Multiple-classifier constructions and nominal expressions in Chinese

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Abstract This paper examines multiple-classifier constructions in Chinese, in which two classifiers are stacked in one nominal position. The following three properties are found in these constructions: (i) strict linear ordering between different types of classifiers, (ii) definiteness/specificity of the lower DP, and (iii) obligatory non-distributive readings. The properties of multiple-classifier constructions allow us to study the syntax and semantics of nominal expressions in Chinese from a novel point of view. We argue that, syntactically, and against the bare NP analysis in Chierchia (in: Rothstein S (ed) Events and grammar, Kluwer, Dordrecht, pp 53–103, 1998a, Nat Lang Semant 6:339–405, 1998b) and the Classifier Phrase analysis in Cheng and Sybesma (Linguist Inq 30:509–542, 1999; in: Cinque G, Kayne R (ed) The Oxford handbook of comparative syntax, Oxford University Press, pp 259–292, 2005), from the properties of multiple-classifier constructions, a universal DP analysis is favored (as in Li, Linguist Inq 29: 693–702, 1998). Incorporating the theories in Zamparelli (in: Alexiadou A, Wilder C (eds) Linguistics today: possessors, predicates and movement in the determiner phrase, vol 22, John Benjamins, Amsterdam, pp 259–301, 1998) and Dayal (Linguist Philos 27:393–450, 2004), we demonstrate that a generalized Chierchian approach (without his semantic parameter) best captures the syntax–semantics mappings within nominal expressions in Chinese. From a compositional semantic point of view, we argue that multiple-classifier constructions should be treated as an instance
of partitive construction with an empty partitive head. The hypothesis of an empty partitive head not only accounts for the properties of the multiple-classifier constructions, but it also offers explanations for the asymmetry of partitive readings in Chinese relative clauses.

**Keywords**Classifier · Determiner phrase · Partitive construction · Syntax–Semantics interface

1 **Introduction**

The syntax–semantics of classifiers has been extensively studied in East Asian linguistics (e.g. Borer 2005; Cheng and Sybesma 1999, 2005; Chierchia 1998a, b; Li 1998, 1999; Tang 1990; Watanabe 2006, among many others). Most of the discussions, however, focus on the classifiers that express individual counting units (i.e. count classifiers) and measuring units (i.e. mass classifiers). A type of classifier that is relatively neglected is the one that classifies kinds/species.¹ This kind of classifier and the interactions with other types of classifiers in Chinese offer new empirical data in the study of the syntax and semantics of Chinese nominal constructions. For convenience, we refer to the three types of classifiers as Individual Classifiers (ICL), Mass Classifiers (MCL), and Kind Classifiers (KCL). Some basic examples are given below:

1. **Individual-classifiers (ICL):**
   - a. yi ge ren
   - b. liang zhi gou
   - c. san tiao shengzi
   - ‘one person’
   - ‘two dogs’
   - ‘three ropes’

2. **Mass-classifier (MCL):**
   - a. yi bei shui
   - b. liang wan tang
   - c. san bang rou
   - ‘a glass of water’
   - ‘two bowls of soup’
   - ‘three pounds of meat’

3. **Kind-classifier (KCL)²:**
   - a. yi zhong gou
   - b. liang lei/zhong shu
   - ‘a breed of dog’
   - ‘two types of books’
   - c. san yang/zhong rou
   - ‘three kinds of meat’

¹ See Huang and Ahrens (2003) for a detailed description of various types of classifiers in Mandarin Chinese.

² The kind classifiers come from the words zhòng-lèi and yòng-zi, which literally mean ‘kinds/types’ in Chinese. The selections between nouns and kind classifiers are not as strict as the selections between nouns and individual classifiers, as the examples above show (with zhòng ‘kind’ being the default kind classifier).
We focus on an interesting but less discussed pattern, where two different types of classifiers are stacked in one position, as in (4). These constructions are named Multiple-classifier Constructions (MCC):

(4) a. Zhangsan you san zhi zhe yi zhong gou.
   ‘Zhangsan has three dogs of this breed.’
   \[\text{Zhangsan have three ICL this one KCL dog}\]

b. Lisi gong he-le san wan na liang zhong tang.
   ‘Lisi totally drank three bowls of soup of the two different kinds.’
   \[\text{Lisi totally drink-Asp three MCL that two KCL soup}\]

Sentences in (4) show that a KCL can either co-occur with an ICL or with an MCL. There are three restrictions in an MCC, as in (5). Details of these properties will be examined in Sect. 2:

(5) a. There is a strict linear ordering between ICL/MCL and KCL in the MCC.
   b. The lower KCL phrase must be definite (taking a demonstrative article).
   c. Only collective readings are allowed in the MCC, not distributive readings.\(^3\)

We argue in Sect. 3 that these properties of the MCC are crucial in understanding nominal constructions in Chinese. Since Chierchia (1998a, b), it has been widely assumed that Chinese represents a typical case of ‘bare NP’ language, where no determiners or plural morphology are structurally required. On the other hand, a nearly opposite view is developed in a series of works by Cheng and Sybesma (1998, 1999, 2005; C&S henceforth), who argue that in classifier languages, classifiers themselves are the parametric counterparts of determiners. In the following, we first show that, from a compositional point of view, MCCs are problematic for Chierchia’s and C&S’s theories. In order to solve the problems of MCCs, we need to reconsider some of the assumptions in Chierchia’s approach, and re-examine the syntax/semantics of each layer of projection in Chinese nominal expressions. We cover this in Sect. 4. Specifically, the syntax of MCC that we propose is presented in (6). The compositionality of semantics provides us a clue to the syntax of MCC. In a bottom-up fashion, first we propose that NPs are inherently type-\(\langle\text{e,t}\rangle\) predicates (a set of entities) in Chinese. Following Zamparelli (1998) and Dayal (2004), an NP denotation is ambiguous with respect to the types of entities that are in it (either

\(^3\) If a distributive reading is called for, another construction is used instead:

(i) Zhangsan yang-le san zhong gou \(\text{ge/gong}\) san zhi.
Zhangsan raise-Asp three KCL dog each/totally three ICL

   a. (with \(\text{ge}\)) ‘Zhangsan raises three kinds of dogs, and three of each kind.’
   [distributive]

   b. (with \(\text{gong}\)) ‘Zhangsan raises three dogs of three different kinds.’
   [collective]

