



The Encoding of Classifiers in Mandarin Chinese

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Abstract

This paper focuses on the role of classifiers in numeral phrases. Based on a generative syntactic framework, the study examines the functional projections involved in nominal structure. It classifies Mandarin classifiers into count-classifiers and massifiers, analyzing their distribution and interpretive roles. Through comparison of different structural analyses, including left-branching NP, classifier projections, number projections, and the DP hypothesis, the paper argues that classifiers are essential grammatical elements that enable nouns to combine with numerals. The study also examines the plural marker “-men,” concluding that it signals collectivity rather than grammatical plurality. Overall, the findings suggest that classifiers in Mandarin serve both syntactic and semantic functions in the derivation of referential noun phrases.

Subject Areas

Linguistics

Keywords

Classifiers, Mandarin Chinese, DP Hypothesis, “Men”

1. Introduction

Number is a category whose values are varied. First and foremost, the number represents the semantic category at the conceptual intensional level. It refers to a set of entities that have a cardinality. According to Bouchard (2002:41), the category number is a way to atomize a set and provide access to individuals [1]. There are many ways for a set to be atomized, varying across languages. Some languages, such as Chinese and Vietnamese, employ classifier systems. Others, like French and English, may use number, or inflectional features. Aboh (2004) argues that bare plurals in some languages can function as arguments. This suggests that the value of the category number is directly related to reference and argumenthood

[2].

The grammatical category of number directly contributes to a noun's referentiality, enabling it to function as an argument of the verb. A noun can serve as an argument when it is marked for number. The general assumption is that the projection of a number, which can be called NumP, as an interpretable feature on nouns, is encoded by a designated head, the head of NumP. The NumP projection is considered to play a crucial role in the nominal structure. Thus, it was among the first inflectional categories established within the DP.

Languages can be divided into classifier and non-classifier languages based on whether classifiers (Cl) are mandatory in quantifier phrases, and CIP refers to classifier projection. This study focuses on classifiers and related structures in Mandarin Chinese, examining issues surrounding their syntactic derivation and semantic interpretation. Current research has conducted detailed analyses of classifiers, enhancing our understanding of classifiers and quantificational structures. However, several controversies persist, such as the ambiguous classification properties of classifiers and the internal hierarchical structure of numerals and classifiers.

2. Classifiers and Numeral Phrases

Classifiers have long been a primary focus in Chinese linguistic research. This chapter begins by summarizing the fundamental features of classifiers, including their classification, distribution, and semantic properties. Next, I examine generative approaches to classifiers, focusing on key theoretical developments. Through analyzing relevant research, this chapter aims to identify the grammatical properties of classifiers, investigate the internal structure of classifier phrases, and explore their interpretive aspects within linguistic theory.

2.1. The Study of Classifiers in Chinese

In Chinese, classifiers are divided into individual classifiers, collective classifiers, and measure classifiers. However, this way of classification, based on the structuralist theory, has led to much debate. Gerner (2010a) proposed that classifiers are "beached grammaticalized nouns" [3]. Their syntactic distribution is similar to that of light nouns, which are phonological realizations of NumP. These different propositions for grammatical features of classifiers highlight the inherent complexity of classifiers, requiring further detailed study.

Regarding lexical properties, some studies suggest that classifiers belong to the closed lexical category, but others argue that classifiers belong to an open word class. Cross-linguistic investigations have revealed that the order of numerals, classifiers, and nouns typically follows (1).

(1) Num > Cl > NP

Some studies have examined the grammatical features of classifiers in Chinese, concluding that classifiers meet the individuating or measuring requirements of

nouns and align with the phonological and grammatical development of Chinese. Feng (2012) further explored the role of classifiers in Chinese prosody [4]. He argued that while the emergence of Chinese classifiers resulted from grammaticalization, the primary driving force was to fulfill prosodic requirements. Additionally, by analyzing linguistic data from Archaic to Old Chinese, Feng suggested that nominal phrases during these periods may have contained individuating markers such as “you” (有) and “wei” (唯). Both “you” (有) and “wei” (唯) functioned as classifiers in syntax. By the Middle Chinese period, these individuating markers gradually disappeared, giving rise to the emergence of classifiers.

Another widely debated issue in the study of Chinese classifiers is the relationship between classifiers and plural markers. Some studies have found that plural markers and classifiers exhibit complementary distribution. However, other studies argue that plural markers exist in classifier languages such as Chinese, Japanese, and Korean, where classifiers and plural markers can coexist. In certain Chinese varieties, such as Zang, Yi, and Jingpo, classifiers and plural markers coexist. By contrast, in other Chinese varieties where classifiers are not well developed, plural markers do not occur alongside classifiers. The semantic type of classifiers remains a key focus of formal semantics research. As bare nominals, Chinese nouns exhibit the feature [+arg, -pred]. As a result, numerals cannot combine directly with nouns.

