

Classifiers: The Many Ways to Profile ‘one’

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Abstract: Based on Her & Hsieh’s (2010) insight that a measure word (M) in a Chinese [Num C/M N] phrase is semantically substantive, while a classifier (C) is semantically null and thus does not block the numeral quantification or the adjectival modification to the noun, this paper further proposes a formal distinction of C/M from a mathematical perspective. Synthesizing the concepts of parceler (Landman 2004), divider (Borer 2005), and multiplier (Au Yeung 2005, 2007), I follow Her (2010, 2011) and propose that while C/M both function as a multiplier mathematically, C’s value is necessarily 1 and M is not, thus ~ 1 . The semantically null C nonetheless functions to profile an inherent semantic aspect of N. Finally, based on the strict distinction of C versus M, a preliminary report is given on the true classifiers identified in 國語日報量詞典 *Mandarin Daily News Dictionary of Measure Words*.

Keywords: classifier, measure word, multiplication, multiplier, 1, profile

1. Introduction

Whether classifiers (C) and measure words (M) can be meaningfully distinguished in Chinese has been a controversial issue, reflected also by the drastic discrepancy in the inventories of classifiers previously proposed. In this paper I fully justify this distinction from linguistic as well as mathematical perspectives. I follow Her (2010, 2011) and propose that C/M both function as a multiplier mathematically, where C is necessarily of the value 1 and M is not. From a cognitive linguistic point of view, the semantically and mathematically null C nonetheless functions to profile an inherent semantic aspect of the head noun. This strict distinction of C versus M makes it possible to identify true classifiers in a language, and a preliminary report is given on the classifiers identified from the category of ‘individual measure words’ listed in 國語日報量詞典 *Mandarin Daily News Dictionary of Measure Words*.

2. Formal Tests for C/M Distinction

Her & Hsieh’s (2010), H&H hereafter, observe that the two formal tests, i.e., *de*-insertion and adjectival modification, that proponents for the C/M distinction

proposed previously, have been shown to be unreliable. However, based on the insight that M, but not C, constitutes a barrier to numeral quantification and adjectival modification, they refine the previous two tests and come up with much more reliable and accurate formulations (Test A, B). They also restate *ge*-substitution as a heuristic (Test C) and observe that temporary measure words are often restricted to the number *yi* ‘one’ (Test D).

Test A: Numeral/Adjectival Stacking

- (1) If [Num X Num Y N] is well-formed, then $X = M$, $X \neq C$, and $Y = C/M$.
e.g., 一箱十個蘋果, 一箱十包蘋果 vs. *一顆十包蘋果, 一顆十粒蘋果
- (2) If [Num A-X N] = [Num X A-N] semantically, then $X = C$ and $X \neq M$.
e.g., 一大顆蘋果 = 一顆大蘋果 vs. 一大箱蘋果 $\neq$ 一箱大蘋果
- (3) Given antonyms A_1 and A_2 , if [Num A_1 -X A_2 -N] is semantically well-formed, then $X = M$ and $X \neq C$.
e.g., *一大顆小蘋果 vs. 一大箱小蘋果
- (4) If [A-X *de* N] is semantically equivalent to [A-N], then $X = C$ and $X \neq M$.
e.g., 大顆的蘋果 = 大蘋果 vs. 大箱的蘋果 $\neq$ 大蘋果

Test B: *De*-insertion

Test: [*yi* M/*C *de* N]

e.g., 一箱(的)蘋果 vs. 一顆(的)蘋果

Test C: *Ge*-substitution

Test: If [Num_i X N_j] = [Num_i *ge* N_j] semantically, then $X = C$ and $X \neq M$.

e.g., 十粒蘋果 = 十個蘋果 $\neq$ 十箱蘋果

Test D: *Yi*-restriction

Test: If [Num X N] is well-formed *iff* Num = 1, then $X = M$ and $X \neq C$.

e.g., 一頭白髮 vs. *三頭白髮; 一片苦心 vs. *五片苦心

3. Semantic Distinction between C/M

H&H further employ the *Aristotelian distinction* between essential and accidental properties as well as the Kantian *distinction* between analytic and synthetic propositions to characterize the C/M distinction: C is semantically null; M is semantically substantive. Precisely, C indicates an essential property of the noun, and can be paraphrased as the predicate concept in an analytic proposition with the noun as the subject concept; M indicates an accidental property in terms of quantity, and can be restated as the predicate concept in a synthetic proposition with the noun as the subject concept. Given this characterization, M can be demonstrated to be more of a content word, thus open to innovations, while C is more a function word, thus forms a closed set resistant to innovations.

The semantic distinction of C/M can receive a mathematical interpretation in terms of set theory. In short, properties denoted by C do not contribute to the total compositional semantic content of the phrase. M, on the other hand, is semantically substantive in [Num M N] and thus does contribute semantic value specific to M only. This contrast can be made explicit in terms of set theory.