This construction is different from the MCC in that the KCL phrase does not have to be definite (or take a demonstrative article), and it is ambiguous between distributive and collective readings, depending on the adverbial used in between. As a caveat, we will not discuss this type of sentence in this paper, but will only focus on the MCC.
individual terms or kind terms). Secondly, we argue that the function of a classifier is to disambiguate the ambiguous NP denotations by selecting a corresponding counting level (a KCL selects a level which consists of kind terms, and an ICL a level that consists of atomic individuals). At the same time, a classifier generates an enumerable set in the form of a join semilattice, in the sense of Link (1983) and Chierchia (1998a, b). Since each member in the enumerable set has a well-defined cardinality, it follows that the function of a numeral is to pick up the member(s) with corresponding cardinality. In addition, the obligatory presence of a demonstrative article in Chinese suggests that the article should be treated on a par with a definite determiner (but not as a modifier). This point is crucially related to our proposal that the MCC be treated as a partitive construction. We argue for an empty partitive head between the upstairs CLP and the DP, as in (6b):

\[(6) \ a. \ san \ zhi \ zhe \ (yi) \ zhong \ gou \ \\
\quad \text{‘three dogs of this kind’} \]

With the proposed analysis, all of the properties of the MCC are simply reflections of the partitive constraints; argued at length in Fodor and Sag (1982), Jackendoff (1977), and Ladusaw (1982), among many others. Consequently, the properties of MCC offer strong evidence for the universality of DP analysis in the sense of Abney (1987), Borer (2005), Li (1998, 1999), and Longobardi (1994). In addition, the proposal of an empty partitive head in Chinese sheds light on other partitive constructions in Chinese, such as the topicalized partitive constructions and the partitive constructions with a relative clause, which are discussed in Sect. 5.

2 Properties of MCC

First of all, a strict linear ordering is observed in the MCC. As shown in the following examples, an ICL must precede a KCL, which is then followed by a head noun:

\[
\begin{align*}
\text{a. } & \text{san zhi zhe (yi) zhong gou} \\
& \text{‘three dogs of this kind’}
\end{align*}
\]

\[
\text{b. }
\begin{array}{c}
\text{Num} \\
\text{san} \quad \text{CL} \\
\text{‘three’} \\
\text{PartP} \\
\text{zhi} \quad \\
\text{‘ICL’} \\
\text{Part} \\
\text{DP} \\
\text{∅} \\
\text{zhe} \quad \text{Num} \\
\text{‘this’} \quad \text{yi} \\
\text{‘one’} \\
\text{CL} \\
\text{zhong} \\
\text{‘KCL’} \\
\text{gou} \\
\text{‘dog’}
\end{array}
\]

\[
\text{With the proposed analysis, all of the properties of the MCC are simply reflections of the partitive constraints; argued at length in Fodor and Sag (1982), Jackendoff (1977), and Ladusaw (1982), among many others. Consequently, the properties of MCC offer strong evidence for the universality of DP analysis in the sense of Abney (1987), Borer (2005), Li (1998, 1999), and Longobardi (1994). In addition, the proposal of an empty partitive head in Chinese sheds light on other partitive constructions in Chinese, such as the topicalized partitive constructions and the partitive constructions with a relative clause, which are discussed in Sect. 5.}
\]

\[
\begin{align*}
\text{2 Properties of MCC}
\end{align*}
\]

\[
\text{First of all, a strict linear ordering is observed in the MCC. As shown in the following examples, an ICL must precede a KCL, which is then followed by a head noun:}
\]

\[
\begin{align*}
\text{a. } & \text{san zhi zhe (yi) zhong gou} \\
& \text{‘three dogs of this kind’}
\end{align*}
\]
Another significant property of the MCC is that the second classifier (the KCL in (8a)) must bear a demonstrative article *zhe* ‘this’ or *na* ‘that’, and the demonstrative article always brings about a definite interpretation. Observe the contrast between the definite (8a, b) and the indefinite (8c, d):

(8) a. Zhangsan yang-le san zhi *zhe* (yi) zhong gou.
Zhangsan raise-Asp three ICL this one KCL dog
‘Zhangsan raises three dogs of this kind.’

b. Zhangsan xiang-ma san zhi *na* liang zhong gou.
Zhangsan want-buy three ICL that two KCL dog
‘Zhangsan wants to buy three dogs of those two kinds.’

c. *Zhangsan yang-le san zhi *yi* zhong gou.
Zhangsan raise-Asp three ICL one KCL dog

d. *Zhangsan xiang-ma san zhi *liang* zhong gou.
Zhangsan see-Asp five ICL two KCL dog

In addition to a demonstrative/definite article, a specific article, like *mou* ‘certain’ is also acceptable for most native speakers. Therefore, we conclude that the second classifier phrases are never nonspecific indefinite:

(9) Zhangsan yang-le san zhi *mou* zhong gou.
Zhangsan raise-Asp three ICL certain KCL dog
‘Zhangsan has three dogs of a certain kind.’

The third nontrivial property of the MCC is that only collective/group readings are available. Therefore, in (10a), the total number of dogs being caught is three, not six. Likewise, the number of snakes in (10b) is five, rather than ten:

(10) a. You san zhi *zhe* liang zhong gou bei zhua-le qilai
have three ICL this two KCL dog BEI catch-Asp up
‘Three dogs of these two kinds got caught.’

b. Zhangsan jian-guo wu zhi *zhe* liang zhong she.
Zhangsan see-Asp five ICL this two KCL snakes
‘Zhangsan has seen five snakes of these two different kinds.’

To summarize, three generalizations can be formed with respect to multiple-classifier constructions:
Given the linear word order and the distribution of the demonstrative article, as a first attempt, we launch out with a structure in (12). We shall examine, and revise, the structure from a compositional perspective in the next section:

(12) Syntax of MCC (a first approximation)

3 Classifiers and NP structures in Chinese: two former approaches

In this section we review two previous theories: on the one hand, Chierchia’s theory of Chinese NP states that a classifier is a type-shifter that turns a complex entity into a predicate. On the other, C&S’s theory treats a classifier as a determiner. Both theories, however, cannot offer a satisfying account for the properties of the MCC.