2.2. The Study of Classifiers in Numeral Phrases

Various approaches have been proposed within the framework of ge to analyze the internal structure of Chinese classifiers. Cheng and Sybesma (1998) classified classifiers into count-classifiers and massifiers [5]. Based on these standards of classification, this section will explain the semantic features and syntactic distribution of classifiers in Mandarin Chinese.

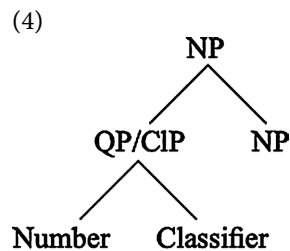
Classifiers in Mandarin Chinese, such as “ben” (本) and “ping” (瓶), can be semantically distinguished based on the nouns they are associated with. Count nouns denote entities with discrete, countable units, whereas mass nouns represent substances that lack specific units. Accordingly, classifiers are categorized into two types: count-classifiers (e.g., those in (2a)) and massifiers (e.g., those in (2b)). The semantic differences between these two types are as follows: first, count-classifiers have lost their original semantics and function as grammatical markers. In contrast, massifiers, often termed pseudo-classifiers, retain their basic classifier function while also contributing informational content to the entities.

The syntactic difference between these two types can be explained by the underlying structure of ClPs containing a massifier versus those containing a classifier. As illustrated in (3a), the massifier is selected by the head of ClP and then moves to the Cl0 position. In contrast, count-classifiers, as closed-class elements, are directly inserted into the head of ClP, as illustrated in (3b).

- (2) a. sān běn bǐ jì běn
三 本 笔记本

- three Cl notebook
 ‘three notebooks’
 b. sì xiāng píng guǒ
 四箱 苹果
 Four Cl apple
 ‘four boxes of apples’
 (3) a. [CIP Ni [NP ti [NP N]]]
 b. [CIP Cl [NP N]]

Two syntactic structures have been proposed to account for the distribution of classifiers in Mandarin Chinese nominal phrases. The first is the unified left-branching structure, as shown in (4). In this structure, the NP serves as the maximal projection, with the Num-Cl sequence functioning as a modifier of the N. In this tree, the Num-Cl sequence forms a quantifier phrase (QP) with the numeral as its head, and the QP selects the NP as its complement and projects as either QP or CIP. As the first method to examine Mandarin Chinese classifiers in early Generative Grammar, this approach can account for the distribution of classifiers in Mandarin Chinese. However, treating classifier phrases as NPs is overly simplistic, partly because the NP projection cannot represent both the semantic and syntactic features of classifiers.

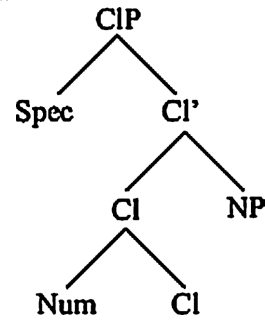


According to the DP hypothesis, the projection of a nominal phrase contains two Spec positions: one for the possessor and another for classifier phrases. Classifiers receive thematic roles from the head noun. Consequently, classifiers with thematic roles cannot undergo iteration; otherwise, this would violate the θ -criterion. In this approach, the maximal projection of the noun phrase is extended to DP, incorporating multiple functional projection layers. However, this approach has two shortcomings: first, it fails to explain classifier iteration in Chinese, as in the expression “sanren-ci” (三人次); second, while head nouns assign thematic roles to classifiers, the specific thematic roles remain unclear.

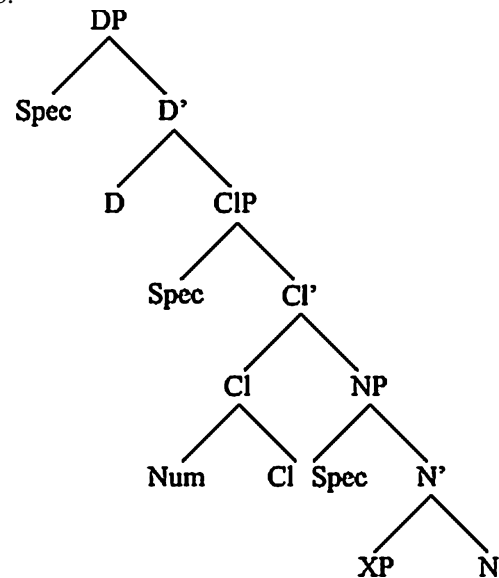
Tang (1990) adopted the DP hypothesis, proposing that the numeral phrase corresponds to a CIP projection, with the classifier as its head [6]. His analysis introduces an intermediate functional category, Cl, which selects NP as its complement, and where the CIP projection functions as the complement of D. Thus, the syntactic projections of numeral phrases are illustrated in (5a) and (5b). His analysis includes an intermediate functional category, Cl, which selects NP as its complement, and the CIP projection serves as the complement

of D.

(5) a.



b.



