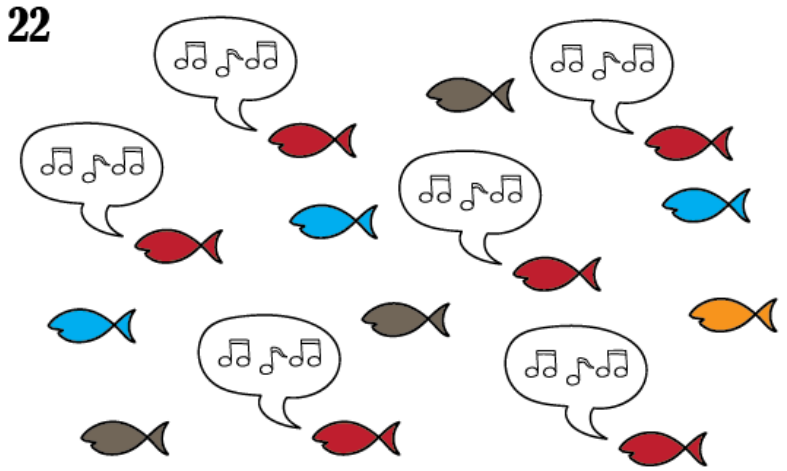



# Documenting quantifiers in Akuzipik: A series of images for eliciting nominal quantification

Benjamin Hunt (George Mason University)

Sylvia L.R. Schreiner (George Mason University)

with Ukaall Crystal Aningayou (St. Lawrence Island Yupik)

# Positionality

- The authors are non-Indigenous individuals and are grateful to be allowed to live, work, and study on unceded land stewarded for thousands of years by tribes including the Rappahannock, Pamunkey, Upper Mattaponi, Chickahominy, Eastern Chickahominy, Nansemond, Monacan, Mattaponi, Patawomeck, Nottaway, and Piscataway.
- To the Yupik community, who remain on the land inhabited by their people for generations, igamsikayugvikamsi. We are grateful to you for sharing your language, culture, and kindness.

# Language Ecology

- Akuzipik (ISO 639-3: ess, *Yupigestun*/Yupik/St. Lawrence Island Yupik/Siberian Yupik/Chaplinski Yupik)
  - Inuit-Yupik-Unangan language of the Bering Strait region
  - Polysynthetic
  - Verbs, nouns, demonstratives, particles; 600+ derivational "postbases"
- Spoken as a first language by fewer than 1000 individuals
  - On St. Lawrence Island, Alaska;
  - On the Chukotka Peninsula of Russia; and
  - In mainland Alaska (de Reuse 1994; Schwartz, et al. 2020)

# Language Ecology

- A generational shift
  - Towards Russian beginning in the 1950s in Russia
  - Towards English beginning in the 1990s in Alaska (Schwartz, et al. 2020)

- Current situation:
  - Most younger speakers are English- (or, in Russia, Russian-) dominant
  - Some do not speak Akuzipik at all (Koonooka, et al. 2021)

# Language Ecology

- The work described here is part of a larger project:
  - Further documentation of the syntax, semantics, morphology, phonology, phonetics, and lexicon of Akuzipik;
  - Digitization of existing legacy materials; and
  - Creation of computer tools for Akuzipik speakers and researchers

(NSF Documenting Endangered Languages Grants #BCS 1760977 (Sylvia L.R. Schreiner, PI) and #BCS 1761680 (Lane Schwartz, PI): Navigating the New Arctic: Collaborative Research: Integrating Language Documentation and Computational Tools for Yupik, an Alaska Native Language)

# Research Context

- The images described here are taken from a research project documenting quantifiers in Akuzipik
- After an initial review of the literature and available resources on Akuzipik, a list of known quantifiers was assembled in addition to a list of potentially missing quantifiers based on those identified as occurring commonly across languages in Paperno & Keenan (2017)

# Akuzipik Quantifiers

- **Generalized Existential**:
  - Cardinal: *ataasiq* ‘one’, *maalghuk* ‘two’, etc…; *ilangi* ‘some’.
  - Interrogative: *qafsiniite* ‘which (in a series)’; *naligh** ‘which one(s)’; *qafsina* ‘how many?’.
  - Value judgement: *qafsin’get* ‘several’.
  - Potentially missing: ‘no/none’, ‘few’, group numerals (‘couple’, ‘dozen’, etc.).
- **Generalized Universal**:
  - *iingunagh** ‘all; whole’,
  - *tamaghhagh** ‘all, every, both (for dual)’,
  - *qamaggllu* ‘all, all of, each’.
  - Potentially missing: ‘each’, ‘any’, ‘ever’.
- **Proportional**:
  - *uglagh* ‘large number or amount; many; much; large quantity’,
  - *aveg* ‘half” (nominal root),
  - *qafsinagnegh/qafsina* ‘several; a few’.
  - Potentially missing: 'most'.
- **Comparative**:
  - *alla* ‘more; some more; again’,
  - *ellmaaghaghhagh** ‘a little bit more’.
  - Potentially missing: 'fewer/less'.
- **Partitive**:
  - *naliit/ naliighiit(a)* ‘any of’.
  - Potentially missing: 'some of, few/several of'.