3.1 Chierchia’s view on Chinese NP

Chierchia (1998a, b) argues that the denotation of a kind term is a plural individual (of type e). That is, a kind term is the ideal individual (of type e) generated from a nominalized property, as in (13). Conversely, a property (of type <e, t>) can also be viewed as a predicativized kind individual. Chierchia therefore proposes two type-shifting operators: the downward operator \( \cap \) for ‘nominalization’ and the upward operator \( \cup \) for ‘predicativization’. The bidirectional operation can be visualized as follows (from Chierchia 1998b, p. 352):

(13) **PROPERTIES**

| \( P, \langle e, t \rangle \) | \( \cap \) ‘downward’ | \( \cup \) ‘upward’ | \( K, e \) |

\( K, e \)
Chierchia further argues that a property coming out of a kind appears as mass. This claim can be illustrated in (14). (14a) is the extension of a mass noun, a complete join semilattice in the sense of Link (1983), which is of type \( \langle e, t \rangle \); similarly, (13) can be translated into a join semilattice model in (14b), the left-hand side of which illustrates the property generated from a plural (kind) individual through predicativization. The resulting product looks exactly like (14a) (adapted from Chierchia 1998a, b):

(14)

<table>
<thead>
<tr>
<th>a. The denotations of a mass noun. e.g. furniture</th>
</tr>
</thead>
<tbody>
<tr>
<td>{a, b, c} {a, b} {b, c} {a, c} \rightarrow \text{pieces of furniture}</td>
</tr>
<tr>
<td>a b c \rightarrow \text{a piece of furniture}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>b. PROPERTIES</th>
<th>KINDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>{a, b, c} {ab} {bc} {ac} \rightarrow K={a, b, c}</td>
<td></td>
</tr>
<tr>
<td>a b c = atoms</td>
<td>\bigcap 'downward'</td>
</tr>
<tr>
<td>\bigcup 'upward'</td>
<td></td>
</tr>
</tbody>
</table>

Under the general framework, Chierchia assumes that all Chinese nouns are kind terms inherently (the right hand side of (14b)), and the upward type-shifter (i.e., predicative operator) is applied for the purpose of counting (since a numeral quantifier requires a restriction). Therefore, classifiers are necessary in Chinese since they specify the level of counting. That is, they define the size of atoms in the semilattice. In this sense, a classifier in Chinese can either be identified as an upward type-shifter of type \( \langle e, \langle e, t \rangle \rangle \), or as an element that triggers predicativization, as in Kurafuji (2004). Adopting the former, a classifier in Chinese transforms a noun from an individual of type \( e \) to a join semilattice of type \( \langle e, t \rangle \). KCLs and ICLs, both being classifiers, should have the same function: a KCL would point to the kind level of counting, while an ICL to the individual (atomic) level.

Let us examine the structure in (12), as in (15). Assume that both classifiers are type-lifters of type \( \langle e, \langle e, t \rangle \rangle \), and a demonstrative functions as a determiner which maps the set to a unique entity in the context (which is of type \( \langle \langle e, t \rangle, e \rangle \)):

(15) A Chierchian approach to MCC

}\text{ICLP, } \langle e, t \rangle \quad \text{KCLP, } \langle e, t \rangle \quad \text{ICLP, } \langle e, t \rangle \quad \text{NP, } e
\text{CL, } \langle e, \langle et \rangle \rangle \quad \text{DP, } e
\text{D, } \langle \langle et \rangle, e \rangle \quad \text{KCLP, } \langle e, t \rangle
\text{CL, } \langle e, \langle et \rangle \rangle
Technically, the structure in (15) is type-theoretically plausible. However, the structure leads to a conceptual inconsistency. If one assumes the semantic parameter in Chierchia (1998a, b), Chinese being a [+argument, −predicate] language, a definite determiner is redundant in Chinese since a bare NP can readily function as an argument of type e (therefore, given the lexical blocking principle, a Chinese definite determiner would only apply in the lexicon as a nominalizer; see Chierchia 1998a, p. 92 and Dayal 2004, p. 416). This claim implies that even if there exists an element that has the same function as a definite article in English, we would not expect to find it in Chinese syntax. Therefore, if we stay adherent to Chierchia’s original proposal, we should not be able to find a definite determiner heading a DP in Chinese and having exactly the same function (from a predicate to a unique entity) as that in English. However, the observation in the MCC leads to a theory-internal problem for Chierchia’s theory: on the one hand, the argument-denoting noun theoretically blocks the presence of a syntactic definite determiner in Chinese; on the other hand, a syntactic definite determiner is always required in the MCC.

3.2 Cheng and Sybesma’s analysis

C&S (1999, 2005) examine more closely the distributions of bare nouns in Mandarin and Cantonese. They find that the distributions and interpretations of bare nouns in Chinese are not as free as one would predict from Chierchia’s (1998a, b) semantic parameter. We briefly sketch a general picture of C&S’s analysis of Mandarin Chinese here. First, they propose that a classifier is always projected in Chinese, and the classifier is unpronounced in bare nouns in Mandarin, but is pronounced in Cantonese. Therefore, bare NPs are not inherently arguments of type e, but are predicates of type ⟨e,t⟩. Second, through the observation that a CL + N combination can have a definite interpretation in Cantonese, they propose that a classifier in Chinese has exactly the same function as do the definite articles in English and in Romance languages. Third, indefinite interpretations come from the Numeral Phrase (NumP), which is not projected when the NP is definite. The definite (demonstrative) article in their system is also treated as a locative adverbial, but not as a functional one like the in English. The following structures illustrate their main proposal. In (16a), a CLP alone is enough to be a definite description since the classifier itself is a definite determiner. In (16b), a numeral projection carries the function of a generalized quantifier of type ⟨⟨e,t⟩,⟨⟨e,t⟩,t⟩⟩:

(16) a. Definite NP

\[
\begin{array}{c}
\text{CLP} \\
\text{CL, ⟨⟨e,t⟩,e⟩} & \text{NP, ⟨e,t⟩}
\end{array}
\]

b. Indefinite NP

\[
\begin{array}{c}
\text{NumP, ⟨⟨e,t⟩,⟨⟨e,t⟩,t⟩⟩} \\
\text{Num} & \text{CLP} \\
\text{[-def]} & \text{CL, ⟨⟨e,t⟩,e⟩} & \text{NP, ⟨e,t⟩}
\end{array}
\]
Their theory, however, encounters even more difficulties in the face of the MCC. Consider the structure in (17). First, if the ICL is of type \( \langle (e,t),e \rangle \), in order for the structure to work, the KCL would have to denote a \( \langle (e), (e) \rangle \) function (since the demonstrative would be a locative modifier). However, this analysis of KCL would result in an undesirable consequence: the KCL and the ICL end up having different functions, which then implies that the numerals for different classifiers are also of different types:

\[
\text{(17)} \quad \text{ICLP, e} \quad \begin{array}{c}
\text{ICL, } \langle (e,t),e \rangle & \quad \text{KCL, } \langle e,t \rangle \\
\text{Dem, } \langle (e),(et) \rangle & \quad \text{KCL', } \langle e,t \rangle \\
\text{KCL, } \langle (e),(et) \rangle & \quad \text{NP, } \langle e,t \rangle
\end{array}
\]

