NPST].

Kalaallisut (MB data)

Ole^T saw a big bear$^\perp$ & shot $it_\perp$.

✓*Ole-p angisuu-mik*
Ole-ERG [big-MOD
nanu-si-ga-mi aallaa-pa-a-Ø.
bear-see-FCT-$3S_T$] shoot-DEC_{tv}-3S-3S

* *Angisuu-mik Ole-p*
[big-MOD Ole-ERG
nanu-si-ga-mi aallaa-pa-a-Ø.
bear-see-FCT-$3S_T$] shoot-DEC_{tv}-3S-3S

.

CCG rules (universal)

- APPLICATION

  X/Y: B_{ab} $\quad Y$: A_a $\quad \Rightarrow_{>}$ $\quad X$: BA

  Y: A_a $\quad X\backslash Y$: B_{ab} $\quad \Rightarrow_{<}$ $\quad X$: BA

- sample translation from English into *Type Logic* (TL):
  (with $x_n, y \in Var_e$, $run \in Con_{et}$, $P \in Var_{et}$, $Q \in Var_{(et)t}$)

he	*is*	*running*	English
pn: x_1	iv/iv$_{prg}$: $\lambda P \lambda y.Py$	iv$_{prg}$: $\lambda y.\ run\ y$	lexicon (Eng-TL)
	iv (:= s\pn): $\lambda y.\ run\ y$	(>)	
s: $run\ x_1$		(<)	TL

CCG rules (universal)

- COMPOSITION

  X/Y: B_{bc} $\quad Y/Z$: A_{ab} $\quad \Rightarrow_{>B}$ $\quad X/Z$: $\lambda u_a.\ B(Au_a)$

- e.g.

Ole	*is*	*and*	*Jim*	*will*	*be*	*running*
s/iv: $\lambda P.P\ ole$	iv/iv$_{prg}$: $\lambda P \lambda y.Py$	(x\x)/x (w. x = s/iv$_{prg}$): $\lambda Q' \lambda Q \lambda P(QP \wedge Q'P)$	s/iv: $\lambda P.\ P\ jim$	iv/iv$_{inf}$: $\lambda P \lambda y.\ \boldsymbol{F}\ Py$	iv$_{inf}$/iv$_{prg}$ $\lambda P \lambda y.Py$	iv$_{prg}$: $\lambda y.\ run\ y$
(>B)			(>B)			
s/iv$_{prg}$: $\lambda P.\ P\ ole$			s/iv$_{inf}$: $\lambda P.\ \boldsymbol{F}(P\ jim)$			
			(>B)			
			s/iv$_{prg}$: $\lambda P.\ \boldsymbol{F}(P\ jim)$			
		(>)				
		x\x (w. x = s/iv$_{prg}$): $\lambda Q \lambda P(QP \wedge \boldsymbol{F}(P\ jim))$				
		(<)				
		s/iv$_{prg}$: $\lambda P(P\ ole \wedge \boldsymbol{F}(P\ jim))$				
		(>)				
		s: $(run\ ole \wedge \boldsymbol{F}(run\ jim))$				

CCG rules (universal)

- APPLICATION

  X/Y: B_{ab} $\quad Y$: A_a $\quad \Rightarrow_{>}$ $\quad X$: BA

  Y: A_a $\quad X\backslash Y$: B_{ab} $\quad \Rightarrow_{<}$ $\quad X$: BA

- COMPOSITION

  X/Y: B_{bc} $\quad Y/Z$: A_{ab} $\quad \Rightarrow_{>B}$ $\quad X/Z$: $\lambda u_a.\ B(Au_a)$

  $Y\backslash Z$: A_{ab} $\quad X\backslash Y$: B_{bc} $\quad \Rightarrow_{<B}$ $\quad X\backslash Z$: $\lambda u_a.\ B(Au_a)$

  $Y\backslash Z\backslash Z'$: $A_{aa'b}$ $\quad X\backslash Y$: B_{bc} $\quad \Rightarrow_{<<B}$ $\quad X\backslash Z\backslash Z'$: $\lambda u_a \lambda u'_{a'}.\ B(Auu')$

Kalaallisut-specific: Categories

- K1 (Kalaallisut categories)
  i. s, pn, cn, are Kalaallisut categories;
  ii. If X and Y are Kalaallisut categories, then so are X/Y and $X\backslash Y$