# The study

- Aim: documenting any quantificational elements not listed in the dictionary, or previously undocumented quantificational uses of lexical items
- Limited access to speakers
  - Unreliable internet
  - Financial limitations
  - Travel restrictions (in COVID times)
  - Low-quality video correspondence/recordings

# Possible approaches

- Traditional elicitation
  - Descriptions of semantic context using metalanguage (English, in this case)
  - Establish hypothetical scenarios to tease out target constructions
- Avoiding metalanguage influence (Matthewson 2004; Burton & Matthewson 2015; AnderBois & Henderson 2015)
  - Possibility of direct translation if metalanguage is used to provide context
  - Possibility of priming if target language is used to provide context

# Possible approaches

- Visual elicitation
  - Pictures for lexical elicitation (Kinloch 1971; Gregg 1992, Woods 1999)
    - Allow targeted elicitation
    - Limit metalanguage influence
    - These authors used pictures to elicit terms for common items for dialectal surveys
    - Kinloch comments that elicitation items like "didn't use to" were not easily rendered in picture form (pg. 41) and opted not to include them
- Storyboarding (Burton & Matthewson 2015; Cable 2019)
  - Allow targeted elicitations of both concrete and abstract (e.g. verbal semantics, evidentiality, etc.) items
  - After follow-up elicitation, allow collection of negative data

# Possible approaches

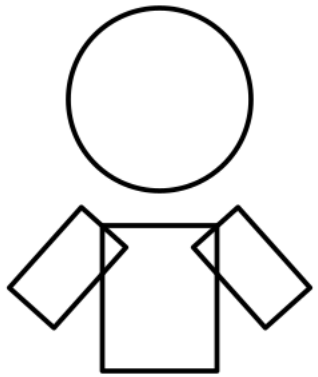
- A combination of these two approaches seems to be well suited to targeted lexical elicitation of abstract concepts like quantificational semantics
  - Setting up a visual context is essential to lead the speaker to the right semantic space
  - Narratively driven context might lead to too narrow a semantic space

# Illustrating quantificational semantics

- 24 images
- Created in a vector graphics editor – Inkscape (Freeware), Adobe Illustrator (paid)
  - Similar images could be composed in PowerPoint with clipart or any similar program
  - Vector graphics offer more flexibility in composition, export size
- Created in a few hours' worth of work
  - Majority of time went to planning the visualized contexts (e.g. how best to visualize "some" vs "few")

*New document 1 - Inkscape

File Edit View Layer Object Path Text Filters Extensions Help



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Fill Stroke paint Stroke style

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Markers:

Join: 4.00

Cap:

Order:

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Opacity (%) 100.0

Layers (Shift+Ctrl+L) Find/Replace (Ctrl+F)

Align and Distribute (Shift+Ctrl+A)

Align

Relative to: First selected

Treat selection as group:

Distribute

Rearrange

# Making an image

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X: 216.49 Y: 107.18 Z: 99%



52°F ENG 12:45 PM 1/19/2022

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File Edit View Layer Object Path Text Filters Extensions Help

- Object to Path Shift+Ctrl+C
- Stroke to Path Ctrl+Alt+C
- Trace Bitmap... Shift+Alt+B
- Trace Pixel Art...
- Union Ctrl++
- Difference Ctrl+-
- Intersection Ctrl+*
- Exclusion Ctrl+^
- Division Ctrl+/
- Cut Path Ctrl+Alt+/
- Combine Ctrl+K
- Break Apart Shift+Ctrl+K
- Inset Ctrl+(
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- Linked Offset
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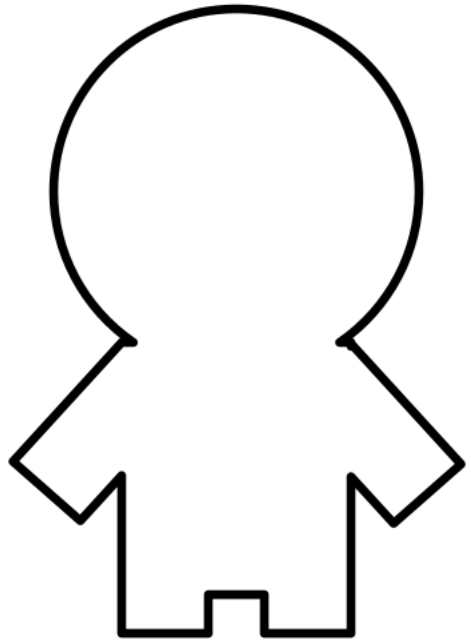

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Fill | Stroke paint | Stroke style

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Align and Distribute (Shift+Ctrl+A)

Align

Relative to: First selected

Treat selection as group:

Distribute

Rearrange

Remove overlaps

H: 0.0 V: 0.0

Layers (Shift+Ctrl+L) Find/Replace (Ctrl+F)

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52°F ENG 12:54 PM 1/19/2022

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File Edit View Layer Object Path Text Filters Extensions Help

