

A UNIFIED SEMANTIC ANALYSIS OF  
CLASSIFIERS AND REDUPLICATION ACROSS  
NOMINAL AND VERBAL DOMAINS  
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## OVERVIEW

FUNCTIONS OF CLF AND REDP IN N & V

CENTRAL CLAIM: 2-TIERED QUANTF-INDV

PREDICTIONS

IMPLICATION

## CLASSIFIER IN NOMINALS

English does not use Clf: a cup / \*an air / a puff of air

Cantonese nominals require Clf:

- (1) jat1 **go3** bui1 'a cup'
- (2) jat1 **dung6** bui1 'a stack of cups'
- (3) jat1 {**dik6 / bui1 / gung1sing1**} seoi2  
'a drop/cup/litre (of) water'

- ▶ Clf denotes the unit of counting / measuring  
 $\llbracket Clf(X)_K \rrbracket = Count_K(X_{root} \cap Q)$  (Rothstein, 2010)
- ▶ Nouns in Cantonese typically require Clf
- ▶ Natural plurality expressed solely by Clf,  
no marking on bui1 'cup'

(Rothstein, 2010; Cheng, 2012; Zhang, 2013; Harding & Lin, 2014)

## CLASSIFIER IN VERBS

English expresses bounded events with count nouns,  
i.e. not with Clf:

- ▶ 'take **a look**' (as suggested by the use of determiner)
- ▶ 'give it **a try**'

## CLASSIFIER IN VERBS

Cantonese Clf can occur with verbs to give the same bounded reading, among other constructions:

### Clf with Nominals

- (4) loeng5 go3 jan4  
two    Clf person  
'two people'

### Clf with Verbs

- (5) paau2 go3 bou6  
run    Clf step  
'go for a jog'
- (6) sik6 go3 faan6  
eat    Clf rice  
'have a meal'  
not 'eat a grain of rice'

- ▶ Bounded events can cooccur with Asp-marking  
(Syntax: below AspP; Semantics: Clf-V does not denote viewpoint aspect)

## REDUPLICATION IN N & V

- (7)    zek3 zek3 gau2  
       Clf Clf     dog  
       'every dog'

Clf-N → Exhaustive list reading  
             N-N reduplication are unacceptable

- (8)    haau1 haau1 ha5 mun4  
       knock knock Dur door  
       'knocking on the door'

Bounded V → Iterative event

- (9)    cung1 cung1 ha5 loeng4  
       wash wash   Dur cool  
       'taking shower'

Unbounded V → Durative event

The boundedness of 'knock' and 'wash' happen to be the same as English, cf. modification by 'for a long time'.

## REDUPLICATION IN N & V

Redp is essentially 'every'.

$$(10) \quad [\![\text{EVERY}]\!] = \lambda f \in D . \forall x \in D \rightarrow f(x) = 1$$

(Heim & Kratzer, 1998)

- (11) bun2 bun2 syu1 dou1 hou2 cung5  
Clf Clf book all very heavy  
'Every book is heavy.' (distributive but not collective reading)

- ▶ the function  $f$  (being an entire book) is applied to all object  $x$  in the domain  $D$  in question.

## SUMMARY OF INTERPRETATIONS OF REDP

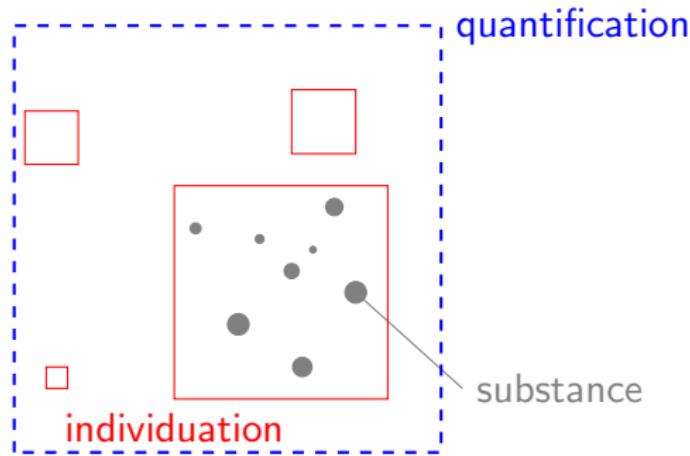
Category	Interpretation
CI-N	exhaustive list 'every N'
$V_{bounded}$	iterative 'knocking'
$V_{unbounded}$	durative 'running'
Adj	diminutive 'fairly Adj'

Lam (2013) explains the pattern in terms cumulativity and quantization.