- ABBREVIATIONS:
  s^+ = s/s, iv = s\pn, tv = iv\pn, rn = cn\pn, x\y\z = (x\y)\z

- K2 (Kalaallisut category-to-type rule)
  i. **tp**(s) = [], **tp**(pn) = D, **tp**(cn) = [D]
  ii. **tp**(X/Y) = **tp**($X\backslash Y$) = **tp**(Y)**tp**(X)

- ABBREVIATION:
  D = se, [] = $(st)st$, $[]^2$ = [][], $abc = a(bc)$, $[a_1 \ldots a_n] = a_1 \ldots a_n[]$

Table 1. Kalaallisut cat-to-type rule (K2)

Kalaallisut item (gloss)		Category	UC_1 type *a*	Notes
run, die-, capsize, …		iv	[D]	$\underline{x}, \underline{y}, \underline{z} \in {}^{\perp}Var_{\text{D}}$
see, kill-, forestall-…		tv	[DD]	
bear-, Ole, that-, big, other-…		cn	[D]	
enemy-, …		rn	[DD]	
-see, -use		iv\cn	[D][D]	$\underline{P} \in {}^{\perp}Var_{[\text{D}]}$
-have		iv\rn	[DD][D]	$\underline{R} \in {}^{\perp}Var_{[\text{D}}$
-with		cn\rn	[DD][D]	
-cn\iv (-tuq)		cn\iv	[D][D]	
-rn\tv (-taq)		rn\tv	[DD][DD]	
-rn\cn (-Ø)		rn\cn	[D][DD]	
-DEC, …		s\pn\iv	[D](D[ ])	$K \in {}^{\perp}Var_{[]}$
-FCT_{T}, $\text{-FCT}_{\perp}$, -ELA_{T}, $\text{-ELA}_{\perp}$, …		s^+\pn\iv	[D](D[ ]^2)	
$^{-\text{T}}$, -ERG^{T}, $^{-\perp}$, $\text{-ERG}^{\perp}$, -MOD		s^+\cn	[D][ ]^2	
-1S, -2S, $\text{-3S}_{(\text{T})}$, $\text{-3S}_{(\perp)}$, …		x\(x\pn)	(D…)…	x ∈ {s, s^+, cn, …}
$^{-y}(\cdot)$	(⊥-accommodation)	x\x	[D][D]	x ∈ {iv, cn}
$^{-\backslash}(\cdot)$	(head x lift)	x\s^+\x	[D][ ]^2[D]	x ∈ {iv, cn}
$^{-\backslash\backslash}(\cdot)$	(pre-head lift)	s^+\$s^+$\$s^+$	[ ]^2[ ]^2[ ]^2	$\underline{J} \in {}^{\perp}Var_{[]2}$
$^{-\backslash\backslash\backslash}(\cdot)$	(post-head lift)	s\(s\$s^+$)\$s^+$	[ ]^2[[ ]^2][ ]	$\underline{H} \in {}^{\perp}Var_{[[]2]}$

Kalaallisut to UC_1: Lexical entries (part 1)