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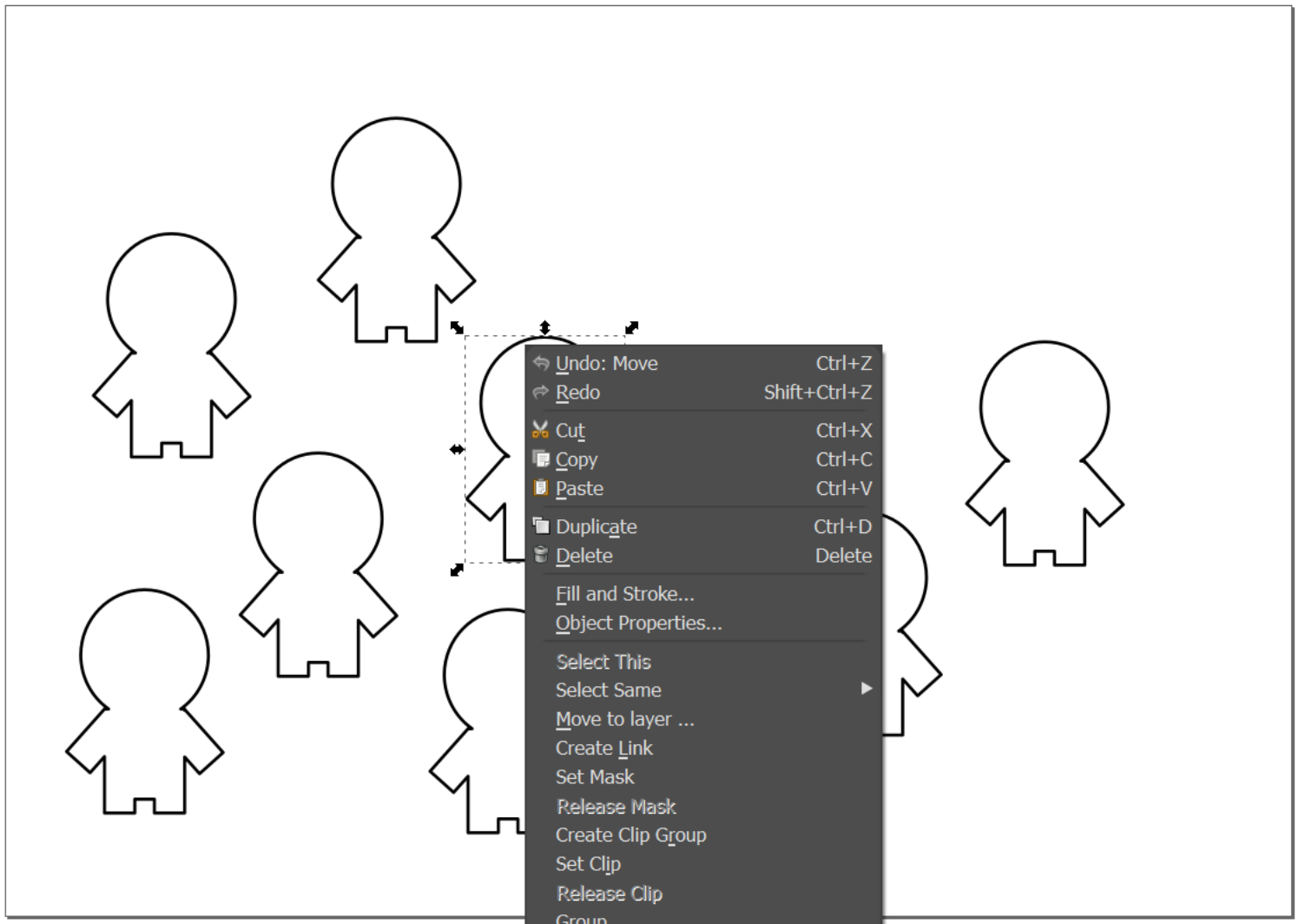


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Treat selection as group:

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Rearrange

Remove overlaps

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52°F ENG 12:56 PM 1/19/2022

*New document 1 - Inkscape

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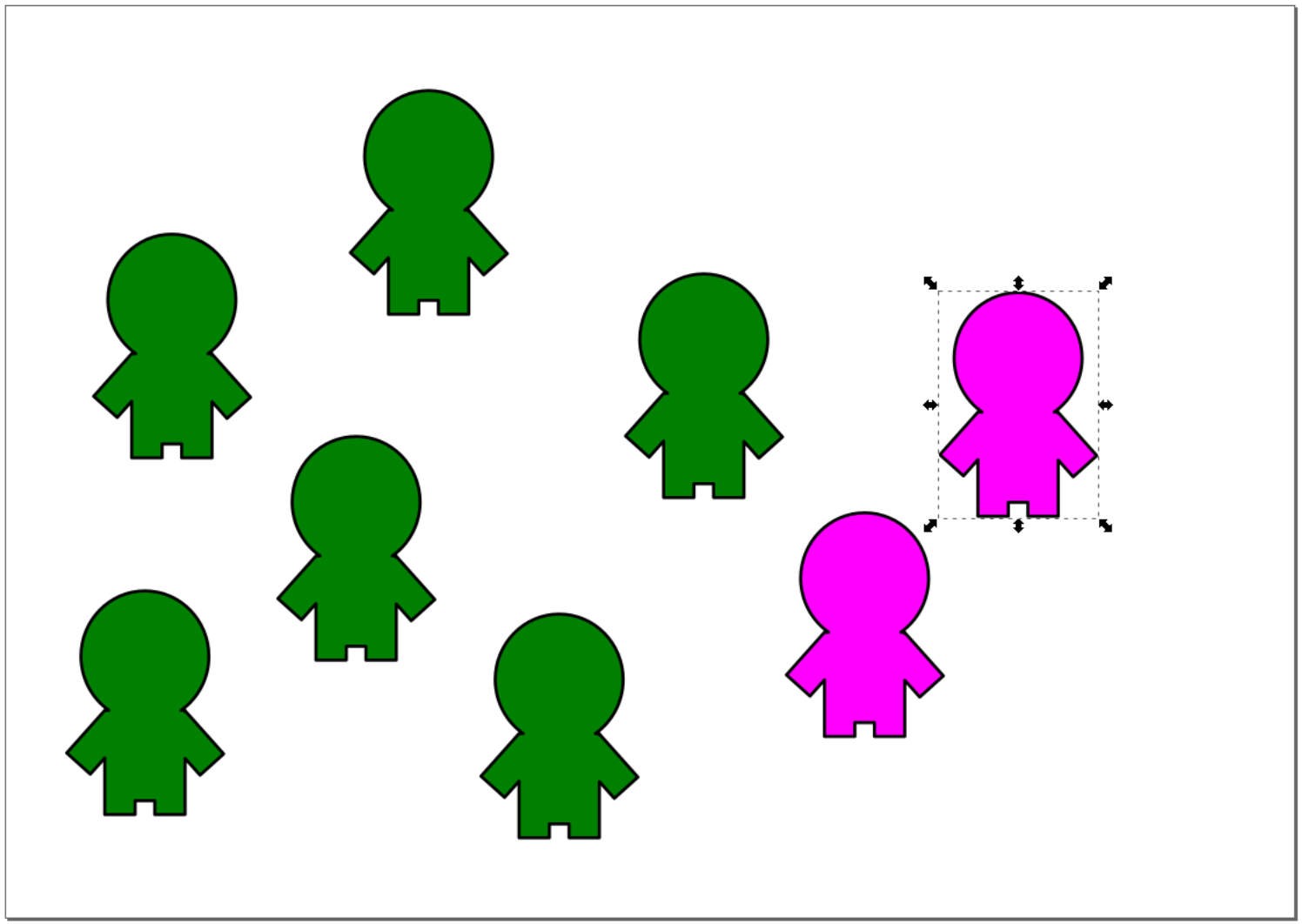

