



HAL
open science

Classifiers and some typological considerations

Dan Xu, Fu Jingqi

► **To cite this version:**

Dan Xu, Fu Jingqi. Classifiers and some typological considerations. Guangshun Cao, Hilary Chappell, Redouane Djamouri and Thekla Wiebusch. Breaking down the barriers: Interdisciplinary studies in Chinese linguistics and beyond, Institute of Linguistics, Academia Sinica pp.865-885, 2012. hal-01476967

HAL Id: hal-01476967

<https://inalco.hal.science/hal-01476967>

Submitted on 26 Feb 2017

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Classifiers and some typological considerations¹

Dan XU
INALCO/CRLAO, France
University Institute of France (IUF)

Jingqi FU
St. Mary's College of Maryland
USA

Abstract

Classifiers, both nominal and verbal, must be taken into consideration as a parameter in typological studies of the numeral classifier languages. Building on previous work, we will show that nominal and verbal classifiers are mutually dependent both chronologically and in terms of their syntactic position. Cross-linguistic data in general, and Chinese in particular, illustrate this dependency: nominal classifiers develop before verbal classifiers and the word order of the two kinds of classifiers is in a complementary distribution, occurring before nouns and after verbs.

Keywords: classifier, typology, word order, complementary distribution

0. Introduction

Since Greenberg's (1963) works on language typology, discussions and studies of this topic have flourished in general linguistics, and the number of investigated languages has increased considerably. Dryer's (1992, 2003) studies of numerous typological characteristics, for example, are based on 625 language samples. According to Dryer, the Chinese language (contemporary Mandarin) is considered an atypical VO language. Some Chinese scholars have also tried to test the assumptions established by Greenberg and Dryer. Among them, Liu Danqing (2003) has analyzed Chinese languages, while Huang Xing (1996) has investigated non-Han languages in China. Their works confirm, for the most part, the ideas put forward by Greenberg (1966) and Dryer (1992). Numerous significant works have been published on different languages. The focus of previous research was predominantly on word order and its plausible implicational relationships with other features. The presence of classifiers in numeral classifier languages, however, was not a salient feature in these studies and their relevance for word order sometimes neglected. Only recent works by Haspelmath *et al.* (2005) and Comrie (2008) began to take classifiers into account as one of the typological parameters in noun phrases. Indeed, in languages with obligatory numeral classifiers, they play an important role in word order typology, at least in Asian languages. Since a majority of these languages belonging to the Sino-Tibetan, Altaic, and Austro-Asiatic families, are in close contact in China, it is interesting to compare how classifiers function and how they influence word order in Chinese (contemporary and classical) and in non-Han languages of China. Our work will build on the significant research results found in Chinese publications, such as Sun Hongkai (1988), Dai Qingxia and Jiang Ying (2004), Li Jinfang and Hu Suhua (eds. 2005), and others.

In this paper, we use 'nominal classifiers' in its usual interpretation: morphemes that denote the shape or class of the referent and used in conjunction with

¹ Our gratitude goes to Alain Peyraube who warmly received us when we first came to France in 1982 as graduate students. He has given us enormous support during our studies in Chinese linguistic research.

Our works have been supported by the grant *Quantification et Pluralité* éANR-06-BLAN0259 awarded by the Research Department of the French Government.

We thank the anonymous reviewer for his/her constructive comments and suggestions.

the numeral of an NP (Akhenvald, 2000:97). They are to be distinguished from ‘measure words’, which express measuring units of the referent of the noun. To give examples in Chinese, in (1), the noun *hua* ‘flower’ is modified by Num+CL, the different classifiers used give a different meaning: while *zhi* refers to flowers with a stem *duo* only refers to the flower itself.

- (1) a. 三枝花
sān zhī huā
three CL flower
‘three (single stem) flower’
- b. 三朵花
sān duǒ huā
three CL flower
‘three flowers (without the stem)’

In (2), we have examples of measure words:

- (2) a. 三碗水
sān wǎn shuǐ
three MW water
‘three bowls of water’
- b. 三桶水
sān tǒng shuǐ
three bucket water
‘three buckets of water’

While all languages have measure words of some sort, few have numeral classifiers. The term ‘verbal classifiers’, is used differently here. It is sometimes used as verbal affix referring to predicate argument (Akhenvald, 2000:149) and is found in some American Indian languages and languages of New Guinea and Australia (Akhenvald, 2000:169-171). We define the term as words that measure the action expressed by the VP. For example, in Chinese, (3a) is contrasted with (3b) in the use of verbal classifier.

- (3) a. 我听过两次他的讲演
wǒ tīng-guò liǎng-cì tā de jiǎngyǎn
I listen-EXP two-time his POSS speech
‘I have listened to his speech twice.’
- b. 我听过两遍他的讲演
wǒ tīng-guò liǎng-biàn tā de jiǎngyǎn
I listen-EXP two-time his POSS speech
‘I have listened to his whole speech twice.’

Both *cì* and *biàn* provides the unit for counting the number of times of the event. However *biàn* has the additional implication that the event takes place from the beginning to the end, in this case, the whole lecture twice. On the other hand the verbal classifier *cì* does not imply the whole process. It could well mean two times

and each time for a short period. In this sense, not all languages have verbal classifiers, only few languages like Chinese do.

Nominal classifiers have been extensively examined and discussed, but verbal classifiers seem to be less studied. In this paper, we try to understand the syntactic distribution of nominal classifiers and verbal classifiers and their relationship. We believe that the order Numeral Noun (NumN) has to be studied together with classifiers (CL) in languages with obligatory NumCL. It appears that nominal CL generally develop before verbal CL and the distribution of nominal CL and verbal CL shows a mirror symmetric word order (see also Shi Yuzhi, 2006) and the same mirror word order will be shown to be true in cross linguistic data at hand. We will offer tentative explanations on why this is so at the end of this paper.

1. Numeral and noun

To examine the evolution of numeral classifier and verbal classifier, we will start with numeral classifier first and with the pre-numeral classifier stage, in which Num directly modifies Noun.