## CENTRAL CLAIM

### 2-tiered Quantification-Individuation

- ▶ t0: N / V instantiates the mass, unquantifiable substance
- ▶ t1: Clf individuates substance to **quantifiable units**
- ▶ t2: Redp takes units and returns **quantified set**



## FORMALLY

Denotation for Clf:

$$\llbracket \text{Clf}(X)_K \rrbracket = \text{Count}_K(X_{\text{root}} \cap Q)$$

(Rothstein, 2010)

$$\text{Count}_K(\text{Dog}_{\text{root}} \cap Q) = 1 \text{ iff:}$$



Otherwise, like

Then  $\text{Count}_K(\text{Dog}_{\text{root}} \cap Q) = 0$

... or ...

## INDIVIDUATED NOUN + REDUPLICATION

$$\|Clf(X)_K\| = Count_K(X_{root} \cap Q) \quad (\text{Rothstein, 2010})$$

**EVERY** =  $\lambda f \in D . \forall x \in D \rightarrow f(x) = 1$  (Heim & Kratzer, 1998)



1.  $\text{Dog}(X) = 1$ , iff  $X$  has the property of 'being dog' (not 'a dog'!)
  2.  $\text{Count}_K(\text{Dog}_{\text{root}} \cap Q) = 1$ , iff the object has the property of being dog AND satisfies the quantity of 'a dog', manifested by 'zek3 gau2' in Cantonese
  3.  $\lambda \text{Dog} \in D . \forall \text{Clf}(X) \in D \rightarrow f(\text{Clf}(X)) = 1$ , iff all  $\text{Clf}(X)$  can be called 'a dog' , manifested by 'zek3 zek3 gau2' in Cantonese

## INDIVIDUATED VERB + REDUPLICATION

$$\llbracket \text{Clf}(X)_K \rrbracket = \text{Count}_K(X_{\text{root}} \cap Q) \quad (\text{Rothstein, 2010})$$

$$\llbracket \text{EVERY} \rrbracket = \lambda f \in D . \forall x \in D \rightarrow f(x) = 1 \quad (\text{Heim \& Kratzer, 1998})$$

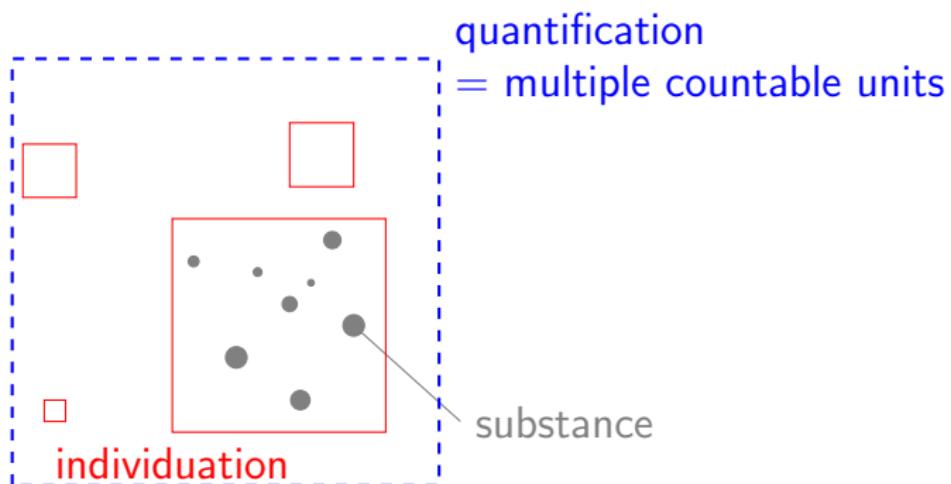
- (13)    haau1 haau1 ha5 mun4  
**knock knock** Dur door  
 ‘knocking on the door’      Bounded V → Iterative event

