

Number Deletion and Classifier Realization in Three Chinese Dialects

Yi-Hsien Liu

University of Southern California

This paper explores the interactions between classifiers and numerals (specifically the numeral ‘one’) in Cantonese, Mandarin, and Taiwanese by looking at bare NP, [Cl-NP], [Poss-Cl/MFK-NP], [RC-Cl/MFK-NP], and [Dem-(Cl)-NP]. We propose that there are three features in Cl—[num]([Sg]/[Pl]), [one], and [def], and the three-way dialectal differences on classifiers and numerals result from the different ways to check [num] feature and the (non)-availability of Cl-raising to D. Cantonese and Mandarin have the ability to incorporate the numeral value ‘one’ and the inherent value ‘one’ (from individualization) into classifiers, whereas Taiwanese can only have inherent value ‘one’ in classifiers. This parameter attributes to the fact that Taiwanese has the obligatory presence of ‘one’ in the indefinite [one-Cl-NP]. Also, we suggest that not all the intermediate projections under D have to be projected. For the nominal constructions that have ambiguous number information, it is possible that NumP or ClP is not projected at all.

1. Background

In recent years, many studies (Cheng&Sybesma 1998, 1999; Li 1996, 1997, 1998, 1999; Tang 1990, 1996, 2001c) have been devoted to exploring the nominal nature of Chinese dialects. Many of them have been focused on the (in)definite interpretation of (Number)-Classifier-Noun [(Num)-Cl-NP] phrases and bare nouns in Cantonese and Mandarin. In Mandarin, bare NPs in postverbal position can be interpreted as indefinite as in (1a), definite in (1b), generic in (1c). In preverbal position, bare NPs can be definite (2a) and generic (2b), but not indefinite as the translation in (2a). [CL-NP] in Mandarin can only have indefinite interpretation as in (1d), and thus always in postverbal position but never in preverbal position (2a). [Num-CL-NP] (with individual interpretations)¹ can

¹ Li (1998) notes that (2c) improves a lot if it is the answer to *how many* questions.

- (i) [San ge baomu] jiu zhaogu ni yige xiaohai a?
threeCL babysitter only care you one child PAR
‘Three babysitters took care of you, only one child?’
- (ii) [San zhi gunzi] gou ni da ta ma?
Three CL sticks enough you hit him Q
‘Are three sticks enough for you to hit him (with)?’

Noticeably, some linguistic clues are found in those acceptable sentences, for example, the adverb *jiu* ‘then’ and *gou* ‘enough’. She argues that these nominals express quantity readings (rather than the existence of indefinite individuals), and that they only project to NumP (rather than to DP).

only be indefinite and always in postverbal not preverbal position in (1e)/(2c). (SFP= sentence final particle)

(1) Mandarin: nominals in postverbal position

- | | |
|--|---|
| a. John mai [shu] qu le. (indef)
John buy book go SFP
'John went to buy a book/books.' | d. Wo xiang mai [ben shu]. (indef)
I would-like buy CL book
'I would like to buy a book/*the book.' |
| b. John he-wan-le [tang]. (def)
John drink-finish-LE soup
'John finished the soup.' | e. Wo kan-dao [san ge xuesheng]. (indef)
I see three CL student
'I saw three students/*these three students.' |
| c. John xihuan kan [shu]. (generic)
John like read book
'John likes to read books.' | |

(2) Mandarin: nominals in preverbal position

- | | |
|---|---|
| a. [*Zhi] Mao] duzi e le.
(*CL) cat stomach hungry SFP
'The/*A cat is hungry.' | c. *[San ge xuesheng] wo zhidao bei dang le.
Three CL student I know BEI fail SFP
'Three students, I know they fail the subject.' |
| b. [Laoshu] ai chi dami. (generic)
mouse love eat rice
'Mice like to eat rice.' | |

Cantonese differs from Mandarin in that bare NPs cannot express definiteness, preverbal or postverbal; instead, it uses [CL-NP] as shown in (3b)/(4a). To express indefiniteness, Cantonese, like Mandarin, uses bare NPs and [CL-NP] in postverbal position as in (3a)/(3c). As for generic interpretation, Cantonese again patterns like Mandarin, using bare NPs as in (3d)/(4b).