Fill and Stroke (Shift+Ctrl+F)

Fill Stroke paint Stroke style

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RGB HSL CMYK Wheel CMS

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L: 128

A: 255

RGBA: ff00ffff

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Align and Distribute (Shift+Ctrl+A)

Align

Relative to: First selected

Treat selection as group:

Distribute

Rearrange

Remove overlaps

Layers (Shift+Ctrl+L) Find/Replace (Ctrl+F)

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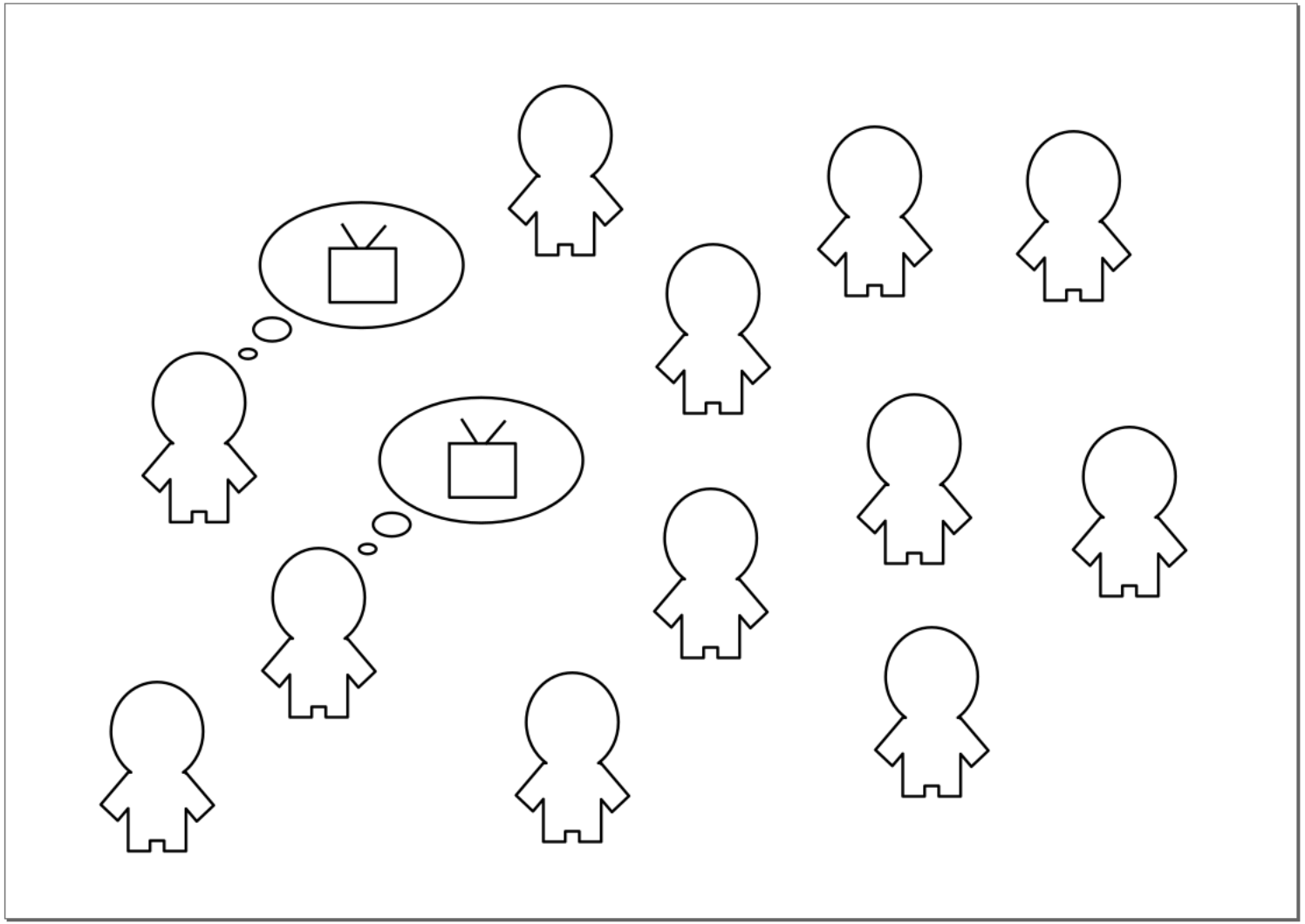