In the literature on typology (Dryer, 1992: 119), the pair NumN and NNum is left unclassified. NumN/NNum order clearly shows a correlation with VO/OV type except in languages of Africa. It is evident in Dryer's statistics that the order NumN strongly correlates with VO order cross-linguistically. Dryer states that "the two orders of numeral and noun are equally common among OV languages" (p118). Independently, Huang Xing's (1996) statistics based on 35 non-Han languages in China corroborate Dryer's observations. One phenomenon is striking in Huang's (1996: 12) table. In the Tibeto-Burman group, belonging to the OV language type, and the Altaic group, also of OV type, 17 languages use NNum order while no language uses NumN order. However, many Tibeto-Burman languages possess classifiers. Thus, these statistics without classifiers are more or less meaningless. The NumN or NNum order can help us better grasp the word order patterns in languages without an obligatory NumCL system. This is the case in Old Chinese (OC 11-1st centuries BC) when classifiers were not fully developed. OC is mainly a VO language (Shen Pei 1992, Peyraube 2000 among others). Does this NumN & VO pattern work for OC? See the following table established by Wu Dan (2005):

Table 1. NumN and NNum in Old Chinese

	NumN	NNum
詩經 <i>Shījīng</i> 11 th -6 th centuries BC	25	5
尚書 <i>Shàngshū</i> 5 th century BC?	22	0
論語 <i>Lúnyǔ</i> 5 th century BC	4	1
左傳 <i>Zuǒ zhuàn</i> 5 th century BC ²	54	6
孟子 <i>Mèng Zǐ</i> 4 th century BC	35	7
Total	140	19

In this table, the order of NumN and NNum is significant, since at that period classifiers did not exist as a system. It is clear that the NumN order is predominant. NNum existed, but the proportion of its occurrence is only about one in seven. Consider these examples in OC in which the numeral precedes the noun:

² The statistics could vary: Wu Dan excludes postnominal numerals which can be interpreted as verbs.

(4) 三 人 行， 必 有 我 師 焉 (論語.述而)
sān rén xíng, bì yǒu wǒ shī yān (*Lúnyǔ. Shù ér*)
 three man walk, certain have my master final-particle
 Walking with two persons, I must have a teacher among them.

(5) 拔 二 城 (戰國縱橫家書. 25 章³)
bá èr chéng (*Zhànguó zònghéngjiā shū. 25*)
 conquer two city [Jing Ji] has conquered two cities.

(6) 大 縣 十 七 (戰國縱橫家書. 26 章)
dà xiàn shíqī (*Zhànguó zònghéngjiā shū. 26*)
 county seventeenseventeen counties

The order NumN (ex. 4 and 5) is most frequent, while the NNum order (ex. 6) is rare in OC (see Table 2). Table 1 also confirms the statistics of Dryer (1992: 118): VO languages exhibit a strong tendency to be NumN. How about Middle Chinese (MC), after the Chinese language had undergone a typological change (Xu Dan 2006) starting in the Western Han (206 BC-23 AD)?

2. Word order change of Chinese nominal classifiers

According to previous scholars such as Wang Li (1958), Hashimoto (1977), Peyraube (1998) and others, classifiers began to develop during the Han. According to the commonly accepted view, there are three steps (simplified here) illustrating the use of classifiers in the Chinese noun phrase (the symbol “>” meaning “evolve toward”):

(7) NumN > NNumCL > NumCLN

Some comments are necessary to explain this change. The evolution is not linear (we will discuss this in more detail later). The schema of the first step (NumN) does not imply that NNum did not exist. This phenomenon is parallel to VO vs. OV word order in Chinese; the fact that Old Chinese was mainly a VO language does not exclude some OV order sentences, which existed but were not dominant (Xu Dan 2006). In Table 1, we saw that NumN order coexists with NNum, but the latter does not represent the prevalent word order tendency of that period. At a later time, the dominant order NumN stabilized. Table 2 is a summary of the distribution of NumN, NNum and NNumCL based on an excavated text of the 戰國縱橫家書 *Zhànguó zònghéngjiā shū* (ZZJ ± 195BC, hereafter ZZJ).

Table 2. NumN and NNum and NNumCL in the ZZJ (± 195BC)

N and Measure Word ⁴	NumN	NNum	NnumCL
---------------------------------	------	------	--------

³ 戰國縱橫家書 *Zhànguó zònghéngjiā shū* (ZZJ ± 195BC) [Letters of Strategists in the Warring States period].

⁴ Measure words (MW) exist in all languages such as ‘a cup of tea’ in English or ‘une tasse de thé’ in French. These words helped the development of classifiers in Chinese but they must not be considered as classifiers. In this paper we distinguish MW and CL. Tables based on other scholars’ works does also make this distinction.

Common noun	65	3	0
MW 里 <i>lǐ</i> half kilometer	15	0	0
MW 乘 <i>sh èng</i> ‘chariot’	8	0	2
MW 年 <i>ní án</i> ‘year’	7	0	0
MW 月 <i>yu è</i> ‘month’	4	0	0
MW 歲 <i>su ì</i> ‘year’ (age)	2	0	0
MW 丈 <i>zh àng</i> measure word	2	0	0
MW 仞 <i>r èn</i> measure word	2	0	0
Total	105	3	2

Excluded from this table are proper nouns such as 三晉 *Sān Jìn*, 三梁 *sān Liáng* and so forth. The word 乘 *sh èng* ‘chariot’ is different from other measure words. It can be used as a noun (8 occurrences) and classifier (twice). The only two examples of NNumCL involve *sh èng*:

(8) 臣 以 車 百 五十 乘 入 齊 (戰國縱橫家書.第 8 章)
ch én yǐ jū bǎi wǔshí sh èng rù Q í (ZZJ. 8)
 I take chariot hundred fifty CL enter Qi
 I will take one hundred fifty chariots to go to the State of Qi.

(9) 於氏 (是) 為 長安 君 約 車 百 乘
 (戰國縱橫家書.第 18 章)
yú sh ì(sh) w ǎ Cháng'ān jūn yuē jū bǎi sh èng (ZZJ 18)
 then for Chang-An prince arrange chariot hundred
 CL

Then [Empress Zhao] arranged one hundred chariots for her son Chang An.

The statistics in Table 2 are self-evident. The order NumN is the most attested at that period in this excavated text. Many linguists such as Peyraube (1998) are right to indicate that measure words were used first, and classifiers showed up later in the same slot. We distinguish measure words from common nouns in order to better see their development. Measure words like *lǐ* ‘half kilometer’, *ní án* ‘year’ and *yu è* ‘month’ are most frequently seen in this text. The order NNumCL is found twice. This is due to the text’s style. In the same tomb, other texts about medicine were excavated. According to Zhang Junzhi and Zhang Xiancheng (2002: 220), the order NNumCL/MW is attested more than 100 times in the 五十二病方 *Wǔshí'èr bìng fāng* ‘fifty-two prescriptions’ (almost the same period as the ZZJ). It is unfortunate that the authors did not distinguish measure words from classifiers. In fact, more than 60% measure words in their data are included in their statistics. In any case, their studies confirm that the order NNumCL began to develop around the Han period⁵. Observe two examples drawn from this excavated text.