roots & derivational suffixes

•	run-	iv: $\lambda\underline{x}[run\langle\underline{x}\rangle]$		*pangalig-*
	see-	tv: $\lambda\underline{y}\lambda\underline{x}[see\langle\underline{x}, \underline{y}\rangle]$		*taku-*
	bear-	cn: $\lambda\underline{x}[bear\langle\underline{x}\rangle]$		*nanu(q)-*
	Ole-	cn: $\lambda\underline{x}[\underline{x} =_i ole]$		*Ole-*
	that-	cn: $\lambda\underline{x}[\underline{x} =_i ?_n]$		*taa(ss)-*
	big-	cn: $\lambda\underline{x}[big\{\underline{x}, ?_n\|\}]$		*angisuu(q)-*
	other-	cn: $\lambda\underline{x}[?_n \in \underline{x}\|]$; $[\underline{x} \neq_i ?_n]$		*alla-*
	enemy-	rn: $\lambda\underline{z}\lambda\underline{x}[enm^{of}\langle\underline{x}, \underline{z}\rangle]$		*akira(q)-*
•	-see	iv\cn: $\lambda\underline{P}\lambda\underline{x}.\ \underline{P}\ \perp\ ^{\perp}$; $[see\langle\underline{x}, \perp\rangle]$		*-si*
	-use	iv\cn: $\lambda\underline{P}\lambda\underline{x}.\ \underline{P}\ \perp\ ^{\perp}$; $[use\langle\underline{x}, \perp\rangle]$		*-tur*
	-have	iv\rn: $\lambda\underline{R}\lambda\underline{x}.\ \underline{R}\ x\ \perp$		*-qar*
	-with	cn\rn: $\lambda\underline{R}\lambda\underline{x}.\ \underline{R}\ x\ \perp$		*-lik*
	-cn\iv	cn\iv: $\lambda\underline{P}\lambda\underline{x}.\ {}^{\downarrow}\underline{P}\ f?_n$; $[\underline{x} = f?_n]$	$f \in \{\lambda x.x, pos\}$	*-tuq*
	-rn\tv	rn\tv: $\lambda\underline{R}\lambda\underline{z}\lambda\underline{x}.\ {}^{\downarrow}(\underline{R}\ \underline{z})\ f?_n$; $[\underline{x} = f?_n]$	$f \in \{\lambda x.x, pos\}$	*-taq*
	$^{-}{}_{=}$	cn\cn: $\lambda\underline{P}\lambda\underline{x}.\ {}^{\downarrow}\underline{P}\ f?_n$; $[\underline{x} = f?_n]$	$f \in \{\lambda x.x, pos\}$	*-Ø*
	$^{-}{}_{f}$	rn\cn: $\lambda\underline{P}\lambda\underline{z}\lambda\underline{x}.[\underline{z} = f\underline{x}]$; $\underline{P}\ \underline{x}$	$f \in \{pos, loc, \ldots\}$	*-Ø*

Kalaallisut to UC_1: Lexical entries (part 2)

inflectional suffixes & lexical operations

($^{\downarrow}\underline{P} = \lambda\underline{x}(^{\downarrow}\underline{P}\ \underline{x})$, x ∈ {s, s^+} for SUB-pn, x = cn for POS-pn)

•	-DEC	s\pn\iv: $\lambda\underline{P}\lambda\underline{x}.\ \underline{P}\ \underline{x}$		*-pu|pa|la*
	-FCT_{T}	s^+\pn\iv: $\lambda\underline{P}\lambda\underline{x}\lambda K.\ (\underline{P}\ \underline{x}; K)$		*-ga*
		s^+\pn\iv: $\lambda\underline{P}\lambda\underline{x}\lambda K.\ ([\mathbf{x}\|\ \mathbf{x} = ?_n]\ ^{\text{T}}; \underline{P}\ \underline{x})\ ^{\text{T}}; K$		
	$\text{-FCT}_{\perp}$	s^+\pn\iv: $\lambda\underline{P}\lambda\underline{x}\lambda K.\ (\underline{P}\ \underline{x}; K)$		*-mm*
		s^+\pn\iv: $\lambda\underline{P}\lambda\underline{x}\lambda K.\ ([y\|\ y = ?_n]\ ^{\perp}; \underline{P}\ \underline{x})\ ^{\perp}; K$		
	-(ERG)^{T}	s^+\cn: $\lambda\underline{P}\ \lambda K.\ ([\mathbf{x}]\ ^{\text{T}}; \underline{P}\ \text{T})\ ^{\text{T}}; K$		*-Ø|p|uma|…(-3$_{\text{T}}$)*
	$\text{-(ERG)}^{\perp}$	s^+\cn: $\lambda\underline{P}\ \lambda K.\ ([y]\ ^{\perp}; \underline{P}\ \perp)\ ^{\perp}; K$		*-Ø|p|uma|…(-3$_{\perp}$)*
	-MOD	s^+\cn: $\lambda\underline{P}\lambda K.\ K\ ^{\perp}; {}^{\downarrow}\underline{P}\ \perp$		*-mik*
	$\text{-3S}_{(\text{T})}$	x\(x\pn): $\lambda\underline{F}.\ \underline{F}\ \text{T}$		*-q|a|ni|mi…*
		x\(x\pn): $\lambda\underline{F}\lambda\ldots([\mathbf{x}\|\ \mathbf{x} = ?_n]\ ^{\text{T}}; \underline{F}\ \text{T}\ldots)$		*-ni|mi…*
	$\text{-3S}_{(\perp)}$	x\(x\pn): $\lambda\underline{F}.\ \underline{F}\ \perp$		*-Ø|at|gu|…*
		x\(x\pn): $\lambda\underline{F}\lambda\ldots([y\|\ y = ?_n]\ ^{\perp}; \underline{F}\ \perp\ldots)$		*-at|gu…*
•	$^{y}(\cdot)$-	x/x: $\lambda\underline{P}\lambda\underline{x}.\ [y]\ ^{\perp}; \underline{P}\ \underline{x}$	⊥-accommodation, (x ∈ {iv, cn})	
	$^{-\backslash}(\cdot)$	x\$s^+$\x: $\lambda\underline{P}\lambda\underline{J}\lambda\underline{x}.\ \underline{J}(\underline{P}\ \underline{x})$	head x lift, (x ∈ {iv, cn})	
	$^{-\backslash\backslash}(\cdot)$	s^+\$s^+$\$s^+$: $\lambda\underline{J}'\lambda\underline{J}\lambda K.\ \underline{J}(\underline{J}'K)$	pre-head lift	
	$^{-\backslash\backslash\backslash}(\cdot)$	s\(s\$s^+$)\$s^+$: $\lambda\underline{J}\lambda\underline{H}.\ \underline{H}\ \underline{J}$	post-head lift	