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Treat selection as group:

Distribute

Rearrange

Remove overlaps

H: 0.0 V: 0.0

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O: 0

Layer 1

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# Quantifier images

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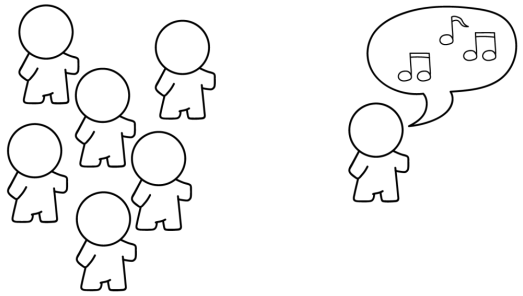

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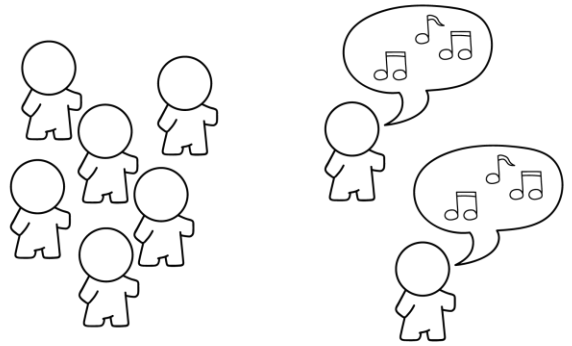

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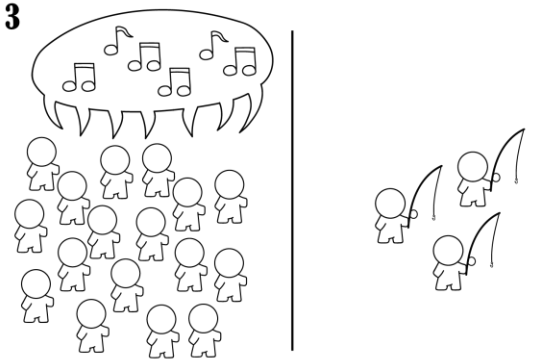

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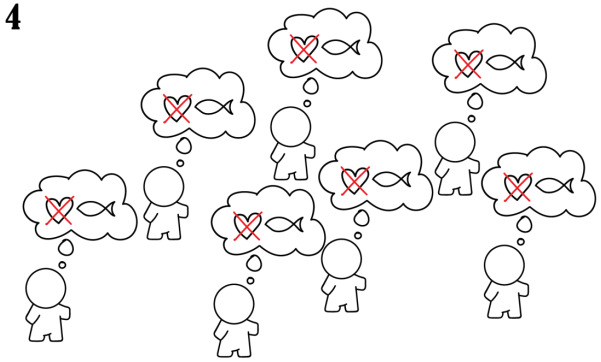

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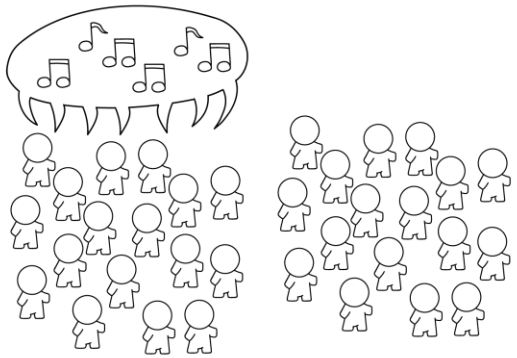

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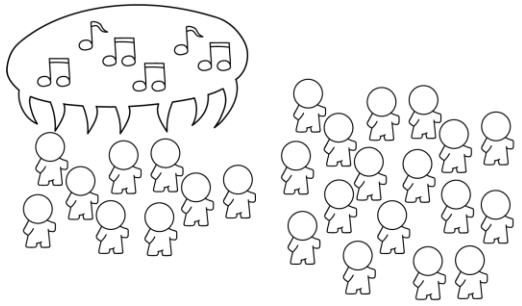

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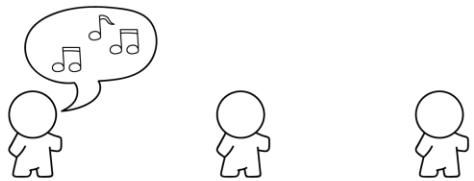

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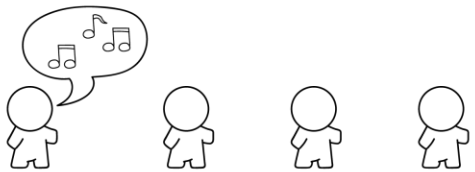

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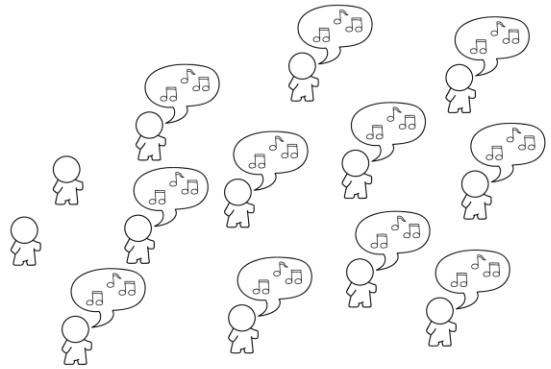