Let us try to modify their original account by unifying the functions of the ICL and the KCL (a functional projection FP is added in between to avoid a type mismatch). The structure would look like (18):

\[
\text{(18)} \quad \text{ICLP, e} \quad \begin{array}{c}
\text{ICL, } \langle e,t \rangle & \quad \text{FP, } \langle e,t \rangle \\
\text{F, } \langle e,et \rangle & \quad \text{KCL, } \langle e,t \rangle \\
\text{KCL, } \langle (e),e \rangle & \quad \text{NP, } \langle e,t \rangle
\end{array}
\]

However, this account cannot be maintained either. First, this structure provides no explanations for why a demonstrative is obligatory in the lower KCLP. Second, if we identify the F as a demonstrative article, this amounts to saying that NP with a demonstrative article in Chinese cannot function as an argument (since it would denote a type-\( \langle e,t \rangle \) predicate). That is, we would wrongly predict that the sentence in (19) is ungrammatical:

\[
\text{(19) } \text{OKZhangsan jian-guo } \begin{array}{c}
\text{[FP=DemP zhe zhong gou].}
\end{array}
\quad \begin{array}{c}
\text{Zhangsan see-Asp this KCL dog}
\end{array}
\]

\text{‘Zhangsan has seen this kind of dog.’}

Another way of fixing the structure is to say that the KCL and the ICL are both of type \( \langle (e,t),(e,t) \rangle \), but then the demonstrative would also behave as a modifier, and therefore should be optional, contrary to the fact.

Still another problem comes from C&S’S treatment of numerals. Recall that in their theory, an overt numeral projection always results in an indefinite reading, and a demonstrative only specifies the locative information. This analysis, however, wrongly predicts that the sentence in (20) has an indefinite reading like (20b):

\[
\text{(20) } \quad \begin{array}{c}
\text{OK}-
\text{Zhangsan jian-guo DemP zhe zhong gou.}
\end{array}
\]

\text{Zhangsan see-Asp this KCL dog}

\text{‘Zhangsan has seen this kind of dog.’}
Scenario: There are several books on the shelves, which are far from Speaker A.

A: Gei wo na liang ben shu!

Give me that two CL books

a. ‘Give me those two books.’

b. ‘Give me any two books (which are at a distance from Speaker A)’

Despite the theoretical problems, however, the empirical findings in C&S argue strongly that Chinese NPs should not be treated as inherently type-e denoting arguments, but rather as type-⟨e,t⟩ predicates. It follows that a more elaborated NP structure should be entertained, contra Chierchia’s proposal.

4 Settling the argument: an eclectic approach towards MCC

We have seen that none of the existing theories can fully account for the MCC. It has also been shown that solving the MCC problems requires a clear understanding of each projection within Chinese nominal structures. Some of the insights from Chierchia’s and C&S’s theories, nevertheless, can be maintained. We argue, in accordance with Chierchia, that the function of a classifier is a ∪-operator (in the sense that a join semi-lattice is constructed by the sum operation), but that the denotation of an NP is of type ⟨e,t⟩, as C&S claim. As will be demonstrated, some adjustments and assumptions (modified from Dayal 2004 and Zamparelli 1998) are needed in order to unify the seemingly two opposite approaches.

4.1 Ambiguity of NP denotations and the role of classifiers

As in Chierchia (1998b), we assume that the domain of individuals contains sorted individuals: $x_{in}$ refers to a variable over atomic singular individuals, $x_p$ a variable over plural individuals, and $x_k$ a variable over kind terms. With the sorted variables, we can pursue the idea that Chinese nouns are inherently of type ⟨e,t⟩. The reason is as follows. In both Dayal (2004) and Zamparelli (1998), the denotations of NPs are taken to be ambiguous with respect to the sort of entity in the set. We argue that the same approach can be carried over to Chinese. Specifically, denotations of a noun are ambiguous among several levels. One level consists of atomic singular individuals, as in (21a), and one or more levels may consist of kind terms, as in (21b) and (21c). In other words, denotations of a noun should include every dimension of the information/concepts associated with the noun. We represent the ambiguous NP denotations as in (21):

\[
\llbracket N \rrbracket_{D(e,t)} = \begin{cases} 
\{a_{in}, b_{in}, c_{in}, \ldots\} & \text{OR} & \{a \text{ set of atomic individuals}\} \\
\{a_{k1}, b_{k1}, c_{k1}, \ldots\} & \text{OR} & \{a \text{ set of kind terms I}\} \\
\{a_{k2}, b_{k2}, c_{k2}, \ldots\} & \text{OR} & \{a \text{ set of kind terms 2}\} \\
\ldots & & 
\end{cases}
\]

Let us look at a concrete example. A noun like gou in Chinese, or dog in English, has the following denotations. First, there is arguably only one level of atomic singular individuals (a natural assumption to make). (22a) thus represents the set of

\[
\{a_{in}, b_{in}, c_{in}, \ldots\}
\]

...
every individual dog in the domain. On the other hand, when kind distinctions of
dogs are concerned, there can be several levels depending on the criterion of ‘kind’
being used in the context. One criterion of kind may come from the taxonomy
(different breeds of dogs), as in (22b); other criteria may come from any charac-
teristics that may be perceived as a ‘kind’; see also Carlson (1977) and Zamparelli
(1998). For example, (22c) shows a kind distinction in terms of the hair qualities of
dogs. Importantly, the members in each level are mutually exclusive and are jointly
exhaustive:

(22) \[ \text{[[DOG]]} = \]
a. {Amigo, Bimbo, Candy, Doodle...} \(\text{[individual dogs]}\)
b. {Beagle, Chihuahua, Dachshund...} \(\text{[kinds from breeds}
of dogs]}\)
c. {long-haired, short-haired, smooth-haired...} \(\text{[kinds from hair qualities of dogs]}\)
d. ...

