Sign Language Semantics Day 3: Events: telicity and pluractionality

Jeremy Kuhn
Institut Jean Nicod, CNRS, EHESS, ENS
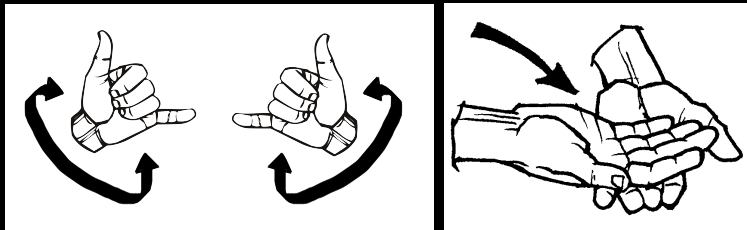
July 27, 2022

Section 1

Telicity and iconic scales
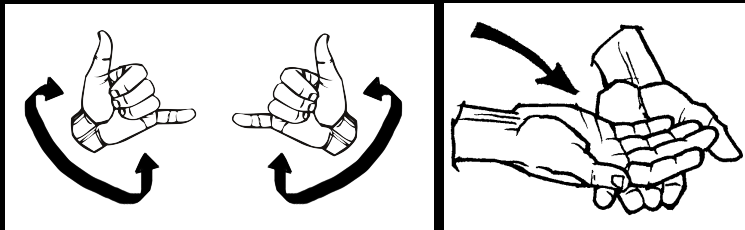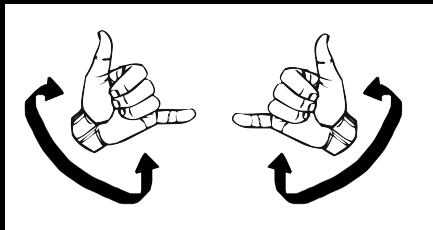
Let's play a game!

Match the sign with its meaning!

a. decide
b. ponder

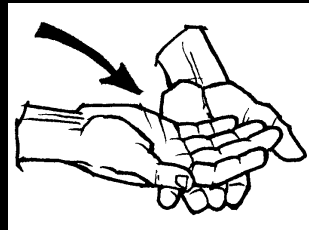I have a confession to make...

I have a confession to make...

play

arrive

- Something in common?

play		arrive
	vs.	
ponder		decide

- Something in common?

play		arrive
	vs.	
ponder		decide

- Yes! Telicity!

Two types of verbs

Telic predicates
a point of culmination

Atelic predicates
no point of culmination

'reach the finish line'

'run'

Two types of verbs

Natural language grammar encodes these categories.

- Telic predicates

    (1) a. 'John came to a decision **in** 30 minutes.'
         b. 'John arrived at the party **in** two minutes.'

- Atelic predicates

    (2) a. 'John pondered the question **for** 30 minutes'
         b. 'John played with his friends **for** two hours'

Visible telicity in S.L.

- **Wilbur (2003):**
  Many sign languages systematically distinguish telicity in
  the phonological movement of a verb.

  - Telic verbs stop sharply, often with contact.
  - Atelic verbs have a continuous, extendable movement.

- More examples:

  Telic: ARRIVE, CLOSE, DIE, SIT-DOWN, GET-FULL
  Atelic: PLAY, WALK, WAIT, EXPLAIN, PONDER

Visible telicity in S.L.

- **Wilbur (2003):**
  Many sign languages systematically distinguish telicity in the phonological movement of a verb.

  - Telic verbs stop sharply, often with contact.
  - Atelic verbs have a continuous, extendable movement.

- More examples:

  Telic: ARRIVE, CLOSE, DIE, SIT-DOWN, GET-FULL
  Atelic: PLAY, WALK, WAIT, EXPLAIN, PONDER

- Is this encoded in the *grammar*, or is it just historical?

Phonetic manipulations

- **Observation:** In ASL, Wilbur shows that the phonetic form of a verb may be manipulated with semantic effect.