(3) Cantonese: nominals in postverbal position

- | | |
|---|---|
| a. John heoi maai [syu]. (indef)
John go buy book
'John went to buy a book/books.' | d. Ngo zungji taai [syu]. (generic)
I like read book
'I like to read books.' |
| b. John jam-jyun [* (wun) tong] la.
John drink-finish CL soup SFP
'John finished drinking the soup.' | e. Ngo sik-zo [saam go pinggow]. (indef)
I eat-PF three CL apple
'I have eaten three apples/*these three apples.' |
| c. Ngo soeng maai [bun syu] (lei taai).
(indef)
I want buy CL book come read
'I want to buy a book (to read).' | |

(4) Cantonese: nominals in preverbal position

- | | |
|--|--|
| a. [* (Zek) gau] soeng gwo maalou. (def)
CL dog want cross road
'The dog wants to cross the road.' | |
|--|--|

- b. [Gau] zungji sek juk. (generic)
 dog like eat meat
 ‘Dogs love to eat meat.’
- c. *[Saam bun syu] ngo soeng maai lei taai. (indef)
 Three Cl book I want buy come read
 ‘Three books, I want to buy them to read.’

The three different interpretations of the two languages are summarized as below:

The three interpretations of the Mandarin and Cantonese nominals

	Mandarin					Cantonese				
	Indef	Def		Gen		Indef	Def		Gen	
	Post-V	Pre-V	Post-V	Pre-V	Post-V	Post-V	Pre-V	Post-V	Pre-V	Post-V
Bare+N	+	+	+	+	+	+	-	-	+	+
Cl+N	+	-	-	-	-	+	+	+	-	-
Num+C	+	-	-	-	-	+	-	-	-	-
I+N										

The present paper includes one more Chinese dialect, Taiwanese (Southern Min), to see the three-way dialectal differences in the interactions between classifiers and numerals. Cheng & Sybesma (2003) has made a simple observation on Taiwanese nominal— it crucially differs from the other Chinese dialects (Mandarin, Cantonese, and Wu) in that Taiwanese does not have [Cl-NP] structure, definites or indefinites. In addition to including one more Chinese dialect, we go beyond the limit of investigating bare NP and [(Num)-CL-NP], consider more data to explore the nature of classifiers, and focus on the interaction between classifiers and numerals (specifically the numeral ‘one’).

More data related to the different distributions of classifiers and the numeral ‘one’ in the three dialects are investigated. Specifically, we look at bare NP, [Cl-NP], [Poss-Cl/MFK-NP], [RC-Cl/MFK-NP], and [Dem-(Cl)-NP].² The questions to be asked are as follows: 1) why can Mandarin and Taiwanese have definite bare NP, but not Cantonese? 2) Why can’t Mandarin and Taiwanese have definite [Cl-NP] like Cantonese? 3) Why can’t Taiwanese (generally) have [Cl-NP] at all?³ 4) Why can classifiers be realized in

² Poss=possessive RC= relative clause Dem=demonstrative MFK= modifier marker
 The MFK is *de* in Mandarin, *ge* in Cantonese, and *e* in Taiwanese.

³ Au-Yeung (2005) points out that Cantonese has the following [Cl-NP] phrases, which are derived from one-deletion as in (i). The classifiers are limited to multiples (ones-tens-hundreds-thousands-tens of thousands) or measuring classifiers (meter, catty, hour, day, etc.). Taiwanese has exactly the same phrases in (ii), and this seems to be the counterexamples of Cheng&Sybesma’s observation that Taiwanese does not have [Cl-NP] structure in any case. The status of these [Cl-

possessive and relativized constructions in Cantonese, but Mandarin and Taiwanese have to use modifier markers *-de/-e?* 5) Why can Mandarin omit classifiers in [Dem-(Cl)-NP], whereas Cantonese and Taiwanese cannot? The questions show three-way differences. Questions 1), 2), and 4) show that Cantonese is generally more distinct from Mandarin and Taiwanese. Question 5) shows that Cantonese and Taiwanese are the same in terms of classifier realization in the demonstrative construction. Question 3) shows that Taiwanese is different from all the other two languages.