C/M Distinction in Set Theory

Given a well-formed phrase [Num K N], X the set of properties denoted by K, and Y the set of properties denoted by N, K is C *iff*

$X \in Y$; otherwise, K is M.

The fact that C does not contribute any semantic value to the semantics of the overall [Num C N] phrase is *not* because it has no semantic value itself; rather, again, it is because it does not contribute any semantic property that the noun does not already possess. This total overlap of semantic properties between C and N is the reason why modification or quantification on C is also on N. M, on the other hand, does contribute semantic properties to the [Num M N] phrase that N does not possess, and any modification or quantification on M thus does not extend to N.

4. Mathematical Distinction between C/M

Most importantly, extending and integrating Landman's (2004) view of C/M as parcelers, Borer's (2005) insight that classifiers in Chinese and the plural suffix /-s/ function the same as dividers, and Au Young's (2007) findings of the mathematical multiplication basis of classifiers, I propose that the crucial C/M distinction in terms of their mathematical value is that C is the multiplier 1 and 1 only, and M a multiplier other than 1, or ~ 1 .

Mathematical Distinction of C/M

Given [Num X N], $X = C$ *iff* $X = 1$; otherwise, $X = M$.

e.g., [五張餅 = 五 $\times$ 1 餅 = 五餅] vs. [五打餅 = 五 $\times$ 12 餅 $\neq$ 五餅]
[二條魚 = 二 $\times$ 1 魚 = 二魚] vs. [二對魚 = 二 $\times$ 2 魚 $\neq$ 二魚]

Under this view of simple mathematics, the many classifiers in Chinese, while denoting an intricate system of classifying nouns, can be seen as many ways to profile some intrinsic semantic aspects of the nouns and ultimately the mathematical value of *one*. This mathematical interpretation of C/M further explains why C, as the

superfluous multiplier *1*, may be optional, while *M* is obligatory, and also why *C* is semantically *null* and thus *transparent* to numeral quantification and adjectival modification, while *M* is not. Finally, note that under this mathematical interpretation of *C/M*, English lacks measure words altogether, given the fact that its multiplier is restricted to *1* only and grammaticalized as the nominal suffix *-s* and thus no longer part of the numeral and must be part of the head noun. Thus, Borer (2005), contra to common misconceptions, is exactly right that English plural maker */-s/* is a *C*. I thus follow through and claim that while English plural suffix */-s/* is a *C* similar to the Chinese generic *C* *ge*, English has no measure words and putative *M*'s should in fact be treated simply as common nouns.

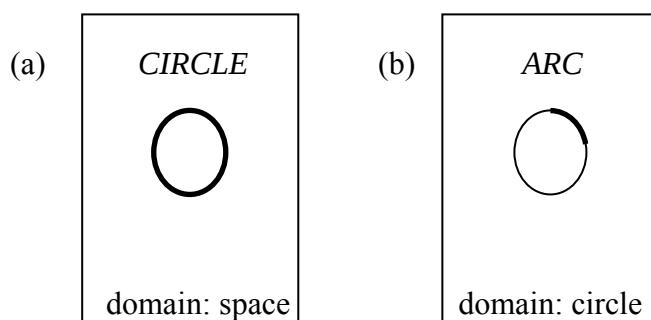
Distinction between Chinese and English

Chinese: [Num X N], $X=1$ (*C*) or ~ 1 (*M*)

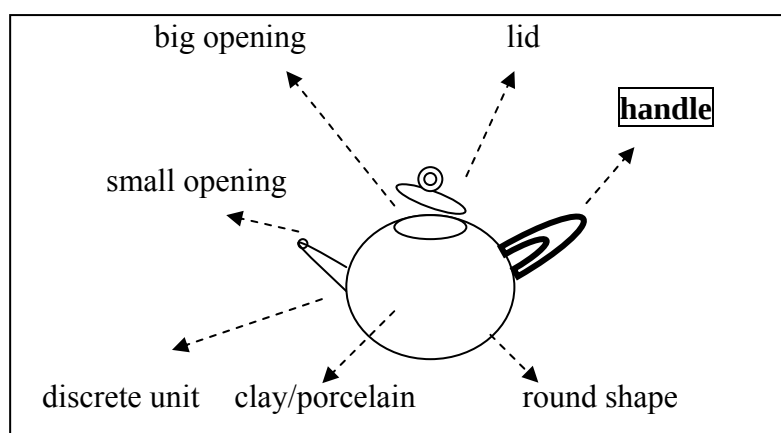
English: [Num X N], $\text{Num} > 1$ and $X=1$ (*C*); $3 \times 1 \text{book} = 3 \text{--s book} = 3 \text{ books}$

5. C as a Profile

Besides the function of a divider (Borer 2005) or pacreler (Landman 2007), which both *C/M* share, *C*, being semantically and mathematically null, is shown to have the unique function as a profile (Hsieh 2009). The notion of profile/base segregation has a strong connection to gestalt psychology, a comprehensive model of perception organization. Langacker (1987) illustrates the notion of base/profile by the example of *circle/arc*.



