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論世界語言中分類詞與複數的共現

On the Co-occurrence of Numeral Classifier and Plurality Marker in Languages of the World

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On the Co-occurrence of Numeral Classifier and Plurality Marker in Languages of the World

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研究所別：語言學研究所

論文名稱：論世界語言中分類詞與複數的共現

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在過去的研究中，學者們指出分類詞與複數常常呈現互補分佈的關係，當其中一個的出現為必要時，另一個通常為非必要。另外更有學者聲稱分類詞與複數在句法結構上佔據同一個句法位置，因此是同一個句法成分。然而，另也有學者發現兩者其實是可並存的。在 Gil (2008) 跟 Hasplemath (2008) 所共同研究到的 114 個語言中，有 22 個語言同時具有分類詞與複數。本論文的目的即在於探究這 22 個語言的分類詞與複數之間的關係，藉此去論斷兩者是否呈現互補，是否為同一句法成分，而兩者之共現情形，則是相當重要的判斷依據。

22 個語言的資料顯示出，當語言同時出現分類詞與複數時，其使用範圍大多呈現互補分佈的關係，而分類詞與複數共現於一個名詞詞組的情形，並非少數。由於這 22 個例外的語言並非完全違反互補分佈之宣稱，因此分類詞與複數應為同一個句法成分，而其共現於同一名詞詞組的情形應為分岔的句法結構，此結構可能由兩種原因所造成，一為語言接觸，一為語言變遷。所以，這 22 個原為例外的語言，其實大多仍符合語言的普遍現象。

Abstract

The relationship between numeral classifiers and number plurals has been examined by several linguists (Greenberg 1972, Sanches& Slobin 1973, Chierchia 1998, and T'suo1976, Borer 2005 and Her 2012a). They found that it is a universal property that classifiers and plurals are in complementary distribution. Borer (2005) and Her (2012a) further proposed that classifiers and plurals are the same category. However, classifiers and plurals can co-occur at least in 22 languages, according to a surveye by Gil (2008) and Haspelmath (2008). The aim of this study is to find out the relationship between classifiers and plurals in these 22 languages. After the analysis of data, the results show that classifiers and plurals are in complementary distribution in their usage, but not in cases of co-occurrence. The possible reasons for the co-occurrence may be language contact or language change. Thus, to account for the co-occurrence in the 22 languages, syntactic structure of classifiers and plurals may be co-head structure. Most languages tend to have either classifier system or plural system because they are the same category. But the co-occurrences are also reasonable since they are co-head.

Key Words: Numeral Classifiers, Plurals, Typological Property

Chapter 1. Introduction

There are numerous types of classifiers and number marking in languages. Classifiers include noun classifiers, verbal classifiers, numeral classifiers, locative classifiers etc. (Aikhenvald 2000). Number marking includes nominal number (as plural, dual and trial) and verbal number etc. (Corbett 2000). The focus of this study is the relationship between numeral classifiers and plural marking in noun phrases.

If a numeral can be directly adjacent to a noun in a language, it is called a non-classifier language. If there is a classifier between a numeral and a noun, it is a classifier language. The main function of classifiers is classification or individualization. Chinese is considered to be the most prototypical classifier language among the numerous classifier languages and it contains the largest amount of classifiers (T'sou 1976). However, the exact number of classifiers in every classifier language is still uncertain due to the controversy in the definition of classifiers. Therefore, a definition of classifiers will also be provided in this paper.

As for plural marking, some languages denote plurals in various aspects as in nouns, pronouns, verbs, demonstrative etc., but plural marking is not always obligatory. Chierchia (1998) declared that if nouns in languages are transnumerals or mass, there will be no plural marking in such languages.

Although classifiers and plurals seem to be unrelated, they share the same

function of indicating the presence of countable units or individualizing nouns as a unit (Doetjes 1997). In addition to such similar function, Peyraube (1998) also found that the development of classifiers might be due to the decline of the plural markers. In his study of archaic Chinese, he found that the loss of plural markers forms a foundation stone of the prosperity of count-classifiers.

Several linguists studying in the area of universal grammar or linguistic typology have observed that classifiers and plurals rarely co-occur. Greenberg (1972) claimed that "*Numeral classifier languages generally do not have compulsory expression of nominal plurality, but at most facultative expression.*" (Greenberg 1972: 17). Sanches and Slobin (1973) found that if a language has classifiers, there is no need for obligatory plural markers on nouns. Chierchia (1998) suggested that the argument type of languages which contain classifiers will lack plural markers along with (in)definite markers. T'sou (1976) proposed that the use of nominal classifiers and the use of plural morphemes are in complementary distribution in natural languages. In addition to the suggestion that classifiers and plurals are in complementary distribution, Borer (2005) further declared that numeral classifiers and plurals also occupy the same syntactic position, being the same category. Since the topic of the relationship between classifiers and plurals has been investigated by so many linguists, we abbreviate their contribution as the general CPCD principle which represents that

classifiers and plurals are seen as being in complementary distribution, and the strict CPCD principle which represents that classifiers and plurals are seen as being of the same category and thus unable to co-occur in a noun phrase (Borer 2005).

Although the CPCD principle is applicable to most languages in the world, there are exceptions. In Nootka, both classifiers and plurals are obligatory (Sanches and Slobin 1973). In Korean, classifiers and plurals can simultaneously occur in a noun phrase (Kim 2005). Therefore, Fassi Fehri (2007) suggested that classifiers and plurals are different categories. Since the roles of classifiers and plurals are still controversial, this paper will try to clarify the roles based on 22 languages which contain both classifiers and plurals from the *World Atlas of Language Structure Online*.

1.1 Motivation and Purpose

The results of research by numerous linguists are presented in the *World Atlas of Language Structure Online*, with such results being re-organized by features used in the categorization of languages. Among the features, two of them are related to our topic: numeral classifiers and the occurrence of nominal plurality. Numeral classifiers in 400 languages were examined by Gil (2008) and the occurrence of nominal plurality in 291 languages was investigated by Haspelmath (2008). One hundred and

fourteen languages were covered by both linguists. The clear classification of the absent/present of classifiers and plurals in 114 languages is as following.

Table 1. Numeral Classifiers and Nominal Plurality

		Nominal Plurality	
		Absent	Present
Numeral Classifiers	Absent	8	80
	Present	4	22

84 languages following the CPCD principle are in complementary distribution in the existence of classifiers and plurals; 8 languages[1] lack classifiers and plurals; and most important of all, 22 languages containing both classifiers and plurals violate the CPCD principle. When closely examining the 22 exceptions, we found that the degree of the violation is different.

Among the 22 languages, classifiers and plurals are obligatory in only 4 languages: Taba, Kathmandu Newar, Kham, and Mokilese. Furthermore, there are only 2 languages: Kham and Mokilese, whose classifiers are obligatory and plural marking is also obligatorily applied to all nouns; that means they strongly violate the general CPCD principle. A detailed classification of the 22 languages is shown as in Table 2.

[1] 8 languages in WALS are lacking of classifiers and plurals. However, the other possibility is that the 8 languages might be containing both classifiers and plurals which are transparent.

Table 2. Numeral Classifiers and Nominal Plurality in 22 Languages

		Occurrence of Nominal Plurality				
		Human nouns only, optional	Human nouns only, obligatory	All nouns, always optional	All nouns, optional in inanimates	All nouns, always obligatory
Numeral Classifiers	Optional	Hatam (1)	(0)	Ainu Indonesian Khmer Tetun Chantyal (5)	(0)	Hungarian Turkish Tuvaluan (3)
	Obligatory	Mandarin Japanese (2)	Taba Kathmandu Newar (2)	Garo Jacaltec Nivkh Teribe Ulithian Vietnames (6)	Belhare (1)	Kham Mokilese (2)

If the principle proposed by previous linguists are correct, the 22 languages are exceptions. However, the principle is an assumption based on observations and inferences. It is reasonable that there are exceptions. But whether the principle is correct or not will be based on the degree of the violation of the exceptions. If the violation is not strong, the principle is still correct.

Therefore, the aim of this study is to find out the correctness of the CPCD principle, and the nature of the exact relationship between the classifiers and plurals in the 22 languages. In the research of Gil (2008) and Haspelmath (2008), we found that they may have made their conclusions on the roles of classifiers and plurals in a

language based on a sentence or a chart of a book. In this paper, we will provide real sentences to support our analysis.

Before our analysis in the 22 languages, we will clearly define classifiers and plurals in those languages, so as to establish that they have both classifiers and plurals. To define what classifiers are, we will adopt Greenberg (1974) and Her (2012a)'s criteria to identify true classifiers. As for true plurals, we will first distinguish additive plurals which are plural reading and associative plurals which express collective meaning, and the collective plurals will be excluded. In the process of defining classifiers and plurals, we can also check the accuracy of the classification provided by WALS online database.

Among the languages which actually contain classifiers and plurals, we will rank the complexity of the two systems in languages according to the range of application of classifiers and plurals. Among the languages which have true classifiers, the classifiers will be ranked based on the criteria of Adam Conklin (1973), and true plurals will be ranked based on the criteria proposed by Corbett (2000). Different rankings of classifiers and plurals will be shown on an X axis and a Y axis, respectively. Classifiers will be scaled along an X axis; plurals will be scaled along a Y axis. And the hierarchy of the ranking will be introduced in Chapter 3.

Thirdly, we move on to find whether the two elements can co-occur in a single

noun phrase, since Borer (2005) stated that it is possible for classifiers and plurals to co-occur in a language but not in a noun phrase. From the findings, we will try to find the syntactic structure of the languages.

And finally, we try to conclude whether classifiers and plurals in the 22 languages support the CPCD principle or whether the principle needs to be revised.

1.2 Organization of the Thesis

In this paper, the different claims about the relationship of classifiers and plurals will be presented in Chapter 2. Section 2.1 reviews several studies which have observed that classifiers are in complementary distribution with plurals. In Section 2.2, Borer's (2005) assertion that classifiers and plurals are the same category, and Her's (2012a) presentation of some evidence to support Borer's claim are presented. In Section 2.3, the relationship between classifiers and plurals in languages has been studied in depth by a number of linguists is described. Examples from Chinese are provided in Section 2.3.1 and from Japanese are in Section 2.3.2.

Before examining the data in the 22 languages, the definition of classifiers and plurals will be presented in Section 3.1 and 3.2.

In Chapter 4, the analysis of data will be presented in Section 4.1; a short summary for data analysis in Section 4.2; the analysis of syntax in Section 4.3; and

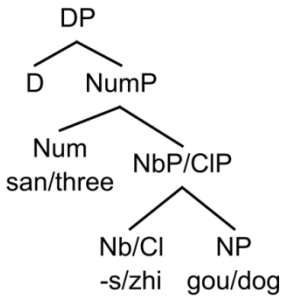
possible explanation in Section 4.4. And the analysis of data will be divided into four parts. The two major languages, Chinese and Japanese, are analyzed in Section 4.1.1 and Section 4.1.2, respectively. In Section 4.1.3, we examine obligatory classifier languages, including Taba, Kathmandu Newar, Belhare, Mokilese, Kham, Nivkh, Garo, Vietnamese, Ulithian, Jacaltec and Teribe. In Section 4.1.4 we examine optional classifier languages, including Hatam, Tuvaluan, Hungarian, Turkish, Ainu, Khmer, Indonesian, Tetun and Chantyal. All of the examination of the classifiers and plural marking is based on the standard presented in Chapter 3.

Lastly, a conclusion along with some limitations of this study and suggestions for further research will be presented in Chapter 5.

Chapter 2. Literature review

World's languages can be divided into two groups, classifier languages and non-classifier languages, based on the appearance or non-appearance of classifiers. Among the classifier languages such as Chinese, Japanese, Korean, etc., linguists have found that there is a typological property for classifier languages to lack obligatory plural marking. Therefore, they proposed that classifiers and plurals are in complementary distribution. Even if a language has both classifiers and plurals, there is a tendency for one of them to be obligatory and the other to be optional. Further, classifiers and plurals hardly co-occur in a language. If they do, the characteristics of the classifiers and plurals may change (Seiler 1986). To interpret the phenomenon of complementary distribution, Borer (2005) suggested that classifiers and plurals belong to the same category.

(1)



(Marie-Thérèse Vinet and Xiaoyan Liu 2008 p.361)

This chapter will briefly introduce the work of certain linguists who have observed the complementary distribution phenomenon in Section 2.1. In section 2.2,

the statements of Borer (2005) and Her (2012a) show that classifiers and plurals belong to the same category. In section 2.3, the work of various linguists who have constructed different points of view on the issue of classifiers and plurals in some languages is discussed. Chinese and Japanese are discussed in section 2.3.1 and 2.3.2, respectively.

2.1 Classifiers and Plurals: Complementary Distribution

2.1.1 Greenberg (1972)

Greenberg has devoted himself to finding the universal grammar. One of his important findings is about classifiers. He tried to find the origin of classifiers and reached the conclusion that classifiers are derived from measure or non-unit construction. This is based on two reasons. One is that word order and syntactic markers of measure word construction and classifier construction are quite similar. The other is that measure word construction is prevalent almost in every language.