The general question to be asked is — what exactly makes the whole picture on classifiers complex in the three dialects? We adopt the feature-checking analysis (Chomsky 1995), try to solve the puzzle by first exploring the nature of classifiers, and hopefully can provide a unified account for the constructions under investigation in Mandarin, Cantonese, and Taiwanese.

2. More data

2.1 Cantonese vs. Mandarin and Taiwanese

Cantonese differs from Mandarin and Taiwanese in that Cantonese has definite [Cl-NP] and the option to realize Cl in [X-Cl-NP]. (Notice that the modifier marker *ge-* can also substitute Cl in Cantonese.) However, Mandarin and Taiwanese cannot have definite [Cl-NP], but use definite bare NP instead. Also, they can only use modifier markers *de-* and *e-* respectively in [X-Cl-NP]. (Cantonese data from Au-yeung 1997)

NP] phrases, however, is doubtful in that 1) multiples are not classifiers and might sit in Spec NumP according to Ionin & Matushansky (2006); 2) the NP in the structure can only be numeral or ‘more’ in the case of multiples, and ‘more’ or ‘half’ in the case of measuring classifiers.

- (i) a. (jat) maan saam/gei
 one ten-thousand three/more ‘thirteen thousand/ten thousand something’
 b. (jat) baak saam/gei
 one hundred three/more ‘a hundred and thirty/a hundred something’
 c. (jat) jat gei/bun
 One day more/half ‘one day or something/a day and half’
 d. (jat) cek gei/bun
 one meter more/half ‘one meter or something/a meter and half’
- (ii) a. (chi) ban go/gwa
 one ten-thousand five/more ‘fifteen thousand/ ten thousand something’
 b. (chi) pah go/gwa
 one hundred five/more ‘a hundred and fifty/ ten thousand something’
 c. (chi) chhioh gwa/buan
 one meter more/half ‘one foot or something/a meter and half’
 d. (chi) gang gwa/buan
 one day more/half ‘one day or something/a day and half’

Definite CL-N/Definite bare NP

Cantonese	Mandarin	Taiwanese
a. [*(bun2) syu1] hou2hou2 tai2 Cl book very very read 'The book is very readable.'	a. [(<i>*Bei</i>) shui] hen hao he. Cl water very good drink 'The water tastes very good.'	a. [(<i>*Poe</i>) chui] chin ho lim. Cl water very good drink 'The water tastes very good.'
b. nei5 zung6 mei6 maai5 [*(bun2) syu1] you FOC yet buy CL book 'You haven't bought the book yet?'	b. John he-wan-le [(<i>*wan</i>) tang]. John drink-finish-LE Cl soup 'John finished the soup.'	b. Wa chi-oan [(<i>*liap</i>) pinko] a. I eat-finish Cl apple SFP 'I finished the apple.'
	c. wo xiang he [bei shui]. I want drink Cl water 'I want to drink a/* the cup of water.'	

Possessive construction

Cantonese	Mandarin	Taiwanese
[Poss-Cl/ge-NP] Siuming bun2/ge syu1 Siuming Cl/ GE book 'Siuming's book'	[Poss-de-N] Xiaoming de shu Xiaoming DE book 'Xiaoming's book'	[Poss-e-N] Siobeng e su Siobeng E book 'Siobeng's book'

Relativized construction

Cantonese	Mandarin	Taiwanese
[RC-Cl/ge-N] dit3-zo2 lok6 gaai1 bun2/ge syu1 fall-PFV down street Cl/GE book 'The book that fell on the street.'	[RC-de-N] diao-le xia qu de shu fall-PFV down go DE book 'The book that fell on the street.'	[RC-e-N] Lap-lo khi e su Fall-PFV go E book 'The book that fell on the street.'

2.2 Mandarin vs. Cantonese and Taiwanese

Taiwanese classifiers are consistently not present in the constructions in section 2.1. However, classifiers become obligatory in the demonstrative construction like Cantonese. On the other hand, Mandarin can have optional classifier in the demonstrative construction.