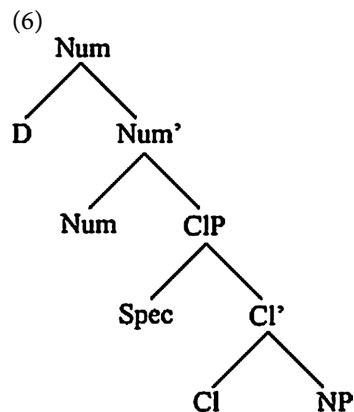
Tang (1990) explained that similar to how the subject of a sentence moves to the Spec position of CP, possessives in the aforementioned structures can move to the Spec position of DP. Furthermore, correlations exist between the “numeral-classifier-noun” structure and the “noun-numeral-classifier” structure. Specifically, the “Num-Cl-NP” sequence is base-generated, where the relation between Num-Cl and NP is argument-predicate, with the Num-Cl sequence functioning as the secondary predicate. By contrast, the relation between NP and the Num-Cl sequence is head-complement.

This approach explains the syntactic distribution and the relationship between classifiers and NPs in classifier languages, according to which, classifiers semantically select NPs in Chinese. However, this analysis has some problems: first, the relationship between classifiers and NPs is unclear. For example, Chinese exhibits numerous instances of “one classifier with multiple nouns” and “one noun with multiple classifiers.” Second, his syntactic structure lacks a *c*-command relationship between Cl and NP. To solve this problem, the NumP projection was introduced in his later studies. Tang’s approach represents a shift toward a right-branching structure.

With the DP hypothesis becoming the dominant framework for studying nominal phrases, research on classifier phrases in Mandarin Chinese explores varying projections. For instance, Li (1998, 1999) argues that numeral phrases in Chinese can be projected either as DP or NP, corresponding to two interpretations: quantity-denoting and individual-denoting [7] [8]. In the quantity-denoting interpretation, the numeral serves as the head and projects as NP, whereas the individual-denoting interpretation projects as DP with an empty determiner. Numeral phrases in subject argument positions can take on a quantity-denoting interpretation, but individual-denoting interpretations in such positions are implausible.

Regarding the syntactic structure of numeral phrases, some studies adopt the right-branching structure (Wang, 2024) [9]. In this analysis, the structure of numeral phrases begins with the ClP, which then projects into NumP. Specifically, in ClP, the classifier functions as the head. In NumP, the number (Num) encodes singular or plural features, with the numeral occupying the specifier position of NumP. Consequently, the maximal projection of the quantity phrase is NumP.

While an alternative approach treats numeral phrases as QP or NumP. In this approach, numerals and classifiers are functional categories, which project into two maximal projections: NumP and ClP. In this structure, NumP dominates ClP, establishing a head-complement relation. The syntactic structure can be illustrated in (6).



The above two methods capture the hierarchical structure of numeral phrases, align with the right-branching structure, and maintain consistency in syntactic analysis. However, the lack of differentiation between individual-denoting classifiers and quantity-denoting quantifiers may obscure their distinct syntactic and semantic contributions to the interpretation of numeral phrases.

3. Semantic and Syntactic Features of Classifiers

This section has outlined the semantic and syntactic features of classifiers in Mandarin Chinese. The discussion demonstrates that numerals and classifiers function as distinct grammatical units, each with its own projection. In certain contexts, numerals may be omitted, leaving only the classifier. Syntactically, nominals in

classifier and non-classifier languages do not differ fundamentally; the variation lies solely in their surface structure.

3.1. The Semantic Features of Classifiers

According to Chierchia (1998), Chinese nouns, characterized by the [+arg, -pred] feature, are categorized as mass nouns because they inherently carry plural readings [10]. In contrast, nouns in languages like English can be either countable or uncountable. Nouns in classifier languages like Chinese are universally mass nouns, numerals cannot combine directly with nouns. To fulfill the measurement function, classifiers serve as counting units in numeral phrases. Therefore, classifiers in Chinese are defined as functions mapping kinds to predicates, as shown in (7b). Furthermore, when classifiers combine with nouns in Chinese, their denotation becomes equivalent to that of countable nouns in English, as illustrated in (7c). Thus, akin to countable nouns in English, classifiers in Chinese can directly combine with numerals once they merge with nouns.

- (7) a. $[wu]=\lambda P: ATOMIC(P). \{x: *P(x) \ \& \ \mu\#(x)=5\}$
 b. $[jian]=U$
 c. $[wu] ([jian])=\{x: ATOM(x) \ \& \ waitao(x)\}=[coat]$

In this approach, bare nominals in Chinese are assigned the semantic type, numerals are defined as $\langle\langle e, t \rangle, \langle e, t \rangle\rangle$, and classifiers are of the semantic type $\langle e, \langle e, t \rangle\rangle$, functioning as operators. Without classifiers, following the fundamental principles of semantic computation, an expression such as $(\langle\langle e, t \rangle, \langle e, t \rangle\rangle \text{ 田})$ results in a semantic type mismatch, causing derivation failure. Semantic operations can proceed sequentially only with the intervention of classifiers, resulting in ClP having the semantic type $\langle e, t \rangle$.