During the research, Greenberg (1972) also made a generalization which was previously proposed by Sanches (1971). "*Numeral classifier languages generally do not have compulsory expression of nominal plurality, but at most facultative expression.*" This generalization is based on the observation of languages rather than a theoretical investigation. Although their generalization is similar, the assertion about

the number marking is quite different. Sanches (1971) indicated that the classified noun is singular; while Greenberg (1972) regarded it as a noun lacking number marking rather than being singular. In addition, Greenberg (1972) pointed out that there are exceptions with respect to this generalization, such as Arabic dialects, Russian, and Turkic. There are both classifier system and plural system in these languages. However, Greenberg (1972) suggested that the plurals in such languages are in fact collectives which are grammatically singular but semantically plural. Thus, he claimed that if there is an exception to the generalization, the number marking is to distinguish singular/collective rather than singular/plural. Therefore, the definition of plurals in classifier languages plays a dominant role when examining the CPCD principle. The different issues of plurals will be introduced in Section 3.2.

2.1.2 Sanches and Slobin (1973)

Similar to Greenberg, Sanches and Slobin (1973) observed that plural markers are not obligatory in classifier languages. They examined 70 languages and made a table to show the relationship between numeral classifiers and plural markers as shown in Appendix B.

Among the languages, certain of our target languages, Indonesia, Chinese, Garo, Jacaltec, Japanese, Khmer, Kathmandu Newar, and Vietnamese are located at

Quadrant 1 [+numeral classifier, -obligatory plural marking]. In addition, there are a few exceptions which appear in Quandrant 4 [+numeral classifier, +obligatory plural marking]. Although their declaration about classifiers and plurals has exceptions, the Sanches-Greenberg-Slobin generalization forms a foundation stone on which to base an investigation of the relationship between classifiers and plurals.

2.1.3 Chierchia (1998)

Chierchia proposed two kind of features [arg] and [pred] to denote different kinds of nouns. And based on the features, languages can be classified into three types, [+arg, -pred] as Chinese, [+arg, +pred] as English, and [-arg, +pred] as Italian. The first type of languages is the major concern in this paper. Nouns in argument type [+arg, -pred] languages can be directly used as bare forms and are often regarded as mass nouns. In Chierchia's statement, mass nouns are regarded as plurals, so it is reasonable for mass nouns to lack plural markers. For mass nouns which are inherently plural, classifiers serve the function of counting. Following are several properties of this type of languages as proposed by Chierchia.

(2) a. Every noun extension is mass.
b. There is no plural marking.
c. A numeral can combine with a noun only through a classifier.
d. There is no definite or indefinite article.
e. Nouns can occur bare in argument position.

According to the (2c) and (2b), the languages which are so-called classifier languages will lack plural markers. Therefore, this conclusion is quite in accordance with the Sanches-Greenberg-Slobin generalization.

2.1.4 T'sou (1976)

T'sou (1976) proposed a statement that is similar to Greenberg's generalization as following:

> *Moreover, the study of nominal classifier system suggests an important hypothesis that the use of nominal classifiers and use of plural morpheme are in complementary distribution in a natural language. More concretely, it suggests that either a) if a natural language has either nominal classifiers or plural morpheme, or b) if a natural language has both kinds of morphemes, their use is in complementary distribution.* (T'sou 1976: 1216)

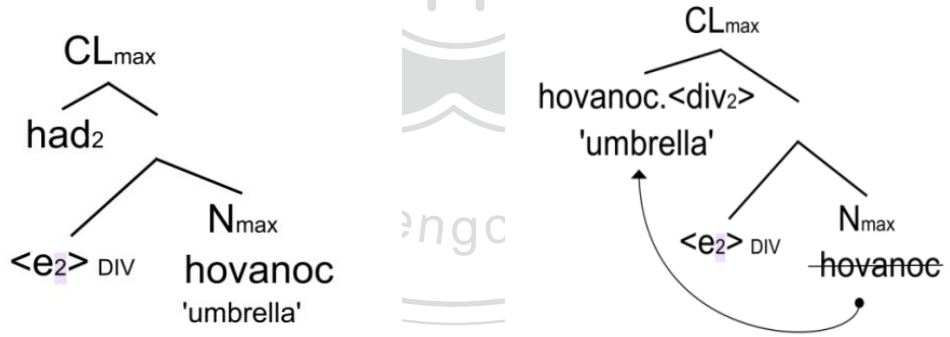
Apart from this observation, he also supported his statement with evidence from child language acquisition. There is a similar process of development when children acquire classifiers and irregular plurals, along with irregular verbal conjunctions. In child language acquisition, children tend to learn the same things at the same stage, so this may be a supporting evidence for Borer to claim that classifiers and plurals are the same category.

2.2 Classifiers and Plurals: The Same Category

2.2.1Borer (2005)

Borer (2005) suggested two viewpoints with regard to world languages. One is that all nouns are mass nouns, but unmarked for count or mass. The other is that both count nouns and mass nouns are grammatically constructed, rather than lexically constructed. The two statements are important for his argument that classifiers and plurals belong to the same category. In addition, languages have ways to make mass nouns become countable, and classifiers and plurals function as counting triggers in classifier languages and non-classifier languages, respectively. He further developed a tree structure to support his claim to their similarity.

(3) a. b.



(Borer 2005: 95) (Borer 2005: 95)

Classifiers are independent morphs as head of and plurals are affixes containing the feature, and both of them serve as dividers, and are thus of the same category.

Although he claimed that classifiers and plurals are of the same category, he

observed that it is possible for classifiers and plurals to co-exist in a language, but that it is impossible for them to co-occur in the same clause.

(4) a. *Yergu had hovanoc uni-m*
Two CL umbrella have-1SG
'I have two umbrellas'

b. *Yergu hovanoc-ner unim*
Two umbrella-PL have-1SG
'I have two umbrellas'

c.**Yergu had hovanoc-ner uni-m*
Two CL umbrella-PL have-1SG
'I have two umbrellas' (Borer 2005: 95)

Thus, classifiers and plurals are in complementary distribution in a noun phrase.

2.2.2 Her (2012a)

Her (2012a) claimed that the plural *–s* can be seen as a generic or general classifier. To demonstrate the similarity of *–s* and classifiers, Her (2012a) made a comparison among Chinese, Japanese and English as following:

(5) a. Chinese: [Num 3 [C *ge* [N cup]]]=>[Num 3 [C *ge* [N cup]]]
b. Japanese: [Num 3 [C *-tsu* [N cup]]]=>[Num 3-*tsu* [C [N cup]]]
c. English: [Num3 [C *-s* [N cup]]]=>[Num 3 [C cup-*s* [N ~~cup~~]]]
(Her 2012a: 1682)

Plural *–s* used to be thought as number more than one. But in fact, it functions as classifiers which represent the concept of times one, such as (6).

(6) a. Plural: three books [3 book*1]

b. Classifier: 三　本　　書 [3 *1 書]
san　ben　shu
three CL　book
'three books'　　(Her 2012a: 1674)

Although Her (2012a) agreed with Borer's (2005) statement that classifiers and plurals are the same category, he proposed that it is possible for classifiers and plurals to co-occur in a noun phrase.

(7) a. Chinese:三 個 學生　們
san ge xuesheng-men
3 CL student　PL
'three students'

b. Japanese: *san-nin-no　gakusei-tati*
3　CL-NO student -TATI
'three students'　　(Her 2012a:1684)

The two examples are well-formed and widely used by native speakers, but they violate the strict CPCD principle. So, are the examples exceptions? Or, is the CPCD principle incorrect? We will take a closer look at this issue in Section 4.1.

2.3 Previous Studies on Specific Languages

In this paper, there are 22 languages which deserve a detailed examination in the relationship between their classifiers and plurals. Some of the languages have been surveyed by several linguists, but they have not reached a consensus. This section

presents some viewpoints on Chinese in Section 2.2.1, and on Japanese in Section 2.2.2.

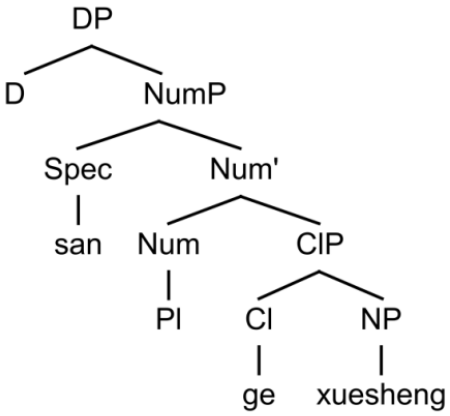
2.3.1 Chinese

In Chinese, *–men* is considered to be either a plural marker (Li and Thompson 1981, Li 1999, Huang 2009) or a collective marker (Lu Shuxiang1947, Chao1968, Norman1988, Iljic1994, Cheng and Sybesma1999). If *–men* is a collective marker rather than a plural marker, Chinese is not a counter example to Borer's generalization. If *–men* is a plural marker, it is worthy finding out the degree to which it violates the generalization.

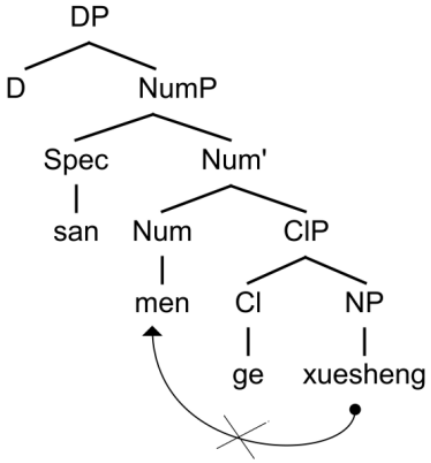
Li (1999) suggested that plural markers and classifiers are different heads which project NumP and ClP, respectively. She proposed that *-men* and *-s* in English both generate under Number. Unlike *-s* as realized in nouns, the application of *-men* as realized in determiners is more limited Therefore, *san ge xuesheng men* 'three students' is ungrammatical because the classifier *ge* blocks the head movement of the noun (N) *xuesheng* to D position.

(8) a. 三個學生
san ge xuesheng
3 CL student
'three students'

b. *三個學生們
san ge xuesheng-men
3 CL student PL
'three students'



(Li 1999: 87)



(Li 1999: 87)

Huang (2009) further supported Li's claim by the cases of pronouns and proper names which are generated in D.

(9) a. 我 對 他們 三 個 人 特別 好
wo dui ta-men san ge ren tebie hao
I to he-PL 3 CL people especially good
'I am especially nice to them three'

b. 我 對 小強們 三 個 人 特別 好
wo dui XiaoQiang -men san ge ren tebie hao
I to XiaoQiang -PL 3 CL people especially good
'I am especially nice to XiaoQiang them three persons'

(Huang and Li 2009: 313)

Because *-men* should attach to a pronoun and a proper name, *-men* must be realized in the D position.

From Huang and Li's (2009) perspective, Borer's (2005) generalization is incorrect. Classifiers and plurals are in complementary distribution because of the head movement constraint rather than being the same category.

Unlike Huang and Li (2009), Her (2012a) indicated that *san ge xuesheng men* 'three students' is grammatical which is supported by real data from Google search engine. Thus, Chinese violates not only the strict CPCD principle, but also the statement of Huang and Li (2009).

2.3.2 Japanese

In Japanese, there are two kinds of word order in noun phrases with classifiers as following:

(10) a. *gakusei san-nin -ga kita*
student 3-CL -NOM came
'Three students came.'

b. *san-nin gakusei -ga kita*
3-CL student -NOM came
'Three students came.' (Yasuo Ishii 2000: 2)

When the noun is pluralized by *-tati*, *gakusei-tati san-nin -ga kita* 'Three students came' is grammatical in Japanese. Ishii (2000) suggested that classifiers and number plurals are different heads. And the plural marker *-tati* in Japanese is a phrasal affix attaching to NP which reveals in DP spec via feature checking. In addition, the assertion of Ishii (2000) convinced another linguist, Kurafuji, who had once thought that the co-occurrrence of classifiers and plurals is unacceptable in Japanese. Although we are not sure about the relationship between classifiers and plurals, we do

know that classifiers and plurals can co-occur in a noun phrase in Japanese.

Downing (1996) adopted Greenberg's concept in which the singulative/collective system often exists in classifier languages and the singular/plural system in non-classifier languages. Furthermore, Downing (1996) suggested that the singulative/collective and singular/plural systems were combined in Japanese, so that *-tati* can refer to either a plural meaning in common nouns or a collective meaning with proper names. However, the different word order of the nominal construction will influence the acceptability when the nouns are attached by *-tati*, as following.

(11) a. *Taro-tati san-nin*
Taro-PL 3-CL
'Taro and his friends'

b. **san-nin Taro tati*
3-CL Taro-PL
'Taro and his friends'

c. *gakusei-tati san-nin*
student-PL 3-CL
'three students'

d. *san-nin gakusei-tati*
3-CL student-PL
'three students' (Downing 1996)

Taro tati means Taro and his friends which is a collective usage. And proper names must be realized in D, so '*san-nin Taro tati*' is ungrammatical. *gakusei-tati* on the other hand is a plural reading and realized in N, so both *gakusei-tati san-nin* and

san-nin gakusei-tati are acceptable. Although *–tati* has both plural and collective usage, Downing (1996) proposed that this kind of mixed system is in fact not a stable one. So, Japanese might become a language with either a singulative/collective system or a singular/plural system in the future.

2.4 Syntactic Analysis of Nominal Structure

The four basic elements in nominal structure are demonstrative (D), numeral (Num), adjective (Adj), and noun (N). The order of these elements varies from language to language. Greenberg (1963) proposed a universal generalization called universal 20 to include the possible order of the four elements in the languages of the world.

