Question word distributivity

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Introduction

Shan, a Kra-Dai language of Burma, uses the same morpheme *lǎj*/*lǎɯ* 'which' to express the following:

(1) **Distributive** [Num Clf *lǎj*]$_{\text{KEY}}$ ... [Num Clf]$_{\text{SHARE}}$
sǎam tsúm nâj, nɯŋ tsúm **lǎj** lɤk tǒnâp sɔ̌ŋ ʔǎn
three group this one group LAJ choose number two CLF.GEN
'Those three groups, each group chose two numbers.'

(2) **Which questions** [Clf *lǎj*]
tsúm **lǎj** lɤk tǒnâp ʔǎn **lǎj**
group LAJ choose number CLF.GEN LAJ
'Which group chose which number(s)?'
(Context: 6 students split into 3 groups of two to play a game.)

Distributive construction

- Can be clause-final, right before SHARE Num Clf:

(3) háw kwàa thóp mɔ̌jǎa nân nɯŋ lɤ̌n **lǎj**
1 go meet doctor that one month LAJ
nɯŋ pɔk
one time
'I go see that doctor once each month.'

- Similar to dependent numerals in, e.g., Kaqchikel (Henderson 2021) or Bengali (Guha 2021) as well as English distributive *each* (Zimmermann 2002) and Japanese *dono... -mo* (Shimoyama 2006).
- Shimoyama (2006) analyzes Japanese distributive *-mo* as a universal quantifier.

(4) Dono gakusei-mo odotta.
which student-MO danced
'Every student danced.'(Shimoyama 2006: (25a))

- Unlike the English and Japanese distributive, the Shan SHARE must have a Num-Clf expression.
- Many accounts of distributive constructions presume an atomic distributive KEY (Champollion 2016, Henderson 2021), but the numeral in the Shan [Num Clf *lǎj*]$_{\text{KEY}}$ can be greater than one.

Indeterminate pronouns

- Kratzer & Shimoyama (2002) propose a unified Hamblin account of indeterminate pronouns.
- Shan employs indeterminate pronouns, including *lǎj*, but the distributive construction is unique.

(5) mɤ **lǎj** kɔ...
when LAJ PRT
'whenever ...'

(6) ʔàm ...táaŋ **lǎj**
NEG way LAJ
'not ...anywhere'

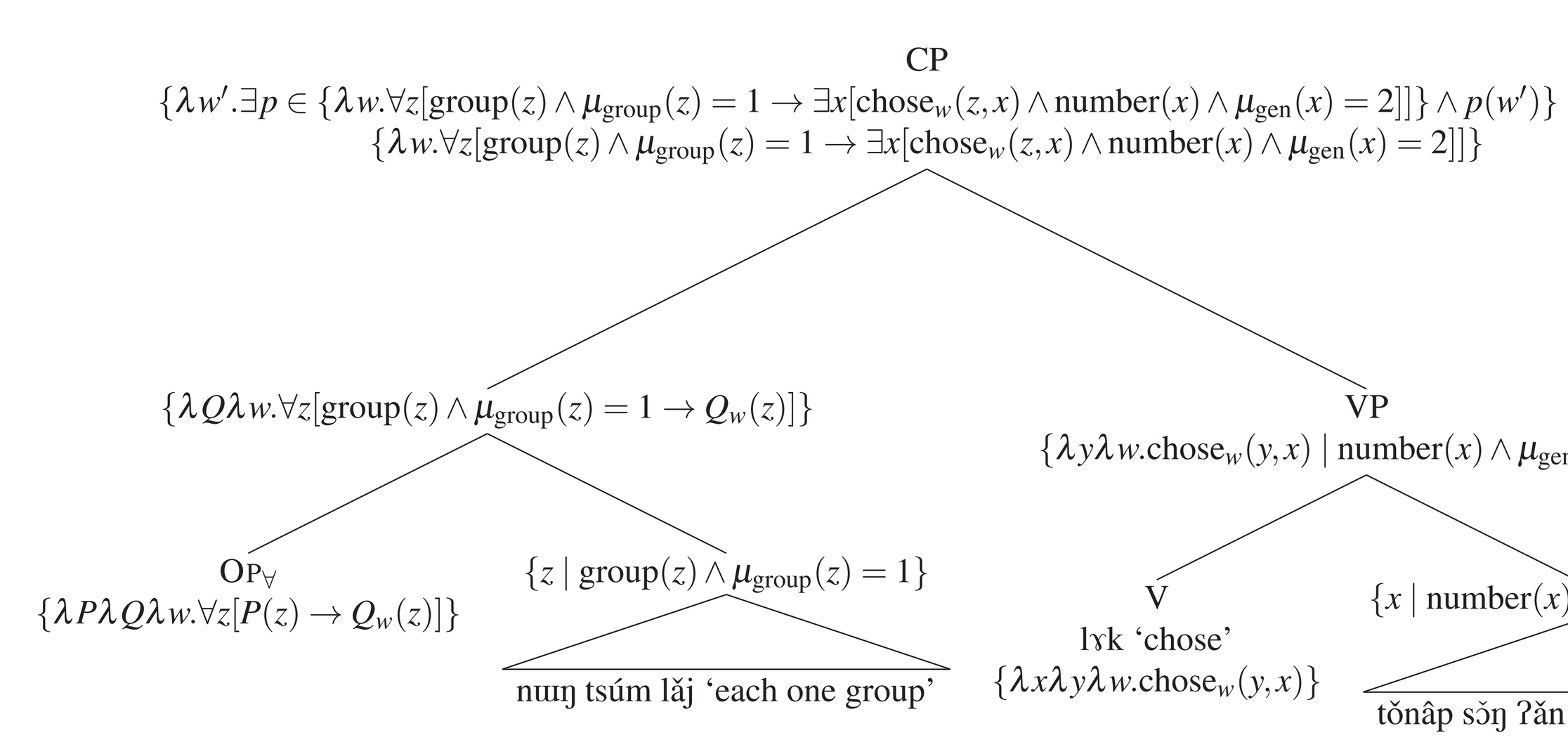
- A free choice meaning arises with the particle *kɔ*, and an NPI interpretation with negation.
- The distributive effect fits with ∀ quantification.
- Multiple wh-questions, such as (1), can have pair-list answers.
- Family-of-questions (Fox 2012; Kotek 2016) or dynamic (Roelofsen & Dotlačil 2023) accounts of multiple wh-Qs are compatible with an indeterminate pronouns analysis.
- There is no SG/PL contrast in wh-questions, but uniqueness in Q-answers requires further testing.