Some studies argue that classifiers represent a parametric option for the morphological marking of numerals. Cross-linguistically, numerals fall into two categories: those with a measure function ($\mu\#$), which directly combine with nouns, as illustrated in (8a), and those without a measure function, such as numerals in Chinese, as shown in (8b). Consequently, the combination of numerals and classifiers in Chinese is semantically equivalent to English numerals, as demonstrated in (8d).

- (8) a. $[five]=\lambda P: ATOMIC(P). \{x: *P(x) \ \& \ \mu\#(x)=5\}$
 b. $[wu]=\lambda m\lambda P: ATOMIC(P). \{x: *P(x) \ \& \ m(x)=5\}$ c. $[jian]=\mu\#$
 d. $[wu] ([jian])=\lambda P: ATOMIC(P). \{x: *P(x) \ \& \ \mu\#(x)=5\}=[five]$

Similarly, it has been proposed that the denotation of numerals differs between classifier and non-classifier languages. Specifically, numerals in non-classifier languages include a function that assigns values to object units (OU), as shown in (9a). In contrast, in classifier languages, the denotation of numerals is merely a natural number, as illustrated in (9b), while classifiers in numeral phrases assign values to object units, as demonstrated in (9c).

- (9) a. $\llbracket \text{five} \rrbracket = \lambda P \lambda x [P(x) \ \& \ \text{OU}(x)=5]$
 b. $\llbracket \text{five} \rrbracket = 5$
 c. $\llbracket \text{jian} \rrbracket = \lambda n \lambda P \lambda x [P(x) \ \& \ \text{OU}(x)=n]$

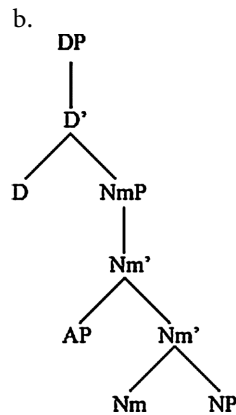
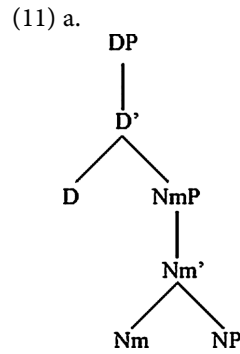
3.2. The Syntactic Features of Classifiers

The previous section has discussed the relation between nouns and classifiers. First, in most cases, the “Num-Cl” sequence can be seen as the quantifier floating, where the noun can move to a position before the numeral, as in (10a). Moreover, nouns can often be omitted in appropriate contexts, while the numeral-classifier sequence cannot be omitted, as in (10b). These linguistic facts are widespread in Mandarin Chinese. From a prosodic perspective, numerals and classifiers are combined, as in (10c). Some numerals and classifiers have even merged into a single prosodic unit, such as “liang” (俩), and “san” (三). Furthermore, it is implausible to insert determiners, possessives, or adjectives between numerals and classifiers, as in (10c).

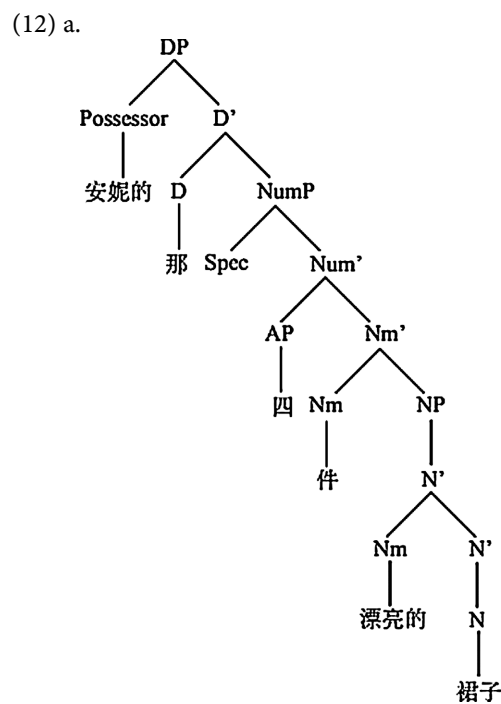
- (10) a. wài tào wǔ jiàn
 外套五件 coat five Cl ‘five coats’
 b. shū jià shàng yǒu liǎng běn shū, yī běn shì jù fǎ xué de, yī běn shì fān yì de
 书架上有两本书，一本是句法学的，一本是翻译的。
 bookshelf be two Cl book, one Cl is syntax, one Cl is translation
 ‘There are two books on the shelf, one is on syntax, the other is on translation.’
 c. * wǔ zhè / piào liang de jiàn wài tào
 五这/漂亮的件外套 five this/beautiful DE Cl coat
 ‘five coats.’

These linguistic facts suggest that numerals and classifiers form a relatively complete syntactic unit, indicating that classifiers are syntactically necessary. Since nouns in classifier languages are “trans-numeral nouns,” they cannot directly combine with numerals. Furthermore, it is argued that the role of classifiers is to make nouns countable or enumerable through individuation.