(12) **Greenberg's Universal 20**

When any or all of the items (demonstrative, numeral, and descriptive adjective) precede the noun, they are always found in that order. If they follow, the order is either the same or its exact opposite.

(Her 2012b: 3)

However, only 14 orders from the 24 possible orders exist in the languages of the world. Cinque (2005) provided an order D> Num> A> N which can produce the 14 orders and exclude the other 10 impossible orders through two ways of movement. One is that N can move from Spec to Spec. The other is that N moves along with the category which it moves to.

(13) a. b.

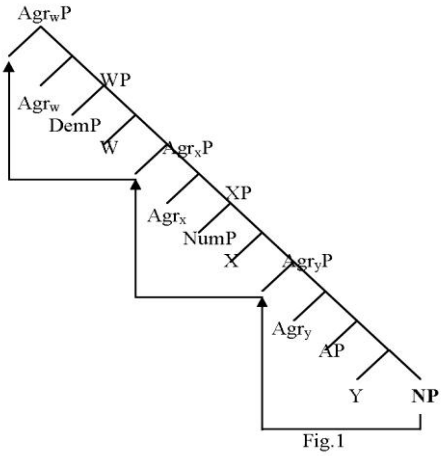


Fig.1

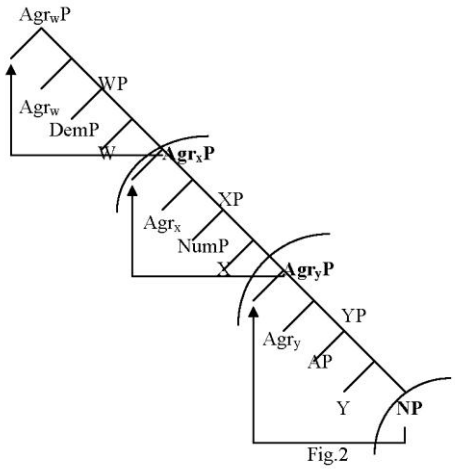


Fig.2

(Her 2012b: 14) (Her 2012b: 15)

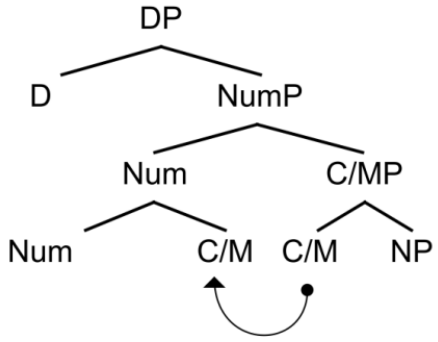
This is a perfect analysis for the order of the four elements. However, in classifier languages, the universal order becomes D> Num> C/M > A> N, and the generalization is no longer so efficient. Among the three elements: Num, C/M, and N, there are 6 possible word orders.

(14) Six Possible Word Orders of [Num, C/M, N]
a. [Num C/M N]
b. [N Num C/M]
c. [C/M Num N]
d. [N C/M Num]
e. [C/M N Num]
f. [Num N C/M] (Her 2012b: 2)

According to the basic order Num> C/M >N along with the movement as in (14a) and (14b), Cinque wrongly predicted [C/M Num N], [C/M N Num], and [Num N C/M]. The analysis becomes insufficient because of the inseparability of Num and C/M. To compensate for the insufficiency of Cinque's prediction, Her (2012b)

proposed that [Num C/M] should be viewed as a constituent. In previous studies, Num and C/M, being two independent elements and differing in semantic function are described as two functional heads, but they are usually viewed as a single constituent. So Her (2012b) suggested that Num and C/M generate as two heads, and C/M will move to Num and merge as a single unit.

(15)



(Her 2012b: 24)

With this additional concept, the order of nominal structure with classifiers is perfectly predicted. And this nominal structure will be added with the number phrase (NbP) to incorporate plurals in Section 4.2.

2.5 Remark

The relationship between classifiers and plurals has been a universal property. While each statement proposed by linguists has exceptions. Greenberg (1972) and Sanches and Slobin (1973) stated that plural marking is not obligatory in classifier languages. But some languages such as Yuki, Nootka, Tlingit, Ejagham etc. have both

numeral classifiers and obligatory number marking. Sanches and Slobin (1973) also found this fact as shown in Appendix B. So the Sanches-Greenberg-Slobin generalization is not without exceptions. And Borer (2005) claimed that numeral classifiers and plural marking are the same category, and can not co-occur in a noun phrase. But they do co-occur in a noun phrase as in Chinese and Japanese.

(16) a. 三個學生們
san ge xuesheng-men
3-CL student-PL
'Three students' (Her 2012a: 1684)

b. *gakusei-tati san-nin*
student-PL 3-CL
'Three students' (Yasuo Ishii 2000: 12)

So it is worthwhile to take a closer look at this issue. Are classifiers and plural marking the same category? If yes, how can we explain the co-occurrence? If not, why is the phenomenon of complementary distribution a universal property?

In respect to the syntactic aspect of classifiers, Her (2012b) adopted the word order typology from Cinque (2005) and provided a new analysis to account for the nominal structures with classifiers. But Her (2012b) only focused on the analysis of classifiers and measure words, and did not take plural marking into consideration. So in a study of the relationship between classifiers and plurals, it is worthwhile to reanalyze the form of the tree.

Chapter 3. Defining Classifiers and Plurals

3.1 Definition of classifiers

There are numerous types of classifiers such as noun classifiers, verbal classifiers, numeral classifiers, locative classifiers etc. Among all of the types of classifiers, that of numeral classifiers is the most well-known type, and linguists often shorten it as classifiers. Traditionally speaking, classifiers can be divided into two kinds: classifiers and measure words (Lyons 1977). Classifiers which is also called sortal classifiers or count-classifiers denote a classification based on the kind of entity; measure words which is also called mensural classifiers, massifiers, mass-classifiers individuate from quantity. Following are some examples of both types:

(17) Classifiers

a. 一　本　書
yi　*ben*　*shu*
one　C　book
'one book'

b. 一　種　樹
yi　*zhong*　*shu*
one　C　tree
'a kind of tree'

(18) Measure words

a. 一　斤　魚
yi　*jin*　*yu*
one　M　fish
'one kilogram of fish'

b. 一　群　狗
yi　*qun*　*gou*
one　M　dog
‘a pack of dogs’

T’sou (1976) thought that there are still some differences between (17) and (18) . So he further provided two kinds of features to divide classifiers into four types: [+exact, -entity], [+exact, +entity], [-exact, +entity], and [-exact, -entity]. And only [+exact, +entity] classifiers are regarded as true classifiers in this study.

(19) a. [+exact, -entity]
一　群　狗
yi　*qun*　*gou*
one　M　dog
‘a pack of dogs’

b. [+exact, +entity]
一　本　書
yi　*ben*　*shu*
one　C　book
‘one book’

c. [-exact, +entity]
一　斤　魚
yi　*jin*　*yu*
one　M　fish
‘one kilogram of fish’

d. [-exact, -entity]
一　種　樹
yi　*zhong*　*shu*
one　C　tree
‘a kind of tree’

Since classifiers and measure words occupy the same linear position and both function as unit-counters, they were once thought of as being of the same status. However, they are distinct from each other. Her (2012a) provided two ways to differentiate classifiers and measure words. One is by the semantic distinction in which classifiers indicate the essential property of nouns; while measure words indicate the accidental property in terms of quantity.

(20) a. 三百　　尾　　魚
sanbai　*wei*　　*yu*
300　　C　　fish
'300 fish'

b. 三百　　噸　　魚
sanbai　　*dun*　*yu*
300　　M　　fish
'300 tons of fish'　　(Her 2012a)

Wei referring to tail is an essential property of a fish; while *dun* denoting the amount of fish is an accidental property. So classifiers and measure words are semantically different.

The other is mathematical distinction. The value of classifiers is necessarily 1; and the value of measure words is not necessarily 1.

(21) a. 四　　個　　人
si　　*ge*　　*ren*
Four　　C　　person
'4 persons'

b. 四　　打　　玫瑰
si　　*da*　　*meigui*
Four　M　　rose
‘4 dozens of roses’　　(Her 2012a: 1676)

The number of people in *si ge ren* is four; while the number of rose in *si da meigui* is forty-eight (4*12). So the number of classifiers is one; while the number of measure words is not necessarily equal to one.

From the aboved introduction, we know that classifiers and measure words are different from each other. So it is important to find the true classifiers. And in this paper, only sortal classifiers with [+exact, +entity] property are true classifiers. Hale and Shresthachrya (1973) summarized five characteristics of true classifiers from Greenberg (1972).

(22) a. They are overt expressions of unit counting.
b. They are used with reference to structured units which are normally counted as individuals.
c. They impose a semantic classification upon the head noun.
d. They function as individualizers of a head which is indeterminate for number.
e. They have no reality outside of the numeral expression.

In this paper, we analyze the 22 languages based on Greenberg and Her’s criteria.

After defining the true classifiers, we further rank the classifiers based on the range of application to distinguish the completion of classifier system in the 22 languages. We adopt the semantic hierarchy of classifiers provided by Adam and Conklin (1973). [±human], [±animates], and [shape] are important features in the

hierarchy. A higher ranked one will imply the existence of a lower ranked one. So when classifiers can denote the higher ranking, we assume the system in which such type of classifier is found is more complete.

Apart from the hierarchy provided by Adam and Conklin (1973), we also find that obligatoriness of classifier is also crucial. A language with obligatory classifiers implies the completion of its classifier system. Also, measure words were included at the lowest ranking, because measure words may be the origin of classifiers. A language may only contain measure words before it generates its classifier system. Therefore, classifiers will be ranked as following in this paper.

(23) The Ranking of Classifiers in This Paper
Measure words < Optional classifiers (human) < Optional classifiers (animal) < Optional classifiers (inanimate) < Optional classifiers (shape) < Obligatory classifiers (human) < Obligatory classifiers (animal) < Obligatory classifiers (inanimate) < Obligatory classifiers (shape)

3.2 Definition of Plurals

The basic distinction between numbers is singular and plural, but some languages also includes dual, trial or paucal in their number marking system. And the focus of this paper is plural.

There are several ways to express plurality. For example, we may add a plural marker to nouns, use different determiners, reduplicate the nouns, etc. When applying

plural marking in languages, we often find that different nouns will differ in the tendency of using plurality. For example, *-men* in Mandarin which is sometimes considered as a plural marker can only attach to animate nouns such as *haizimen* 'children' or *xiaogoumen* 'dogs'. But as *qianbimen* 'coins'or *shubenmen* 'books', these inanimate nouns followed by *-men* are ungrammatical. The differences in the application can be distinguished based on Animacy Hierarchy presented by Corbett (2000) as following:

(24) Animacy Hierarchy
1st person pronoun > 2nd person pronoun > 3rd person pronoun > kin > human > animate > inanimate

Similar to the ranking of classifiers, obligatory and optional application is also included in the ranking to judge the completion of the plural system. Further, to make an economical ranking, personal pronouns are shortened into one scale as plural personal pronoun. And kin is omitted, because kin is not a distinctive feature in the analysis of the 22 languages. Therefore, the ranking of plurals in this paper is as following:

(25) The Ranking of Plurals in This Paper
Plural personal pronoun< optional human plurals < optional animate plurals < optional inanimate plurals < obligatory human plurals < obligatory animate plurals < obligatory inanimate plurals

Apart from the plural distinction, we should note two elements which often occur in classifier languages, transnumeral nouns and collective markers. Both of them possess the property of plurality, so it is important to exclude the two elements, and correctly identify the true plurals. The two elements will be introduced in Section 3.2.1 and Section 3.2.2.

3.2.1 Transnumerals

Some languages have a singular-plural distinction, while there is no such distinction in other languages, in which the number is transparent. Linguists may call transparent number as " general number", " general", "a common number form", "unit reference", or "transnumeral". In such languages, the number of bare nouns can be regarded as either one or more than more.

(26) Languages with singular-plural distinction
English: a dog (sg.)
dogs (pl.)

(27) Languages with transnumerals
a. Mandarin: 狗
gou
'a dog(sg.) or dogs(pl.)'

b. Bayso: *lúban*
'a lion(sg.) or lions(pl.)' (Corbett 2005: 10)

Although the number of transnumerals can not be identified in bare forms, it can

be expressed through other denotation rather than plural markers. Following are three ways to distinguish between the singular and plural of transnumeral nouns.

(28) Numeral denotation

a .一 隻 狗
yi *zhi* *gou*
1 CL dog
'a dog'

b. 兩 隻 狗
liang *zhi* *gou*
2 CL dog
'two dogs'

(29) Classifier and measure word denotation

a. 一 隻 狗
yi *zhi* *gou*
1 CL dog
'a dog'

b. 一 群 狗
yi *qun* *gou*
1 M dog
'a pack of dogs'

(30) Adjective denotation

a. 一 些 狗
yi *xie* *gou*
some dog
'some dogs'

b. 很 多 狗
hen *duo* *gou*
many dog
'many dogs'

Therefore, if the nouns in the 22 languages are considered to be transnumeral, they may lack plural markers even if they are semantically plural. So plural marking tends to be optional in such languages.

3.2.2 Additive/ Associative Distinction

Additives are general plurals which represent the number of the thing is more than one, such as the plural marker *–s* in English. Associatives on the other hand usually refers to a person along with one or more associated members as in the case of collective marker *-ek* in Hungarian. Hungarian is a language containing both additives and associatives. Following are examples.