- **Slow action**
  - DIE signed slowly ≈ 'slowly die.'

- **Incomplete action**
  - SIT-DOWN ends with contact between the signer's two hands; SIT-DOWN without contact ≈ 'almost sit down.'

Phonetic manipulations
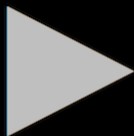
(3) LAST-YEAR MY GRANDMOTHER DIE-{normal/slow}.
     'Last year, my grandmother {died/died slowly}.'

Phonetic manipulations
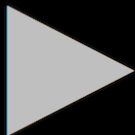
(4) a. I SIT.
        'I sat down.'
     b. I SIT-incomplete FIGHT.
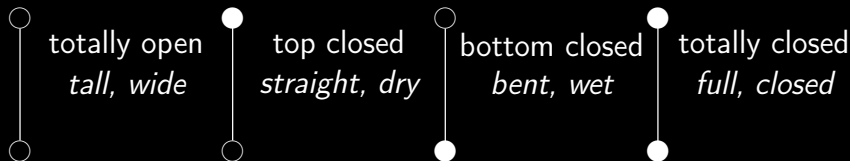   'I was sitting down when a fight broke out.'

The iconic mapping

- How is this iconic mapping encoded in the grammar?

An answer from scales

- **Kennedy and McNally 2005:**
  Gradable adjectives are associated with **scales**.

- Possible scale structures:

totally open	top closed	bottom closed	totally closed
tall, wide	*straight, dry*	*bent, wet*	*full, closed*

- Natural language is sensitive to these distinctions.
  - slightly wet   vs.   *slightly {tall, dry}
  - completely straight   vs.   *completely {wide, bent}

Verbal scales

- **Hay, Kennedy, and Levin (1999):**
  Some verbs are sensitive to the same scales.

  - Clearest in morphologically-related adjective/verb pairs like *wide/widen*, *straight/straighten*, *open/open*.

- **Differences with respect to telicity!**

(5) Verbs based on closed scales have variable telicity.
   a. The towel dried for an hour.
   b. The towel dried in an hour.

(6) Verbs based on open scales are atelic.
   a. The gap between the boats widened for a few minutes.
   b. ?? The gap between the boats widened in a few minutes.

Scalar semantics

- ▶ Both adjectives and verbs are built from the same scales.

- ▶ For example:

(7) wide $=$ $\mathbf{pos}_A(\text{width})$
           $=$ True of an individual x iff the width of x is greater than some standard.

(8)

   widen $=$ $\mathbf{pos}_V(\text{width}_\Delta)$
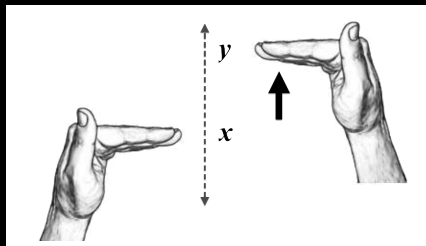 $=$ True of an individual x and and event e iff the change in width of x over e is greater than some standard (namely, 0).
          $=$ True iff x increases in width over e.

Scales in sign language
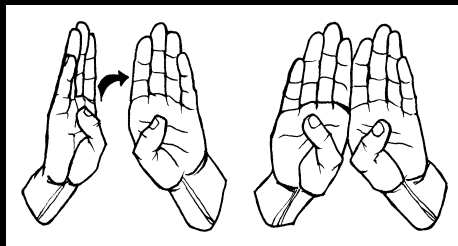
- Recall, degrees may be represented iconically.

(9) MARIA TALL-x GIANNI TALL-scale-more-y.
     'Gianni is taller than Maria.'   (**LIS**)

Verbal scales in sign language

- **Proposal:** The scales iconically seen in adjectives are also iconically represented in change-of-state verbs in ASL.

- End-marking on telic verbs is the iconic representation of the maximum of a closed scale.

