Review of: Li Xuping. *Numeral Classifiers in Chinese: The syntax-semantics interface*. Trends in Linguistics. Berlin: Mouton de Gryuter, 2013.

Reviewed by MATTHIAS GERNER, City University of Hong Kong

This book, which is a revised and extended version of the author's doctoral thesis, represents a state-of-the-art work, a milestone, on the syntax and semantics of Chinese-style classifiers. The aim of the book (see next paragraph) is clearly stated and broken down into incremental steps with well formulated research questions and a rigorous set-up of empiricial evidence. The author incorporates valuable insights from publications in Chinese not easily accessible to a worldwide audience. The integrated syntactic/semantic analysis is a departure from the prevalent cognitive/onotological paradigm characteristic of most works in the past 50 years. There are, however, certain inconsistencies in the semantic analysis which I will highlight below.

The author argues against a grammatical basis for dividing Chinese nouns or Chinese classifiers into subcategories at the word level (e.g. count versus mass nouns, or sortal versus mensural classifiers). Instead, he proposes a division of classifiers at the phrasal level, into count classifier phrases versus measure classifier phrases. This underlying idea is reminiscent of the (in)alienable property which, similarly, is not a feature of words but of phrases. (In)alienability is the (im)possibility of separating the possessee from the possessor (Chappell and McGregor, 1996).[1]

The author reviews empirical evidence for distinguishing between count and mass nouns, and between sortal and mensural classifiers. There is a "signature property" (Chierchia, 2010) which divides nouns into those that can be directly modified by numerals (count nouns) and those that cannot (mass nouns). As all Chinese nouns carry the signature of mass nouns, the distinction of count versus mass nouns cannot be made at a grammatical level, only at an ontological level. Bare nouns, which the author investigates in a separate chapter, are underspecified between a kind-level reading and a (count/mass) object-level reading (Krifka, 1995). The author deploys two tests that demonstrate this ambiguity. First, bare nouns can take kind-level predicates like *juezhong* 'extinct' or become kind-level predicates after the copula. Second, bare nouns that are objects of opaque verbs like *zhao* 'seek' are ambiguous between a kind-level reading and a definite object-level reading.

Moreover, the author discounts any evidence that would allow drawing a grammatical distinction between sortal and mensural classifiers which in turn could be used to differentiate between count and mass nouns. He argues against three pieces of evidence that Cheng and Sybesma (1998) advanced in support of a distinction between sortal and mensural classifiers. First, it is not always the case that sortal classifiers are denominal morphemes and mensural classifiers nominal morphemes. Some sortal classifiers, for example, are grammaticalized from verbs (*gua* 'hang') and adjectives (*wan* 'curved'), while some mensural classifiers cannot be used as nouns that take classifiers. Second, not all sortal classifiers disallow modification by the adjectives *da* 'big'/*xiao* 'small'. (Mensural classifiers, on the other hand, can take size adjectives.) The author quotes Lu (1987) who identifies 24 sortal classifiers with possible adjectival modification. Third, there are many counter-examples to Cheng and Sybesma's claim that sortal classifiers cannot be followed by the nominalizer *de*, while mensural classifiers can. A summary of these counter-examples is presented in the following table.

[1] Chappell and McGregor (1996:3) distinguish between *my liver* (inalienable) and *my liver that I am going to eat* (alienable). Languages may or may not mark the feature of inalienability in the grammar.

Phenomenon	Tendency	Counter-examples
Origin of classifier	- Sortal classifiers are grammaticalized nouns:	- yi **gua** bianpao 'a string of firecrackers'
	- Mensural classifiers are descriptive nouns:	- yi **ping** shui 'a bottle of water' / *yi ge **ping** 'a bottle'
Size adjectives	- Sortal classifiers **cannot** take size adjectives:	- yi **da** ben zidian 'a big dictionary'
	- Mensural classifiers **can** take size adjectives:	---
Nominalizer *de*	- Sortal classifiers **cannot** be followed by *de*:	- ershi-si mei **de** luan 'about 24 eggs'
	- Mensural classifiers **can** be followed by *de*:	- yi kuai (***de**) rou 'a piece of meat'

In support of the author's argumentation, we can further cite the fact that certain sortal classifiers can categorize both count and mass nouns. The classifier *tiao*, for example, categorizes lengthy count objects and also mass objects such as precious metals.