(31) Hungarian

a. *János*
'John'

b. *János-ok*
John -PL
'Johns' (more than one person called John)

c. *János-ék*
John-ASSOC.PL
'John and associates', 'John and his group' (Corbett 2005: 102)

In some languages, the distinction between additive plurals and associative plurals is not clear, so it is important to correctly identify true plurals and exclude collective markers.

In languages with both classifiers and plural marking, Greenberg (1972) suggested that they tend to make a distinction between singulative/collective rather than singular/plurality. Seiler(1986) also proposed that plurals in languages with a mixed system are not true “plural marker”. Therefore, in the 22 languages which have a mixed system, it should be noted as to whether the plural is a real plural or not.

Chapter 4. Analysis

The focus of this paper is to analyze the 22 languages which have been examined by Gil (2008) and Haspelmath (2008). Since they carried out research on numeral classifiers and plural marking, respectively, we try to analyze the relationship between the two and reach a consensus. The WALS online database provides a more detailed categorization of the 22 languages (Mandarin Chinese, Japanese, Taba, Kathmandu Newar, Belhare, Mokilese, Kham, Nivkh, Garo, Vietnamese, Ulithian, Jacaltec, Teribe, Hatam, Tuvaluan, Hungarian, Turkish, Ainu, Khmer, Indonesian, Tetun, and Chantyal) as in Appendix A. The data in each language will be analyzed in Section 4.1. And since I am a native speaker of Mandarin Chinese and a foreign language learner of Japanese, Mandarin Chinese and Japanese will be closely examined in Section 4.1.1 and Section 4.1.2, respectively. And other languages will be divided into two parts: those containing obligatory classifiers (according to Gil 2008) in Section 4.1.3 and optional classifiers (according to Gil 2008) in Section 4.1.4. Most of the languages in Section 4.1.3 and 4.1.4 are less-studied languages. It is very likely that there are only one or two linguists who have ever examined these languages, so the data is scarce and limited. To compensate for the scarcity of data, we will adopt the categorization from WALS online database or use assumptions. All of the analysis will be based on the definition in Chapter 3. And a short summary for the data

analysis will be displayed in Section 4.2. In Section 4.3, a syntactic analysis will be proposed to explain the typological property of classifiers and plurals in the majority of languages as well as some exceptions with co-occurrence of classifiers and plurals. In Section 4.4, some possible explanations for our findings are presented.

4.1 Data Analysis in Languages

In this paper, 22 languages are investigated. Mandarin Chinese and Japanese will be closely examined in Section 4.1.1 and Section 4.1.2, respectively. In section 4.1.3, languages in which classifiers are obligatory according to Gil (2008) (Taba, Kathmandu Newar, Belhare, Mokilese, Kham, Nivkh, Garo, Vietnamese, Ulithian, Jacaltec, and Teribe) will be examined. In section 4.1.4, languages in which classifiers are optional according to Gil (2008) (Hatam, Tuvaluan, Hungarian, Turkish, Ainu, Khmer, Indonesian, Tetun, and Chantyal) will be analyzed. Most of the data are secondary sources collected from previous studies.

4.1.1 Mandarin Chinese

Chinese is considered to be a prototypical classifier language, and its classifiers are obligatory, including general classifiers, human classifiers, animal classifiers, inanimate classifiers and shape classifiers.

(32) Obligatory classifiers

a. 我 需要 三 位 學生 來 幫忙
wo xuyao san wei xuesheng lai bangmang
I need three CL students come help
'I need three students to help me.'

b. *我 需要 三 學生 來 幫忙
wo xuyao san xuesheng lai bangmang
I need three students come help
'I need three students to help me.'

(33) Range of application of classifiers

a. Measure word: *jin*
一 斤 肉
yi jin rou
one CL meat
'one kilogram of meat'

b. General classifier: *ge*
一 個 人
yi ge ren
one CL person
'one person'

c. Human classifier: *wei*
三 位 老師
san wei laoshi
three CL teacher
'three teachers'

d. Animal classifier: *pi*
三 匹 馬
san pi ma
three CL horse
'three horses'

e. Shape classifier: *ke*

一　顆　蘋果

yi　*ke*　*pingguo*

one　CL　apple

'an apple'

Since classifier system in Chinese is quite complete, it is worth examining the range of the application of the plural marker *-men*. Some linguists considered it as collectives (Lu Shuxiang 1947, Chao 1968, Norman 1988, Iljic 1994, Cheng and Sybesma 1999) rather than plurals (Li and Thompson 1981, Li 1999, Huang 2005, Her 2012a). In this paper, we find that *-men* is a plural.

Some linguists propose that *Zhang San men* 'many *Zhang San* or *Zhang San* and his friends' have a plural reading with the meaning that there are many people whose name is *Zhang San* and a collective reading with the meaning of *Zhang San* and his friends. But *Zhang San men* with a collective reading is seldom used. Most native speakers even regard the collective usage as ungrammatical. It is more likely that *Zhang San ta men* will be used to obtain the collective meaning of *Zhang San* and his friends.

In the other case, if there are a man who is tall, and three men who are short, we can not use *gao ge zi men* 'tall people' to denote the four people. But if *–men* is a collective, *gao ge zi men* should be applicable in this situation. So *–men* is not a collective marker.

Another piece of evidence is proposed by Huang (2005). *-men* can be followed by a distributive marker *dou* 'all', such as, *tamen dou jie hun le* 'They are all married.' With the use of distributive marker *dou*, the meaning is that each of the two people is married to another people. However, if *–men* is a collective marker, the sentence means that the two people are married to each other. While there is no such interpretation for this sentence. Thus *-men* can not be a collective but a plural marker. Although *–men* is a plural marker, its properties as following are different from the plural marker *-s* in English.

(34) a. *-men* applies only on pronoun, proper name, human or animated common nouns.
b. *-men* is not used with numerals.
c. *-men* is not obligatory.

In this paper, we suggest that the first and second properties should be revised. Among the younger generation, *-men* can be affixed not only to pronouns, proper names, human or animated common nouns, but also to inanimate common nouns.

(35) a. 去 把 桌子們 擦 一 擦
qu ba zhuozimen ca yi ca
go table-PL wipe
'Wipe the tables'

b. 把 插頭們 拔 掉
ba chatoumen ba diao
plug PL pull
'Pull out the plugs.'

In addition, when *-men* is affixed to inanimate nouns, the usage of *-men* is more like a plural marker rather than a collective.

On the second point, *-men* can co-occur with numerals along with classifiers as in (36).

(36) a. 三 個 老師們 昨天 去 開會
San ge laoshimen zuotian qu kaihui
three CL teacher PL yesterday go meeting
'Three teachers had a meeting yesterday.'

b. 那 五 個 學生們 的 作業 交 了 沒?
Na wu ge xueshengmen de zuoye jiao le mei?
That five CL student PL homework hand in?
'Did the five students hand in their homework?'

Thus, we can find that the application of *-men* is more prevalent than as noted in previous studies.

We can sum up that in Chinese, classifiers are stronger than plurals in previous studies. But we find that plurals have become stronger in recent years, with the extension of range of application to include inanimate nouns.

4.1.2 Japanese

Classifiers in Japanese are obligatory and include measure words, general classifiers, human classifiers, animate classifiers, inanimate classifiers and shape classifiers.

(37) Obligatory Classifier
*hon ni *(satu)*
Book two CLF
'two books' (Nomoto 2010: 2)

(38) Range of application of classifiers
a. Measure word: *hako*
keiki hito-bako
cake one CL
'a box of cake'

b. General classifier: *tsu*
ringo hito-tsu
apple one CL
'an apple'

c. Human classifier: *nin*
sensei san nin
teacher three CL
'three teachers'

d. Animal classifier: *hiki*
kuma ni-hiki
horse two CL
'two horses'

e. Shape classifier: *satsu*
hon ichi-satsu
book one CL
'a book' (Dowing 1996: 55)

As for number marking, nouns in Japanese are transnumerals, so number marking is not obligatory. There is more than one plural marker in Japanese, such as *-tati, -ra, -domo,* and *-gata*. *-ra, -domo,* and *-gata* are only used to denote plural pronouns, but *-tati* can be widely used in human and animate common nouns.

(39) Range of application of plurals

a. Human

gakusei-tati

student-PL

'the students'

b. Animate

inu-tati

dog-PL

'the dogs'

c. * Inanimate

kuruma-tati

Car-PL

'the cars' (Ishii 2000: 1)

Some linguists have treated *-tati* as a plural while others have considered it as a collective. *-tati* can be either a plural or a collective when attached to different kinds of nouns. If the noun is a common noun, *-tati* represents a plural. If the noun is a proper name,*-tati* is a collective.

(40) a. Plural:

Kodomo tati

child PL

'Children'

b. Collective:

Taro tati

Taro ASSOC-PL

'Taro and his friends' (Ishii 2000: 2)

As for the co-occurrence of classifiers and plurals, it is grammatical in Japanese as in (41).

(41) *gakusei-tati san-nin*
student-PL 3-CL
'three students' (Ishii 2000: 12)

Thus the system of Japanese is quite similar to Chinese. The classifier system is more dominant than the plural system.

4.1.3 Obligatory classifier languages

In this section, we investigate the languages whose classifiers are obligatory according to Gil (2008), including Taba, Kathmandu Newar, Belhare, Mokilese, Kham, Nivkh, Garo, Vietnamese, Ulithian, Jacaltec and Teribe. The real classification in such languages is not necessarily obligatory classifier languages. The role of classifiers in each language will be based on collected data.

4.1.3.1 Taba

Classifiers are obligatory (without supporting examples) in Taba, and include measure words, general classifiers, human classifiers, animal classifiers, inanimate classifiers and shape classifiers.

(42) Range of application of classifiers
a. Measure word: *ha-*
Liter halu
liter ha=lu
litre CLASS=two
'two liters' (Bowden 2001: 253)

b. General classifier: *p-*
amplop pwonam
amplop p=wonam
envelop CLASS=six
'six envelopes [of A4 size]' (Bowden 2001: 243)

c. Human classifier: *i*-1/*mat*-2-9/*yo*-10
Wang gulo iso
Wang gulo i=so
Child baby CLASS=one
'one baby' (Bowden 2001: 256)

d. Animal classifier: *i*-1/ *sis*-2-9/*beit*-10
yan iso
yan i=so
fish CLASS=one
'one fish' (Bowden 2001: 257)

e. Shape classifier: *mot-*
amplop motwonam
amplop mot=wonam
envelop CLASS=six
'six normal sized envelopes' (Bowden 2001: 242)

In Taba, there is a special phenomenon in which classifiers will vary with numbers. For example, the classifier for animal has three forms, *i*, *sis*, and *beit*. *i* is used for 1; *sis* for 2 to 9; and *beit* for 10.

(43) a. *yan iso*
yan i=so
fish CLASS=one
'one fish' (Bowden 2001: 257)

b. *kabin* *sithol*
kabin sis=tol
goat CLASS=three
'three goats' (Bowden 2001: 257)

A plural marker *-si* in Taba is optional as in (44b) and it only applies to human nouns.

(44) a. With a plural marker:
mapinci *mattol*
mapin=si mat=tol
woman=PL CLASS=three
'three women' (Bowden 2001: 256)

b. Without a plural marker:
mapin *mattol*
mapin mat=tol
woman CLASS=three
'three women' (Bowden 2001: 256)

The co-occurrence of classifiers and plurals, it is grammatical in Taba as in (45).

(45) *mapinci* *mattol*
mapin=si mat=tol
woman=PL CLASS=three
'three women' (Bowden 2001: 256)

Therefore, Taba violates the strict CPCD principle in which classifiers and plurals shouldn't co-occur. But we can find that they are still in complementary distribution in certain degree because classifier system is stronger than plural system.

4.1.3.2 Kathmandu Newar

The classifier system of Kathmandu Newar is quite similar to Taba's. Its system is obligatory (without supporting examples) and include measure words, animate (human and animal) classifiers, inanimate classifiers and shape classifiers.

(46) Range of application of classifiers

a. Measure word
jākhi cha-khwalā
rice one M
'a cupful of rice' (Weidert 1984: 208)

b. Human classifier:-*mha*
macā cha-mha
child one CL
'one child' (Weidert 1984: 188)

c. Animal classifier:-*mha*
khicā cha-mha
dog one CL
'one dog' (Weidert1984: 188)

d. Inanimate classifier: -*kha*
che cha-kha
house one CL
'one house' (Weidert 1984: 189)

e. Shape classifier: -*ga*
ālu cha-gaa
potato one CL
'one potato' (Weidert1984: 189)

There are two ways to express plural marking in Kathmandu Newar. One is plural marker; the other is reduplication. Plural markers, -*tɔ* and -*pĩ*, obligatorily

applies to animate common nouns, as in (47). And the reduplication form to express plurality is as in (48).

(47) Range of application of plural marker

a. Human

pasa-pĩ

'friends'

b. Animal

khica-tɔ

'dogs' (Hargreaves 2003: 373)

(48) Reduplication

a. *khica*[2]

'dogs'

b. *khica-khaca*

'dogs' (Hargreaves2003: 378)

The co-occurrence of classifiers and plurals is grammatical in Kathmandu Newar, as in (49).

(49) *chə-gu: deś-ɛ:* *nya-mhə pasa-pĩ: du*

one-CLF country-LOC five-CLF friend-PL exist.ID

'In a certain country there were five friends.'