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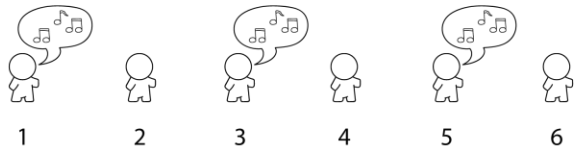


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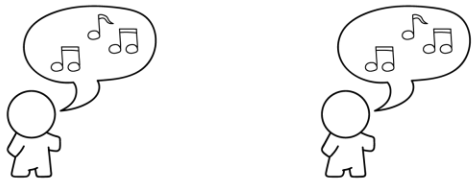

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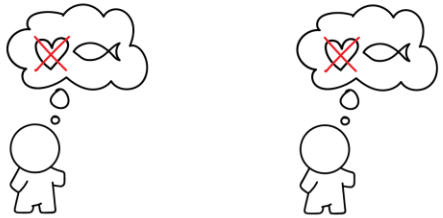

# Quantifier images

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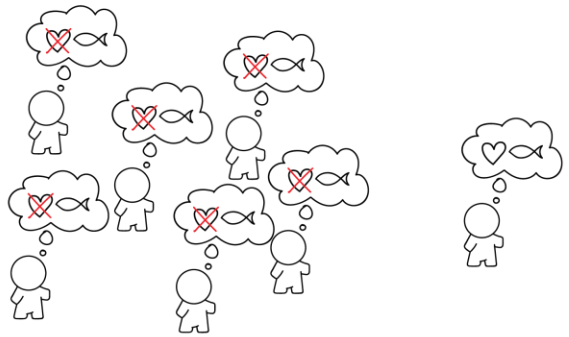

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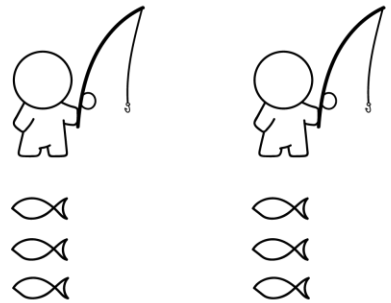

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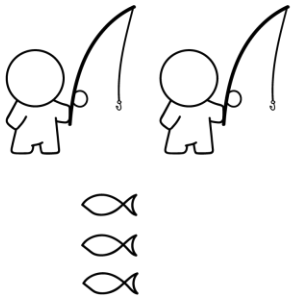

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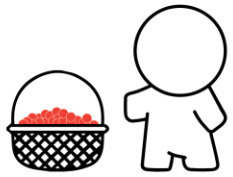

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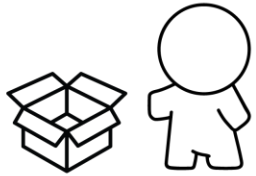

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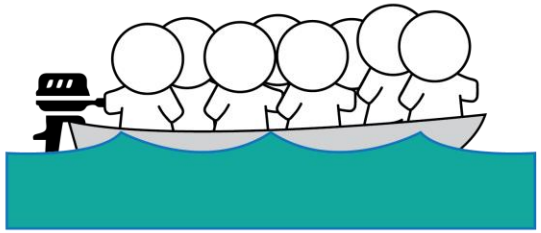

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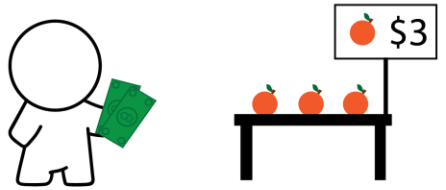


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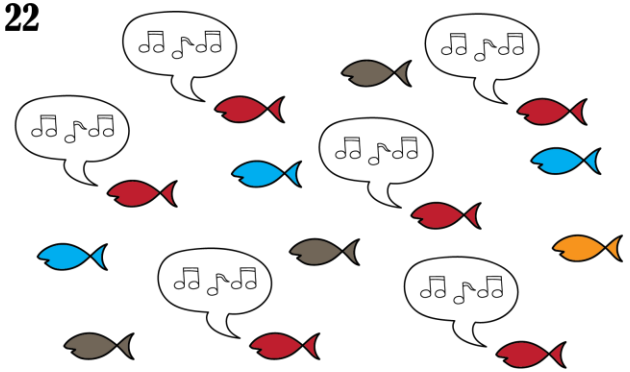

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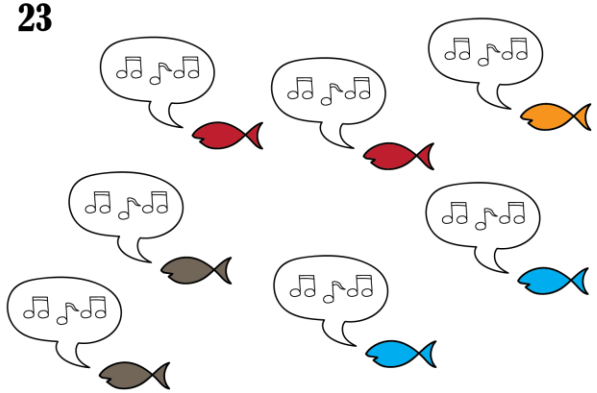