Concerning the syntactic derivation of classifiers, it is proposed that there is an intermediate projection between D and N in the DP structure, labeled as NmP, which is analogous in form and semantics to the grammatical category Pr in clauses. The NmP acts as a predication operator that converts the NP into a predicate with the semantic feature $\langle e, p \rangle$, thereby establishing the predication relationship. Additionally, Bowers (1993) distinguishes between strong and weak determiners [11]. Strong determiners, or D-quantifiers, map D to a feature set, changing the type of NmP and necessitating determinate reference, as in (11a). In contrast, weak determiners, or A-quantifiers, are adjectival modifiers that do not alter the type of the expressions they modify, as in (11b).



The above tree diagrams indicate that there is no essential difference in the deep structure of nominal phrases between Chinese and English. The only difference lies in the surface structure. To be specific, in Chinese, the classifier is the phonetic realization of the functional head Nm, while in English, Nm is realized as a predication operator, as shown in (12).



4. The Interpretation of “-men”

Some studies reveal that one prominent difference between classifier and non-classifier languages is the obligatory presence of classifiers in quantificational phrases. Another difference between these two types of languages is the presence of plural markers. Classifier languages, such as Chinese and Japanese, have robust systems of classifiers but do not have plural markers; by contrast, non-classifier languages, like English, have plural markers, but no classifiers. Thus, it is suggested that plural markers and classifiers are in complementary distribution. However, some studies suggest that classifier languages have both robust systems of classifiers and plural markers, like “-men” in Mandarin Chinese, “-tachi” in Japanese, and “-tul” in Korean. In this section, I will analyze the semantic and syntactic features of “-men”. To do this, this section first reviews the main findings of previous research, then, by comparing the strengths and weaknesses, this section will elaborate syntactic distribution of “-men”.

Concerning the syntactic properties of “-men”, there have been different proposals mainly about these three aspects: “-men” can be either a plural marker or a collective marker; “-men” is a pure plural marker, and “-men” is a pure collective marker.

4.1. “-men” is Either a Plural Marker or a Collective Marker

In Mandarin Chinese, “-men” is mainly attached to common nouns denoting people, as in (13a), personal pronouns, as in (13b), and proper nouns, as in (13c).

- (13) a. xué shēng men
学 生 们
'students'
- b. wǒ mēn
我 们
'we'
- c. xiáng lín sǎo men
祥 林 嫂 们
'women always complaining'

Earlier studies argue that “-men” attached to personal pronouns is a plural marker, but “-men” attached to common nouns and proper nouns are collective markers. This conclusion comes from the fact that “-men” is incompatible with the sequence “Num-Cl”. Moreover, when it is attached to common nouns, it cannot be attached to nouns denoting objects. This can be explained by the fact that the grammatical function of classifiers is to individualize nouns, while “-men” denotes a collection or a group of individuals. Thus, the combination of the two may result in semantic conflict, as in (14a). Additionally, other studies indicate that the sequence “Num-Cl” encodes new information, while “-men” encodes the known information, so the combination of the two may also result in semantic opposition. Whereas, according to Xiong (2019), the approximative expression “ji” (几)

can co-occur with “-men”, as in (14b) [12].

- (14) a. sì gè lǎo shī men
四个 老师 们
four CI teacher -MEN ‘four teachers’
- b. jǐ gè xué shēng men cān jiā le bǐ yì dà sài.
几个学 生 们 参 加了笔译大赛。
several students -MEN participate LE translation competition ‘Several students participated the translation competition.’

Hsieh (1977) makes the distinction between “-men” as a plural marker and a collective marker [13]. In general cases, “-men” is the marker of collective plurality, but when it is modified by quantifiers, like “yixie” (一些, it functions as a semantic plurality marker which can be a derivational morpheme. Beyond this, she also argued that “-men” has vocative features.

It is also proposed that “-men” can encode definiteness, meaning that its presence may trigger a definiteness effect. As a result, determiners or definite nominals cannot appear in existential sentences, nor can they occur after unaccusative verbs or copula verbs, as shown in (15).

- (15) a. * cāo chǎng shàng yǒu xué shēng men.
*操 场 上 有 学 生 们。
Campus on be student -MEN
‘There are students on campus.’
- b. * lái le lǎo shī men.
来 了 老 师 们。
come LE teacher -MEN ‘Here comes teachers.’
- c. * tā men shì zhuān jiā men.
*他 们 是 专 家 们。
‘They are experts.’

The definiteness interpretation of “-men” can also be corroborated by its incompatibility with other determiners. For instance, in (16), the definite article cannot co-occur with the demonstrative pronoun or other determiners for the D position cannot simultaneously accommodate two elements with [+Def] features. In addition, the attachment of “-men” to bare nouns may lead to different interpretations of definiteness and specificity. For example, in (17a), “pengyoumen” (朋友们) must refer to a definite group that both the speaker and the hearer can identify within the context, whereas in (17b), the bare noun “pengyou” (朋友) can be definite or indefinite. Additionally, “-men” does not have a generic reading.