1. Knock(X) = 1, iff X has the property of ‘being knocking’
2. Though there is no Clf, but the lexical knowledge forces us to interpret it as bounded
3.  $\lambda \text{Knock} \in D . \forall x \in D \rightarrow \text{Knock}(x) = 1$ , iff all X can be called ‘a knock’, manifested in reduplication in Cantonese

## INDIVIDUATED ELEMENTS + REDUPLICATION

- (14) zek3 zek3 gau2  
      Clf  Clf  dog  
      'every dog'

Graphically:



## UNINDIVIDUATED ELEMENT + REDUPLICATION

$$\llbracket Clf(X)_K \rrbracket = Count_K(X_{root} \cap Q) \quad (\text{Rothstein, 2010})$$

$$\llbracket \text{EVERY} \rrbracket = \lambda f \in D . \forall x \in D \rightarrow f(x) = 1 \quad (\text{Heim \& Kratzer, 1998})$$

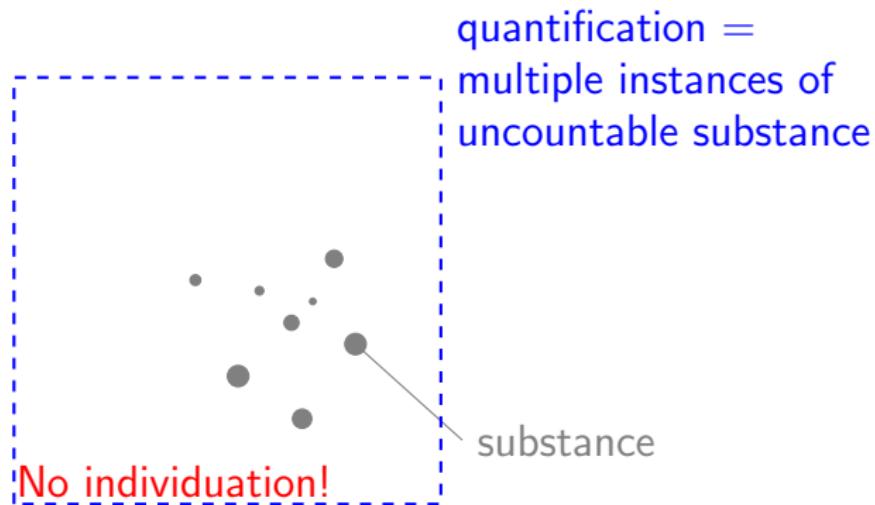
- (15)    cung1 cung1 ha5 loeng4  
       wash wash Dur cool  
       'taking shower'                      Unbounded V → Durative event