Chierchia’s claim that a classifier specifies the level of counting can be reinterpreted as so: a
classifier always selects a corresponding level in the NP denotations. Classifiers therefore
disambiguate the NP denotations (e.g. a KCL selects a certain level of kind, which consists of
members of the sort \(x_k\)), and at the same time generate an enumerable set in the form of a join
semilattice. A classifier thus makes counting possible in grammar. Type-theoretically speak-
ing, a classifier takes an unordered set of type \(\langle e, t \rangle\), restricts its member to the corresponding
sorts, and again returns a partially-ordered set of type \(\langle e, t \rangle\), which consists of the plural and
singular entities. In this analysis, the function of numerals can be kept simple, as assumed in
Barker (1998), Ionin and Matushansky (2006), and Ionin et al. (2006): a numeral chooses the
member(s) with corresponding cardinality from the enumerable set. Let us illustrate our point
with a simple structure like (23a), where a classifier (either an ICL or a KCL) is combined with
an NP. (23b) shows that the denotations of the NP are ambiguous. (23c) illustrates the case
where we have a KCL combining with NP, and (23d) shows an ICL with NP:

(23) a. 

\[
\text{CLP} \\
\text{Num, \langle e, t \rangle} \quad \text{CL', \langle e, t \rangle} \\
\text{CL, \langle e, t \rangle} \quad \text{NP, \langle e, t \rangle}
\]

b. \(\text{[[NP]]} = \{a_{in}, b_{in}, c_{in}\} \cup \{a_{k}, b_{k}, c_{k}\} \cup... \in D(e, t)\)

c. 

\[
\begin{array}{c}
\text{CL'} \\
\text{KCL} \quad \text{NP}
\end{array}
\quad = \left[ \begin{array}{c}
\{a_{k}, b_{k}, c_{k}\} \\
\{b_{k}, c_{k}\} \quad \{a_{k}, c_{k}\}
\end{array} \right] \quad \in D(e, t)
\]

d. 

\[
\begin{array}{c}
\text{CL'} \\
\text{ICL} \quad \text{NP}
\end{array}
\quad = \left[ \begin{array}{c}
\{a_{in}, b_{in}, c_{in}\} \\
\{b_{in}, c_{in}\} \quad \{a_{in}, c_{in}\}
\end{array} \right] \quad \in D(e, t)
\]
We shall use ‘dog’ as a concrete example. The syntax–semantics for the indefinite expression *liang zhong gou* ‘two KCL dogs’ is demonstrated below. Suppose there are three breeds of dogs in the domain of discourse:

\[(24) \begin{align*}
\text{a. } & \left[ \text{CLP} \text{ liang zhong } \left[ \text{NP gou} \right] \right] \\
& \text{two KCL dog} \\
& \text{‘(any) two breeds of dogs’} \\
\text{b. } & \left[ \text{NP} \right] = \{\text{Beagle, Chihuahua, Dingo}\} \\
\text{c. } & \left[ \text{KCL} \right] = \left\{ \begin{array}{c}
\{B,C,D\} \\
\{B,C\} \{C,D\} \{B,D\}
\end{array} \right.
\text{B C D}
\right. \\
& \text{(B=Beagle; C=Chihuahua; D=Dingo)} \\
\text{d. } & \left[ \text{KCLP} \right] = \left[ \text{Num=2 KCL} \right] = \{B,C\} \{C,D\} \{B,D\}
\end{align*}\]

The level of counting is determined by the classifier that is used, and there can be no mixed levels of counting. Saying ‘Zhangsan saw two breeds of dogs’ cannot mean Zhangsan saw Beagles and long-haired dogs.

The model constructed here explains how classifiers enable counting in grammar: it specifies the level of counting (as assumed in Chierchia 1998a, b), and each member in the join semilattice has a well-defined cardinality, which is in turn chosen by a numeral. By assuming this model, we have solved the first part of our problems. Namely, NP denotations in Chinese can be maintained as type-\langle e, t \rangle predicates. The theory-internal problem in Chierchia (1998a, b) can be avoided without losing much of his insights. We depart from Chierchia simply in not assuming the lexical type-shifting mechanisms (along with the blocking principle governing the lexical type-shifting). Instead, our position echoes the theory in Zamparelli (2000), who argues that all type-shifting mechanisms should occur in narrow syntax (Zamparelli 2000, p. 10). A welcome result of giving up the parametric lexical type-shifting is that the universal DP analysis, in the sense of Abney (1987) and Longobardi (1994), also holds in Chinese (see also Borer 2005, Li 1998, 1999; Liao and Vergnaud 2010).

4.2 MCC as partitive construction

We are left with but one central problem: why does the second classifier phrase have to carry a definite determiner or a specific article? The answer, we suggest, lies in the partitive constraints, discussed in Fodor and Sag (1982), Jackendoff (1977), Ladusaw (1982), among many others (i.e. the lower NP/DP in a partitive construction must be definite/specific). Compare the English partitive construction with the MCC:
It has been argued in Barker (1998), Ladusaw (1982), Ionin et al. (2006), Schwarzschild (2002, 2006), and Zamparelli (1998) that the function of the English partitive of is to ‘unpack’ an entity into a set of type \( \langle e,t \rangle \) that contains a subset of the entity. The meaning of the English partitive of is given in (26):

\[(26) \quad \|of\_part\| \in D\langle e,\langle e,t \rangle \rangle = \lambda x \in De. \lambda y \in De. y = x \quad \text{(from Ionin et al. 2006)}\]

Now assume that in Chinese there is an unpronounced counterpart of the English partitive of. That is, there is a partitive phrase with an empty partitive head between the ICLP and the DP. We find the last piece of our jigsaw puzzle. See (27):

The partitive analysis not only accounts for the definiteness of the lower CLP, it also predicts the obligatory group readings of the lower CLP. Ladusaw (1982, p. 238) observes that in a partitive construction, the lower NP always denotes a (group-level) plural entity, which resists a distributive reading. Thus, all examples in (28) are ruled out because the lower NPs (NP2) are all distributive NPs, none of which denote a plural group entity:

\[(28) \quad \text{a. } \ast \text{two of } \text{NP2 every men} \]
\[(28) \quad \text{b. } \ast \text{one of } \text{NP2 both students} \]