CLOSE in ASL

Visibility and iconicity

- This example displays both visibility *and* iconicity.

- Based on spoken language, we postulated that telic verbs have a morphological decomposition based on a scale.

  - In ASL, this scale, and its scalar maximum, are visible.

- Manipulations of this visible scale are interpreted via a structure-preserving mapping.

  - Thus, the construction is also iconic.

Iconicity in the grammar

- ▸ **Note!** Cannot be reduced to conjunction of an iconic predicate at sentential level:

    - ▸ **Possible:**
      DIE-slow = "He died and it happened like this: slowly".

    - ▸ **Not possible:**
      DIE-incomplete
          = "He died and it happened like this: incompletely".

- ▸ The iconic component must be integrated to the same degree as the adjective *almost* (cf. '*she almost died.*')

- ▸ **Icon**$^{\Phi}(width_{\Delta})$

Consequence

- ▸ Iconicity and the grammar are tightly interwoven.

Section 2

Pluractionality

Pluractionality

- In many languages, verbs may show 'pluractional' marking.

- The semantic contribution is that the sentence describes a **multitude of events**
  - One event that happens again and again
  - Multiple events happening simultaneously
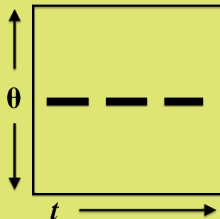
    (Cusic 1981, Hofherr & Laca 2012)

Dimensions of pluractionality
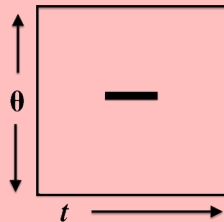
- Upriver Halkomelem (Thompson 2009):

(10) **yáleq'** -et -es te   theqát   (cf. yáq'-et)
      fall.pl -tr. -3S det. tree
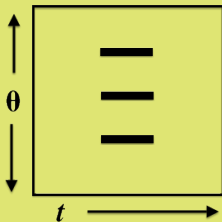
✓ Several trees fell.   ✓ One tree fell several times.   * One tree fell one time.

Only verbs?

- ▶ **Nouns** : marking on a DP may indicate that a plurality of individuals are distributed in some way.

(11) **Telugu** (Balusu 2006)

pillalu   renDu-renDu kootuluni cuuseeru.
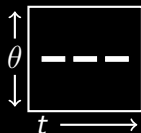children two-two   monkeys saw

Only verbs?

- ▶ **Nouns** : marking on a DP may indicate that a plurality of individuals are distributed in some way.

(11) **Telugu** (Balusu 2006)

pillalu   renDu-renDu   kootuluni   cuuseeru.
children   two-two   monkeys   saw

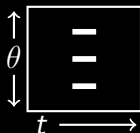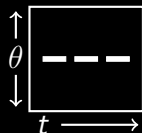   a. 'The children saw two monkeys several times.'

Only verbs?

- ▶ **Nouns** : marking on a DP may indicate that a plurality of individuals are distributed in some way.
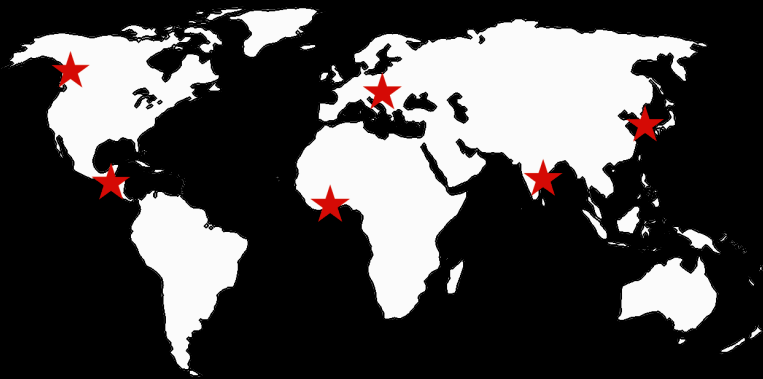
(11) **Telugu** (Balusu 2006)

pillalu   renDu-renDu kootuluni cuuseeru.
children two-two   monkeys saw

  a. 'The children saw two monkeys several times.'

  b. 'The children saw two monkeys each.'