Demonstrative construction

Mandarin	Cantonese	Taiwanaese
[Dem-(Cl)-NP] Zhe/na (ben) shu This/that Cl book 'this/that book'	[Dem-*(Cl)-NP] Nei1/go2 *(bun2) syu1 This/that Cl book 'this/that book'	[Dem-*(Cl)-NP] Chit/hit *(pun) su This/that Cl book 'this/that book'

2.3 Taiwanese vs. Mandarin and Cantonese

As observed by Cheng & Sybesma (2003), Taiwanese does not have [Cl-NP] at all. Cantonese and Mandarin can have [Cl-NP] (though Mandarin [Cl-NP] can only have indefinite interpretation.)

CI-NP

Taiwanese	Mandarin	Cantonese
Wa be lim [(*)bei] chui]. I want drink CI water 'I want to drink a cup of water.'	Wo xiang he [bei shui]. I want drink CI water 'I want to drink a/*the cup of water.'	a. [bun2 syu1] hou2hou2 tai2 CI book very very read 'The book is very readable.' b. ngo soeng maa5 [bun2 syu1] I want buy CL book 'I want to buy a book'

We summarize the distributions of classifiers in the constructions under investigation in this paper.

	Structures under investigation				
	Definite bare N	Definite CI-NP	Indefinite CI-NP	X-CI-NP	Dem-NP
Cantonese	No	Yes	Yes	Yes	No
Mandarin	Yes	No	Yes	No	Yes
Taiwanese	Yes	No	No	No	No

3. Feature-based analysis

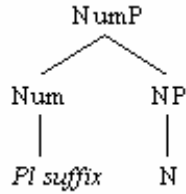
This section is going to propose that the different classifier distributions can be explained in the mechanism of classifier-raising in the spirit of Chomsky's feature-checking (1995), and consequently generate the clustering properties and interpretations. We believe the different behaviors of classifiers and numerals (specifically 'one') in the three dialects result from the (non)-availability of CI-raising and the different ways to check the features under Num. The question that immediately arises is what motivates classifiers to move and what features have to be checked.

3.1 [+def] in D & [+num] in Num

Following the spirit of Ritter (1995) and Li (1999), I propose there is a [+def] feature in D, and a [+num] feature in Num head. In addition, I argue that there is one more feature [+one] under Num in Chinese. A lot of literature (Abney 1987; Longobardi 1994, 1999; Ritter 1991, 1995; etc.) have suggested that D is the head for definiteness, and that definite nominals (e.g. pronouns and proper names) are either base-generated in D or undergo movement to D. In line with Chomsky's feature-checking (1995) mechanism in the Minimalism, it is possible to argue that there is a [+def] feature in D (or [+ref] in Longobardi's term) that needs to be checked and motivates the movement to support the phonologically empty D. However, the moved item, which also has a [+def] feature, might differ from language to language as is going to be discussed in the next section.

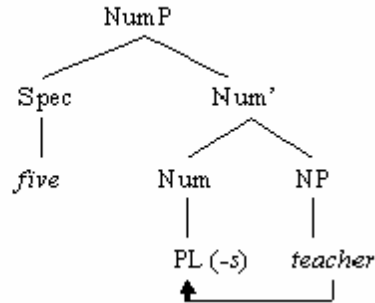
Ritter (1995) investigates the plural pattern of Modern Hebrew and proposes the following structure.

(1)



Li (1999) follows Ritter (1995) and proposes that both English plural marker *-s* and Chinese *men-* originate from the head Num. The two languages differ in that English has an obligatory N-to-Num movement, but Chinese do not due to the block of the CI head. English can thus have the number in Spec NumP to agree with the N in a Spec-head fashion. Chinese plural marker *-men*, on the other hand, have no choice but attach to D, and leads to the definite interpretation and restricted distribution of *-men*-phrase (Li 1999).

