Coercion and anaphoric use of Mandarin classifiers

Laurent Prevot[a] and ShuKai Hsieh[b]
[a]Laboratoire Parole et Langage, Univ. de Provence
[b]LOPE, National Taiwan Normal University

Classifiers in Mandarin Chinese are required elements of well-formed noun phrases. They have to appear between the determiner and the noun as shown in example (1). The variety of classifiers, has been described and analyzed in [9, 4, 6] among others. Classifiers are often separated from measure words by requiring them to hold a [+sortal] attribute [4]. In [6], classifiers are divided into individual, kind and event classifiers on the ground of a corpus-based classifier dictionary [5]. A formal analysis of the distinction between kind and individual classifier has been proposed in [8]. In this study we will focus however on individual classifier and measure words.

Huang and Ahrens suggest, without proposing a formal account, that classifiers can coerce the interpretation of the noun they classify (as in (1) taken from [6, p361]) .

(1) 一　朵 /株　　　　　花
　　　yi4　duo3/zhu1　　　hua1
　　　one　CL.bud/CL.plant　flower

　　　one flower bud/one flowering plant

In this work, we are dealing in the interaction between two phenomena: (i) classifier coercion (illustrated in the previous examples) and (ii) the anaphoric use of classifiers, exemplified in (2). In this example, the second sentence is missing a noun. As a reviewer pointed us, it is tempting to assume that in 'DET+CL' constructions the classifier becomes a noun. However, most of the classifiers cannot be used as nouns in other contexts.[1] It would be going against the standard view on Mandarin syntax to assume here a category change, see for example [10].

(2) 我　買　了　五　粒　　　水餃
　　　wo3　mai3　le5　wu3　li4　　　shui3jiao3
　　　I　buy　ASP　five　CL.grain　dumplings

　　　I bought five dumplings

　　　你　吃　了　四　粒
　　　ni3　chi1　le5　si4　li4
　　　you　eat　ASP　four　CL.grain

　　　You ate four

---

[1]Some words like 碗 /wan3 *(bowl)*, can be used both as classifiers and nouns, but as nouns they requires another classifier to precede them.

Example (3) shows an incomplete NP referring back to a previous noun that has been classified differently in the previous sentence. Here '花 -hua1'*(flower)* is used a first time with a plant classifier (株 -zhu1) that allows in the second sentence an anaphoric use of another classifier (朵 -duo3/*(bud)* that re-classify the noun at distance.

(3) 你   看   這   株   花
     ni3   kan4 zhe4 zhu1   hua1
     you   look this CL.plant flower

'Look at this flower'

     剪   一   朵   給   我
     jian3 yi4   duo3   gei3 wo3
     cut   one   CL.bud   give I

'Cut one bud for me'

In 4 a tentative treatment for the phenomenon is proposed. The formal apparatus include DRT [7] and some ingredients from [3] for handling associative anaphoricity. We propose that the missing noun introduce some kind of relation R between the object described by the incomplete NP and the context. When the anaphoric use is felicitous the relation R should be specified and instantiated with a variable of the context. Moreover, we assume a type system for the variables on top of the logical forms. The typing system is inspired by the the rich typing framework proposed in [1, 2]. In example (3), the variables are typed by the classifiers as $\langle$PLANT$\rangle$ and $\langle$BUD$\rangle$. In the lexicon, a PART-OF holds between these two types. It is therefore straightforward to instantiate the relation R.

(4) $[Y_{\langle\text{ANIM}\rangle}, x_{\langle\text{PLANT}\rangle}, e1_{\langle\text{EVT}\rangle} \mid \text{look}(e_1, Y, x), \text{flower}(x)]$
$\oplus_{\text{update}} [y_{\langle\text{BUD}\rangle}, e2_{\langle\text{EVT}\rangle} \mid \text{cut}(e_2, Y, y), R(y, ?)]$
$\rightsquigarrow_{\text{PART-OF(BUD,PLANT)}} \text{Part} - \text{of}(y, x)$

Examples like (3) might not be extremely common as it relies on the specific kind of polysemy of '花 -hua1'. However, very similar phenomena occurs with quantity or measure related examples like (5) and (7) that are frequent in spoken Chinese. Example (3) featured a noun being coerced by two different classifiers into two different objects. In example (7) the mass noun is measured twice as two different quantities. Example (5) is more complicated to handle since 糖果 -tang2guo3 *(candy)* is used once with a quantity and once with a real classifier.