(Hale and Shrestha 2006: 93)

Therefore, Kathmandu Newar violates the strict CPCD principle. Also, classifier system is stronger than plural system in Kathmandu Newar.

[2] The majority data are secondary sources collected from previous studies. Examples are cited based on the original forms from authors, so the spelling may differ from person to person. For example, 'dog' in Kathmandu Newar were spelt as *khica* by Hargreaves (2003); while *khicā* by Weidert(1984). But, they are the same word.

4.1.3.3 Belhare

Classifiers in Belhare are obligatory. Only two kinds of classifiers are indigenous: human classifier *-paŋ* and non-human classifier *-kira*. Except for *-paŋ* and *-kira*, other kinds of more specific classifiers are borrowed from Nepali. (Bickel 2003).

(50) Range of application of classifiers

a. Human classifier: *-paŋ*

sip- -paŋ *maʔi-chi*
two-HUM person-nsg[ABS]
'Two people' (Bickel 2003: 563)

b. Non-human classifier: *-kira*

sik-kira *phabeleŋ=ma* *phuŋ* *tar-he-ŋ*
Two NHUM red=COLOUR. ART flower[ABS] bring-PAST[-3P]-1sgA
'I brought two red flowers. (Bickel 2003: 562)

A plural marker *-chi* is optional and rarely used in inanimate common nouns. Since plural markers are optional, only few examples with plural markers were found. We can only judge the range of application of plurals based on the description of author (Bickel 2003).

Classifiers and plurals in Belhare must co-occur, as in (51). If there are no plurals as in (51b), it will be ungrammatical.

(51) a. *sip- -paŋ* *maʔi-chi*
two-HUM person-nsg[ABS]
'two people' (Bickel 2003: 563)

b. **sip- -paŋ* *maʔi*
two- HUM person [sgABS] (Bickel 2003: 563)

4.1.3.4 Mokilese

Classifiers in Mokilese are obligatory. But there are only four numeral classifiers: *-w*, *-men*, *-pas*, and *-kij*. *-w* is a general classifier; *-men* is an animate classifier; *-pas* is a long object classifier; *-kij* denotes things which have pieces or parts.

(52) Range of application of classifiers

a. Measure word: *-kij*
adroau riahkij
egg two-CL
'two pieces of eggs' (Harrison 1976: 97)

b. General classifier:*-w*
wus riaw
banana two-CL
'two bananas' (Harrison 1976: 96)

c. Animate classifier:*-men*
jeri roahmen
child two-CL
'two children' (Harrison 1976: 95)

d. Shape classifier:*-pas*
amper dohpas
umbrellas nine-CL
'nine umbrellas' (Harrison 1976: 96)

Based on Her (2012a), the number of classifier should be equal to '1'. However, *-kij* denotes the number less than one (Harrison 1976). Thus, *-kij* should be a measure word rather than a real classifier.

(53) a. *adroau riahkij*
egg two-M
'two pieces of eggs' (Harrison 1976: 97)

b. *adroau riaw*
egg two-CL
'two eggs' (Harrison 1976: 97)

In Mokilese, personal pronoun has four ways of distinction, singular, dual, plural, remote plural. And in common nouns, determiner *-pwi* serves as the function of distinguishing singular and plural.

(54) *Ngoah kapang woalpwi o*
I see man-D there
'I saw some men there.' (Harrison 1976)

An interesting phenomenon in Mokilese is that both classifier system and plural system are strong. Both system are obligatory and applying to the highest ranking. Thus, Mokilese violates the general CPCD principle, and represents no complementary distribution in its usage. Therefore, it deserves a closer look in further research.

The co-occurrence of classifiers and plurals is ungrammatical in Mokilese. Doetjes (to appear) suggested that if a sentence contains a numeral which fused with a classifier, the co-occurrence of the plurality determiner *-pwi* will be prohibited.

4.1.3.5 Kham

Based on Watter (2002), there are only measure words in Kham. Because we can't find the true classifier from the same reference of Gil (2008) provided by WALS online database, we assume that there are no true classifiers but only measure words in Kham.

(55) a. *tə-kəri: sya:*
'a chunk of meat' (Watter 2002: 54)

b. *to-cop mənəm*
'a pinch of flour' (Watter 2002: 54)

A plural marker *-rə* can obligatorily apply to all nouns and include human, animate, and inanimate common nouns.

(56) Range of application of plurals
a. Human
luhza
Child:SG
'a child' (Watter 2002: 54)

b. Animal
Ka:h-ni
Dog-DL
'(two) dogs' (Watter 2002: 54)

c. Inanimate
lu:-rə
Stone-PL
'(three or more) stones' (Watter 2002: 54)

As for the co-occurrence of classifiers and plurals, there are no classifiers but measure words in Kham based on Watter (2002). So there is no need to concern the issue.

4.1.3.6 Nivkh

Classifiers are obligatory (according to WALS online database) in Nivkh, and include measure words, general classifiers, human classifiers, animal classifiers, inanimate classifiers, and shape classifiers. (Mattissen. 2003)

(57) Range of application of classifiers

a. General classifiers: *ñaqr* ‘1’; *meqr* ‘2’; *ʈaqr* ‘3’

b. Human classifier: *ñin* ‘1’; *men* ‘2’; *ʈaqr* ‘3’

c. Animal classifier: *ñəñ* ‘1’; *mor* ‘2’; *ʈor* ‘3’

d. Inanimate classifier (for boats): *ñim* ‘1’; *mim* ‘2’; *ʈem* ‘3’

e. Shape classifier (for long shape): *ñex* ‘1’; *mex* ‘2’; *ʈex* ‘3’

(Mattissen p.c., Panfilov 1962: 181-183, Krejnovič 1934: 202-203)

Plurals being optional in Nivkh can be denoted in two ways. One is plural marker; the other is reduplication. There are four forms of plural markers: *ku*, *gu*, *ɣu*, and *xu*, and they can apply to all common nouns.

(58) Range of application of plural marker

a. Human

n'ivx-gu

'men' (Gruzdeva 1998: 16)

b. Inanimate

k'u-γun

'arrows' (Gruzdeva 1998: 16)

(59) Reduplication

a. *eri*

'river' (Gruzdeva 1998: 16)

b. *erieri*

'rivers' (Gruzdeva 1998: 16)

The co-occurrence of classifiers and plurals is grammatical in Nivkh as following.

(60) a. *ku-umguo ʁla-gu men, hə ʈ̓-umgu-nanak-xu*

that-girl-PL two_CLF that 2s.P'OR-woman-elder_sister-PL

"those two girls, the sisters of that wife of yours, ran away."

(Panfilov 1962: 158)

(Mattissen. 2003: 241)

b. *Umlən vi-r urla-buñḍ-γu-meqř-po-ra*

U. go-CV:3s good-bow-PL-two_CLF-take/hold-ENU:3s

"Umlən went and took two good bows." (Krejnovič 1937: 32)

(Mattissen. 2003: 242)

c. *imN hE ruv-gu men-dox Ro-r p'rE-D-Gu*

3pl that sibling-PL 2_human_being-ALL carry-converb come-IND/NML-PL

'they brought it to those two brothers (or relatives)'

(Mattissen p.c., Panfilov 1962 : 192)

4.1.3.9 Garo

Classifiers are optional in Garo and include measure words, general classifiers,

human classifiers, animal classifiers, inanimate classifiers, and shape classifiers.

(61) Optional classifiers

a. With a classifier:

sak-sa

'one person' (Burling 2003: 394)

b. Without a classifier

sa

'one person' (Burling 2003: 394)

(62) Range of application of classifiers

a. Measure word

te'-rik gal- sa

banana CL: one

'one small bunch of bananas' (Burling 2003: 394)

b. Human classifier: *sak-*

sak-gin-i

'two people' (Burling 2003: 394)

c. Animal classifier: *mang-*

meng-go mang-bong-a

'five cats' (Burling 2003: 394)

d. Inaimate classifier: *rong-*

te'-rik rong- sa

'two bananas' (Burling 2003: 394)

e. Shape classifier: *kiŋ-*

re-ka kiŋ-git-tam

'three pieces of paper' (Burling 1961 p.52)

In Garo, some classifiers which contains meanings are not true classifiers.

(63) a. *te'-rik gal- sa*
banana M one
'one small bunch of bananas' (Burling 2003: 394)

b. *te'-rik ol- sa*
banana M one
'one large bunch of bananas' (Burling 2003: 394)

Based on the criteria of Her (2012a), a real classifier should be semantically null. The classifiers *gal-* and *ol-* denote the quantity of nouns. Thus these are not true classifiers, but measure words.

With regard to number marking, nouns are transnumerals in Garo. Thus the plural marker *-rang* optionally applies to all common nouns (without supporting examples for animate nouns).

(64) Range of application of Plurals
a. Human
man-de-raŋ-ko nik-a-ha-ma
'did you see the men?' (Burling 1961: 44)

b. Inanimate
re-ka-raŋ te-bir-o daŋ-a
'the papers are on the table.' (Burling 1961: 44)

Apart from plural marker, there is a collective marker *-maŋ* in Garo.

(65) Collective
naŋ-gan-ma'ŋ-ni nok
'the house of Nanggan and family' (Burling 1961: 44)

Since neither examples of the co-occurrence of classifiers and plurals were found nor native speakers can be consulted, we assume the case in Garo from personal communication with an expert of Garo, Burling. He states that it is weird for classifiers and plurals to co-occur. In addition, Burling (1961) indicated that plurals may not be used if there are other elements denoting plurality. So we assume that classifiers and plurals can not co-occur in Garo.

4.1.3.10 Vietnamese

Classifiers are obligatory in Vietnamese and include measure words, general classifiers, human classifiers, animal classifiers, inanimate classifiers, and shape classifiers.

(66) Obligatory classifiers

a. With classifiers

ba *cuốn* *sách*

three CL book

'three books' (Nguyen 2004: 10)

b. Without classifiers

**ba* *sách*

three book

'three books' (Nguyen 2004: 10)

(67) Range of application of classifiers

a. Measure word

một kí đủờng

one kilogram sugar

'a kilogram of sugar' (Nguyen 2004: 2)

b. General classifier: *cái*
cái ghế
'a chair' (Thang 1999: 72)

c. Human classifier: *đứa*
đứa bạn
'a freind' (Thang 1999: 72)

d. Animal classifier: *con*
con bò
'a cow' (Thang 1999: 72)

e. Inaimate classifier: *cuốn*
hai cuốn sách
'two books' (Nguyen 2004: 99)

f. Shape classifier: *hòn*
hòn đá
'a stone' (Thang 1999: 75)

Nouns are transnumerals in Vietnamese. Its plural markers can optionally apply to all common nouns.

(68) Transnumeral nouns
sách
'(a/the) book(s)' (Nguyen 1986: 9)

There are two major plural markers in Vietnames: *những* and *các*. Thompson (1965) stated that *những* denotes only certain of the total possible number and *các* represents all of a given set of entities. The range of application of the plural marker is all common nouns.

The co-occurrence of classifiers and plurals is grammatical as in (69).

(69) a. *nhủng cuốn sách hiếm*
Pl Cl book rare
'(some of the) rare books' (Nguyen 2004: 18)

b. *các con ngựa đen*
Pl Cl horse black
'the black horses' (Nguyen 2004: 18)

4.1.3.11 Ulithian

There are two kinds of classifier system in Ulithian. One is numeral classifiers; the other is noun classifiers. And we only focus on numeral classifiers in this paper. Numeral classifiers are obligatory (according to WALS online database) in Ulithian, including measure words, general classifiers, animate (human and animal) classifiers, inanimate classifiers, and shape classifiers.

(70) Range of application of classifiers
a. Measure word
ttaxe 'slice'
xumu 'mouthful of water, beer, or other liquid'
(Sohn and Bender.1973 p.202)

b. General classifier: *wo* 'general object'
(Sohn and Bender 1973: 202)

c. Animate (Human&Animal) classifier: *male*
diwa male malėxė
9 CL chicken
'nine chickens' (Sohn and Bender 1973: 205)

d. Inaimate classifier: *xaye*
ruwə-xaye pinsan
'two pencil' (Lynch, Ross and Crowley 2002: 796)

e. Shape classifier: *fase* ‘ rounded object’
(Sohn and Bender.1973: 201)

Unlike plural markers which are marked on nouns in other languages, a plural marker *ka-* in Ulithian is marked on demonstrative as in (71).

(71) a. Singular
senseye laa mə yap
teacher DEM from Yap
‘that teacher from Yap’ (Lynch, Ross and Crowley 2002: 797)

b. Plural
yiir senseye kalaa mə yap
they teacher DEM from Yap
‘(they) those teachers from Yap’ (Lynch, Ross and Crowley 2002: 797)

From a website, Habele (http://www.habele.org/language.htm 2012/11/14), we achieve a personal communication with Neil Mellen who is familiar with Ulithian. He suggests that the sentence in (72) is grammatical which means classifiers and plurals can co-occur in a noun phrase in Ulithian. But he also indicates that “in practice most people are using English counting words now as they don't have the numerous suffixes to remember”.

(72) *ruw-xaye pinsan kalaa*
‘those two pencils’ (Mellen, p.c.)

4.1.3.12 Jacaltec

Similar to Ulithian, there are numeral classifiers and noun classifiers in Jacaltec.