(2) English *five teachers* (Li 1999:86)



Li (1996, p24) observes that almost all classifiers in Chinese are singular although there are certain classifiers that have plural interpretations such as *qun* ‘group’, *shuang* ‘pair’, *diar* ‘a bit’, and *xie* (general plural CI).⁴

Crucially, it is the number projection that carries the number information and determines the singularity/plurality value of the nominal. For example, (3a) is singular but (3b) plural.

(3) a. *yi ge/ben/zhi* N

One CI

b. *Liang/ji...ge/ben/zhi* N

Two CI

⁴ *Diar* and *xie* can only be preceded by ‘one’, not other numerals. It is possible that *diar* and *xie* are lexicalized with numeral *yi* ‘one’ or demonstrative *zhe/na* ‘this/that’ to form the fixed expressions *yi-diar/xie* ‘a bit/little’, *zhe/na-diar* ‘this/that small amount’, and *zhe/na-xie* ‘these/those’. As Li (1996) notes, they behave like English ‘a bit’ and ‘a little’, but there is no ‘two bits’ and ‘two littles’.

Assuming that numerals are in Spec NumP (Ionin & Matushansky 2006), it is not far-fetched at all to assume that there is a [+num] feature ([+Sg/Pl]) in Num head that needs to be checked. How the [+num] feature (specifically [+Sg]) is checked differs among languages, and hence the dialectal differences on the presence of the numeral ‘one’.

We differ from Ritter (1995) and Li (1999) in that we propose one more feature [+one] under Num head. In addition to the explicit number information from numeral (e.g. one, two, thrity-three..), Chinese language has a unique number value ‘one’ encoded in Num head. For example, a nominal without an overt number like [Cl-NP] or [Dem-Cl-NP] encodes number information ‘one’.

(4) Mandarin

Wo xiang mai [ben shu].

I would-like buy CL book

‘I would like to buy a book/*books.’

(5) Cantonese

a. Ngo soeng maai [bun syu] (lei taai).

I want buy CL book come read

‘I want to buy a book/*books (to read).’

b. [Zek gau] soeng gwo maalou.

CL dog want cross road

‘The dog/*the dogs wants to cross the road.’

(6) Mandarin (same in Cantonese)

zhe ben shu

Dem Cl book

‘this book/*these books’

It is possible to think that this inherent ‘one’ value is from classifiers that individualize Chinese mass nouns to countable units one by one (Chierchia 1998). Following Li’s idea (1999) that English nouns have to move to Num head to get plural suffix –s and at the same time agree with the numeral in Spec NumP, we believe there are two reasons why Chinese cannot do so. Syntactically, as Li (1999) mentioned, there is a Cl head in Chinese that blocks the N-Num movement. More importantly, Chinese nouns are not countable because they are mass, and it is the classifiers that are actually counted. Hence, it is not far-fetched at all to move classifiers to Num head because of the [+one] feature, and then the classifiers can agree with the numeral in a Spec-head fashion like English. In this sense, all classifier languages might have the [+one] feature in Num.⁵ Because the

⁵ Whether the [+one] feature exists in every classifier language needs to be further investigated. In addition, we can push it further and claim that English is also a classifier language that has the full-fledged [D Num Cl N] structure like Chinese. English mass nouns also need measuring nouns to count them (e.g. two **cups** of water, three **grains** of

inherent value ‘one’ from classifier individualizing function matches the overt numeral ‘one’ in singular nominals, the overt numeral ‘one’ can have the option to be omitted as will be discussed later.⁶

There might be confusion between the [+Sg] (one of the values in [+num]) and [+one]. Although both are number values in Num, they differ in that [+Sg] only applies in singular nominals while [+one] is an inherent number value that all nominals (singular or plural) share.

We have one more clarification among features under D and Num. Although these features are different in nature, they share one characteristic—all are interpretationally motivated. In the case of [+def] feature, if the nominal is definite and D is phonologically empty, some lexicon item must move to D to support it and check the [+def] feature. If the nominal is interpreted indefinite, the [-def] feature under D does not trigger move-

sand). If the measuring nouns are in Cl, it needs to move to Num because of the [+one] feature to agree with the numerals. When the nouns are count, it moves to Cl and Num, picks up plural suffix –s in Cl (Au-Yeung 2001; Walker 2008) or in Num (Li 1999). The count nouns then can have Spec-head agreement with the numeral in Spec NumP. On the other hand, if all English nouns are mass as claimed by Roy 2005 and Walker 2008, then the phonologically null classifier (NUMBER in Kayne’s term (2003)) will have to move to Num because of the [+one] feature and agree with the numeral in Spec NumP.