- (16) a. * the / that bag
b. * nà xué shēng men
那学 生 们
those student -MEN
‘those students’

(17) a. wǒ qù zhǎo péng yǒu men.

我 去 找 朋 友 们。

I go find friend -MEN

‘I go to find friends.’

b. wǒ qù zhǎo péng yǒu.

我 去 找 朋 友。

I go find friend

‘I go to find a friend.’

As mentioned above, “-men” can also be attached to proper names. It is observed that when the proper name is attached by “-men”, its interpretation is a related group with the same characteristic. For example, proper name in (18) refers to a group of individuals all named “Xiaoqiang,” or a collective of people with the feature that “Xiaoqiang” has. In this collective reading, the Num-Cl sequence cannot precede the proper noun, nor can classifiers co-occur with “-men”.

(18) a. guǎng chǎng shàng yǒu sān gè lán péng yǒu.

广 场 上 有 三 个 蓝 朋 友。

square on be three Cl firemen

‘There are three firemen on the square.’

b. lán péng yǒu men bǎo wèi rén mín de shēng mìng ān quán.

蓝 朋 友 们 保 卫 人 民 的 生 命 安 全。

firemen -MEN protect people DE live safety

‘Firemen protect the safety of people’s lives.’

In the DP hypothesis, proper names should undergo N-to-D movement (Longobardi 1994) [14]. By contrast, in Li’s (1998, 1999) analysis, proper names are base generated in two positions. If it is base generated in the D position, then it gets the collective reading, as in (19a). If it is base-generated in the N position, as Longobardi proposes, it undergoes N-to-D movement to get the associative interpretation, as in (19b). Then, Li’s approach indicates that when “-men” are attached to proper names, the resulting structures are derived by two syntactic operations.

(19) a. [DP [D 蓝朋友 i-们 j [NumP[Num’ tj]]]

b. [DP [D 蓝朋友 i-们 j[NumP[Num’ tj [ClP[Cl[NP ti]]]]]]]

However, it is not reasonable to consider “-men” as having different syntactic structures, as it is not an economical solution, nor does it conform to the basic principles of computation.

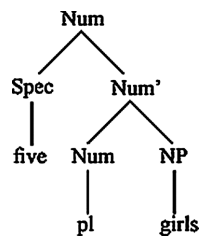
4.2. “-Men” as a Plural Marker

Some studies suggest that “-men” functions purely as a plural marker in Mandarin Chinese, similar to English plural morphemes. This proposal stems from the observation that if “-men” were a collective marker, it would be implausible for common nouns with “-men” to have a distributive interpretation when referring to individuals. However, both common nouns with “-men” and pronouns with “-

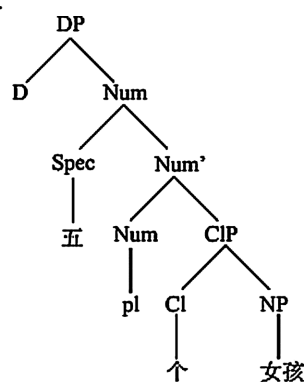
men” exhibit a distributive interpretation when used with “dou” (都).

Li (1998, 1999) used the syntactic structures to depict the distributional features of plurals in Chinese and English. In both languages, they are generated in the quantifier phrases, with the plural feature occupying the head of the quantifier phrase, thus requiring an explicit morphological realization. The difference between the two languages is that, in English, there is no interference from classifiers. If Num contains the plural -s, the noun must undergo an N-to-Num movement, as in (20a). “-Men” also occupies the Num projection in Chinese. If “-men”, similar to plurals in English, occupies the Num position, it would require N-to-Num movement. However, the classifier blocks this operation because of the head movement constraint and the relativized minimality condition, as in (20b). Thus, the only possible operation is the N-to-D movement. In this way, classifiers cannot co-occur with “-men” which is further attracted to D where it gets the definite interpretation as in (20c).

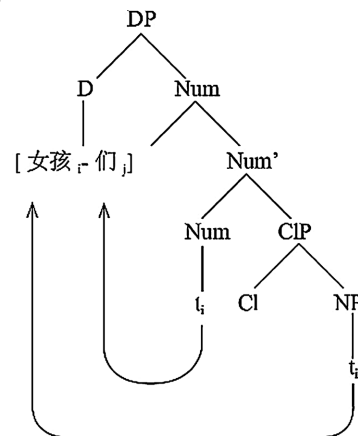
(20) a.



b.



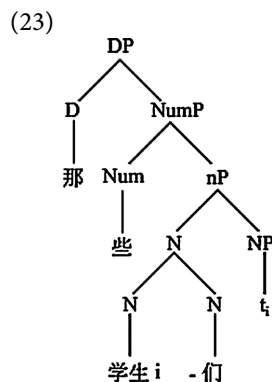
c.