Analysis

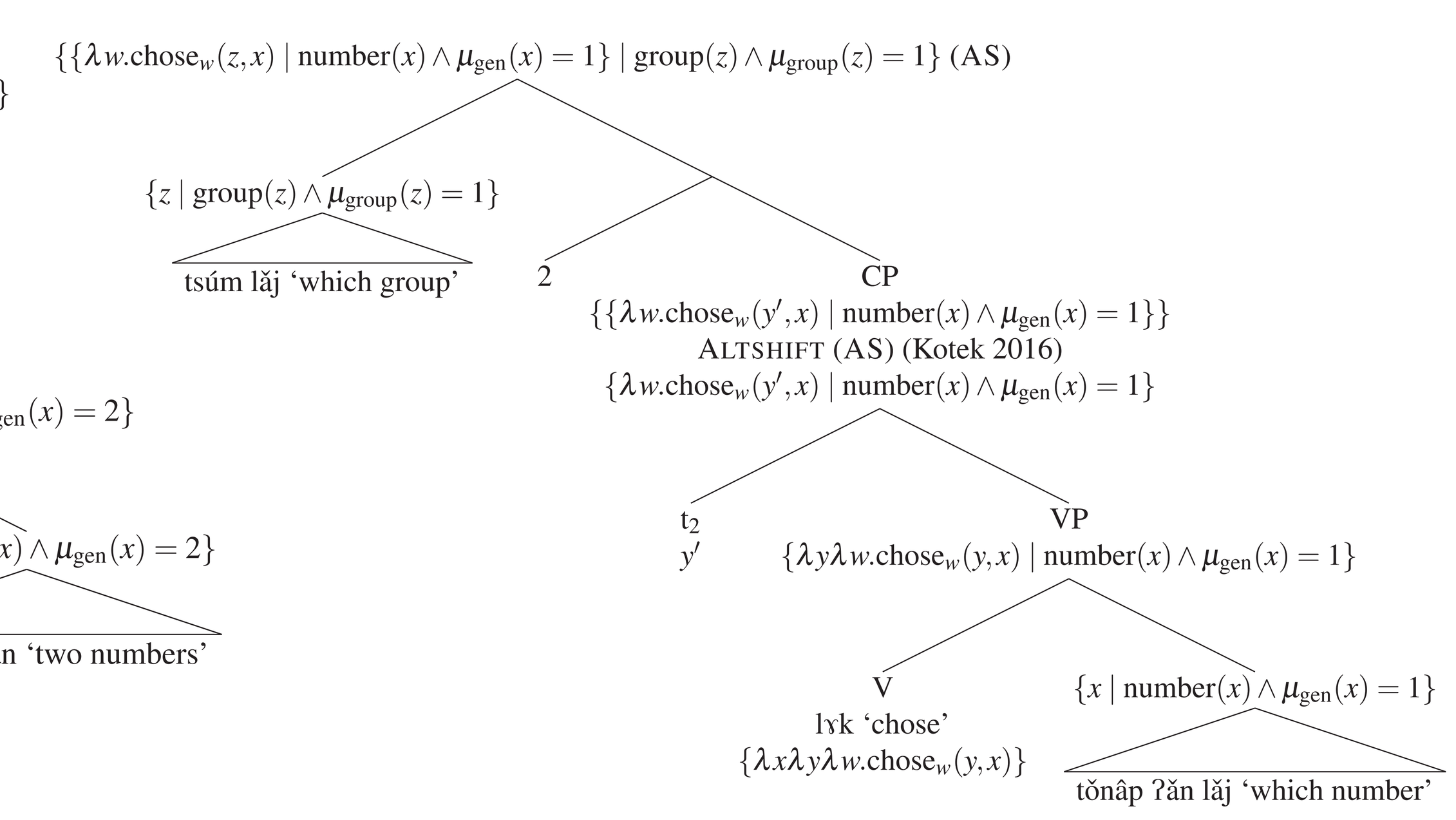
Hamblin semantics for *lǎj* in distributive and multiple-wh constructions:

- A Hamblin semantics (Hamblin 1973) for indeterminate pronouns, as described by Kratzer & Shimoyama (2002); Shimoyama (2006) can account for the data here.
- A covert distributive quantifier is licensed by the understood plurality of *sǎam tsúm nâj* 'these three groups' in (1) and the numeral-classifier construction.
- For the distributive case, ∃ propositional operator indicates one proposition among the alternatives is true.
- To generate a family-of-questions (FoQ) for multiple wh-questions, use ALTSHIFT from Kotek 2016.

(7) **Distributive**



(8) **Multiple wh-questions**



- To flatten the FoQ to include (non-)exhaustive alternatives, following Xiang's (2023) observations, use (9).

(9) **Combine consistent alternatives**:
$$\textbf{CCA}(\mathbb{Q}) := \{p \mid \exists \mathbb{Q}'_{(stt)t} \subseteq \mathbb{Q}_{(stt)t}[\forall Q_{(st)t} \in \mathbb{Q}'_{(stt)t}[\exists q \in Q_{(st)t}[\exists w[q(w) \wedge p(w)]]]]\}$$
The set of propositions p such that there is a subset of the family-of-questions $\mathbb{Q}$ where every sub-question contains a proposition q such that some q worlds are p worlds.

(10) For example (2), $\mathbb{Q} =$
$$\left\{ \left\{ \begin{array}{c} \text{A chose 1+2,} \\ \text{A chose 3+4,} \\ \ldots \end{array} \right\}, \left\{ \begin{array}{c} \text{B chose 1+2,} \\ \text{B chose 3+4,} \\ \ldots \end{array} \right\}, \left\{ \begin{array}{c} \text{C chose 1+2,} \\ \text{C chose 3+4,} \\ \ldots \end{array} \right\} \right\}$$

(11) $\textbf{CCA}(\mathbb{Q}) =$
$$\left\{ \begin{array}{c} \text{A chose 1+2 and B chose 3+4,} \\ \text{A chose 1+2 and B chose 3+4 and C chose 5+6,} \\ \text{A chose 1+2 and B chose 3+4 and C chose 6+7, } \ldots \end{array} \right\}$$

Non-atomic distributive keys:

- Non-atomic distributive keys are possible in Shan, (12), and in other languages, e.g., Korean, (Choe 1987).

(12) lukhén laj pâplik **sǎam kɔ̂** **lǎj** sɔ̌ŋ pâp
student get book three CLF.HUM LAJ two CLF.BOOK
'Each three students get two books.'

Further puzzles:

- There is an overt universal quantifier *ku* that can appear with Numeral Classifier expressions:

(13) ku sɔ̌ŋ thɯ̌ŋ sǎam tsomɔ́ŋ
every two to three hour
'every two to three hours'

(14) Jake photographed { every / #each } student in the class, but not individually.

(15) { every / #each } two to three hours

- The quantifier *ku* does no co-occur with *lǎj*. The distributive character of *lǎj* has some parallels to the English *each*/*every* distinction in having an event differentiation condition (Brasoveanu & Dotlačil 2015).

Conclusions and future work

This paper presents novel data from Shan, an understudied language, on expressions of distributivity using question word *lǎj* 'which'. A Hamblin semantics of indeterminate pronouns with a covert distributivity operator accounts for this data. A new method of flattening family-of-questions has been proposed that allows for non-exhaustive interpretations of multiple-wh questions. This approach easily deals with cases of non-atomic distributive keys, which is relevant for distributivity cross-linguistically. Future work will investigate distinctions between the quantifier *ku* 'every' and the distributive use of *lǎj*.

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