⁶ Cheng & Sybesma (1998) notes that Mandarin (or Cantonese) [Cl-N] phrases are not simply phonological reductions of [yi-Cl-N] ‘one Cl +N’. The main reason is that [Cl-N] phrases and [yi-Cl-N] phrases have different distributions. In particular, indefinite [Cl-N] phrases can be interpreted as indefinite nonspecific only while [yi-Cl-N] phrases can be interpreted as specific and nonspecific indefinites. Thus, in contexts where only an indefinite specific interpretation is possible as in i)-iii), [Cl-N] phrases should not be able to surface.

- i) Wo chi-wan-le *(yi)-kuai binggan. (bounded predicate)
I eat-finish-LE one-CL cookie
‘I finished a cookie.’
- ii) Wo ba *(yi)-wan tang he-wan-le. (ba-construction)
I BA one-bowl soup drink-finish-LE
‘I finished a (particular) bowl of soup.’
- iii) Wo jiao-guo *(yi)-ge xuesheng hen congming. (secondary predication)
I teach-EXP one-CL student very intelligent
‘I once taught a student who was very intelligent.’

However, Li (1996) showed that [Cl-N] in Mandarin is derived from [yi-Cl-N] although the deletion is conditional. It is subject to the appropriate context in a sentence. Not every position that allows indefinite NP is possible to substitute [yi-Cl-N] to [Cl-N]. For example, in double object structures, only the object adjacent to the verb can appear in the Cl-N form. In addition, stress and frequency play roles in deletion—unstressed [yi-Cl-N] phrases and frequently used [yi-Cl-N] are common to deletion.

ment to support D. D is left unfilled and has to be lexically governed by a head (V or P) (Longobardi 1994; Li 1996, 1997; Cheng & Sybesma 1996, 1999). In the same line, feature checking in Num head is obligatory only when the nominals carry explicit number information. When the nominals have fuzzy or vague number information, it is possible that NumP is not projected, and hence no [+num] or [+one] feature needs to be checked.

3.2 Proposal

Having established that D has [+def] feature (when the nominal is definite) and Num has [+num] and [+one] feature (when the nominal has explicit number information), we now try to answer the following questions. 1) Why can Mandarin and Taiwanese have definite bare NP, but not Cantonese? 2) Why can Cantonese use definite [CI-NP], but not Mandarin? 3) Why is the non-existence of [CI-NP] in Taiwanese? 4) Why can classifiers be present in [X-CI-NP] in Cantonese, but not Mandarin and Taiwanese? 5) Why can Mandarin have the option to use classifiers in [Dem-(CI)-NP], while the classifiers must be realized in Cantonese and Taiwanese?

We propose that the different realizations of classifiers and numerals result from the different ways to check [+num] feature (specifically, [+Sg]) and the (non)-availability of CI-raising to D. In all three dialects, classifiers are [+one] and can move to check the [+one] feature in Num. Cantonese and Mandarin classifiers can be [+Sg] that can check off the [+Sg] in Num head, while Taiwanese classifiers are [-Sg], and [+Sg] feature in Num is checked off by Spec-head relation. That is, **Cantonese and Mandarin have the ability to incorporate the numeral value ‘one’ and the inherent value ‘one’ (from individualization) into classifiers, whereas Taiwanese can only have inherent value ‘one’ in classifiers.** This parameter attributes to the fact that Taiwanese has the obligatory presence of ‘one’ in indefinite [one-CI-NP], but Cantonese and Mandarin can have optional ‘one’ in [(one)-CI-NP]. When it is [+Pl] under Num head, all three languages cannot have [+Pl] feature in classifiers because [+Pl] and [+one] features contradict semantically. The numerals (except for ‘one’) have to check off the [+Pl] in Num via Spec-head relation like the Taiwanese singular case. This is why numerals more than ‘one’ has to be present at all time. For the (in)definiteness, Cantonese classifiers can have the option to be either [+def] or [-def] (depending on the interpretation) while Mandarin and Taiwanese classifiers are always [-def]. [+def] feature in Mandarin and Taiwanese is in fact in N (Cheng & Sybesma 1999, Li 1999).