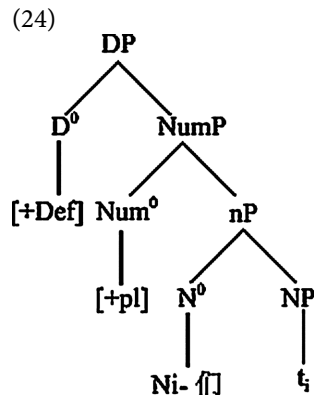
Li further argued that considering “-men” as a collective marker cannot reasonably explain the following facts. If personal pronouns and proper nouns are base-generated in the D position, then “-men” can move to the D position, making (21a) and (21b) grammatical. By contrast, in (22a) and (22b), the quantifier phrase overrides DP, making them ungrammatical.

- (21) a. wǒ qǐng tā men liǎng gè rén hē kā fēi
 我 请 她 们 两 个 人 喝 咖 啡。
 I invite them two Cl people drink coffee
 ‘I invite two people to drink coffee.’
- b. wǒ gěi lán péng yǒu men sòng lǐ wù
 我 给 蓝 朋 友 们 送 礼 物。
 I give firemen -MEN give gift
 ‘I give firemen gifts.’
- (22) a. * wǒ qǐng liǎng gè tā men hē kā fēi
 * 我 请 两 个 她 们 喝 咖 啡。
 I invite two Cl them drink coffee
 ‘I invite two people drink coffee.’
- b. * wǒ gěi liǎng gè lán péng yǒu men sòng lǐ wù
 * 我 给 两 个 蓝 朋 友 们 送 礼 物。
 I give two Cl firemen -MEN give gift
 ‘I give gifts to two firemen.’

Kim (2018) also considers “-men” a plural marker but introduces an additional nP projection between NumP and NP, with nP denoting collective reference [15]. Because classifiers select individuals from nP, they are incompatible with “-men.” In terms of syntactic derivation, Kim (2018) argues that the noun adjoins to N^0 to satisfy the suffixal features of “-men”. This is necessary because “-men” carries an uninterpretable [human] feature that must be checked before spell-out. Attracted by the [+def] feature, “-men” undergoes N-to-Num movement and then Num-to-D movement, acquiring plural and definite interpretations, respectively. The final spell-out form is illustrated in (23). Concerning the derivation of “-men”, Kim (2018) argues that pronouns are base-generated in the D position, with their features also checked in the D position.



Therefore, personal pronouns in D carry at least two features, [+Def, +Sig]. For instance, the first-person pronoun “women” (我们) is derived as (24):



The above studies suggesting “-men” as a plural marker follow the DP hypothesis (Abney 1987) and provide relatively reasonable explanations for some linguistic facts, but also face some problems [16].

4.3. “-Men” is a Collective Marker

It is argued that “-men” is not merely a plural marker but rather a subjective grouping element that indicates collective characteristics. In this dissertation, I support this view for several reasons. Firstly, “-men” carries a vocative feature, serving a pragmatic function that allows the speaker to include themselves, either intentionally or unintentionally, as part of the listener's group. Consequently, if a common noun cannot function as a vocative, it would be implausible for “-men” to be attached, as demonstrated by the contrast between (25a) and (25b).

- (25) a. * nǚ shēng men, ràng wǒ men yī qǐ nǚ lì ba
 * 女 生 们, 让 我 们 一 起 努 力 吧。
 girl -MEN let us together strive Part.
 ‘Girls, let us strive for our goals.’
- b. nǚ hái men ràng wǒ men yī qǐ nǚ lì ba.
 女 孩 们 让 我 们 一 起 努 力 吧。
 girls -MEN let us together strive BA
 ‘Girls, let us strive for our goals.’

Second, the emotional connotation encoded by the vocative feature of “-men” is generally positive, such as friendliness and sympathy. Kaden also observed the emotional connotation of “-men” and linked this emotional meaning to the speaker's subjectivity. For example, in few cases, “-men” appear in legal documents or regulations for these texts lack subjectivity. Iljic (2001, 2005) further argued that the modal value of emotional connotation is implicitly related to the speaker or the narrator [17] [18]. Moreover, he proposed the concepts of point of view and the shift of point of view to explain the possible references of “-men”. For example, the reference of the first-person pronoun “women” (我们) includes

both the speaker and other people but excludes the hearer. By contrast, “zanmen” (咱们) can include the speaker, the hearer and other people.

Last but not least, the view that “-men” is a collective marker can also be proved by its distribution in coordinate structures. When two people-denoting nouns are coordinated, “-men” can only be attached to the last noun. As discussed in the previous section, one argument against treating “-men” as a collective marker is that structures with “-men” exhibit a distributive interpretation. However, if “dou” (都) functions as a maximal operator, the distributive interpretation of “-men” cannot be considered valid evidence, as shown in (26).

- (26) nǚ shēng men de shù xué chéng jì dōu hěn hǎo”.
 女生们的数学成绩都很好。
 girls -MEN DE math score all very good
 ‘The math scores of all girls are good.’

Cross-linguistically, the collective or distributive interpretation of quantifiers arises from the interplay between plurals and related predicates. Collective predicates can be divided into distributive sub-entailment and pure cardinality collective predicates. The best way to distinguish them is to place these two types of predicates in a coordinate structure (Dowty 1986 etc.) [19], as in (27). Depending on the semantics of the predicate, the noun can have either a distributive or a collective interpretation.