⁵ The study of Wei Desheng (2000: 128) shows the same tendency, NNumCl order is not rare in the 睡虎地秦墓竹簡 *Shuì hǔ dì Qín mù zhújiǎn*, an excavated text on bamboo slips dated from around the 3rd century BC.

- (10) 烏豕 (喙) 十四 果 (顆) (五十二病方)
wū yǐ (huì) *shí sì guǒ (kē) (Wúshí'èr bìng fāng)*
 aconitum fourteen CL
 fourteen aconitum
- (11) 龍須 (鬚) 一 束 (五十二病方)
lóng xū (xū) *yī shù*
 rush one CL
 one bundle of rush

Recent studies such as Sun Yan (2000), Wu Dan (2005), Wu Fuxiang (2006) among others show that the order NumN without classifier was the dominant order until the Tang Dynasty (618-907). According to Wu Dan and Wu Fuxiang (2006: 556-557), during 5th century AD, NNum or NumN⁶ without a classifier made up 90% of cases in transmitted texts. This situation remained the same until the Yuan Dynasty (1271-1368). It is clear that the situation drastically changed beginning in the Yuan, as indicated in Table 3 below. In other words, classifiers became obligatory much later than current studies suggest. Here are two examples from transmitted texts:

- (12) 出一編書 (史记 55)
chū yī biānshū (Shǐjì)
 take out one CL book
 [He] took out one book.
- (13) 馬三匹 (左傳.莊公 16)
mǎ sān pǐ (Zuǒ zhuàn. Zhuāng gōng 16)
 horse three CL
 three horses

Now let us observe statistics from other scholars. The following table suggests that the order NumN (with some NNum) lasted at least until the Tang, while the order NNumCL began to develop in the Han and coexisted with NumN. In other words, the development was not linear from the first stage to the second stage, but with overlaps.

Table 3. Proportion of noun phrases (NP) without CL to NP with CL (by Wu Fuxiang 2006 based on Wu Dan 2005)

Periods	N Num and Num N (without CL)	N Num CL and Num CL N
	(figures represent relative frequency, not tokens)	
先秦 Xiān Qín ca. 8th-3rd c. BC	10	1
漢代 H àn d ài 206 BC-220 AD	9	1
魏晉南北朝 W èi-J ì n N á n-Bèi-Ch áo ca. 3rd-6th c. AD	10	1
唐代 T áng d ài 618-907	4	1

⁶ The authors did not give the statistics on either NumN or NNum.

宋代 <i>Sòngdài</i> 960-1279	3	1
元代 <i>Yuándài</i> 1271-1368	2	1
明代 <i>Míngdài</i> 1368-1644	1	5
清代 <i>Qīngdài</i> 1644-1911	1	7

The boundary between the second and third steps (NNumCL>NumCLN) does not appear to have taken place earlier than the Tang. Studies by Wang Li (1958), Hashimoto (1977), Peyraube and Wiebusch (1993), Sun Yan (2000), Wu Dan (2005) and Wu Fuxiang (2006) converge to the same conclusion. Consider the following table by Wu Fuxiang (2006: 559) based on Wu Dan (2005):

Table 4. *Relative frequency of NumCLN and NNumCL*

Periods	Num CL N	N Num CL
先秦 <i>Xiān Qín</i> ca. 8th-3rd c. BC	1	5
漢代 <i>Hàndài</i> 206 BC-220 AD	1	3
魏晉南北朝 <i>Wèi-Jìn-Nán-Běi Cháo</i> ca. 3rd-6th c. AD	1	1
唐代 <i>Tángdài</i> 618-907	5	1
宋代 <i>Sòngdài</i> 960-1279	9	1
元明清 <i>Yuán Míng Qīng</i> 1271-1911	15	1

The independent observations of Sun Yan (2000: 407) based on a text from the late Tang confirm the above statistics, i.e. NNumCL is attested more than NumCLN even though the two orders coexisted. All of these studies show that the Chinese language became a NumCL language after the Tang Dynasty, and the order NumCLN won as a dominant order only around the 13th century AD.

Monographs and articles on classifier development are numerous. Scholars note that fully-fledged classifiers are almost all monosyllabic. At the first step, echo classifiers are found on bone inscriptions. Many Tibeto-Burman languages still use echo classifiers. Li Yuming (2000) indicates that this type of classifier is a primitive phase in classifier development. We can say at least that the reverse process, i.e. a classifier becoming an echo classifier, is not reported. When general classifiers are formed or become mature, echo classifiers become restricted and eventually disappear. As scholars have pointed out, measure words were first used with numerals, and by analogy classifiers took the same position later in noun phrases. We will not deal with all these details in this paper.

3. Development of verbal classifiers compared with nominal classifiers

In some numeral classifier languages, verbal classifiers are also attested. In general, verbal CL develop after nominal CL and are apparently much less numerous. Now we examine how verbal classifiers evolved in Chinese and compare its development with nominal classifiers. It is a well known fact that in Chinese verbal classifier is obligatory and shows in postverbal position, as in VNumCL. But it did

not start this way. Scholars agree in general⁷ that verbal classifiers develop in these three steps:

- (14) NumV > VNum > VNumCL

Again, each step is not without some exceptions, but the main tendency is illustrated by these steps. According to several different studies, the order NumV was dominant before the Han:

- (15) 吾 日 三 省 吾 身 (論語.學而)
 wú rì sān xǐng wú shēn (Lúnyǔ.Xué ér)
 I day three introspect I body
 I examine myself three times a day.

- (16) 曷為 三 遇 齊 王 而 不 言 事
 ? (荀子.大略 35)
 h é w éi sān yù Qí wáng ér bù yán shì
 ? (Xúnzǐ. Dà lüè 35)
 why three meet Qi king Conj Neg talk
 Why did he not mention affairs of state after three audiences with the king of Qi ?

A few instances of the order VNum are also found (cf. Tang Yuming [1990], 2002). Here is a table illustrating verbal quantification expressions in OC, from Tang Yuming ([1990], 2002: 203).