---

4 See Barker (1998) for another line of inquiry into the partitive constraint. Barker argues that the lower NP/DP is subject to the uniqueness condition (therefore the lower NP/DP must be definite) since the function of the partitive head is to unpack the unique group-individual into all of its proper subsets (i.e. the anti-uniqueness condition). This theory also explains why distributive readings are excluded in the partitive construction.
c. *liang zhi [NP2 mei yi zhong gou]
   two ICL every one KCL dog
   ‘(intended): two from every kind of dogs’

d. *liang zhi [NP2 ge liang zhong gou]
   two ICL each two KCL dog
   ‘(same as (c))’

Summarizing so far, we see that the MCC poses problems for earlier analyses in Chierchia (1998a, b) and Cheng and Sybesma (1998, 1999, 2005). We present a unified analysis in which nouns are of type-⟨e,t⟩ in Chinese (as proposed by C&S), and the NP denotations are inherently ambiguous between several levels of counting. Different types of classifiers have the same function in disambiguating the NP denotations and generating an enumerable set for counting (as in Chierchia). In addition, we treat the MCC as a partitive construction. This analysis straightforwardly explains the properties of the MCC in (11), repeated in (29):

(29) a. An ICL/MCL must precede a KCL, which then precedes a noun.
   b. The second CL phrase (i.e. KCLP) must carry a definite/specific article.
   c. Only collective/group readings are allowed.

(29a) is now directly explained. Since the lower phrase in the partitive construction must provide a divisible entity, the (non-atomic) kind object is one of the suitable candidates. Atomic individuals, being indivisible atoms by definition, are not admissible to the partitive head. Notice that (29a) can be sharpened by saying that an upstairs classifier must be in the lower counting hierarchy than the downstairs classifier, as we shall make explicit in the next section. This means that the upstairs classifier is still a disambiguator (like the downstairs one). While the downstairs classifier receives its ambiguous input directly from the noun, the upstairs classifier has the ambiguous input from the partitive head (which generates ambiguous subsets from the downstairs DP).5 (29b) and (29c) also follow from the partitive constraints: the lower DP must be a definite/specific DP that denotes a collective plural entity.6

5 We thank an anonymous JEAL reviewer for urging us to clarify on this point.
6 An anonymous JEAL reviewer considers the following construction as a type of partitive construction in Chinese and shows that this type of partitive construction might be immune from the partitive constraints since the demonstrative is optional:

(i) (na) san ben shu zhong de liang ben
   that three ICL book among DE two ICL
   ‘two among the three books’

We tentatively suggest that (i) be derived from the partitive construction [two ICL [Part0 [that three ICL books]]] as an instance of predicate inversion, and zhong ‘among’ is an overt realization of the partitive linker (see den Dikken 2006). However, we argue that (i) is still subject to the partitive constraint, which requires the superset (three books) to be definite or specific. It is a common property for the inverted bare numeral to be specific/definite, despite the lack of an overt demonstrative or the specific marker mou.

(ii) Wo san ben shu kan wan yihou, you mai-le ling yi ben.
    I three ICL book read finish after then buy-Asp another one ICL
    ‘After I read the three books, I bought another one.’
5 More on the Chinese partitive constructions

5.1 Monotonic conditions: evidence for the partitive analysis

Schwarzschild (2002, 2006) examines the measure phrases in English. A principled account is found between the syntactic status of a measure phrase and its monotonic property, which is defined in terms of a salient part–whole relation. A monotonic interpretation means that the part–whole relations are tracked. Schwarzschild’s idea is that when a measure phrase is combined with the measured noun in a partitive construction, the interpretation will be a monotonic one; when a measure phrase is combined with the measured noun as an attributive modifier, the interpretation will be a non-monotonic one. Some examples are given below:

(30) Partitive measure phrases
   a. 2 liters of oil (cf. *2 liter oil)
   b. two of the students

(31) Attributive measure phrases
   a. 90 degree oil (cf. *90 degree of oil)
   b. 7 pound baby (cf. *7 pounds of (the) baby)

Example (30a) shows that volume is monotonic. 2 liters of oil have a salient subpart (e.g. 1 liter of oil) and if we combine 2 and 2 liters, we have 4 liters of oil, which is a superset. Example (30b) shows that individual counting is always monotonic: two students are a subset of the students referred to in the context. On the other hand, example (31a) shows that temperature is not monotonic on the part–whole relation of oil, any subpart of the 90 degree oil will still be 90 degrees (i.e. the temperature is not affected by the part–whole relation). Also, in (31b), a 7 pound baby does not have any salient subpart for us to weigh, and having two ‘7 pound babies’ does not mean each baby weighs 3.5 pounds.

Incorporating the monotonicity condition into our analysis, the MCC can be viewed as a more general case. The monotonic condition holds between the upstairs and the downstairs classifiers. Since we argue that the MCC is in fact a partitive construction, we predict that the interpretations of MCC are always monotonic. The prediction is borne out (Part. = partitive; Att. = attributive):

Footnote 6 continued
The following example further shows that a construction like (i) is subject to the partitive constraints (since the superset is non-specific and distributive):

(iii) *Zhangsan du-guo ge/mei san ben shu zhong de yi ben.
*Zhangsan read-Asp each/every three ICL book among DE one ICL

A question is why the specificity/definiteness of the downstairs DP in MCCs cannot be headed by a covert determiner. We believe that this is related to the fact that a covert D must be properly licensed (Longobardi 1994; Li 1998). In MCCs, the downstairs D is simply embedded too deeply in the structure to be properly licensed, and therefore it must be overtly realized. We owe Audrey Li (p.c.) for this observation.
(32) a. san zhi zhe zhong gou
    three ICL this KCL dog
    ‘three dogs of this kind’
    [ICL Part. KCL]: from a kind to individuals of that kind
b. san ping zhe zhong jiu
    three bottle this KCL wine
    ‘three bottles of this kind of wine’
    [MCL Part. KCL]: from a kind to measures of mass of that kind
c. san ke zhe tong tangguo
    three ICL this bucket candy
    ‘three candies of this bucket’
    [ICL Part. MCL]: from a group to individuals in that group
d. liang zhong zhe zhong gou
    two KCL this KCL dog
    ‘two subkinds of this breed of dog’
    [KCL Part. KCL]: from a kind to its subkinds

(32a) is explained by the fact that a kind object is taken to be the largest set of its atomic members (Chierchia 1998a, b). Therefore, individuals of the same kind are subsets of that kind (hence the part–whole relation is tracked). (32b) and (32c) are similar cases. A kind of wine is still wine, which can be partitioned into different bottles. Each bottle, then, will be considered a subset of that kind of wine. Each candy is also a subset of the bucket of candies. In (32d), subkinds are partitions of a larger kind, which is also monotonic.