Kalaallisut BA.TO.L-traits explained: BA

• **T1** (argument type). BOUND-ARGUMENT LANGUAGE

BA.i. verbal *n*-pred. requires *n* morphologically BOUND ARGUMENTS
verbal *n*-pred. + *n* morph. BOUND ARGUMENTS constitute a sentence (s)

BA.ii no obligatory syntactic np's: all syntactic np's ('subject', 'object', etc) are optional dependents of the verbal head. (see TO.ii below).

(1) (Look, a bear$^{\text{T}}$!)
iv: *Pangalig-pu-q.*
run-DEC_{iv}-$\text{3S}_{(\text{T})}$
It_{T} is running.

•	run-	-DEC_{iv}	$\text{-3S}_{(\text{T})}$
	iv: $\lambda\underline{x}[run\langle\underline{x}\rangle]$	s\pn\iv: $\lambda\underline{P}\lambda\underline{x}.\ \underline{P}\ \underline{x}$	s\(s\pn): $\lambda\underline{P}.\ \underline{P}\ \text{T}$
	——————— <		
	s\pn: $\lambda\underline{x}[run\langle\underline{x}\rangle]$		
	——————————— <		
	s: $[run\langle\text{T}\rangle]$		

Kalaallisut BA.TO.L-traits explained: BA

• **T1** (argument type). BOUND-ARGUMENT LANGUAGE

BA.i. verbal *n*-pred. requires *n* morphologically BOUND ARGUMENTS
verbal *n*-pred. + *n* morph. BOUND ARGUMENTS constitute a sentence (s)

(1) (Q: Has Ole$^{\top}$ seen it$^{\perp}$?
A: Yes, …)
tv: *taku-pa-a-Ø*
see-DEC$_{tv}$-3S$_{(T)}$-*3S*$_{(\perp)}$
he$_{\top}$'s seen it$_{\perp}$.

•

see-	-DEC$_{tv}$	-3S$_{(T)}$	-*3S*$_{(\perp)}$
tv (= iv\pn)	s\pn\iv:	s\(s\pn):	s\(s\pn):
$\lambda\underline{y}\lambda\underline{x}[see\langle\underline{x},\underline{y}\rangle]$	$\lambda\underline{P}\lambda\underline{x}.\ \underline{P}\ x$	$\lambda\underline{P}.\ \underline{P}\ \top$	$\lambda\underline{P}.\ \underline{P}\ \perp$

———————— <B
s\pn\pn: $\lambda\underline{y}\lambda\underline{x}[see\langle\underline{x},\underline{y}\rangle]$
———————————— <B
s\pn: $\lambda\underline{y}[see\langle\top,\underline{y}\rangle]$
———————————————— <
s: $[see\langle\top,\perp\rangle]$

Kalaallisut BA.TO.L-traits explained: TO (part 1)

• **T2** (prominence type). TOPIC-PROMINENT LANGUAGE

TO.i. Grammar primarily contrasts ⊤ (topic) vs. ⊥ (background).
TO.ii. Optional syntactic dependents used for *re-centering*.

(1$^{\top}$) (Look!)
iv *Nanuq* *pangalig-pu-q.*
bear$^{\top}$ run-DEC$_{iv}$-3S
There is *a* bear running.

(Yesterday I saw a hunter and a bear$^{\perp}$.)
Nanuq *pangalig-pu-q.*
bear$^{\top}$ run-DEC$_{iv}$-3S
The bear was running.