Table 5. NumV and VNum in Old Chinese

	NumV	VNum
尚書 <i>Shàngshū</i> 5 th century BC?	4	1
詩經 <i>Shījīng</i> 11 th -6 th centuries BC	1	0
左傳 <i>Zuǒ zhuàn</i> 5 th century BC	126	9
論語 <i>Lúnyǔ</i> 5 th century BC	8	0
孟子 <i>Mèngzǐ</i> 4 th century BC	13	0
荀子 <i>Xúnzǐ</i> 4 th -3rd centuries BC	39	0
墨子 <i>Mòzǐ</i> 5 th century BC?	43	0
莊子 <i>Zhuāngzǐ</i> 4 th -3rd centuries BC	38	1
韓非子 <i>Hánfēizǐ</i> 3rd centuries BC	62	2
戰國策 <i>Zhànguó cè</i> first century BC	52	5
禮記 <i>Lǐjì</i> first century BC	26	9

⁷ Hong Yifang (2000) notes the order 'Num CL V' in her data. This order appears twice in the texts of Tulufan (4th-8th centuries) (p.69), while in the texts of Dunhuang (8th-10th centuries), it occurs half of the time of the 'V Num CL' order, i.e. 33 'Num CL V' (p.129) vs. 61 'V Num CL' in the Dunhuang Bianwen (p. 127). Is it due to the style of these texts or other factors? It is worth noting that in the texts of Dunhuang, the order 'Num CL N' is more frequent than 'N Num CL', i.e. 375 vs. 246 (pp. 110-111). It seems that the word order was undergoing changes during this period.

It is clear that the occurrences of NumV represent the predominant order in OC while a few instances of VNum can be seen. In the earliest examples with VNum given by Tang, we notice that in most of them (7 out of 10) the verb is limited to 笞 *chī* ‘flog, beat with bamboo stick’, or 鞭 *biān* ‘flog’. This finding is further confirmed by the statistics of Wen Desheng (2000: 127-128) from the 睡虎地秦墓竹簡 *Shuì hǔ dì Qín mù zhújiǎn (SHD)*, an excavated text on bamboo slips dated from around the 3rd century BC. Wei noted that there are six instances of VNum order, all with the verb 治(笞) *chī* ‘flog’. The order NumV, in contrast, is used 17 times. Here is an example with VNum order given by Tang in OC:

- (17) 當 笞 五十 (睡虎地秦墓竹簡)
- dāng chī wǔshí (SHD)*
- must beat.with.bamboo.stick fifty
- This merits fifty beatings with a bamboo stick.

In example (17), the order VNum is used. But this order is not frequent in OC. Real verbal CLs are found in the Wei-Jin period. Observe example (18):

- (18) 讀 書 百 遍 而 義 自 見。(三國志)
- dú shū bǎi biàn ér yì zì xi àn. (Sānguó zhì)*
- read book hundred CL
Conj meaning self to become visible ?
- Reading a book one hundred times, the meaning itself becomes clear.

In Table 6 we have roughly sketched classifier evolution in Chinese:

Table 6. Synthesis of the nominal CL and verbal CL development

先秦 <i>Xiān Qín</i>	漢代 <i>Hàn dài</i>	魏晉 <i>Wěi-Jìn</i>	唐宋 <i>Táng Sòng</i>	元 <i>Yuán</i>
NumN	NumN	NumN	NumN	NumN
(NNumCL)	NNumCL	NNumCL/ NumCLN	NumCLN	NumCLN
NumV	VNum (VNumCL)	VNumCL	VNumCL	VNumCL

Parentheses mean that the order began to exist. The absence of some orders such as NNum or VNum does not imply that they did not exist, but they were not representative at these periods. In comparing classifier development in Chinese, we notice that nominal CLs and verbal CLs began to develop from the same origin but ended up in different places:

- (19) NumN > NNumCL > NumCLN
NumV > VNum > VNumCL

Table 6 shows that

- (1) At the beginning, Num preceded either N or V;
- (2) The verbal CL began to develop when CL was fully-fledged in the NP;
- (3) The order NumCL in NPs became prenominal, while NumCL in a VP remained in the postverbal position.

The development of classifiers in Chinese may lead us to conclude that nominal classifiers develop before verbal classifiers in NumCL-obligatory languages. It is interesting to see that the distribution of nominal CL and verbal CL are complementary. Sun Hongkai (1988: 351), Tang Yuming ([1990], 2002: 206) and Shi Yuzhi (2006: 192-193) have already noted this phenomenon. We will add some pieces of evidence to contribute to the discussion.

4. Cross-linguistic complementary distribution of nominal classifiers and verbal classifiers

In section 3, we showed that nominal classifiers and verbal classifiers ended up taking complementary positions in Chinese syntax. One point has to be noted: at the beginning, their distribution was not complementary. A numeral could precede a noun as well as a verb; and NumCL started out at the same side of noun or verb: post nominal and post verbal. Now let us observe the distribution of nominal CL and verbal CL in non-Han languages and in cross-linguistic data. As we have just mentioned above, scholars noticed the complementary distribution of nominal classifiers and verbal classifiers in Tibeto-Burman languages and in the history of Chinese. Here we provide a larger sample of languages, which goes beyond Tibetan-Burman languages to include Altaic and Austro-Asian languages. A linguistic map of languages of China is provided as Appendix I at the end.

Table 7. Complementary positions of classifiers in cross-linguistic data

Languages	VO/ OV	NumCLN NNumCL	other orders	VNumCL NumCLV	other orders	Sources
Tibeto-Burman groups of Sino-Tibetan languages						
<i>Tibetan</i>						
Maqu Zang	OV	NCLNum		CLNumV		Zhou 2003
Cangluo	OV	NCLNum	NNum	CLNumV		Zhang 1986
Menba	OV	NCLNum	NNum	CLNumV		Lu 2002
Baima	OV	NCLNum	NNumCL	CLNumV		Sun 2007
<i>Yi (Lolo)</i>						
Yi (Xide)	OV	NNumCL		NumCLV		ZGDYY 2007
Lahu	OV	NNumCL		NumCLV		Chang <i>et al.</i> 1986
Naxi	OV	NNumCL	echo CL : N1NumN 2	NumCLV		He & Jiang 1985
Sangkong	OV	NNumCL		NumCLV		Li YS. 2002
Kazhuo	OV	NNumCL		NumCLV		Mu 2003
Rouruo	OV	NNumCL		NumCLV		Sun <i>et al.</i>