(5) 你   看   這   包   糖果
     ni3   kan4 zhe4 bao1   tang2guo3
     you   look this CL.bag   candy

'Look at this bag of candies'

     拿   一   顆   吧
     na2   yi4   ke1   ba5
     take one   CL.small-hard IMP

Take one!

To handle this example, we need to make use of the dependent types introduced in [2] as illustrated in 6. From those dependent types can be derived some useful information showned in 6:b. The second sentence introduce 顆 -ke1, a real classier used for small hard grain-like things ($\langle SH \rangle$ in our formulas). This type being compatible with candies, we can instantiate the relation R accordingly.

(6)　(a) $[Y_{\langle ANIM \rangle}, x_{\langle QTY(CANDY) \rangle}, e1_{\langle EVT \rangle} \,|\, \mathsf{look}(e_1, Y, x), \mathsf{bag}(x)]$
$\oplus_{\mathsf{update}} [y_{\langle SH \rangle}, e2_{\langle EVT \rangle} \,|\, \mathsf{take}(e_2, Y, y), R(y, ?)]$
(b)$x_{\langle QTY(CANDY) \rangle} \to \Box \exists x' \, \mathsf{candy}(x') \wedge \mathsf{quantity}(x, x')$
$\rightsquigarrow \mathsf{Member} - \mathsf{of}(y, x')$

(7)

你	這	一	碗	湯	看起來	很	好	喝
ni3	zhe4	yi4	wan3	tang1	kan4qi3lai2	hen3	hao3	he1
you	this	one	CL.bowl	soup	seem	very	good	drink

Your bowl of soup looks delicious.

讓	我	嚐	一	口	吧
rang4	wo3	chang2	yi4	kou3	ba5
let	I	taste	one	CL.mouth	IMP

Let me taste a sip of it!

It would be important to detail how the proposal is implemented in a compositional framework, but due to lack of space this will be done during the presentation only. However, th main line should run as follows. Real classifiers [+sortal] 'S' will have for lexical entries things like '$\lambda P \lambda x_{\langle S \rangle} P(x)$ and those for measure words [-sortal] 'Q' will look like '$\lambda P \lambda x_{\langle QTY(P) \rangle} Q(x)$. Moreover, a cross-linguistic comparison with related phenomena such as adnominal pronouns will be presented as well. Finally, a deeper integration with recent syntactic analysis such as [10] has still to be investigated in order to propose a more general solution for a formal treatment of Mandarin classifiers and measure words.

References

[1] N. Asher. A type driven theory of predication with complex types. *Fundamenta Informatic*, 84(2):151–183, 2008.

[2] N. Asher. *A web of words: Lexical meaning in context.* CUP, Forthcoming.

[3] N. Asher and A. Lascarides. Bridging. *Journal of Semantics*, 15(1):83, 1998.

[4] L.L.S. Cheng and R. Sybesma. Yi-wan Tang, Yi-ge Tang: Classifiers and Massifiers. *Tsing Hua Journal of Chinses Studies*, 28(3):385–412, 1998.

[5] C-R. Huang, K-J. Chen, and C-X. Lai. *Mandarin Chinese Classifier and Noun-Classifier Collocation Dictionnary.* Mandarin Daliy Press, 1995.

[6] Chu-Ren Huang and Kathleen Ahrens. Individuals, kinds and events: classifier coercion of nouns. *Language Sciences*, 25:353–373, 2003.

[7] H. Kamp and U. Reyle. *From discourse to logic.* Dordrecht, The Netherlands: D. Reidel, 1993.

[8] M. Krifka. Common nouns: a constrative analysis of Chinese and English. In *The Generic Book*. 1995.

[9] M.C. Paris. *Problmes de syntaxe et de smantique en linguistique chinoise.* Collge de France, Institut des hautes tudes chinoises, 1981.

[10] C-C. J. Tang. Nouns or classifiers: a non-movement analysis of classifiers in chinese. *Language and Linguistics*, 6(3):431–472, 2005.