Kalaallisut BA.TO.L-traits explained: TO (part 2)

• non-anaphoric topic:

bear-	-$^{\top}$
cn:	s^{+}\cn:
$\lambda\underline{x}[bear\langle\underline{x}\rangle]$	$\lambda\underline{P}\lambda K.\ ([\mathbf{x}]^{\top};\ \underline{P}\ \top)^{\top};\ K$

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s^{+}: $\lambda K.\ ([\mathbf{x}]^{\top};\ [bear\langle\top\rangle])^{\top};\ K$
s^{+}: $\lambda K.\ [\mathbf{x}|\ bear\langle\mathbf{x}\rangle]^{\top};\ K$

• anaphoric topic:

bear-	-$_{=}$	-$^{\top}$
cn:	cn\cn	s^{+}\cn:
$\lambda\underline{x}[bear\langle\underline{x}\rangle]$	$\lambda\underline{P}\lambda\underline{x}.\ \downarrow\underline{P}\perp;\ [\underline{x} =_i \perp]$	$\lambda\underline{P}\lambda K.\ ([\mathbf{x}]^{\top};\ \underline{P}\ \top)^{\top};\ K$

———————————— <
cn: $\lambda\underline{x}.\ [bear\langle\perp\rangle];\ [\underline{x} =_i \perp]$
cn: $\lambda\underline{x}.\ [bear\langle\perp\rangle, \underline{x} =_i \perp]$
———————————————————— <
s^{+}: $\lambda K.\ [\mathbf{x}|\ bear\langle\mathbf{x}\rangle, \mathbf{x} =_i \perp]^{\top};\ K$

Kalaallisut BA.TO.L-traits explained: TO (part 3)

• (Look!)
(3a) There is *a* bear running.

bear-$^{\top}$	run-DEC$_{iv}$-3S$_{(T)}$
s^{+} (= s/s):	s:
$\lambda K([\mathbf{x}|\ bear\langle\mathbf{x}\rangle]^{\top};\ K)$	$[run\langle\top\rangle]$

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s: $[\mathbf{x}|\ bear\langle\mathbf{x}\rangle];\ [run\langle\top\rangle]$

• (Yesterday I saw a hunter and a bear$^{\perp}$.)
(3b) *The* bear was running.

bear-$_{=}$-$^{\top}$	run-DEC$_{iv}$-3S$_{(T)}$
s^{+} (= s/s):	s:
$\lambda K.\ [\mathbf{x}|\ bear\langle\mathbf{x}\rangle, \mathbf{x} =_i \perp]^{\top};\ K$	$[run\langle\top\rangle]$

———————————————— <
s: $[\mathbf{x}|\ bear\langle\mathbf{x}\rangle, \mathbf{x} =_i \perp];\ [run\langle\top\rangle]$

Kalaallisut BA.TO.L-traits explained: L.i (part 1)

• **T3** (word order type). LEXICALLY-ORDERED LANGUAGE

L.i. *'free' order* of verbal head and dependents

(2,3) (Any news today?)

sov *Ole-p* *nanuq* *taku-pa-a.*
Ole-ERG bear see-DEC_{tv}-3S.3S
'Ole saw a bear.'

svo *Ole-p* *taku-pa-a.* *nanuq.*
Ole-ERG see-DEC_{tv}-3S.3S bear
'Ole saw a bear.'

(Who has seen a bear or a walrus?)

osv *Nanuq* *Ole-p* *taku-pa-a.*
bear Ole-ERG see-DEC_{tv}-3S.3S
'Ole has seen a bear.'

Kalaallisut BA.TO.L-traits explained: L.i (part 2)

sov Ole-ERG$^{\top}$ | bear-$^{\perp}$ | see-DEC_{tv}-$3S_{(T)}$-$3S_{(\perp)}$

s^{+}: $\lambda K([\mathbf{x}|\ \mathbf{x} =_i ole]^{\top}; K)$ | s^{+}: $\lambda K([y|\ bear\langle y\rangle]^{\perp}; K)$ | s: $[see\langle \mathsf{T}, \perp\rangle]$

s: $[y|\ bear\langle y\rangle]; [see\langle \mathsf{T}, \perp\rangle]$ >

s: $[\mathbf{x}|\ \mathbf{x} =_i ole]; [y|\ bear\langle y\rangle]; [see\langle \mathsf{T}, \perp\rangle]$ >

svo \(Ole-ERG$^{\top}$) | \(see-)-DEC_{tv}-$3S_{(T)}$-$3S_{(\perp)}$ | \\(bear-$^{\perp}$)