						2002
Bai	VO	NNumCL	NCL or echo CL	VNumCL		Xu & Zhao 1984
Jingpo						
Sulong	OV	NNumCL NCLNum	NNum	CLNumV		Li DQ. 2004
Jingpo	OV	NCLNum	NNum	NumCLV		Dai & Jiang 2004
Geman	OV	NCLNum	NNum	CLNumV		Li DQ. 2002
Anong	OV	NNumCL	echo CL	NumCLV		Sun & Liu 2005
Mian						
Langsu	OV	NNumCL		NumCLV		Dai 2005
Achang	OV	NNumCL		NumCLV		ZGDYY 2007
Zaiwa	OV	NNumCL		NumCLV		ZGDYY 2007
Qiang						
Qiang	OV	NNumCL	NNum when Num=1	NumCLV		Liu 1998
Pumi	OV	NNumCL	NNum	NumCLV		Lu 2001
Rgyal rong (Jiarong)	OV	NNumCL	NNum		NumV	Xiang 2008
Shixing	OV	NNumCL		NumCLV		Xu 2009
Tai (Dong-Tai) languages						
Lakkia (Lajia)	VO	NumCLN		VNumCL		Mao <i>et al.</i> 1982
Zhuang (Wuming)	VO	NumCLN		VNumCL		Zhang <i>et al.</i> 1999
Dai (Dehong)	VO	NNumCL	NCLNum when Num=1	VNumCL		Zhou & Luo 2001
Mak (Mohua)	VO	NumCLN	CLNNum when Num=1	VNumCL	VCLNum when Num=1	Yang 2000
Lachi (Laji)	VO	NumCLN		VNumCL		Li YB. 2000
Biao	VO	NumCLN		VNumCL		Liang & Zhang 2002
Mulam (Mulao)	VO	NumCLN		VNumCL		Bo 2003
Buyang	VO	NumCLN		VNumCL		Li JF. 1999
Hmong-Mien (Miao-Yao) languages						
Miao	VO	NumCLN		VNumCL		Wang <i>et al.</i> 1985
Mien (Mian)	VO	NumCLN		VNumCL		Mao 2004
Bunu	VO	NumCLN		VNumCL		Mao <i>et al.</i> 1982

Buni (Jiongnai)	VO	NumCLN		VNumCL		Mao and Li 2002
Altaic languages						
Salar (Sala)	OV	NNumCL NumCLN	NNum	NumCLV	NumV	Lin 1985
Korean	OV	NNumCL NumCLN	NNum NumN	NumCLV	NumV	Jin 2005
Manchu	OV	NNumCL	NumN	NumCLV		Wang 2005
Austro-Asiatic languages						
Kemie	VO	NumCLN	echo CL	VNumCL		Chen 2005
Mang	VO	NumCLN	CLN when Num=1	VNumCL	VCLNum when Num=1	Gao 2003
Gin (Jing)	VO	NumCLN		VNumCL		Ouyang <i>et al.</i> 1984
Bolyu (Lai)	VO	NumCLN		VNumCL		Li XL. 1999
Bugan (Bugeng)	VO	NumCLN NNumCL		VNumCL		Li YB. 2005
Buxing	VO	NumCLN NNumCL		VNumCL		Gao 2004
Khmu (Kemu)	VO	NumCLN NNumCL		VNumCL		Chen 2002

The classification of languages in Table 7 is from 中國的語言 Zhōngguó de yǔyán (2007). Languages are chosen more or less randomly in one subgroup; recently studied languages and less-known languages have also been added. The list is not exhaustive. In Tibeto-Burman, most groups from Tibetan, Yi, Jingpo and Qiang are represented here. Some languages belong to the Tai (Dong-Tai) and Hmong-Mien (Miao-Yao) groups, as well as the Altaic and Austro-Asiatic families. We can observe the following based on Table 7:

1. The VO or OV order is pertinent for language subgroups (correlates with NumCL and N order) except Bai and Dai (Dehong). Two OV patterns are found, in Tibetan-Burman and Altaic. Two VO patterns are also attested, in Tai-Hmong Mien and Austro-Asiatic. In the Altaic languages, the Mongolic group is absent because it seems that this group does not use CL (measure words are excluded here); a numeral can directly modify a noun.
2. The Num+CL group shows up in the reverse order with N and V respectively, whereas the internal order of the group remains constant (rare exceptions for numeral 1, see also Shi Yuzhi 2006). More precisely, if nominal CLs are on the right of nouns in a language, verbal CLs will be on the left of verbs, and vice versa, regardless of the internal order of Num and CL. According to Sun Hongkai (1988: 341), classifiers are not abundant in languages in which the CL precedes the Num. Dai Qingxia and Jiang Ying's (2004) article confirms that classifiers in the Jingpo language - having a CLNum order in the NP - are at a very primitive stage. In OV languages, NumCL in Yi and Qiang groups and CLNum in Tibetan and Jingpo groups tend to be

postnominal and preverbal. VO languages, except the dialect of Dai cited in the table and some Austro-Asiatic languages, clearly prefer the NumCL order. NumCL occur in prenominal and postverbal position in most of the VO languages studied.

3. Four patterns of the complementary position of classifiers are seen in Table 7.

(a) Tibetan-Jingpo type: NCLNum and CLNumV.

(b) Yi-Qiang type: NNumCL and NumCLV

(c) Tai (Dong-Tai) and Hmong-Mien (Miao-Yao) type: NumCLN and VNumCL.

(d) Mixed type: distribution of Num and CL is less neat. This is displayed in some Austro-Asian and Altaic languages.

Two subtypes, (a) and (b), can be distinguished for OV languages. Likewise, VO languages have two subtypes, namely (c) and (d). Contemporary Chinese (Mandarin) belongs to type (c).

4. Some exceptions exist for the complementary position of classifiers. The Bai language has NumCL order to the right of both noun and verb. In the Dai dialect (Dehong), the distribution is not neat either. NumCLN and NumCLV coexist in Korean, an OV language, and in Buxing, Kemu and Bugeng, three VO languages of the Austro-Asiatic family according to scholars' descriptions (see Table 7). The Buxing or Kemu speakers have close contact with Dai people. This may provide us an explanation why Dai and these languages do not present a complementary distribution of classifiers. In these languages, word order may be continuing to change due to complex contacts between languages.