Numeral classifiers are obligatory based on the classification of WALS online database, and most of them are measure words in Day (1973). We only find some true classifiers for inanimate and shape as following.

(73) Range of application of classifiers

a. Measure word: *pulato*

ca pulato chib'e

'two plates of meat' (Day 1973: 60)

b. Inanimate classifier: *c'otan*

ox c'otan ixim

'three grains of corn' (Day 1973: 60)

c. Shape classifier: *c'olan*

ca c'olan k'oye

'two balls of dough' (Day 1973: 60)

A plural marker *hej* is optional in Jacaltec (Day 1973) and applies to all common nouns. But we only found examples applying to human and animate common nouns.

(74) Optional Plurals

(hej) heb'-ho'uẍtaje

'the brothers' (Day 1973:.69)

(75) a. Human

hej w-uẍtaj

'my brothers' (Day 1973: 69)

b. Animate

hej no'cheh

'the horses' (Day 1973 p.69)

As for the co-occurrence of classifiers and plurals, there are some limitations. Classifiers can occur with plurals in majority, except for those human classifiers which do not denote kin (Day1973). Thus the co-occurrence is grammatical in Jacaltec.

4.1.3.13 Teribe

Classifiers are obligatory (based on WALS online database) in Teribe and include animate (human and animal) classifiers, inanimate classifiers, and shape classifiers.

(76) Range of application of classifiers

a. Animate classifier: *kl-*

Domer *kl-ara* *u*

man CL.ANIMATE-one house

'One man's house' (Quesada 2000: 48)

b. Shape classifier (for round): *kw-*

Sbi *kw-ara* *roy* *di*

pot CL.Round-one inside water

'One pot of water' (Quesada 2000: 48)

A plural marker *-ga* can optionally apply to all common nouns, including human, animate, and inanimate common nouns. Among all common nouns, human and animate common nouns are more likely to be pluralized (Quesada, 2000).

(77) *walë-ga* *wolëso*

woman-PL pretty

'pretty women' (Quesada. 2000: 52)

Teribe follows the strict CPCD principle; classifiers and plurals do not co-occur in a noun phrase.

(78) a. *domer kl-öbö /doglo mya*
Man CL.ANIMATE -some/ CL. ANIMATE three
'some/ three men' (Quesada. 2000: 52)

b. **domer-ga kl-öbö /doglo mya*
Man PL CL.ANIMATE -some/ CL. ANIMATE three
'some/ three men' (Quesada. 2000: 52)

4.1.4 Optional classifier languages

In this section, we investigate the languages whose classifiers are optional according to Gil(2008), including Hatam, Tuvaluan, Hungarian, Turkish, Ainu, Khmer, Indonesian, Tetun and Chantyal. However, The real classification of classifiers in such languages are not necessarily optional. The role of classifiers in each language is according to collected data.

4.1.4.1 Hatam

Both classifiers and plurals are optional in Hatam. Four kinds of classifiers are introduced by Reesink(1999): *-ngud* for animal; *-njon* for flying species except for insects; *-mon* for tree; *-ngan* for seeds. Since the data are deficient, we can only assume the range of application of classifiers is ranked as inanimate classifiers based

on the description of Reesink (1999).

(79) Optional classifiers

a. With a classifier

na *ni-ngud* *can* *ni-ndig* *di-ma*

pig 3SG-body two 3SG-big RE-that

'those two big pigs' (Reesink 1999: 58)

b. Without a classifier

nab *nindig* *can* *di-ma*

pig 3SG-big two RE-that

'those two big pigs' (Reesink 1999: 58)

There are two ways of number marking in Hatam. One is plural marker; the other is reduplication. A plural marker *-nya* can optionally (based on WALS online database) apply to animate common nouns.

(80) Range of application of plural marker

a. Human

sop-nya

woman-PL

'the women' (Reesink 1999: 50)

b. Animate

na(b)-nya

pig-PL

'the pig' (Reesink 1999: 50)

(81) Reduplication

a. *munggwom* *munggwom-munggwom*

'child' 'children'

b. *iy* *iy-iy*

'house' 'houses' (Alfons 2010: 7)

However, the plural marker *-nya* does not attach to nouns, but to the final position of noun phrases (Reesink 1999).

(82) *Krau misien ni-de-nya*
Grab dog 3GS-POS-PL
'He grabbed his dogs.' (Reesink 1999: 50)

In addition to plural marker *-nya*, there is a collective *-bat* in Hatam.

(83) Collective
dani kin di-sut-bat-nya
I with 1SG-friend-COLL-PL
'I and my friends' (Reesink 1999: 50)

The co-occurrence of classifiers and plurals is grammatical in Hatam.

(84) *Di-kindig-bat-nya i-bou can kin di-cig*
1SG-older.sib-COLL-PL 3PL-head two with 1SG-father
'My two older brothers and my father….' (Reesink 1999: 83)

4.1.4.2 Tuvaluan

The data in Tuvaluan is so limited that we can only know little about its classifiers. We found the same reference as WALS online database, *Tuvaluan: A Polynesian Language of the Central Pacific* (Besnier 2000). There are only five classifiers introduced by Besnier (2000): *toko, tua, tao, tau,* and *tuu. toko* is for human; *tua* and *tao* is for flat things that are piled up; *tau* is for coconuts in bunches; *tuu* is for groups of birds or kinfish.

(85) Range of application of classifiers

a. Human classifier: *toko*

te toeaina i te toko lua i te feituu ki tai

the old-man at the Num two at the side to lagoon

'the second old man towards the lagoon' (Besnier 2000: 570)

b. Inanimate classifier: *tua*

E tua faa ana gatu

Nps N-layer four her clothes

'[She] is wearing four layers of clothing' (Besnier 2000: 570)

Although Besnier introduced classifier system in Tuvaluan, he stated that the classifiers are classifier-like elements. Further, from personal communication with Besnier, he suggested that Tuvaluan is not an ideal target when exploring classifiers. Therefore, Tuvaluan is ignored in this study.

4.1.4.3 Hungarian

Classifiers are optional in Hungarian and include measure words, general classifiers, human classifiers, inanimate classifiers, and shape classifiers.

(86) Optional classifiers

a. With a classifier

2 szem gyöngy

'2 pearls' (Csirmaz and Dékány 2010: 7)

b. Without a classifier

2 gyöngy

'2 pearls' (Csirmaz and Dékány 2010: 7)

(87) Application range of classifiers

a. Measure word

egy csomó zöldhagyma

a bunch green.onion

a bunch of green onions (Csirmaz and Dékány 2010: 4)

b. General classifier: *darab*

hét darab szó

seven CL*generic* word

'seven words' (Csirmaz and Dékány 2010: 9)

c. Human classifier: *fő*

hét fő legénység

seven CL*head* crew

'seven people belonging to a crew' (Csirmaz and Dékány 2010: 17)

d. Inanimate classifier: *fej*

két fej hagyma

two CL*head* onion

'two onions' (Csirmaz and Dékány 2010: 11)

e. Shape classifier: *szem*

Egy szem cukor

One CL candy

'One candy' (Csirmaz and Dékány 2010: 4)

A plural marker *-ok* (with several allomorphs: *-k/-ak/-ek/-ök*) is obligatory in Hungarian, and applies to all common nouns.

(88) a. Human

gyerek gyerekek

'child' 'children' (Kenesei, Vago, and Fenyvesi 1998: 256)

b. Inanimate

város városok

'town' 'towns' (Kenesei, Vago, and Fenyvesi 1998: 256)

In addition to the plural marker, there is also a collective *-ék* in Hungarian

(89) Collective: *ék*
Péter- ék
Peter-COL
'Peter and his friend(s)/ family' (Kenesei, Vago, and Fenyvesi 1998: 254)

The co-occurrence of classifiers and plurals is grammatical as in (94). However, plurals can not co-occur with numeral as in (95). Thus we assume that in a noun phrase, [Num+CL+PL] is ungrammatical. Classifiers and plurals can co-occur only if there are no numerals.

(90) *ex-ek a szem-ek rohadt-ak*
this-PL the CL-PL rotten-PL
'These (ones) are rotten.' (Csirmaz and Dékány 2010: 13)

(91) *három takaró-(*k)*
three blanket-PL
'three blankets' (Csirmaz and Dékány 2010: 13)

4.1.4.4 Turkish

Classifiers are optional in Turkish and include human classifiers, animate classifiers, and inaimate classifiers.

(92) Optional classifiers
Without a classifier:
beş çocuk
'five children' (Kornfilt1997: 265)

(93) Range of application of classifiers

a. Measure word

beş litre su

'five liters of water' (Göksel and Kerslake 2011: 80)

b. Animal classifier: *baş*

elli baş sığır

'fifty oxen' (Lewis 2000: 78)

c. Inanimate classifier: *tane*

sekiz tane mendil

'eight handkerchiefs' (Lewis 2000: 77)

Nouns are transumeral in Turkish. A plural marker *lar/ler* can optionally apply to all nouns. When the number is denoted by other elements as numeral, plural markers can not occur.

(94) Transnumeral nouns

Çarşıda CD aldım

'I've bought a CD/ CDs in town.' (Aarssen 2001 : 85)

(95) Range of application of plurals

a. Human

insan-lar

person-PL

'people' (Göksel and Kerslake 2005: 165)

b. Animal

köpekler

'dogs' (Göksel and Kerslake 2005: 68)

c. Inanimate

Boş oda-lar

'vacant rooms' (Göksel and Kerslake 2005: 165)

As for the co-occurrence of classifiers and plurals, it is ungrammatical in Turkish (Kornfilt p.c.). Kornfilt, an expert of Turkish, states that classifiers do not co-occur with plurals in general. If classifiers and plurals do co-occur, the classifier is no longer a classifier, but a noun.

4.4.1.5 Ainu

Classifiers are optional in Ainu and include human classifiers and inanimate classifiers.

(96) Optional classifiers

tu *okkaypo* *rupne* *sike* *ki pa*
two young-man big luggage do PL
'Two young men carried much luggage.' (Bugaeva, p.c.)

(97) Range of application of classifiers

a. Human classifier:-*n(after vowel)/-iw(after consonant)*
tu-nv *iwan-iw*
'two (people)' 'six people'
b. Inanimate classifier: -*p*
tu-p
'two (thing)' (Bugaeva 2012: 471)

Nouns are transnumerals in Ainu. A plural marker -*utar* can optionally apply to all common nouns.

(98) Range of application of plurals

a. Human
ainu-utar
'men' (Patrie 1982 p.131)

b. Animate
chikap-utar
bird PL
'birds' (Kindaichi& Chiri 1936: 30)

c. Inanimate
čise-utar
'houses' (Patrie 1982: 131)

From personal communication with the expert of Ainu, Bugaeva, the co-occurrence of classifiers and plurals is grammatical in Ainu as in (99).

(99) a. *okkaypo utar tu-n sike ari.*
young.man PL two-human.CLF luggage put.down.PL
'These two young men put their belongings down' (Bugaeva, p.c.)

b. *ne pa ta acapo utar tun ne kimun a wa*
this year LOC uncle PL two-human.CLF COP go.to.the.mountains.to.hunt PERF 'This year, two uncles went to the mountains to hunt' (Bugaeva, p.c.)

4.1.4.6 Khmer

Classifiers are optional (Gilbert 2008) in Khmer, including measure words, human classifiers, animal classifiers, inanimate classifiers and shape classifiers.

(100) Range of application of classifiers
a. Measure word:
/sac pii kiilou/
Meat two M
'two kilos of meat' (Ehrman & Sos 1972: 17)

b. Human classifier: *neq*

bong *pii* *neq*

Brother two CL

'two older brother' (Ehrman,p.c.)

c. Animal classifier: *gbaal* (Gilbert 2008: 201)

d. Inanimate classifier: *bɔn-dtub 'rooms'*

(Gilbert 2008: 201)

e. Shape classifier: *groab*

kñom ñam bey groab haɯy

'I took three pills' (Gilbert 2008: 208)

Nouns are transnumerals in Khmer. Its plural marker can optionally apply to all common nouns.

(101) Transnumerals

a. *khla* 'tiger or tigers' (Gorgoniyev.1966: 68)

b. *baɲha* 'question or questions' (Gorgoniyev.1966: 68)

There are two ways to denote plurality: one is plural marker; the other is reduplication. But the reduplication form can only apply to human nouns.

(102) a. Plural marker: *tɛəŋla:y*

sa:m saŋke:t-mal-khəɲ rukkhac eat tɛəŋla:y

'Sam looked at the trees.' (Gorgoniyev.1966: 69)

b. Reduplication

srɛy *srɛy- srɛy*

'woman' 'women' (Gorgoniyev.1966: 59)

Based on a native speaker of Khmer, Soksan Ngoun, there is no words such as *tɛəŋla:y*. He supposed that the word only used in ancient language such as poem.

They no longer use it in daily life. Thus we focus on the reduplication form in following discussion.

The co-occurrence of classifiers and plurals is grammatical in Khmer. Mr. Soksan indicates that there are two ways to express 'two men'.

(103) a. *Proas bei nak*
man three CL
'three men' (Soksan, p.c.)

b. *Proas proas bei nak*
man man three CL
'three men' (Soksan, p.c.)

4.1.4.7 Indonesian

Classifiers in Indonesian are optional and include measure words, general classifiers, human classifiers, animate classifiers, inanimate classifiers, and shape classifiers.