Similarly, Hsieh (2009) and Her and Hsieh (2011) argue that in a [Num *C* N] phrase, *N* can be seen as the base, or likewise the ‘frame’, in the sense of Fillmore’s (1982) frame semantics, and *C* the profile. Below, in the example of 一把壺 *yi ba hu* ‘a teapot’, it is shown that the teapot provides the frame or base for *ba* to profile the handle, an inherent semantic feature of teapot.



Under this view, the classifiers' function of classification is merely a by-product of their function as profilers. This thus explains why there are many idiosyncrasies or gaps in the noun classes categorized by classifiers.

6. The C's in Taiwan Mandarin

Only with a precise characterization of C is it practical to attempt a comprehensive list of C's in a language. *Mandarin Daily Dictionary of Chinese Classifiers* was compiled with data from the Academia Sinica Balanced Corpus of Modern Mandarin Chinese. Seven categories of measure words (C/M) are identified and the first category, called *individual measure words*, comes closest to what is defined as C in this paper. Lai (2011) re-examines the 174 items listed in this category and comes up with a revised but still preliminary list of true classifiers. The preliminary result of this re-examination will be reported in my oral presentation.

7. Conclusion

Based on Her & Hsieh's (2010) insight that a measure word (M) in a Chinese [Num C/M N] phrase is semantically substantive, while a classifier (C) is semantically null and thus does not block the numeral quantification or the adjectival modification to the noun, this paper further proposes a formal distinction of C/M from a mathematical perspective. Synthesizing the concepts of parceler (Landman 2004), divider (Borer 2005), and multiplier (Au Yeung 2005, 2007), I follow Her (2010, 2011) and propose that while C/M both function as a multiplier mathematically, C's value is necessarily 1 and M is not, thus ~ 1 . The semantically null C nonetheless functions to profile an inherent semantic aspect of N. Finally, based on the strict

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References

- [1] Au-Yeung, Ben Wai-Hoo. 2005. *An Interface Program for Parameterization of Classifiers in Chinese*. PhD Thesis, Hong Kong University of Science and Technology.
- [2] Au Yeung, Wei Hoo. 2007. Multiplication basis of emergence of classifier. *Language and Linguistics* 8.4:835-861.
- [3] Aikhenvald, Alexandra Y. 2003. *Classifier: A Typology of Noun Categorization Devices*. Oxford University Press.
- [4] Borer, Hagit. 2005. *Structuring sense. Vol. 1. In name only*. Oxford University Press.
- [5] Fillmore, Charles. 1982. Frame Semantics, in Linguistic Society of Korea. *Linguistics in the Morning Calm*, ed. by Linguistic Society of Korea: 111-137. Seoul: Hanshin Publishing.
- [6] Her, One-Soon. 2010. Distinguishing Classifiers and Measure Words. Paper presented at the The 4th Conference on Language, Discourse and Cognition (CLDC2010), National Taiwan University, Taipei, May 1-2, 2010.
- [7] Her, One-Soon. 2011. Distinguishing Classifiers and Measure Words: A Mathematical Perspective and Implications. Unpublished manuscript. National Chengchi University.
- [8] Her, One-Soon & Chen-Tien Hsieh. 2010. On the semantic distinction between classifiers and measure words. *Language and Linguistics* 11.3: 527-550.
- [9] Hsieh, Chen-Tien. 2009. *A frame-based approach to classifiers: A case study of Taiwan mandarin*. MA Thesis, National Chengchi University.
- [10] Her, One-Soon & Chen-Tien Hsieh. 2011. Classifiers are Profilers. Unpublished manuscript. National Chengchi University.
- [11] Lai, Wan-Jun. 2011. Re-classify Classifiers in Mandarin Chinese. MA Thesis in progress. Unpublished manuscript. National Chengchi University.
- [12] Landman, Fred. 2004. *Indefinites and the Type of Sets*. Malden, MA : Blackwell Pub.
- [13] Loke, K. K. 1983. *A psycholinguistic study of shape features in Chinese (Mandarin) sortal classifiers*. Ph.D. Dissertation, York University.
- [14] Tai, H-Y. James. 1994. Chinese classifier systems and human categorization. In *Honor of Professor William S-Y. Wang: Interdisciplinary Studies on Language and Language Change*, ed. by Matthew Chen & Ovid Tseng, 479-494. Pyramid Publishing Company.
- [15] Tai, H-Y. James. 2003. Cognitive relativism: resultative construction in Chinese. *Language and Linguistics* 4.2:301-316.
- [16] Tai, H-Y. James. and L. Wang. 1990. A semantic study of the classifier *Tiao*. *Journal of the Chinese Language Teachers Association* 25.1:35-56.
- [17] Zhang, Niina. 2009. Syntactic properties of numeral classifiers in Mandarin Chinese. Talk given on April 10, 2009, at the Graduate Institute of Linguistics, National Chung Cheng University. Accessed online, December 1, 2009.
<http://www.ccunix.ccu.edu.tw/~lngnz/index.files/May%202009.pdf>