5. Discussion

In section 4 we saw that in some languages, against the general trend, nominal and verbal classifier distributions are not in complementary positions. We propose that if in one language a nominal CL and a verbal CL are on the same side with respect to a noun or to a verb, then classifiers in this language should be in a developing stage. This could be the situation in Bai, which is influenced by Chinese and always presents atypical characteristics in the Yi group. In other words, we think that Bai is still undergoing transition in terms of word order change in regard to numeral classifiers. In some Austro-Asiatic languages, two orders often coexist; this also suggests that a word order change is taking place. We hope that further studies of these languages will shed light on this issue.

We have looked at Chinese classifier evolution to try to understand the reason why nominal CL and verbal CL tend to be in opposite positions in most languages. Table 6 shows that the orders NNumCL/NumCLN and VNumCL coexisted during the Wei-Jin, and only from the Tang did nominal NumCL and verbal NumCL become complementary. Is the phenomenon found in contemporary Austro-Asiatic languages and in some Dai dialects parallel to the evolution of classifiers in Middle Chinese?

In fact, when nominal quantification and verbal quantification take the same form, i.e. at the same side of a noun or verb, confusion is possible:

(20)	诵	《诗》	三	百 (論語.子路)
	<i>sòng</i>	《shī》	<i>sān</i>	<i>bǎi</i> (<i>Lúnyǔ. Zǐ lù</i>)
	recite	Odes	three	hundred

Recite the three hundred Odes

This example is cited by Ye Guichen and Luo Zhifeng (2007). The authors argue that verbal CLs were formed to distinguish themselves from nominal quantification⁸. Here the NP “read-poem-three-hundred” refers to the first *Odes Shījīng* which contains 305 poems. But as Ye and Luo pointed out, nothing in this phrase’s syntax would prevent interpreting “three-hundred” as verbal quantification (‘three hundred times’). The following example is used by Tang Yuming ([1990] 2002):

- (21) 黎明， 围 宛 城 三 匝。（史記·高祖本
紀）
Gāozǔ běnjì *lín míng, wái Wǎn chéng sān zā. (Shǐjì.*
dawn, surround Wan city three circuit
At dawn, [the army of Liu Bang] circled the City of Wan
three times/ in
three concentric circles.

This example shows that if nominal CL and verbal CL take the same syntactic position (both at the same side of a noun or of a verb), ambiguities may arise. Tang cited Liu Shiru (1965) who had indicated that the word 匝 *zā* ‘circuit’ is a nominal classifier of 城 *chéng* ‘city’ rather than a verbal classifier of the verb 围 *wái* ‘surround’. One can suggest that possible confusions between a nominal CL and a verbal CL require readjustment of word order.

The Bai language is another language with such a possible, but unrealized confusion. In a string of words Verb-Noun-CL-Num, it is possible to interpret CL-Num as part of noun phrase or as verbal modifier.

- (22) $\alpha^{31}t_i^{33}$ ηv^{55} $\alpha^{31}mo^{33}$ $su\alpha^{44}$ $l\alpha^{42}$ $t\tilde{o}^{21}$ ka^{33} $tsh\tilde{e}^{55}$
Dad O.M.⁹ mom speak Past speech several NCL
“To Dad, Mom said a few sentences.”
- (23) $\alpha^{31}t_i^{33}$ ηv^{55} $\alpha^{31}mo^{33}$ $su\alpha^{44}$ $l\alpha^{42}$ $t\tilde{o}^{21}$ ka^{33} $t\tilde{a}^{21}$
Dad O.M. mom speak Past speech several VCL
“To Dad, mom spoke several times.”

However, there are no ambiguous classifiers in the language, at least we have not found any ambiguous classifier in Bai.

In conclusion, two possibilities explain the non-complementary distribution of nominal CLs and verbal CLs in some languages. (1) The language has yet to complete a word order change during a historical stage; (2) There is no chance of confusion when nominal CL and verbal CL are on the same side of a noun or verb. However, nominal classifiers and verbal classifiers present a word order in complementary distribution in most languages investigated in our paper.

⁸ We do not agree with their assertion that verbal CLs were already being used in the Qin Dynasty.

⁹ O.M. represents object marker.

