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

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Charles Lam
charleslam@purdue.edu
Linguistics Program, Purdue University

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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
  \[ [Clf(X)_K] = Count_K(X_{root} \cap Q) \] (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’
A unified semantic analysis of classifiers and reduplication across nominal and verbal domains

Functions of Clf and Redp in N & V

**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’.

\[(\text{EVERY}) = \lambda f \in D . \forall x \in D \rightarrow f(x) = 1\]  
(Heim & Kratzer, 1998)

\begin{align*}
(10) & \quad \text{bun2 bun2 syu1 dou1 hou2 cung5} \\
& \quad \text{Clf Clf book all very heavy} \\
& \quad \text{‘Every book is heavy.’ (distributive but not collective reading)}
\end{align*}

- the function \( f \) (being an entire book) is applied to all object \( x \) in the domain \( D \) in question.
## Summary of interpretations of Redp

<table>
<thead>
<tr>
<th>Category</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI-N</td>
<td>exhaustive list ‘every N’</td>
</tr>
<tr>
<td>$V_{bounded}$</td>
<td>iterative ‘knocking’</td>
</tr>
<tr>
<td>$V_{unbounded}$</td>
<td>durative ‘running’</td>
</tr>
<tr>
<td>Adj</td>
<td>diminutive ‘fairly Adj’</td>
</tr>
</tbody>
</table>

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:
\[ [\text{Clf}(X)_K] = Count_K(X_{\text{root}} \cap Q) \]

(Rothstein, 2010)

\[ Count_K(Dog_{\text{root}} \cap Q) = 1 \text{ iff:} \]

Otherwise, like ...
... or ...

Then \[ Count_K(Dog_{\text{root}} \cap Q) = 0 \]
Individuated Noun + Reduplication

\[
\left[ Clf(X)_K \right] = Count_K(X_{root} \cap Q) \\
\left[ \text{EVERY} \right] = \lambda f \in D . \ \forall x \in D \rightarrow f(x) = 1
\]

(Rothstein, 2010)  
(Heim & Kratzer, 1998)

(12) zek3 zek3 gau2
Clf Clf dog
‘every dog’ Clf-N \rightarrow Exhaustive list reading
N-N reduplication are unacceptable in adult speech

1. Dog(X) = 1, iff X has the property of ‘being dog’ (not ‘a dog’!)

2. \( Count_K(Dog_{root} \cap Q) = 1 \), iff the object has the property of being dog AND satisfies the quantity of ‘a dog’, manifested by ‘zek3 gau2’ in Cantonese

3. \( \lambda Dog \in D . \ \forall Clf(X) \in D \rightarrow f(Clf(X)) = 1 \), iff all Clf(X) can be called ‘a dog’, manifested by ‘zek3 zek3 gau2’ in Cantonese
A unified semantic analysis of classifiers and reduplication across nominal and verbal domains

Central Claim: 2-tiered Quantf-Indv

Individuated Verb + Reduplication

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

\[
[\text{EVERY}] = \lambda f \in D . \forall x \in D \rightarrow f(X) = 1 \quad \text{(Heim & Kratzer, 1998)}
\]

(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) \text{zek3 zek3 gau2} \\
\text{Clf Clf dog} \\
'every dog'

Graphically:

quantification  
= multiple countable units

individuation

substance
A unified semantic analysis of classifiers and reduplication across nominal and verbal domains

Central Claim: 2-tiered Quantf-Indv

Unindividuated element + Reduplication

\[ \text{Clf}(X)_K] = \text{Count}_K(X_{\text{root}} \cap Q) \quad \text{(Rothstein, 2010)} \\
[\text{EVERY}] = \lambda f \in D . \forall x \in D \rightarrow f(X) = 1 \quad \text{(Heim & Kratzer, 1998)} \\

(15) \quad \text{cung1 cung1 ha5 loeng4} \\
\text{wash wash  Dur cool} \\
\text{‘taking shower’ Unbounded V } \rightarrow \text{Durative event} \\

Typically we use variable e for events

1. 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
Central Claim: 2-tiered Quantf-Indv

**Unindividuated element + Reduplication**

Graphically:

quantification = multiple instances of uncountable substance

No individuation!
A unified semantic analysis of classifiers and reduplication across nominal and verbal domains

Central Claim: 2-tiered Quantf-Indv

**Summary**

- Indv
- Clf–N
- Bounded–V
- Every N
- Iterative–V
- *N–N
- Redp
- Durative–V

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)
<table>
<thead>
<tr>
<th>Prediction II:</th>
<th>Reduplicated elements are multiplied</th>
</tr>
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<tbody>
<tr>
<td>▶ Redp + individuated argument = multiple individuals, iterative events</td>
<td></td>
</tr>
<tr>
<td>▶ Redp + unindividuated argument = durative events</td>
<td></td>
</tr>
</tbody>
</table>

(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) Kheye 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: Parallellism 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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References I


References II