(1) a. san tiao he
NUM.3 Cl river
'three rivers'

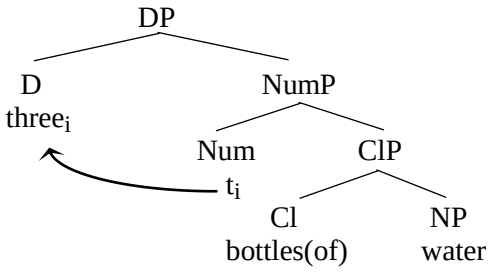
b. san tiao jinzi
NUM.3 Cl gold
'three gold bullions'

The main proposal of the book is a syntactic dichotomy of Chinese count and measure classifier phrases. Many scholars observed that container classifier phrases like *three bottles of water* are ambiguous between a count reading and a measure reading (e.g. Selkirk, 1977).

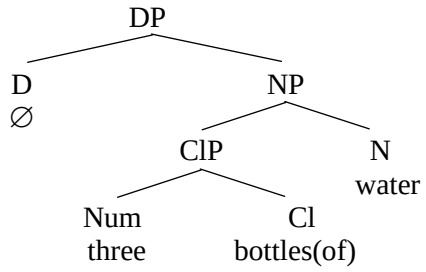
(2) a. John carried [**three bottles of water**] home. [Count]
b. I poured [**three bottles of water**] into the soup. [Measure]

On the count reading, the classifier *bottles* is the head of the phrase, *three* its specifier and *water* its complement, whereas on the measure reading the mass noun *water* is the head of the phrase and *three bottles* its specifier. This ambiguity is thus syntactic in nature.

(3) a. Count reading



b. Measure reading



The author shows that Chinese container classifiers exhibit the same ambiguity as their English counterparts in (2), and that the count and measure readings can be disambiguated in four syntactic constructions. First, in *bare classifier-noun* constructions (Cl+N) only the count interpretation is available (see 4 below). Second, classifiers can be reduplicated only on the count reading. Third, the use of the quantifier *duo* 'more' after the classifier (Num+Cl+*duo*+N) induces a measure interpretation. Fourth, the nominalizer *de* can link a classifier and a noun (Num+Cl+*de*+N) only on the measure reading.

Based on the syntactic ambiguity between count and measure interpretations, the author proposes four types of classifiers in Chinese.

Type:	Examples:
[+count, –measure]:	Sortal classifiers: ge (general), duo (plants), li (granulates), ben (books),…
[–count, +measure]:	Standard measures: *gongjin* 'kilo', *mi* 'meter'; temporary classifiers (*lian* 'face')
[+count, +measure]:	Container classifiers: *ping* 'bottle', *tong* 'bucket',…
[–count, –measure]:	Kind classifers: *zhong* 'kind', *lei* 'class'

These four types introduce a lexical subdivision of classifiers and run counter Li's original argument that classifiers cannot be distinguished at the lexical level. Especially, the [–count, –measure] type is odd since it implies that classifiers of this type neither count nor measure despite the fact that expressions like *san lei shu* 'three classes of books' look syntactically similar to container classifiers of the type [+count, –measure].

The author builds on the formal semantic analysis of classifiers proposed by Krifka (1995) and Rothstein (2010). He proposes a formal analysis which, since it uses shortcuts and hidden assumptions, I have reinterpreted as follows.

- $(D, \subseteq, \cap, \cup)$ is a complete atomic Boolean Algebra with the domain set D of entities;
- $\wp(D)$ = the power set of D is also a Boolean Algebra;
- W = set of possible worlds;
- c = a context, that is a subset of possible worlds $c \subseteq W$;
- Each noun N is interpreted in c by two subsets, as property $\|N^{\smile}\|_c \subseteq D$ and as kind $\|N^{\frown}\|_c \subseteq D$. (The superscripts '$\smile$' and '$\frown$' symbolize Chierchia's *kind-to-property* and *property-to-kind* shifts).
- A numeral Num is interpreted as a context-independent function:

$$\|\text{Num}\|: \wp(D) \rightarrow \wp(D).$$

$$E \subseteq D \rightarrow \begin{cases} E \text{ if } \text{card}(E) = \text{Num}; \\ \varnothing \text{ otherwise} \end{cases}$$