References

- Akhenvald, Alexandra. 2000. *Classifiers*. Oxford: Oxford University Press.
- Bo Wenzhe. 2003. *Mulaoyu yanjiu (Studies of the Mulaoyu)*. Beijing: Minzu chubanshe.
- Chang Hong'en et al. 1986. *Lahuyu jianzhi (Outline of the Lahu Grammar)*. Beijing: Minzu chubanshe.
- Chen Guoqing. 2002. *Kemuyu yanjiu (Studies of the Kemu)*. Beijing: Minzu chubanshe.
- Chen Guoqing. 2005. *Kemieyu yanjiu (Studies of the Kemie)*. Beijing: Minzu chubanshe.
- Comrie, Bernard. 2008. 'The Areal Typology of Chinese: Between North and Southeast Asia', in Djamouri, R. Meisterernst B & R. Sybesma (eds.), *Chinese Linguistics in Leipzig, CLE*, 2, 1-21.
- Dai Qingxia. 2005. *Langsuyu yanjiu (Studies of the Langsu)*. Beijing: Minzu chubanshe.
- Dai Qingxia and Jiang Ying. 2004. Mengya qi liangci de leixingxue tezheng-Jingpo yu liangci de ge'an yanjiu (Typological characteristics of classifiers at a primitive stage-the case of Jingpo), *Studies on Sino-Tibetan languages: Papers in honor of Professor Hwang-Cherng Gong on his seventieth Birthday*. Taipei: Academia Sinica. 315-325.
- Downing, Pamela. 1996. *Numeral Classifier System-The Case of Japanese*. Amsterdam/Philadelphia: John Benjamins Publishing Company.
- Dryer, Matthew S. 1992. 'The Greenbergian word order correlations'. *Language*, Vol 68: 1, 81-138.
- Dryer, Matthew S. 2003. 'Word Order in Sino-Tibetan Languages from a Typological and Geographical Perspective', in Thurgood G. and R. J. LaPolla (eds.), *The Sino-Tibetan Languages*. London and New York: Routledge. 43-55.
- Fang Mei. 1993. 'Binyu yu dongliang ciyu de cixu wenti' (Word order of object and verbal classifier), *Zhongguo Yuwen*, 1, 54-64.
- Fu Jingqi and Xu Dan. 2009. 'SVO yuyan li de binyu qianzhi' (Preverbal object in SVO languages), *Minzu yuwen*. 3, 3-15.
- Gao Yongqi. 2003. *Mangyu yanjiu (Studies of the Mang)*. Beijing: Minzu chubanshe.
- Gao Yongqi. 2004. *Buxingyu yanjiu (Studies of the Buxing)*. Beijing: Minzu chubanshe.
- Greenberg, J. H. 1963. 'Some Universals of Grammar with Particular Reference to the Order of Meaningful Elements', in Greenberg J. H. (ed.), *Universals of Languages*. Cambridge, Mass: MIT Press. 73-112.
- Hagège, Claude. 1985. 'Le chinois, l'ordre des mots et l'ordre du pensable'. *T'oung Pao*. LXXI, 263-274.
- Hashimoto, Mantaro J. 1977. 'The genealogy and the role of the classifier in Sino-Tibetan', *Computational Analyses of Asian & African Languages*. 7, 69-78.
- Haspelmath Martin, Dryer Matthew, Gil David and Comrie Bernard (eds.). 2005. *The World Atlas of Language Structures*. Oxford: Oxford University Press.
- He Jiren and Jiang Zhuyi. 1985. *Naxiyu jianzhi (Outline of Naxi Grammar)*. Beijing: Minzu chubanshe.
- Hong Yifang. 2000. *Dunhuang Tulufan wenshu zhong zhi liangci yanjiu (Studies of classifiers attested in texts of Dunhuan and Tulufan)*. Taipei: Wenjin chubanshe.
- Huang Shengzhang. 1961. 'Liang Han shidai de liangci' (Classifiers during the Han), *Zhongguo Yuwen*, 5, 21-28.
- Huang Xing. 1996. 'Woguo shaoshu minzu yuyan de cixu leixing' (The Word Order typology of minority languages in China). *Minzu yuwen*, 1, 10-18.
- Jin Haiyue. 2005. 'Han-Chao yu shuliang duanyu de xingshi ji yuyi bijiao' (Syntactic and semantic comparison of numeral classifiers in Chinese and Korean), in Li Jinfang and Hu Suhua (eds.) *Han-Zang yuxi liangci yanjiu (Studies of classifiers in Sino-Tibetan)*. Beijing: Zhongyang minzu daxue chubanshe. 499-505.
- Li Daqin. 2002. *Gemanyu yanjiu (Studies of the Geman)*. Beijing: Minzu chubanshe.
- Li Daqin. 2004. *Sulongyu yanjiu (Studies of the Sulong)*. Beijing: Minzu chubanshe.
- Li Jinfang. 1999. *Buyangyu yanjiu (Studies of the Buyang)*. Beijing: Zhongyang minzu daxue chubanshe.
- Li Jinfang and Hu Suhua (eds). 2005. *Studies of classifiers in Sino-Tibetan*. Beijing: Zhongyang minzu daxue chubanshe.
- Li Xulian. 1999. *Laiyu yanjiu (Studies of the Lai)*. Beijing: Zhongyang minzu daxue chubanshe.
- Li Yongsui. 2002. *Kongsangyu yanjiu (Studies of the Kongsang)*. Beijing: Zhongyang minzu daxue chubanshe.
- Li Yongsui. 2002. *Sangkongyu yanjiu (Studies of the Sangkong)*. Beijing: Zhongyang minzu daxue chubanshe.
- Li Yuming. 2000. 'Kaobeixing liangci jiqi zai Han-Zang yuxi liangci fazhan zhong de diwei' (Echo-classifiers and their role in classifier development in Sino-Tibetan). *Zhongguo Yuwen*, 1, 27-34.