Across languages

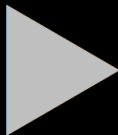Similar phenomena in Korean, Telugu, Hungarian, Romanian, Kaqchikel Mayan, Tlingit, Albanian, ...

Pluractionality in LSF

- Sign language, too!

- Today, I'll discuss LSF : French Sign Language.

- I will focus on two morphemes:
  - /-rep/ is repetition of a full sign
  - /-alt/ is alternating repetition with the two hands

Pluractionality in LSF

LSF: GIVE (singular), GIVE-rep, GIVE-alt

Pluractionality in LSF

LSF: FORGET (singular), FORGET-rep, FORGET-alt

Pluractionality in LSF

FORGET-rep
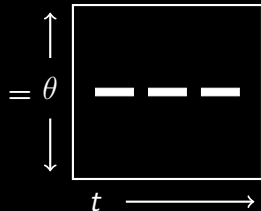

FORGET-alt

Pluractionality in LSF

FORGET-rep

FORGET-alt

$$= \theta$$

$t \longrightarrow$

Pluractionality in LSF

FORGET-rep

$= \theta$

$t \longrightarrow$

FORGET-alt

$= \theta$

$t \longrightarrow$
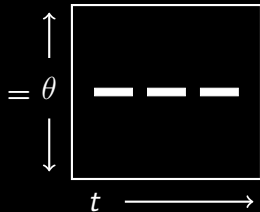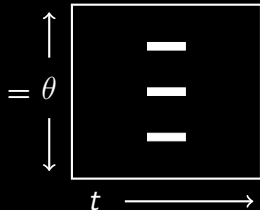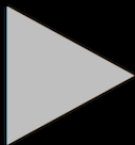
Pluractionality in LSF

- Example 1 (LSF):

(12) OFTEN ONE PERSON FORGET-rep ONE WORD.
'One person often forgot one word.'

Pluractionality in LSF

- Example 2 (LSF):

(13) FRIEND IX-arc ARRIVE-alt.
      'Each of my friends arrived.'

Plural licensors

/-alt/ entails that events involve different individuals

- ▶ Consequence: need a plural noun somewhere in the sentence.

(14) <u>SEVERAL PEOPLE-pl</u> FORGET-alt BRING CAMERA.
'Several people forgot to bring a camera.'

(15) ONE PERSON FORGET-alt <u>SEVERAL WORDS</u>.
'One person forgot several words.'

(16) * ONE PERSON FORGET-alt ONE WORD.

- ▶ We will call that the 'licensor'.

A compositional challenge

A compositional challenge :

- /-alt/ is licensed by EACH
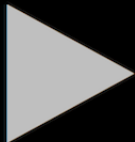
(17) STUDENT EACH FORGET-alt ONE WORD.

A compositional challenge

'Each boy X.'
    = 'Alex X' and 'Ben X' and 'Chris X' ...

A compositional challenge

'Each boy X.'
= 'Alex X' and 'Ben X' and 'Chris X' ...

- ▶ Result: ungrammaticality of (18).

  (18) * EACH BOY GATHER.
        = 'ALEX GATHER' and
          'BEN GATHER' and
          'CHRIS GATHER' and ...

A compositional challenge

'Each boy X.'
= 'Alex X' and 'Ben X' and 'Chris X' ...

- ▶ Result: ungrammaticality of (18).

  (18)   * EACH BOY GATHER.

      = 'ALEX GATHER' and
        'BEN GATHER' and
        'CHRIS GATHER' and ...

- ▶ Remember: sentence (19) is bad.

  (19)   * ONE PERSON FORGET-alt ONE WORD

- ▶ So, why is sentence (20) good?

  (20)   BOY EACH FORGET-alt ONE WORD.