(104) Optional classifiers
Without a classifier
dua orang
'two people' (Sneddon.1996: 132)

(105) Range of application of classifiers
a. Measure word
se-bungkus rokok
One M cigarette
'a packet of cigarettes' (Sneddon 1996: 138)

b. General classifier: *buah* (Sneddon 1996: 136)

c. Human classifier: *orang*
lima orang guru
5 CL teacher
'five teachers' (Dalrymple and Suriel 2009: 3)

d. Animal classifier: *ekor*
lima ekor sapi
5 CL cow
'five cows' (Dalrymple and Suriel 2009: 3)

e. Inanimate classifier: *buah*
tiga buah meja
3 CL table
'three tables' (Sneddon 1996: 135)

f. Shape classifier: *biji*
dua biji teleur
'two eggs' (Sneddon 1996: 136)

Classifiers are optional in Indonesian, but they are obligatory when co-occuring with numeral 'one' (Sneddon 1996).

Nouns are transnumerals in Indonesian. The ways to express plurality is reduplication as in (111).

(106) *buku*
'a book' or 'books' (Dalrymple and Suriel 2009: 5)

(107) *rumah- rumah*
'houses' (Sneddon 1996: 16)

The co-occurrence of classifiers and plurals is ungrammatical in Indonesian. A native speaker of Indonesian, Johnny, states that it is ungrammatical to say *dua biji*

telurtelur ‘two eggs’. Besides, we can find *dua biji telur* from Google search engine, but no examples were found for *dua biji telurtelur*.

4.1.4.8 Tetun

Classifiers in Tetun are optional and include measure words, human classifiers, animate classifiers, and shape classifiers.

(108) Optional classifiers

a. With a classifier:
sia *na’in* *rua*
3P CLS:human two
‘they two (people)’ (van Klinken 1999: 105)

b. Without a classifier:
sia *rua*
3P two
‘they two (people)’ (van Klinken 1999: 106)

(109) Range of application of classifiers

a. Human classifier: *na’in*
feto *nain* *rua*
woman CLS:human two
‘two women’ (van Klinken, Hajek, and Nordlinger 2002: 22)

b. Animal classifier: *matan*
kabau *matan* *atus* *ida* *lima-nulu*
buffalo CLS:animal hundred one five-tens
‘150 head of cattle’ (van Klinken 1999: 106)

c. Shape classifier: *lolon*
tais *lolon* *ida*
Cloth CLS:trunk one
‘one (handwoven) cloth’ (van Klinken 1999: 105)

Although classifiers are optional in Tetun, it is a polite expression if there are classifiers (van Klinken. 1999). Thus, (108a) is more polite than (108b).

In addition, the frequency of the appearance of classifiers varies according to numerals. For example, classifiers are rarely used with *ida* '1' (van Klinken. 1999). This phenonmenon is quite similar to plural *–s* in English which is used except for '1'.

Nouns in Tetun are transnumerals. A plural marker *-sira* can optionally apply to all common nouns. Although it is optional, there are always a plural marker when expressing plurality (van Klinken. 1999).

(110) Transnumerals:

Ami lori kuda
1PE bring horse
'We bought a horse/the horse/horses'
(van Klinken, Hajek, and Nordlinger 2002: 19)

(111) Optional plurals

a. With a plural marker

livru sira
'the books' (van Klinken, Hajek, and Nordlinger 2002: 20)

b.Without a plural marker

ata nia-k rua ne'e
slave 3S-POS two this
'these her two slaves' (van Klinken 1999:.133)

(112) Range of application of plurals

a. Human:

klosan sia
'maleservant' (van Klinken 1999: 113)

b. Inanimate:
livru sira
'the books' (van Klinken, Hajek, and Nordlinger 2002: 20)

In addition to the plural *–sira*, there is a Portugese plural *-s* in Tetun due to language contact. Even more, *-s* sometimes can co-occur with *–sira* as in (113) .

(113) *livru-s sira*
book PL PL
'the books' (van Klinken, Hajek, and Nordlinger 2002: 20)

The plural marker *–sira* can also be used as collective as in (114).

(114) *Simao sira*
Simao ASSOC.PL
'Simao and his family/friends/colleague'
(van Klinken, Hajek, and Nordlinger 2002: 20)

There is no clear example of the co-occurrence of classifiers and plurals. But Hajek, the expert of Tetun, states that he only collected the data as *feto nain rua* 'two women' from native speakers of Tetun. So it is more likely that the co-occurrence of classifiers and plurals is ungrammatical.

4.1.4.2 Chantyal

The classifier system of Chantyal is borrowed from Nepali and divided into two types: human *-jana* and non-human *-ta*. There is only measure words in its own language as in (115). And the classifiers are optional based on WALS online database.

(115) Range of application of classifiers

a. Measure word: *gilas*

yek gilas cɦa

one glass tea

'one glass of tea' (Noonan 2003: 320)

b. Animate classifier:-*ta*

tin-ta jəmməy naku-ma

three-CL all dog-PL

'all three dogs' (Noonan 2003: 318)

With regard to number marking, a plural marker -*ma* can optionally apply to all common nouns. But no representative examples were found. In addition, the plural marker -*ma* can also be used as collective as in (116).

(116) Collective:

Ram-ma

Ram-ASSOC.PL

'Ram and his family/companions' (Noonan 2003: 318)

The co-occurrence of classifiers and plurals is grammatical as in (117).

(117) *tin-ta jəmməy naku-ma*

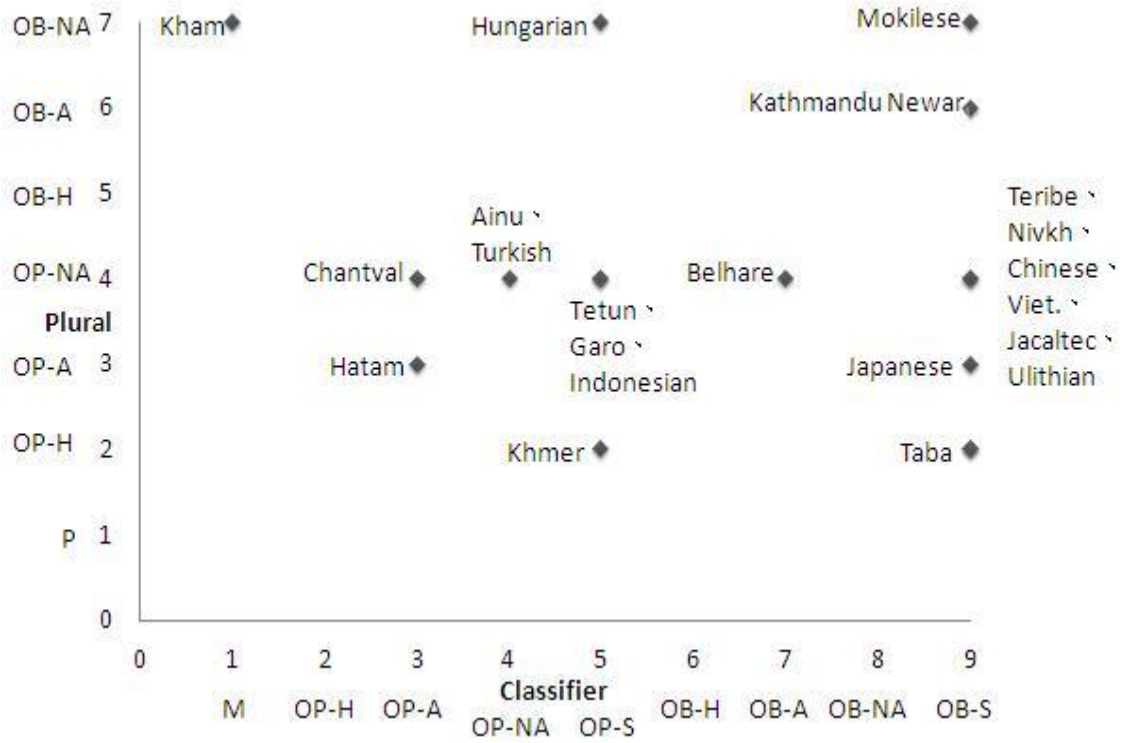
three-CL all dog-PL

'all three dogs' (Noonan 2003: 318)

4.2 A Coordinate Representation of Language Distribution

Based on the data analysis, we rank the range of application of classifiers and plurals onto a scale to find the completion of both systems as we have mentioned in Chapter 3. The results are shown as in Figure1.

Figure 1. The Range of Application of Classifiers and Plurals



(M: measure word、P: Plural personal pronoun、OP:optional、OB: obligatory、H: human、A in X axis:animal、A in Y axis: animate、NA: Inanimate、S: shape)

Along the X axis, classifiers are scaled in ranking as (23) Measure words < Optional classifiers (human) < Optional classifiers (animal) < Optional classifiers (inanimate) < Optional classifiers (shape) < Obligatory classifiers (human) < Obligatory classifiers (animal) < Obligatory classifiers (inanimate) < Obligatory classifiers (shape); along the Y axis, plurals are scaled in ranking as (25) Plural

personal pronoun < optional human plurals < optional animate plurals < optional inanimate plurals < obligatory human plurals < obligatory animate plurals < obligatory inanimate plurals. The higher ranked one will imply the existence of the lower one, so it represents that the system in such language is more complete.

However, part of our data are insufficient, thus we adopt the categorization in WALS online database to compensate for such absence so as to complete the figure. For example, the necessity of classifiers is unclear in Nivkh, and we assume that it is obligatory based on WALS online database; the range of application of plurals is unclear in Vietnamese, and we assume that the plurals can apply to all nouns based on WALS online database.

From figure1, we can find that the range of application of classifiers and plurals are in certain complementary distribution except for Mokilese and Kathmandu Newar. There are no language in the lowest ranked of classifiers and plurals, and only 2 languages containing the highest ranked of classifiers and plurals. In other 19 languages, if the classifier system is stronger, the plural system will be weaker, and vice versa. So the distribution is along a negative slope which means that the range of the usage of classifiers and plurals are in complementary distribution. Therefore, the degree of the violation of the CPCD principle in the 19 languages (except for Mokilese and Kathmandu Newar) are not strong.

In addition, we also summarize the co-occurrence of classifiers and plurals in a noun phrase in 20 languages (except for Tuvaluan and Kham) based on the data as in Table 3. We do not take Tuvaluan and Kham into consideration because Tuvaluan is not an ideal target when examining the issues of classifiers, and Kham only contains measure words.

Table 3 The Categorization of Co-occurrence

Co-Occurrence May Take Place	**Co-Occurrence May Not Take Place**	**Ignored**
1. Chinese	1. Mokilese	1. Kham
2. Japanese	2. Garo	2. Tuvaluan
3. Taba	3. Teribe	
4. Kathmandu Newar	4. Turkish	
5. Belhare	5. Tetun	
6. Nivkh	6. Indonesian	
7. Vietnamese		
8. Ulithian		
9. Jacaltec		
10. Hatam		
11. Hungarian		
12. Ainu		
13. Khmer		
14. Chantyal		

Among the attested languages, we find that the languages which allow the co-occurrence of classifiers and plurals number more than those languages which do not allow the co-occurrence of classifiers and plurals. Thus, the co-occurrence of classifiers and plurals is not accidental. To account for the co-occurrence of these languages, we will provide a syntactic analysis in Section 4.3.

Lastly, based on the real data in languages, we find that there are some mismatches with the categorization provided by WALS online database, and we make a comparison of the categorization in WALS online database and in the data analysis in this paper as in Table 4.

Table 4. Language Categorization

Languages	**Categorization in WALS online database**	**Categorization From Data Analysis**
a. Mandarin	Classifiers: Obligatory Plurals: Only human nouns, optional	Classifiers: Obligatory Plurals:(in)animate nouns, optional
b. Japanese		b. Classifiers: Obligatory Plurals: animate nouns, optional
c. Taba	Classifiers: Obligatory Plurals: Only human nouns, obligatory	c. Classifiers: Obligatory Plurals: Only human nouns, optional
d. Kathmandu Newar		d. Classifiers: Obligatory Plurals: animate nouns, obligatory
e. Belhare	Classifiers: Obligatory Plurals: All nouns, optional in inanimates	e. The same
f. Mokilese	Classifiers: Obligatory Plurals: All nouns, always obligatory	f. The same
g. Kham		g. Classifiers: no true classifiers, only measure words Plurals: All nouns, always obligatory
h. Nivkh	Classifiers: Obligatory Plurals: All nouns, always optional	h. The same
i. Garo		i. Classifiers: Optional Plurals: All nouns, always optional
j. Vietnamese		j. The same

k. Ulithian		k. The same
l. Jacaltec		l. The same
m. Teribe		m. The same
n. Hatam	Classifiers: Optional Plurals: only human nouns, optional	n. Classifiers: optional Plurals: animate, always optional
o. Tuvaluan	Classifiers: Optional Plurals: All nouns, always obligatory	o. Ignore
p. Hungarian		p. The same
q. Turkish		q. Classifiers: Optional Plurals: All nouns, always optional
r. Ainu	Classifiers: Optional Plurals: All nouns, always optional	r. The same
s. Khmer		Classifiers: Optional Plurals: human nouns, always optional
t. Indonesian		t. The same
u. Tetun		u. The same
v. Chantyal		v. The same

4.3 Syntactic Analysis

In the data analysis, we find that classifiers and plurals are in complementary distribution in different aspects as following.