- The *gestalt* properties of Chinese classifiers Cl, such as 'lengthy objects', 'granulates', 'bottle' or 'pound' are represented by a subset $\text{GESTALT} \subseteq D$ that varies with the classifier. Depending on whether it is a sortal, container or measure classifier, Cl is interpreted in context c as one of the following functions:

i. $\|\text{Cl}\|_c: \wp(D) \rightarrow \wp(D)$ {**sortal**} ← do not overlap

$E \subseteq D \rightarrow \{x \in E \mid \forall y \in E: x \cap y = \varnothing\} \cap \text{GESTALT}$

(GESTALT = D is 'vacuous', if the classifier is general without *gestalt* semantics)

ii. $\|\text{Cl}\|_c: \wp(D) \rightarrow \wp(D)$ {**container**} ← containment

$E \subseteq D \rightarrow \{x \in E \mid \forall y \in E: x \subseteq y \text{ or } y \subseteq x\} \cap \text{GESTALT}$

iii. $\|\text{Cl}\|_c: \wp(D) \rightarrow \wp(D)$ {**measure**}

$E \subseteq D \rightarrow E \cap \text{GESTALT}$

- A classifier phrase 'Num Cl N' in context c is a subset $\|\text{Num Cl N}\|_c \subseteq D$ defined by functional concatenation: $\|\text{Num Cl N}\|_c = \|\text{Num}\|(\|\text{Cl}\|_c(\|N^{\smile}\|_c))$.

This formalization, like Rothstein (2010)'s earlier analysis but unlike Krifka (1995)'s work, uses possible worlds via the notion of context, which in my view are not required. In general, numeral classifiers do not depend on clause-external information for their interpretation.[2] The examples the author discusses can be understood as selectional restrictions of lexical projection rules *à la* Katz and Fodor (1963). The use of an intensional semantics appears therefore unwarranted. Another problem is that the author proposes different analyses for $\|\text{Cl}\|_c$ along the heuristic lines of sortal, container and measure classifiers. As the author wishes to establish the count versus measure interpretations in his

[2] Some East Asian languages happen to encode deictic information in their nominal classifiers, for example the Miao languages (Gerner and Bisang, 2008). However, these classifiers have functions that differ from those discussed in the book.

book (see 3), he could have made a stronger case, if the formal semantic analyses exactly represented these interpretations.

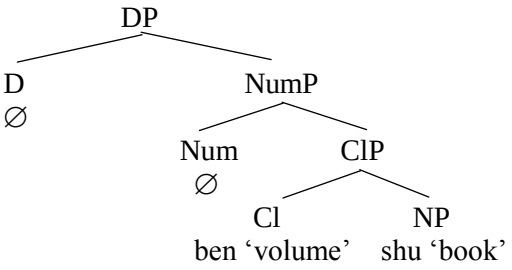
In the final part of the book, the author accounts for the correlation between bare classifier constructions (Cl+N) and (in)definite reference. His empirical observations in Mandarin Chinese, Wu and Cantonese are summarized in the following table.

Cl+N	Topic	Subject (SVO)	Preposed Object (SOV)	Canonical Object (SVO)
Mandarin	---	---	indefinite	indefinite
Wu	definite	definite	definite	indefinite
Cantonese	definite	definite	(in)definite	(in)definite

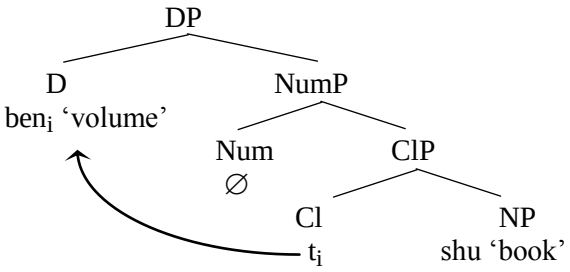
Bare classifiers (Cl+N) are definite to the extent they occur as the (primary or secondary) topic of the sentence. Wu as the most topic-prominent language correlates the definite readings always with a position that can be occupied by a topic. In the slightly less topical Mandarin and Cantonese languages, this tendency is weaker.

Following Simpson (2005), and contra Cheng and Sybesma (1998), the author does not reserve for the classifier the role of determiner or definite article. The classifier is generated in the lower classifier phrase. On the indefinite reading, no movement occurs, but on the definite reading the classifier is moved up into the specifier position of DP.

(4) a. Indefinite Cl+N



b. Definite Cl+N



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