Licensing examples

(21) **Kaqchikel Mayan** (Henderson 2014)

    a.   Xeqatij <u>ox-ox</u> wäy.
          we-eat   three-three tortilla
          'We each ate three tortillas.'

    b.   Chikijujunal ri   tijoxela' xkiq'etej <u>ju-jun</u>   tz'i'.
          each   the students hugged   one-one dog
          'Each of the students hugged a dog.'

    c.   * Xe'inchäp <u>ox-ox</u> wäy.
          I-handle   three-three tortilla
          Desired reading: 'I took (groups of) three tortillas.'

Licensing examples

(22) English *same* (on internal reading):

    a.   The students gave the same answer.

    b.   Each student gave the same answer.

    c. * Edith gave the same answer.

Possible hypotheses

Two possible hypotheses.

Hypothesis 1 : syntactic agreement

- Pluractional verbs do not themselves bear plural meaning.

- Pluractional marking indicates syntactic agreement with a higher distributive operator.

  (Oh 2001, 2005; Kimmelman 2015)

Scopable pluractionality

Hypothesis 2 : pluractionnality that takes scope

- ▶ The quantifier EACH introduces a plurality of events *from a global perspective*.

- ▶ The morpheme /-alt/ is able to escape from the scope of EACH to get access to this global plurality.

Scopable pluractionality
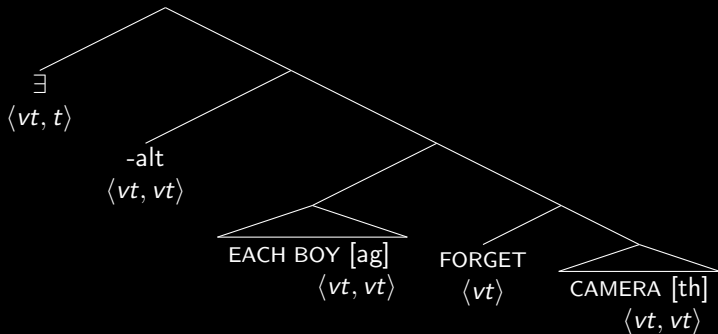
Pluractionality Summary

Interim summary :

- What "pluractionality" means.
- It exists in spoken and sign languages.
- We established a compositional puzzle, and sketched a solution. (But the question is still open.)

- But now something new...

Iconicity in LSF

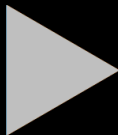**Iconicity : the form of a sign matches its meaning**

- ▶ *For verbs :* the rate of repetition of the verb is associated with the rate of repetition of the event.

(23) a. GIVE-slow   b. GIVE-fast   c. GIVE-medium
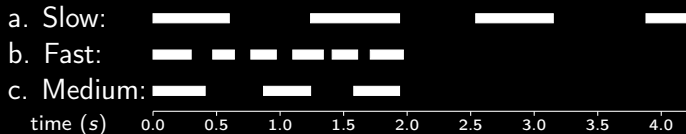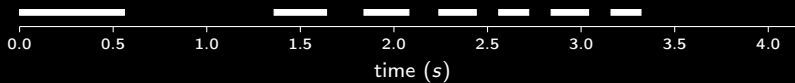
Iconicity in LSF
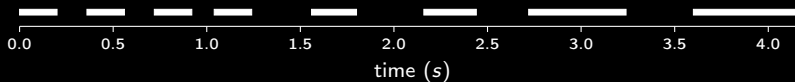
GIVE-rep (accelerating), GIVE-rep (decelerating)

Iconicity in LSF

- These iconic modifications are interpreted.

a. Acceleration

b. Deceleration

The proposal in a nutshell

Two parts of the proposal :

1. A combinatory morpheme with an iconic component :

(24) $\llbracket\text{-alt}\rrbracket =$
$\lambda V e. \underbrace{V(e) \wedge \exists e', e' \preceq e[\theta(e') \neq \theta(e'')]}_{\text{Logical component}} \wedge \underbrace{\textbf{Icon}^{\Phi}(e)}_{\text{Iconic component}}$

2. Composition that allows /-rep/ and /-alt/ to take scope.

Prediction : 'Scopable iconicity'

'Scopable iconicity'

- **Ambiguity** with iconic predicates.