- (27) lǎo shī men guān bì le diàn nǎo, lí kāi le jiào shì, zǒu jìn le bàn gōng shì”.
 老师们关闭了电脑，离开了教室，走进了办公室。
 teacher -MEN close LE computer leave LE classroom, enter LE office
 ‘Teachers close the computer, leave the classroom, and enter the office.’

Plural nouns may have both collective and distributive interpretations, or they may only take one of these interpretations. However, a predicate can influence whether a quantifier phrase receives a collective or distributive interpretation only when the scope of the quantity referred to by the noun is above the scope denoted by its plurality. If a noun receives a collective interpretation, the scope of the quantity it refers to is higher than that of plurality. If the scope of the quantity is above that of the individual parts, the noun phrase receives a distributive interpretation (Ouwayda 2017) [20]. Thus, though “-men” may have either collective or distributive interpretations, in some cases, it may have both of these interpretations, this cannot be valid evidence to refute the proposal that “-men” is a collective marker.

By briefly examining its distributive interpretation, vocative function, and syntactic constraints in coordinated structures, in this section, I demonstrated that “-men” is a collective marker, instead of a plural marker. Regarding the inability for “-men” to co-occur with classifiers, it is argued that the function of “-men” is to express collectivity, but that of classifiers is individualization. Thus, the co-existence of the two may result in meaning conflict. The following section will illustrate how the vocative function is encoded in syntactic structure.

5. The Definite Interpretation of “-Men”

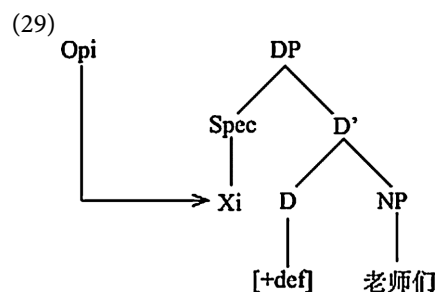
As noted in the previous discussion, regardless of whether “-men” is considered a collective marker or a plural marker, relevant research agrees that “-men” has a definite interpretation. D has a type-shifting function, converting predicates into arguments through either overt or covert noun-to-D head movement, forming a small chain, or through base generation in the D position, forming a large CHAIN. In both large and small chains, the definite interpretation arises from the definiteness inherent in D itself (Huang 2024, Burge 1973, *et al.*) [21] [22]. Conversely, English is a weak D-language, where syntactic derivation fails if either filled determiners or explicit N-to-D head movement occurs. Consequently, implicit N-to-D head movement can only occur at the LF level as a last resort to ensure successful syntactic derivation.

According to the Mapping Hypothesis (Diesing 1992:10), bare plural nominals in English outside of the VP map to the restrictor scope to receive the generic interpretation [23]; those within the VP map to the nuclear scope, receiving the existential reading. This suggests that interpretations of bare plural nominals depend on their licensing conditions and syntactic distributions.

Cross-linguistically, there are two types of D: one type is definite D, formed by N-to-D movement with its phonological form realized as definite articles. The second type is an empty D containing an existential operator, denoted as $D\exists$ (Longobardi 1999) [24]. As discussed above, “-men” has a definite interpretation, but without an explicit marker for definiteness. Since –men can be interpreted as definite, and Chinese lacks overt definiteness markers, I assume that a $D\exists$, which leads to a definite interpretation, exists before “N–men.” Furthermore, D and $D\exists$ are in the complementary distribution, as in (28):

$$(28) [DP [D D/D\exists[N\text{-}们]]]$$

However, simply hypothesizing that the definite interpretation arises from either an overt D or an implicit $D\exists$ is insufficient to fully account for the referential reading of –men. As previously mentioned, while –men can convey a definite interpretation, semantic or referential variations exist. It is observed that the element occupying the specifier position of DP is a bound variable related to the speaker (Hsieh 1977) [13]. Through this binding relation, the extension of nominal phrases includes the speaker, as illustrated in (29). Nevertheless, this proposition cannot explain how the binding relationship is established.



6. Summary

This paper has examined the encoding of number in Mandarin Chinese, with a focus on the syntactic and semantic functions of classifiers in numeral phrases. It argues that classifiers are not merely lexical items but crucial functional projections that mediate between numerals and nouns, enabling countability in a language without overt number inflection. The distinction between count-classifiers and massifiers reveals structural and interpretive differences, supporting a layered nominal structure. The analysis also suggests that the plural marker “-men” functions as a collective marker rather than indicating grammatical plurality. It also contributes to the understanding of nominal syntax in classifier languages and highlights how number is grammatically realized without morphological plural marking. However, the research doesn't involve how to handle borderline or ambiguous classifier-noun combinations. Future work may explore classifier systems across related languages and integrate semantic-pragmatic interfaces more fully into the syntactic analysis.

Conflicts of Interest

The author declares no conflicts of interest.

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