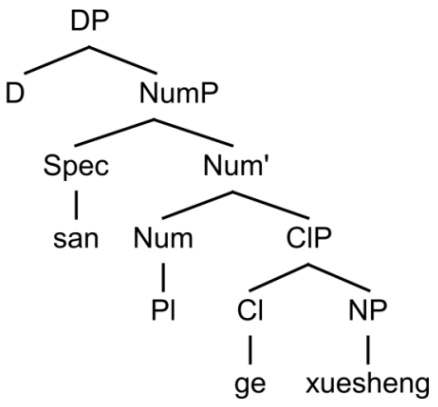
Table5. The Phenomenon Involved in the Complementary Distribution of Classifiers and Plurals

	Appearance in a language	**Obligatory or Optional**	**Range of Application in a Language**	**Co-occurrence in a noun phrase**
In Complementary Distribution	84	19	19	6
Not in Complementary Distribution	22	2	2	14
Total Number of Languages	106	21	21	20

Thus, there are two ways to analyze the category of classifiers and plurals. One is that classifiers and plurals are different heads of projection (Li 1999, Huang 2009, and Fassi Fehr 2005). The other is that classifiers and plurals are the same category (Borer 2005, and Her 2012a).

When classifiers and plurals are different heads of projection as in (118), we can explain the languages with both classifiers and plurals and the co-occurrence in a noun phrase.

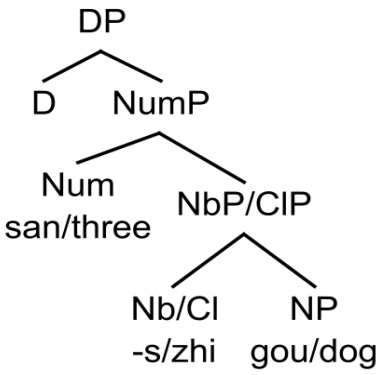
(118)



(Li 1999: 87)

However, from the viewpoint of typology, such co-occurrences of classifiers and plurals are rare. There is a tendency for languages to have only one of the system. Therefore, in this paper, we adopt Borer (2005) and Her's (2012a) claim that classifiers and plurals are the same category, as in (119).

(119)



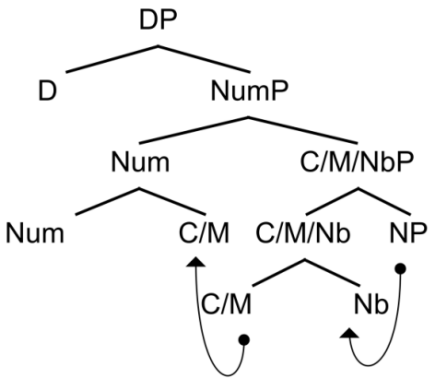
(Vinet and Liu 2008: 361)

In this structure, classifiers and plurals occupy the same syntactic node, so it is reasonable for them to be in complementary distribution in majority of languages. However, it is impossible for classifiers and plurals to co-occur in the nominal structure as in (119). If such were the case the prediction would be that the co-occurrence of classifiers and plurals such as *san ge xuesheng men* 'three students' and *san-nin gakusei-tati* 'three students' would be ungrammatical. However, among the 22 languages in Sections 4.1.3 and 4.1.4 , 14 of them, Chinese, Japanese, Taba, Kathmandu Newar, Belhare, Nivkh, Vietnamese, Ulithian, Jacaltec, Hatam, Hungarian, Ainu, Khmer and Chantyal allow classifiers and plurals to co-occur. Therefore, the co-occurrence of classifiers and plurals is indeed grammatical, rather

than accidental.

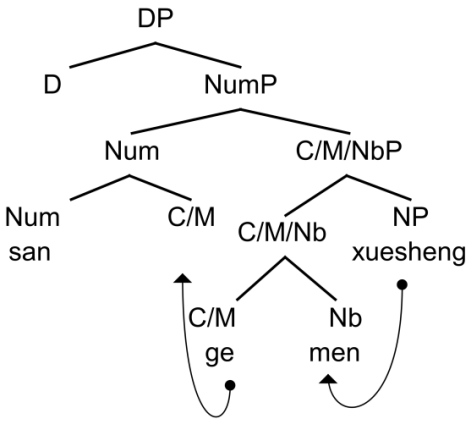
Thus, the nominal structure should be revised to explain the 14 languages as following:

(120)



In this new nominal structure, we can account for the majority of languages with either classifiers or plurals because they are the same category; and furthermore, we can include the co-occurrence cases due to the consideration that they are co-head. For example, *san ge xuesheng men* 'three students' in the syntactic structure is as following.

(121)



Therefore, the structure as (120) is acceptable thus far in explaining the data in the 22 languages.

4.4 Possible Explanations

The co-occurrences of classifiers and plurals are grammatical in languages, but they should be regarded as marked cases because they are co-head structure. Here are two possible reasons for the marked cases to occur: one is language contact; the other is language change.

De Leon (1987) proposed that a classifier language, Tzotzil, has more obligatory number marking due to the influence of Spanish. In this paper, we also find similar cases in our target languages. Classifiers in Chantyal are borrowed from Nepali; certain of the classifiers in Belhare are also borrowed from Nepali; the plural system in Tetun is affected by the plural from Portuguese. In addition, the change of plurals in Chinese is also a good example for the influence of language contact. The plural *-men* was marked on human nouns in the past, such as *xueshengmen* 'students' or *laoshimen* 'teachers'. But the range of application of *-men* by the younger generation has been expanded to include animal or parts of inanimate nouns, as *xiaogoumen* 'dogs' or *zhuozimen* 'tables'. This phenomenon may be owing to the learning of English. Children learn the plural *-s* in English, and apply the range of usage of *-s* to *-men*. Therefore, with language contact, the system of classifiers or plurals may become complex.

As for language change, Chinese is also a good example. In ancient Chinese,

classifiers were optional. Nouns could be directly adjacent to numerals as (122a). However, in modern Chinese, there must be a classifier between *er zi* and *er shan* as in (122b) and (122c).

(122) a. 命　夸 娥 氏 二子 負　二 山
ming kua e　shi er zi　fu　er shan.
'Ask *kua e shi*'s two sons to carry the two mountains' (*Leizi* 列子)

b. 兩　個　兒 子
liang ge　er　zi
'two sons'

c . 兩　座　山
liang zuo shan.
'two mountains'

During the era prior to Qin Dynasty, the number of classifiers increased in line with the setting up of the measurement system. And more classifiers were produced in Han Dynasty. Since then, classifiers become prosperous until nowadays(Wang, 1989).

As for the plural system, there were many plural markers in ancient Chinese, such as *bei, deng, cao,* and *men.*

(123) a. 此 客棧　正　為　我 輩 而　設
ci ke zhan zheng wei wo bei　er　she
'the hotel is for us'　(*shui hu zhuan* 水滸傳)

b. 料 爾 等　米 粒 之 珠
liao er deng mi li　zhi zhu
'I guess you are tiny as rice.'　(*feng shen yan yi* 封神演義)

c. 爾 曹 身 與 名 具 滅 不 廢 江 河 萬 古 流
er cao shen yu ming ju mie, bu fei jian he wan gu liu
'Your body and fame will vanish, but the river will flow on forever'
(Tu-Fu 杜甫, *xi wei liu jue ju* 戲為六絕句)

d. 看 他 門 得 人 憐 秦 吉 了
kan ta men de ren lian qin ji le.
'Look at them, those lovely parrots.' (XinQiJi 辛棄疾, *qian nian tiao* 千年調).

In the Song Dynasty and the Yuan Dynasty, *mén*, *mei* and *mèn* are the major plural marks. However, *mei* and *mèn* gradually disappeared, and only *mén* is applied in modern Chinese (Zhang, 1987). Thus, the plural system was stronger in ancient Chinese than in modern Chinese. From the variation in the system of classifiers and plurals, it is reasonable for both system to co-occur in a certain period of time. However, when the range of application of classifiers is higher, the use of plurals will be lower, and vice versa. The two systems tend to be in complementary distribution in their usage. So, language change may also explain the co-occurrence of classifiers and plurals.

Chapter 5. Conclusion

5.1 Summary

In this paper, we try to clarify the relationship between numeral classifiers and plural marking. Are they in complementary distribution? Are they the same category? Do they co-occur in a noun phrase? From the data analysis of 22 languages, we found that classifiers and plurals are not in complementary distribution in a noun phrase, but they are in complementary distribution in a language or within the range of their usage. Since classifiers and plurals are in complementary distribution in most languages in the world, and they are in complementary distribution in the range of their usage in the 19 languages (except for Mokilese and Kathmandu Newar), classifiers and plurals are the same category but in co-head structure as shown in (120).

5.2 Limitations and Suggestion

Although a wide range of data were collected in this paper, there are still some limitations. First, the majority of the 22 languages are not widely-used, so only a few linguists have done research. For example, Watter is the only linguist who has made a deep study of Kham; likewise Besnier for Tuvaluan. Second, the data are secondary sources, we can only analyze them based on the data presented by the authors. For

instance, we are unable to ascertain the exact usage of classifiers in Hatam, since the data only show four classifiers *–ngud, -njon, -mon,* and *–ngan*. Therefore, we do not know whether there are only four classifiers in Hatam, or whether these are four classifiers that the author has found. In Hungarian, there are human classifiers, inanimate classifiers and shape classifiers, but no animal classifiers were shown. So we can only infer that there are animal classifiers from the hierarchy in (23). Last, we are not sure whether our examples can lead to a correct result. For example, if a non-native speaker of Mandarin finds the two examples as in (124a) and (124b), he may consider Mandarin to be an optional classifier language. However, without classifiers, the sentence is ungrammatical in most cases, such as (124c) and (124d).

(124) a. 三　個　人
san　*ge*　*ren*
three　CL　people
'three people'

b. 二十　人　二十一　腳
ershi　*ren*　*ershiyi*　*jiao*
twenty　people　twenty-one　feet
'twenty people with twenty-one feet'

c. *我　需要　五　紙
wo　*xuyao*　*wu*　*zhi*
I　need　five　paper
'I need five sheet of paper'

d. *你 找到　三　書　了　嗎？
ni　*zhaodao*　*san*　*shu*　*le*　*ma*?

You find three book
'Did you find three books?'

Therefore, the analysis in this paper is limited.

To improve the deficiencies of this study, some suggestions for further research are given as following. First, fieldwork can be carried out to collect sufficient raw data to compensate for the less reliable secondary data. If we can consult native speakers in each language, we can collect enough data to allow for a convincing analysis to our topic. Second, the standard of the ranking can be set more strictly. In this way, we can differentiate the languages along a scale more clearly. Third, there are certain languages the data for which does not correspond to the conclusions in this paper as Mokilese which contains complete classifier and plural systems, and so such languages deserves a more detailed examination in further research. Last, if data from more languages were collected, we may find that the CPCD principle may be more reliable.

Although there are numerous ways to improve the results of this paper, in the current study, we make the conclusion that first, classifiers and plurals are in complementary distribution in appearance and usage. And second, that classifiers and plurals belong to the same category but co-head, so it is possible for them to co-occur in the same noun phrase.

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Appendix A

The 22 Languages Categorization in WALS Online Database

Categorization	Languages
Classifiers: Obligatory Plurals: Only human nouns, optional	a. Mandarin b. Japanese
Classifiers: Obligatory Plurals: Only human nouns, obligatory	a. Taba b. Newa
Classifiers: Obligatory Plurals: All nouns, optional in inanimates	a. Belhare
Classifiers: Obligatory Plurals: All nouns, always obligatory	a. Mokilese b. Kham
Classifiers: Obligatory Plurals: All nouns, always optional	a. Nivkh b. Garo c. Vietnamese d. Ulithian e. Jacaltec f. Teribe
Classifiers: Optional Plurals: Only human nouns, optional	a. Hatam
Classifiers: Optional Plurals: All nouns, always obligatory	a. Tuvaluan b. Hungarian c. Turkish
Classifiers: Optional Plurals: All nouns, always optional	a. Ainu b. Khmer c. Indonesian d. Tetun e. Chantyal

Appendix B

The Relation of Numeral Classifier and Plural Marker

Slobin and Sanches (1973)

	(+)numeral classifier	(-)numeral classifier
(-) obligatory plural marking	ADI(ABOR-MIRI) BAHASA INDONESIA BAHNAR BENGALI BOUGAINVILLE (5 languages) BRAO(PROU,LUE) BUGINESE BURMESE CHAM CHINESE CUNA DAFLA GAR(NMONG) GARO GILBERTESE CUAYMY HUPA JACALTEC JAPANESE KANJOBAL KAREN KAROK KHARIA KHASI YUCATEC KHMER (KEREWA) KIWAI KOREAN LAO MAM MOPAN MAYA NAHUATL NEWARI NICOBARESE NORTH ROGLAI PAHRI PASHTO PERSIAN SONSORAL TARASCAN THAI TIBETAN TONGAN TZELTAL VAYU VIETNAMESE WIYOT WOOLEAN YUROK Q1.	HAWAIIAN KAPINGA MARANGI MARANAO MIWOK POKONCI RABINAL RAROTONGAN SEEDIK SUNDANESE TORUMAN VITI(FIJIAN) YUKI Q2.
(+) obligatory plural marking	Q4 KHAMBU (?) NOOTKA PALAUAN (?) SAMOAN (?) TLINGIT	Q3. . ENGLISH CHAMORRO COOS CHINGPAW LEPCHA