(25) PERSON JEAN BOOK EVERY-DAY GIVE-1-rep-fast.

    a. 'On each day, Jean gave me books repeatedly and fast.'

    b. 'On each day, Jean gave me a book; that is a fast rate to give books.'
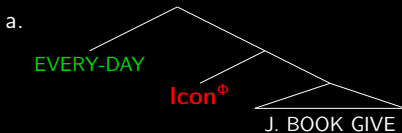
Iconicity in the grammar

Result

- Iconic meaning must be calculated *throughout* the compositional process.

Consequence

- Iconicity and the grammar are tightly interwoven.

Scopable iconicity and EACH
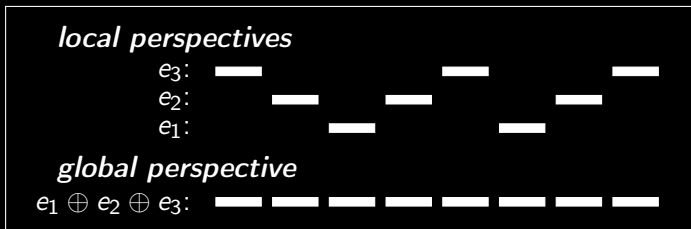
Compositional consequences :

- ► Recall our earlier debate: low scope or high scope under EACH?

- ► Scopable iconicity allows us to read the structural position off the truth conditions.

Scopable iconicity and EACH

- Consider the case of the overworked secretary:

local perspectives								
e_3:	▬			▬			▬	
e_2:		▬		▬			▬	
e_1:			▬			▬		
global perspective								
$e_1 \oplus e_2 \oplus e_3$:	▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬							

- A set of slow event sequences may sum up to a plural event that occurs rapidly.

- **Prediction :** The perspective of the iconic component depends on where the pluractional inflection takes scope.

Scopable iconicity and EACH

- ▶ Systematically, when EACH is the licensor, the iconic component must be interpreted from a global perspective.

(26) a. BOY EACH-a BOOK a-GIVE-1-alt-slow.
   'Each boy gave me books, which happened slowly from a global perspective.'

   b. BOY EACH-a BOOK a-GIVE-1-alt-fast.
   'Each boy gave me books, which happened quickly from a global perspective.'

- ▶ **Conclusion** : the pluractional morpheme takes *wide scope* with respect to EACH.

Results

Results :

- *Hypothesis 1 :* Low scope + syntactic agreement

- *Hypothesis 2 :* Wide scope to access a global plurality

Results

Results :
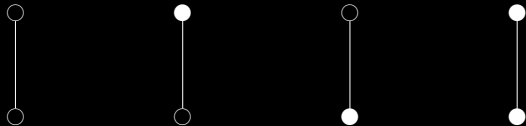
- *Hypothesis 1 :* Low scope + syntactic agreement

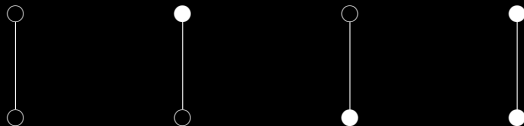- *Hypothesis 2 :* Wide scope to access a global plurality

Section 3

Conclusions

Sign languages in semantic typology

1. Linguistic sensitivity to scale structure
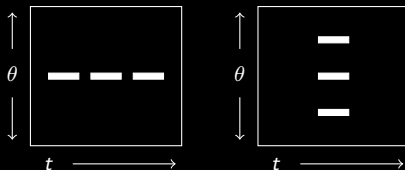
Sign languages in semantic typology
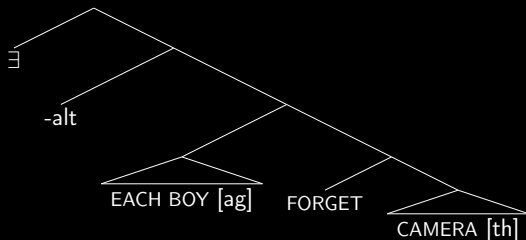
1. Linguistic sensitivity to scale structure

2. Dimensions of pluractionality across languages.

Resolving open debates

- Resolution of a debate regarding the word "each."