$s^{+}\backslash s^{+}$: $\lambda \underline{J} \lambda K.\ \underline{J}([\mathbf{x}|\ \mathbf{x} =_i ole]^{\top}; K)$ | $s\backslash s^{+}$: $\lambda \underline{J}.\ \underline{J}[see\langle \mathsf{T}, \perp\rangle]$ | $s\backslash(s\backslash s^{+})$: $\lambda \underline{H}.\ \underline{H}\, \lambda K([y|\ bear\langle y\rangle]^{\perp}; K)$

<**B**

$s\backslash s^{+}$: $\lambda \underline{J}.\ \underline{J}([\mathbf{x}|\ \mathbf{x} =_i ole]; [see\langle \mathsf{T}, \perp\rangle])$ <

s: $[y|\ bear\langle y\rangle]; [\mathbf{x}|\ \mathbf{x} =_i ole]; [see\langle \mathsf{T}, \perp\rangle]$

Kalaallisut BA.TO.L-traits explained: L.ii

• **T3** (word order type). LEXICALLY-ORDERED LANGUAGE

Lii. *discontinuous 'constituents'*

(4a) (Yesterday I saw a bear$^{\perp}$ near the village. Today…)
Ole *alla-mik* *nanu-si-pu-q* *angisuu-mik.*
Ole other-MOD bear-see-DEC_{iv}-3S big-MOD
Ole saw another bear, a big one.

CCG+UC1 analysis yields (see hdt):
s: $[\mathbf{x}|\ \mathbf{x} =_i ole]; [y|\ bear\langle y\rangle]; [\perp_2 \in \perp\!\!|]; [\perp \neq_i \perp_2]; [big\{\perp, \perp\!\!|\}]; [see\langle \mathsf{T}, \perp\rangle]$

(4b) (Yesterday I saw a big bear$^{\perp}$ near the village. And today…)
Ole *angisuu-mik* *nanu-si-pu-q* *alla-mik.*
Ole big-MOD bear-see-DEC_{iv}-3S other-MOD
Ole saw another big bear.

CCG+UC1 analysis yields (see hdt):
s: $[\mathbf{x}|\ \mathbf{x} =_i ole]; [y|\ bear\langle y\rangle]; [big\{\perp, \perp\!\!|\}]; [\perp_2 \in \perp\!\!|]; [\perp \neq_i \perp_2]; [see\langle \mathsf{T}, \perp\rangle]$

Kalaallisut BA.TO.L-traits explained: L.iii

• **T3** (word order type). LEXICALLY-ORDERED LANGUAGE

Liii. *'scrambling' ✓within | *across clause boundaries*

(5a) ✓ *Ole-p* *angisuu-mik* *nanu-si-ga-mi* *aallaa-pa-a-Ø.*
Ole-ERG [big-MOD bear-see-FCT_T-$3S_T$] shoot-DEC_{tv}-3S.3S
Ole saw a big bear and shot it.

CCG+UC_1 analysis yields (see hdt):
s: $[\mathbf{x}|\ \mathbf{x} =_i ole]; [y|\ bear\langle y\rangle]; [big\{\perp, \perp\!\!|\}]; [see\langle \mathsf{T}, \perp\rangle]$; $[shoot\langle \mathsf{T}, \perp\rangle]$

(5a) * *Angisuu-mik* *Ole-p* *nanu-si-ga-mi* *aallaa-pa-a-Ø.*
[big-MOD Ole-ERG bear-see-FCT_T-$3S_T$] shoot-DEC_{tv}-3S.3S

attempted CCG+UC_1 analysis yields (see hdt):
$s\backslash s^{+}$: $\lambda \underline{J}((\underline{J}[y|\ bear\langle y\rangle]^{\perp}; [see\langle \mathsf{T}, \perp\rangle]); ([\mathbf{x}|\ \mathbf{x} =_i ole]; ([shoot\langle \mathsf{T}, \perp\rangle]^{\perp}; [big\{\perp, \perp\!\!|\}]))$
| |

*type (should be s)

*background-elaboration seq.
$(A^{\perp}; B)$
no bck. update in A, so this seq. denotes the absurd state