On the other hand, examples in (33) illustrate the cases that fail to yield a monotonic interpretation. In (33a), (33c), and (33d), the atomic individual (selected by the ICL) fails to provide a salient part–whole relation. Therefore, all of these examples are ungrammatical. They are also not attributive (see the next paragraph). Example (33b) shows that the kind distinctions are not monotonic on the part–whole relations of individuals. Having more kinds of dogs does not necessarily mean there are more dogs. These sentence constructions are therefore ruled out by the existence of an empty partitive head, which is subject to the monotonic condition:

(33) a. *san zhong zhe zhi gou
    three KCL this ICL dog
    [KCL Part. ICL]
b. *san zhong zhe wu zhi gou
    three KCL this five ICL dog
    [KCL Part. ICL]
c. *san zhong zhe ping jiu
    three KCL this bottle wine
    [KCL Part. MCL]
d. *shi bang zhe ge xuesheng
    ten pound this ICL student
    [MCL Part. ICL]

However, some of the sentences, such as (34a, b) may still have an attributive interpretation. But (34c) does not:
It is observed in Huang et al. (2009) that *shi bang de tangguo* ‘ten pound DE candy’ is ambiguous between a *ten-pound (packed) candy* (i.e. attributive) and *ten pounds of candy* (i.e. pseudo-partitive). In the attributive constructions, the modifier marker *de* is obligatory, as shown in (34). The reason why (34c) is ungrammatical is that a dog cannot be attributed to three kinds (in the case of a mixed dog, it will be considered as a new kind of dog). At the same time, the partitive reading of (34c) is also ruled out by the monotonic condition. Comparatively speaking, while English uses adjectival expressions in the attributive phrases, Chinese employs an obligatory *de* to signal syntactic modifiers.

Unlike the partitive constructions, the attributive constructions in (34) do not involve a partitive head. The constraints found in the MCC therefore do not apply to them. Witness the following examples:

(35) a. Zhe zhi shi bang de gou hen jiankang.
   this ICL ten pound DE dog very healthy
   ‘This ten-pound dog is very healthy.’

b. Shi bang de zhe zhi gou hen jiankang.
   ten pound DE this ICL dog very healthy
   ‘(same as (35a))’

c. Wo mai-guo shi-bang de yi ke juzi.
   I buy-Asp ten-pound DE one ICL orange
   ‘I have bought a ten-pound orange before!’

d. San bang de mei yi dai tangguo dou mai-wan le.
   three pound DE every one bag candy all sell-out Perfect
   ‘All three-pound bags with candy have been sold out.’

As shown in (35a, b), the word orders between the two classifier phrases are rather free in the attributive constructions. Neither is there a requirement on the definiteness of the second classifier, as shown in (35c). The distributive reading is also allowed, as in (35d).

Summarizing so far, we see that the MCC is subject to the monotonic condition, which is considered a general condition for the cross-linguistic partitive constructions. This strengthens our proposal that the MCC is a partitive construction with an empty partitive head.7

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7 Barry Yang (p.c.) and two anonymous *JEAL* reviewers point out that, in Chinese, typical partitive constructions, like *three of the five books* in (i), cannot have the same linear ordering as those in English, and this seems to pose problems for our analysis.
5.2 Empty Part^0 and the asymmetry of partitive readings

In this section we turn to some relative clause constructions (RC) that may carry partitive meanings in Chinese. Huang (1982) and Wu and McGinnis (1998) notice an asymmetry in terms of the partitive readings with respect to the ordering between relative clauses and numeral-classifier phrases. We argue that this observation should be sharpened with different types of relative clauses (the distinctions between individual-level and stage-level predicates in the sense of Diesing (1992); i-level vs. s-level RCs henceforth). The proposal of an empty partitive head may shed some light on this problem. Witness the contrast below:

Foonote 7 continued

(i) *san ben zhe wu ben shu
   three ICL this five ICL book
   ‘three of the five books’

It is striking, however, that the sentence is very much improved when a relative clause or a prepositional phrase occurs between the two classifier phrases:

(ii) a. Lisi chi-le san ke [[RC wo fang-zai zhao-shang de] (na) wu ke juzi ].
   Lisi eat-Asp three ICL I put-on table-top DE that five ICL orange
   ‘Lisi ate three of the five oranges, which I put on the table-top.’

   b. You san ge [[RC Lisi qu nian yujian de] (na) wu ge xuesheng].
   have three ICL Lisi last year meet DE that five ICL student
   jin nian ban qu Dongjing le.
   this year move to Tokyo Perfect
   ‘Three of the five students that Lisi met last year have moved to Tokyo this year.’

The sentences are also improved if the lower DPs are fronted, or topicalized (see Wu and McGinnis 1998):

(iii) a. Zhangsan [(na) san ben shu] kan-le liang ben e.
    Zhangsan that three ICL book read-Asp two ICL
    ‘Zhangsan read two of the three books.’

   b. [(na) San ben shu], Zhangsan kan-le liang ben e.
    that three ICL book Zhangsan read-Asp two ICL

Based on the grammaticality in (ii), we think that it might not be suitable to postulate a pure semantic or syntactic account for the ungrammaticality of (i). Here, we hypothesize that the ungrammaticality of (i) is due to a semantic OCP effect, or a filter constraint at the surface structure (cf. Liao and Wang 2008). That is, two classifiers that belong to the same counting hierarchy (i.e. both are ICLs or KCLs of the same type) cannot appear adjacent to each other (therefore, the insertion of a relative clause or a dislocation can ameliorate the violation). Further study, however, is needed to reveal the nature of this constraint. Note also that in (iiia), one cannot replace five with every. This indicates that the constructions in discussion are indeed partitive constructions that are subject to the partitive constraints:

(iii) *Lisi chi-le san ke [[RC wo fang-zai zhao-shang de] mei ke juzi ].
    Lisi eat-Asp three ICL I put-on table-top DE every ICL orange

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Sentence (36) is ambiguous between a non-partitive reading and a partitive reading. The partitive reading in (36b) presupposes that Lisi bought more than two books yesterday, and Zhangsan only read two of them. On the other hand, to obtain a partitive reading in (37) is very difficult, if not impossible. One test to verify the availability of the partitive readings is by adding a follow-up question, ‘How about the rest of the books [that Lisi bought yesterday/which are in English]?’ (Shengxia de [Lisi zuotian mai de/yong yingwen xie de] shu ne?), which helps us identify whether there is a presupposed set in the context (i.e. the generator set in the sense of Barwise and Cooper (1981)). In out-of-blue context, we find that the follow-up question sounds natural with (36), where the partitive reading is salient, but very unnatural with (37). How do we account for this asymmetry of partitive readings?