Iconicity in the grammar

Iconicity and the grammar are tightly interwoven.

1. Intentional $^{(?)}$ iconicity

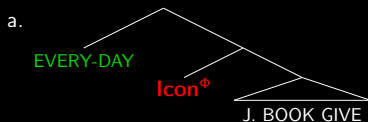$$\mathbf{Icon}^{\Phi}(width_{\Delta})$$

Iconicity in the grammar

Iconicity and the grammar are tightly interwoven.

1. Intentional $^{(?)}$ iconicity

$$\mathbf{Icon}^{\Phi}(\mathit{width}_{\Delta})$$

2. Scopable iconicity.

References

Aristodemo, V. and Geraci, C. (2018). Visible degrees in Italian Sign Language. *Natural Language and Linguistic Theory*, 36:685–699.

Balusu, R. (2005). Distributive reduplication in Telugu. In Davis, C., Deal, A. R., and Zabbal, Y., editors, *Proceedings of the 36th Annual Meeting of the North East Linguistic Society (NELS 36)*, pages 39–53, Amherst, MA. University of Massachusetts GLSA Publications.

Cabredo Hofherr, P. and Laca, B. (2012). Introduction – event plurality, verbal plurality and distributivity. In Cabredo Hofherr, P. and Laca, B., editors, *Verbal plurality and distributivity*. de Gruyter, Berlin, Boston.

Cusic, D. D. (1981). *Verbal plurality and aspect*. PhD thesis, Stanford University, Stanford, CA.

Hay, J., Kennedy, C., and Levin, B. (1999). Scalar structure underlies telicity in "degree achievements". In Matthews, T. and Strolovitch, D., editors, *Proceedings of the 9th Semantics and Linguistic Theory Conference (SALT 9)*, pages 127–144, Ithaca, NY. Cornell University CLC Publications.

Kimmelman, V. (2015). Distributive quantification in Russian Sign Language. Presentation at *Formal and Experimental Advances in Sign Language Theory*, Barcelona, Spain.

Kuhn, J. and Aristodemo, V. (2017). Pluractionality, iconicity, and scope in French Sign Language. *Semantics and Pragmatics*, 10(6):1–49.

Lasersohn, P. (1995). *Plurality, conjunction, and events*. Studies in Linguistics and Philosophy. Kluwer Academic Publishers, Dordrecht, Netherlands.

Oh, S.-R. (2006). *Plurality markers across languages*. PhD thesis, University of Connecticut, Storrs, CT.

Schlenker, P. (2011). Donkey anaphora: the view from sign language (ASL and LSF). *Linguistics and Philosophy*, 34(4):341–395.

Sprouse, J., Schütze, C. T., and Almeida, D. (2013). A comparison of informal and formal acceptability judgments using a random sample from linguistic inquiry 2001-2010. *Lingua*, 134:219–248.

Thompson, J. J. (2009). On verbal number in Upriver Halkomelem. Ms. University of British Columbia. Available at http://semanticsarchive.net/Archive/Dl2NDZiN/.

Wilbur, R. (2003). Representations of telicity in ASL. In *Chicago Linguistic Society 39*, pages 354–368.

Wilbur, R. (2008). Complex predicates involving events, time and aspect: is this why sign languages look so similar? In Quer, J., editor, *Theoretical Issues in Sign Language Research*, pages 217–250, Hamburg, Germany. Signum Press.