- Li Yunbing. 2000. *Lajiyu yanjiu* (Studies of the Laji). Beijing: Zhongyang minzu daxue chubanshe.
- Li Yunbing. 2005. *Bugengyu yanjiu* (Studies of the Bugeng). Beijing: Minzu chubanshe.
- Liang Min and Zhang Junru. 2002. *Biaohua yanjiu* (Studies of the the Biao). Beijing: Minzu chubanshe.
- Lin Lianyun. 1985. *Salayu jianzhi* (Outline of the Sala Grammar). Beijing: Minzu chubanshe.
- Liu Guangkun. 1998. *Mawo Qiangyu yanjiu* (Studies of the Mawo Qiang). Chengdu: Sichuan minzu chubanshe.
- Liu Shiru. 1965. *Weijin Nanbei chao liangci yanjiu* (Studies on Classifiers in Wei-Jin Nan Bei Dynasties). Beijing: Zhonghua shuju.
- Liu, Danqing. 2003. *Yuxu Leixingxue yu Jieci Lilun* (Word Order Typology and a Theory of Adposition). Beijing: Commercial Press.
- Lu Shaozun. 2001. *Pumi fangyan yanjiu* (Studies on Pumi Dialects). Beijing: Minzu chubanshe.
- Lu Shaozun. 2002. *Menba fangyan yanjiu* (Studies on Menba Dialects). Beijing: Minzu chubanshe.
- Mao Zongwu. 2004. *Miaozu Mian yu fangyan yanjiu* (Studies on the Mian dialects of the Yao). Beijing: Minzu chubanshe.
- Mao Zongwu and Li Yunbing. 2002. *Jiongnaiyu yanjiu* (Studies of the Jiongnai). Beijing: Zhongyang minzu daxue chubanshe.
- Mao Zongwu *et al.* 1982. *Yaoyu jianzhi* (Outline of the Yao language Grammar). Beijing: Minzu chubanshe.
- Mu Shihua. 2003. *Kazhuoyu yanjiu* (Studies on the Kazhuo). Beijing: Minzu chubanshe.
- Mu Shihua. 2005. 'Lun Naxiyu kaobeixing liangci de yufahua' (On the grammaticalization of echo-classifier in Naxi), in Li Jinfang and Hu Suhua (eds.), *Han-Zang yuxi liangci yanjiu* (Studies of classifiers in Sino-Tibetan). Beijing: Zhongyang minzu daxue chubanshe. 141-165.
- Ouyang Jueya *et al.* 1984. *Jingyu jianzhi* (Outline of the Jing Grammar). Beijing: Minzu chubanshe.
- Paris, Marie-Claude. 1981. *Problèmes de syntaxe et de s'énantique en linguistique chinoise*. Paris: Collège de France.
- Peyraube, Alain and TheklaWiebusch. 1993. 'Le rôle des classificateurs nominaux en chinois et leur evolution historique : un cas de changement cyclique', *Faits de langue*, 2, 51-61.
- Peyraube, Alain (貝羅貝). 1998. 'Shanggu zhonggu hanyu liangci de lishi fazhan' (Evolution of classifiers in Old Chinese and Middle Chinese). *Yuyanxue luncong*, 21, 99-122.
- Peyraube, Alain. 2000. 'Ordre des constituants en chinois archaïque', in A. Donabédian & Xu Dan (eds.), *Ordre des mots et typologie linguistique*. Paris: *Cahiers de Linguistique de l'INALCO*. 3, 99-110.
- Shen Pei. 1992. *Yinxu jiagu buci yuxu yanjiu* (Studies on word order of oracular inscriptions on tortoise shells and bones of the Dynasty Yin ruins). Taipei: Wenjin chubanshe.
- Shi Yuzhi. 2006. *Yufahua de dongyin yu jizhi* (Motivation and Mechanism of Grammaticalization). Beijing: Beijing daxue chubanshe.
- Sun Hongkai. 1988. 'Zangmianyu liangci yongfa bijiao' (Comparison of classifiers in Tibeto-Burman Languages). *Zhongguo yuyan xuebao*, 3, 339-355.
- Sun Hongkai *et al.* 2002. *Rouruoyu yanjiu* (Studies of the Rouruo). Beijing: Zhongyang minzu daxue chubanshe.
- Sun Hongkai and Liu Guangkun. 2005. *Anongyu yanjiu* (Studies of the Anong). Beijing: Minzu chubanshe.
- Sun Hongkai, Hu Zengyi and Huang Xing (eds.). 2007. *Zhongguo de yuyan (ZGDYY)* (The Languages in China). Beijing: Shangwu yinshuguan.
- Sun Yan. 2005. 'Ru Tang qiu fa xunli xingji de liangci' (Classifiers seen in the Diary of a Pilgrimage to China in Search of the Law), in Li Jinfang and Hu Suhua (eds.), *Han-Zang yuxi liangci yanjiu* (Studies of classifiers in Sino-Tibetan). Beijing: Zhongyang minzu daxue chubanshe. 387-408.
- Tang Yuming. 2002. [1990] 'Gu hanyu dongliang biaoshifa tanyuan' (Origin of verbal quantification in Old Chinese), in *Zhuming zhongnian yuyanxuejia zixuanji-Tang Yuming* (Self-selected collection by notable linguists-Tang Yuming). Hefei: Anhui jiaoyu chubanshe. 201-206
- Wang Fushi *et al.* 1985. *Miaoyu jianzhi* (Outline of the Miao Grammar). Beijing: Minzu chubanshe.
- Wang Li. 1958. *Hanyu jianshi* (Outline of the Chinese Language History). Beijing: Kexue chubanshe.
- Wang Qingfeng. 2005. *Manyu yanjiu* (Studies of the Manchu). Beijing: Minzu chubanshe.
- Wu Anqi. 2005. 'Fenxi xing yuyan de mingliangci' (Nominal classifiers in analytic languages), in Li Jinfang and Hu Suhua (eds.), *Han-Zang yuxi liangci yanjiu* (Studies of classifiers in Sino-Tibetan). Beijing: Zhongyang minzu daxue chubanshe. 1-13.
- Wu Dan. 2005. *Hanyu shuliang jiegou yuxu yanbian de lishi kaocha* (Diachronic Investigations on Word Order Change of Numeral Classifiers in Chinese). Beijing: Master Dissertation of the CASS.

- Wu Fuxiang. 2006. 'Wei-Jin Nanbei Chao shiqi hanyu mingliangci fanchou de yufahua chengdu' (Degree of grammaticalization of Chinese classifier category in Wei-Jin Nanbei Chao), *Linguistic Studies in Chinese and Neighboring Languages: Festschrift in Honor of Professor Pang-Hsin Ting on his 70th Birthday*, 553-571.
- Xiang Bolin. 2008. *Jiarongyu yanjiu* (Studies of the Jiarong). Beijing: Minzu chubanshe.
- Xu Dan. 2006. *Typological Change in Chinese Syntax*. Oxford: Oxford University Press.
- Xu Dan. 2009. 'Xiayou Shixingyu de mouxie tedian' (Some characteristics of Shixing at the lower reaches). *Minzu yuwen*, 1, 25-42.
- Xu Lin and Zhao Yansun. 1984. *Baiyu jianzhi* (Outline of the Bai Grammar). Beijing: Minzu chubanshe.
- Xuan Dewu *et al.*. 1985. *Chaoxianyu jianzhi* (Outline of the Korean Grammar). Beijing: Minzu chubanshe.
- Yang Tongyin. 2000. *Moyu yanjiu* (Studies of the Mo). Beijing: Zhongyang minzu daxue chubanshe.
- Ye Guichen and Luo Zhifeng. 2007. 'Hanyu dongliangci xingcheng de yuanyin' (On the formation of verbal classifiers in Chinese), *Guhanyu yanjiu*, 3, 81-85.
- Zhang Jichuan. 1986. *Cangluo Menba jianzhi* (Outline of the Cangluo Menba Grammar). Beijing: Minzu chubanshe.
- Zhang Junru *et al.*. 1999. *Zhuangyu fangyan yanjiu* (Studies on Zhuang Dialects). Chengdu: Sichuan minzu chubanshe.
- Zhang Junzhi and Zhang Xiancheng. 2002. 'Boshu wushi'er bingfang shuliangci yanjiu' (Studies on numeral classifiers seen in the Fifty-two Prescriptions on silk), in Zhang Xiancheng (ed.) *Jianbo yuyan wenzi yanjiu* (Collected Studies on grammar and graphs found on bamboo slips and silks). Chengdu: Bashu shushe. 1, 191-224.
- Zhou Maocao. 2003. *Maqu Zangyu yanjiu* (Studies on Maqu Tibetan). Beijing: Minzu chubanshe.
- Zhou Yaowen and Luo Meizhen. 2001. *Daiyu fangyan yanjiu* (Studies on Dai Dialects). Beijing: Minzu chubanshe.

Appendix I . Linguistic Map of China
<http://schiller.dartmouth.edu/chinese/maps/map2b.html>

Map 2b: Chinese and Non-Chinese Language Groups