Typically we use variable e for events

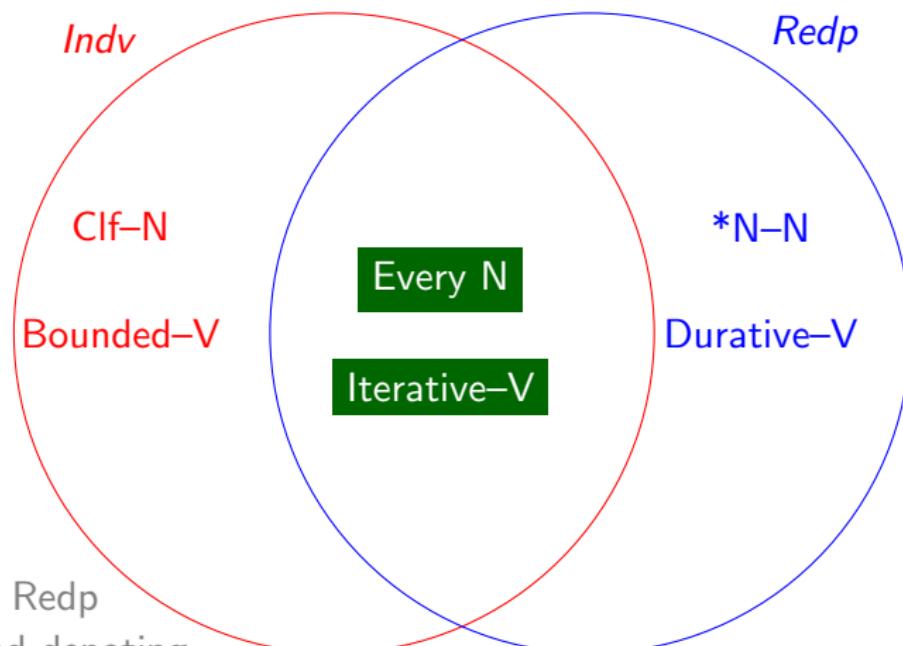
1.  $\text{Wash}(e) = 1$ , iff the event e can be characterized as Wash
2. In sentences like 'He showered for a long time.', the reading is durative, hence 'shower' is considered unbounded.
3.  $\lambda \text{Wash} \in D . \forall e \in D \rightarrow \text{Shower}(e) = 1$ , iff all frames in the events can be characterized as Wash

## UNINDIVIDUATED ELEMENT + REDUPLICATION

Graphically:



## SUMMARY



No Indv or Redp  
bare N: kind-denoting  
V: Generic

## PREDICTION I: BEHAVIORS OF INDIVIDUATED N IN CANTONESE

(16) nin6 nin6

year year  
'every year'

(17) sei3 (\*go3) nin6

four Clf year  
'4 years'

(18) \*go3 go3 nin6

Clf Clf year

'Intended: every year'

- ▶ These nouns can be considered inherently individuated
- ▶ As long as an object is individuated, they can be counted and undergo reduplication (CL-N and these individuated N)

## PREDICTION II: REDUPLICATED ELEMENTS ARE MULTIPLIED

- ▶ Redp + individuated argument = multiple individuals, iterative events
- ▶ Redp + unindividuated argument = durative events

(19)     ngo5 **haau1 haau1** ha5 dou6 mun4 keoi5 zau6 ceot1 lai4  
1sg **knock knock** Asp Clf door 3sg then out come  
'He came out while I was knocking on the door.

(multiple knocking)

(20)     ngo5 haau1 **dou6 dou6** mun4 dou1 mou5 jan4  
1sg knock **Clf Clf** door all Neg person  
'I knock on every door and no one (answered).

(multiple doors)

## PREDICTION II: REDUPLICATED ELEMENTS ARE MULTIPLIED (CONT'D)

Bangla/Bengali

- (21)    **bachar bachar** ek kaj kara  
      'Do the same **every year**.'

- (22)    **Khey Deye** Ami Shute Jaba  
      'After **eating**, I shall go to sleep.'      (partial reduplication)

(Chakraborty & Bandyopadhyay, 2009)

## PREDICTION II: REDUPLICATED ELEMENTS ARE MULTIPLIED (CONT'D)

American Sign Language (Wilbur, 2005)

- ▶ LOOK vs. LOOK-AT [durative]
- ▶ The durative reading is achieved by circular motion (hand movement), interpreted as a prolonged event similar to 'keep on looking'
- ▶ ASL shows a wider range of reduplicated forms (different motions, phonologically) that provide different meanings

## IMPLICATION: PARALLELISM BETWEEN N & V

1. N & V are interpreted in similar syn-sem structure
  - ▶ N: Counting vs. Measuring
  - ▶ V: Iterative vs. Durative
2. Compatible with current spell-out driven syntactic structure
  - ▶ D–Q–Clf–N
  - ▶ TenseAspMood–InternalAsp–V

## CONCLUSION

- ▶ Predicting counting vs. measuring by Individuation in both N & V
- ▶ 2-tiered semantics (Quantification + Individuation) handles the interaction between classifier construction and reduplication
- ▶ Accounts for cross-category behaviours (common syntax in N & V)

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