A difference can be found between the predicate types of the relative clauses in (36) and (37). In (36) the relative clause is an s-level predicate, while in (37) it is an i-level predicate. Our question can be restated as: why can only s-level RCs give rise to a partitive reading? We suggest that the answer lies in the structural asymmetry of the two types of RCs with respect to their host DPs/NPs. Following Larson and Takahashi (2002), Hsieh (2005) proposes that the adjunction sites of Chinese RCs are determined by the predicate types (S-RC, for s-level RC, and I-RC, for i-level RC):

(38) a. (s-level RC > i-level RC)

Zhangsan read-Asp two ICL Lisi yesterday buy DE book  
yi ben [I-RC yong yingwen xie de] 
one ICL use English write DE  
shu.  
‘Zhangsan read the book that Lisi bought yesterday, which is written in English.’

b. (i-level RC > s-level RC)

*(??) Zhangsan du-le [I-RC yong yingwen xie de] shu.  
Zhangsan read-Asp use English write DE  
yi ben [S-RC Lisi zuotian mai de] shu.  
one ICL Lisi yesterday buy DE book
Crucially, an s-level RC tends to precede an i-level RC. Reflecting this linear ordering, Hsieh (2005) proposes that an s-level RC is adjoined to DP, and an i-level RC to NP. Larson and Takahashi (2004) also put forth the following structure in Chinese:

\[
\begin{array}{c}
\text{DP} \\
\text{S-RC} \\
\text{D} \\
\text{S-RC/I-RC} \\
\text{NP}
\end{array}
\]

Complications aside, the structure provides us a clue as to why only the s-level RC can bring about a partitive reading. By definition, an s-level predicate contains an event argument which is linked to a specific time/location, as suggested in Diesing (1992) and Kratzer (1995). Following the assumptions in Kayne (2005) and Leu (2008), we postulate that the s-level RC (but not the i-level one) contains a silent PLACE/TIME (taken as a syntactic realization of an event argument). In this sense, we argue that when an s-level RC is adjoined to a DP, the s-level RC can function as a generalized demonstrative that specifies the time/location of the DP. Therefore, if D is not otherwise specified, an s-level RC is able to mark the DP as specific (as a typical demonstrative).

The correlation between the determiner and the relative clause is reminiscent of the promotion analysis of RC in Vergnaud (1974), who suggests that the determiner and the relative clause CP share a closer relationship than typically assumed in the adjunction analysis. For example, the contrast in (40) has been observed in Vergnaud (1974, p. 264) and Kayne (1994), indicating D and CP are correlated:

(40)  
\begin{enumerate}
  \item (*the) Paris
  \item *(the) Paris [that I knew]
\end{enumerate}

Vergnaud (1974, p. 164) further formulates an interpretation rule connecting the definiteness of the determiner, the relative head, and the relative clause. Generalizing his analysis to Chinese relative clauses, (41b) will be the semantic representation of (41a). The definiteness of this relative clause is structurally unspecified due to an unpronounced determiner. In this case, we assume that the definiteness/specificity of the whole DP is percolated from the relative clause itself. The relative clause being an s-level RC in (41c), the definiteness of the DP comes from the specific event argument (a silent PLACE) contained by the relative clause (since all arguments are associated with the event argument of the predicate, in the sense of Parsons 1990). We shall simplify the representation of the correlation in the form of (42). Although we tentatively take the RC to be an adjunct of DP, as represented in (42), the relative clause may as well come from raising, as in Simpson (2002). We shall leave the exact derivations open:
After establishing the relationships between the s-level RC and the definiteness/specificity of its host DP, the partitive reading can be straightforwardly accounted for (recall the partitive constraints, which require the lower DP to be definite/specific). Consider the following structure:

(43) a. Zhangsan du-le \[ CLP liang ben [S-RC Lisi zuotian
Zhangsan read-Asp. two ICL Lisi yesterday
mai] de shu].
buy DE book
‘Zhangsan read two of the books that Lisi bought.’

The lower DP, which inherits the definiteness/specificity from the s-level RC, is able to provide an input for the partitive head. An s-level RC being able to adjoin to NP as well, the non-partitive reading is therefore also available. On the other hand, the fact that an i-level RC is not able to adjoin to a DP prevents it from being a generalized demonstrative. Therefore, an i-level RC only allows a non-partitive reading, as represented in the following:

---

8 An anonymous reviewer pointed out that Lin (2008) argues that an i-level RC can be adjoined to DP. Note that if we adopt the analysis in Lin (2008), our argument still remains valid. The lack of a silent PLACE/TIME argument in an i-level RC already disqualifies it from affecting the definiteness/specificity of the determiner.
In conclusion, the asymmetry of partitive readings in Chinese results from the structural asymmetry of relative clauses with different predicate types. Since the empty partitive head requires its input DP to be definite/specific, the definiteness/specificity can be provided by the overt marking of a definite/specific article (as we see in the MCC), or by an s-level RC (when the D is not otherwise specified).

6 Conclusion

In this paper, we approach the question ‘what is/are the syntax/semantics of Chinese nominal expressions?’ from a novel point of view: through multiple-classifier constructions. The results sharpen our understandings of Chinese nominal expressions and allow us to pursue a universal DP analysis (as in Abney 1987; Borer 2005, Longobardi 1994; Li 1998, 1999; Liao and Vergnaud 2010). First, we propose NP is not inherently an argument in Chinese. Instead, Chinese NPs denote an ambiguous set of entities. The denotation is ambiguous with respect to the sort of entities that constitute the set (Zamparelli 1998). A classifier functions as a disambiguator of the NP denotations. It restricts the level of counting and generates an enumerable set (in the form of a join semilattice). The numeral then chooses the plural/singular member(s) in that set with corresponding cardinality. Furthermore, the MCC is regarded as a partitive construction, the constraints of which require the lower DP to be definite/specific. From the function of demonstratives, we therefore argue that the demonstrative article in Chinese serves the same purpose as the definite determiner. Our analysis also shows that Chinese partitive construction, though hidden behind an empty partitive head, is still subject to the universal monotonic condition.

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