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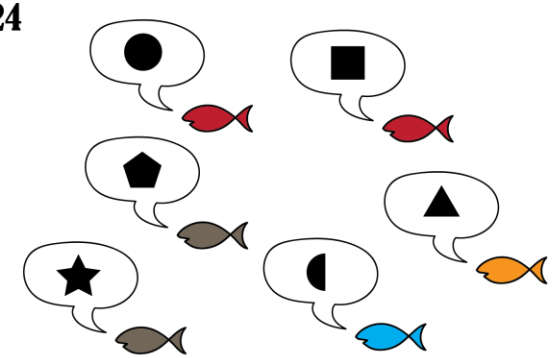


# Illustrating quantificational semantics

- Aim: Minimize salience of non-target features
- Simple line-art used to avoid overcomplicating images and eliminate confounding details
  - e.g. a human with interesting clothing might cause the speaker to describe that aspect of the image rather than what activity they are participating in
- Culturally relevant activities

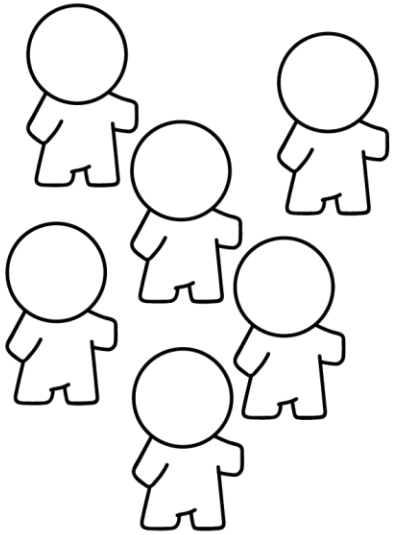
# Illustrating quantificational semantics

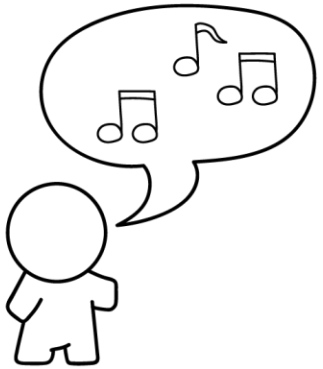
- Ensure symbols representing activities are as transparent as possible
  - The speaker should easily recognize what activity is being represented
  - Any initial confusion may necessitate unwanted discussion in metalanguage

# Quantifier images

- Possible interpretations:
  - One person is singing.
  - Five people aren't singing.
  - Only one person is singing.
  - Most people aren't singing.
  - Almost everyone is singing.
  - All but one person are singing.
  - Etc.

**1**

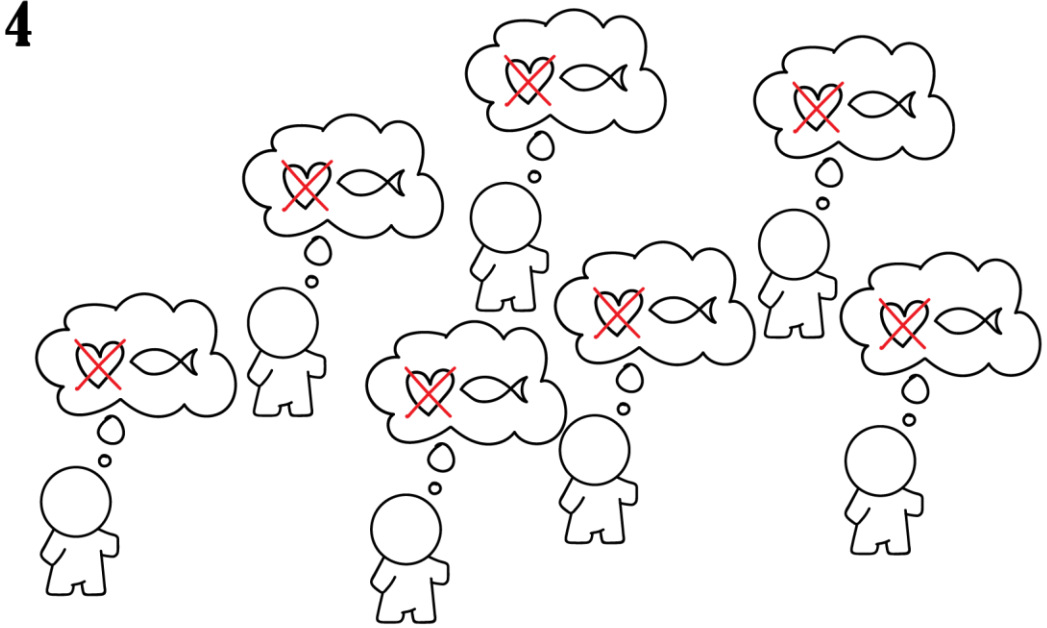




# Quantifier images

- Possible interpretations:
  - None of the people like fish.
  - All the people don't like fish.
  - No one likes fish.
  - Every person doesn't like fish.
  - Etc.

**4**



# Elicitation task

- Images were sent to the speaker via Facebook messenger
- A series of sessions over a 2-week period
  - Sessions lasted between 2-4 hours each (with a short break in longer sessions)

- Introduce the task to the speaker briefly:

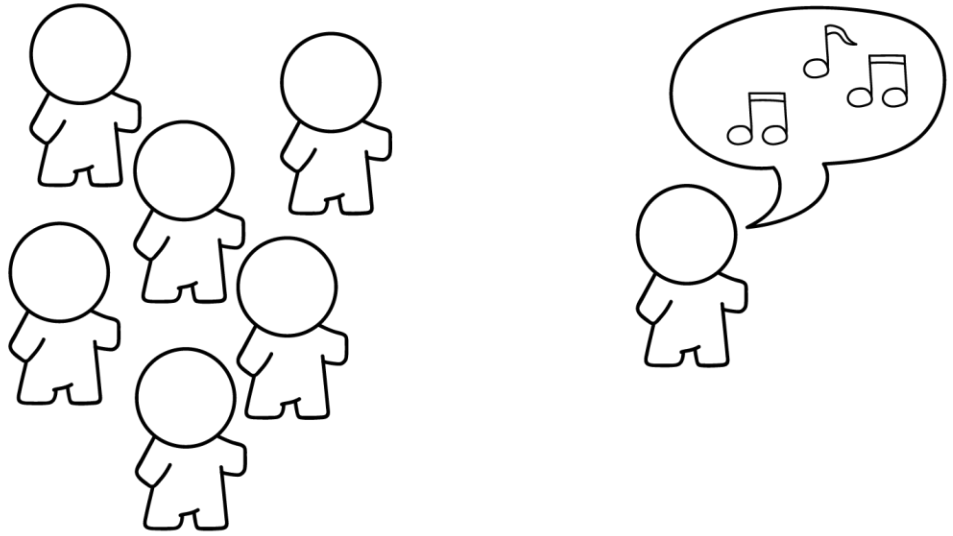
"It's going to be a series of pictures of little cartoon people doing different things. What I'd like for you to do is describe what's going on in the picture only in Yupik, in one or two sentences."

# Elicitation task

- Procedure:
  1. Participant was sent a single image with no additional context, and asked to comment on the content of the image in Yupik
  2. Participant's initial response was recorded, and questions were asked of the participant to clarify the usage of any part of the response
  3. If nothing identifiable as the targeted quantifier or quantifiers was provided, additional context was given to direct the speaker to the desired semantic interpretation.

# Examples

**1**



Taam ilaani ilaagaataqii.

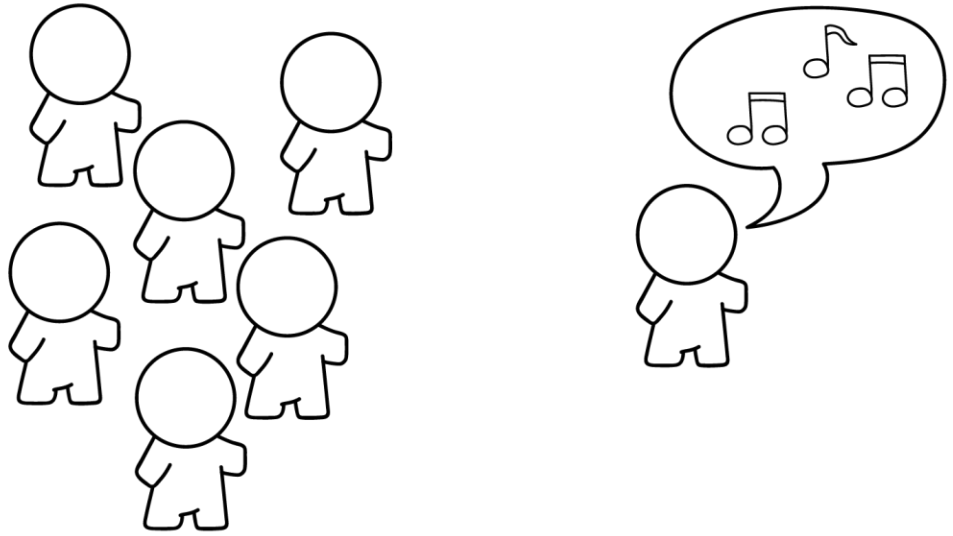
Taam ila(a)-ni ila(a)gaa-t-aq-ii

that.one other-LOC.PL sing-V.for-PROG-IND.TRN.3SG/3PL

“That one is singing to the others he’s with.” (Elicitation 09/26/2020; Speaker 21)

# Examples

**1**



- When asked to focus the sentence on the singing person in contrast with the others who are not singing, the participant offered the response below.

Ataasighhiinaq ilaagaghaaquq.

Ataasigh(h)-i(i)naq ila(a)gagh-a(a)q-uq

one-only.N sing-PROG-IND.INTR.3SG

“Only one is singing.” (Elicitation 9/26/2020; Speaker 21)

# Discussion

- This picture-based elicitation task was quite successful
  - Prompted the speaker to describe images fully in Akuzipik
  - Allowed the researchers to elicit a number of quantifiers without (noticeable) English influence
- These sessions resulted in the confirmation of the previously known quantifiers and the identification of new quantificational senses of known roots

| | | | |
|---|---|---|---|
| *nalighhqek* | neither | *naligh* | which one(s) |
| *naliighhiit* | any/none of these | | |
| *nalighhiiniit/ naliighhiinaq* | none | | |
| *naliighhiinaat/ naliighiinaan* | Only some/little bit of them/it | | |

# Speaker perspective

- The pictures were a good elicitation tool
- The task was easy to understand
- Some pictures were slightly confusing at first but were easily clarified
- The task was fun, and while pictures aren't necessary in all elicitations, looking at them seemed to make it easier to come up with answers
- Working from home via Facebook Messenger was convenient/required less interruption of daily routines than in-person elicitation sessions
- She thought in both Akuzipik and English during the task, but thought first in Akuzipik (as is typical for her).

# Shortcomings and implications

- In person long-form, recorded interview might have been more effective
  - Individual sessions too long/information sparse when over messenger
  - Easy to get lost in the message thread
  - Difficult to clarify subtle semantic distinctions through casual messaging
- Little success with non-English semantic spaces, more work necessary here

# Igamsikayugvikamsi!

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