The consequences of this proposal are that Cantonese classifiers can undergo cyclic CI-Num-D movement, and check off the [+Sg] and [+one] in Num head and [+def] in D head when the nominal is definite.⁷

⁷ Li (1996) also proposes that there is a CI-Num movement in Cantonese [CI-NP]. She argues that Cantonese CI has to move to support Num because Num is syntactically empty. However, in Mandarin and Taiwanese, CI does not need to move to Num since Num has already supported by a lexical item (the default number ‘one’ in this case, which undergoes phonological deletion afterwards). Two questions arise. First, if Num is syntactically empty, how does an invisible Num

Mandarin classifiers can move to check [+Sg] and [+one] like Cantonese but no further movement to D because classifiers are [-def]. Taiwanese classifiers can move to Num head to check off [+one] feature in Num, but its [+Sg] feature has to be checked off via Spec-head, and this results in the obligatory presence of ‘one’. Taiwanese classifiers cannot move to D since they are also [-def] like Mandarin. Mandarin and Taiwanese can move N to check off [+def] in D under the condition that no intervening head (e.g. Num or Cl) is present (Li 1999). If some head(s) is(are) projected between N and D, both languages resort to direct insertion of some lexical items with [+def] feature (e.g. demonstratives) in D. We summarize our proposals in the table below. This proposal will make three-way differences, and consequently spell out the different surface forms of the constructions under investigation in the three dialects.

Available features in CI	Number			(In)definiteness	Consequent CI-movement
	[+Sg]	[+one]	[+Pl]	[+def]	
Mandarin	✓	✓	N	N	D Num Cl N ↑
Taiwanese	N	✓	N	N	D Num Cl N ↑
Cantonese	✓	✓	N	✓	D Num Cl N ↑ ↑

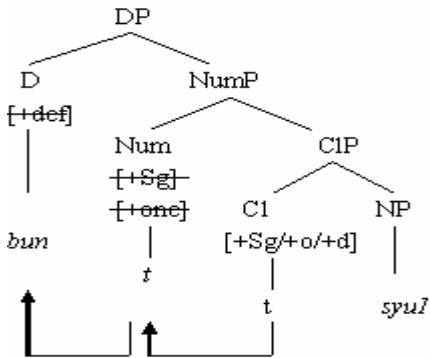
3.3 Toward the solutions

3.3.1 bare NP/[CI-NP]

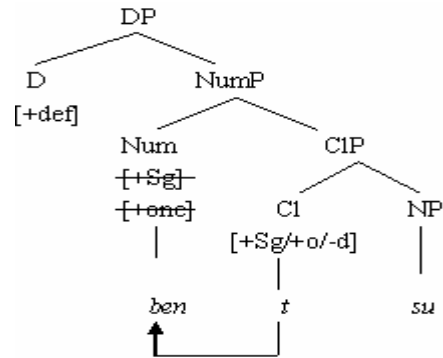
Bare NPs can be definite and indefinite in Mandarin and Taiwanese, but only indefinite in Cantonese. [CI-NP] can be definite and indefinite in Cantonese, indefinite in Mandarin, and non-occurrence in Taiwanese. Mandarin and Taiwanese on one hand and Cantonese on the other hand are in complementary distribution on the definite interpretation of bare NPs and [CI-NP] phrases. While Mandarin and Taiwanese resort to bare NPs to express definiteness, Cantonese cannot have definite bare NP but uses definite [CI-NP], and vice versa. This fact can be accounted for by the present proposal. [CI-NP] phrases in Cantonese and Mandarin are always singular as shown in (4)/(5). As we propose earlier, when number information is clear, NumP has to be projected. The structure is shown in (6). Cantonese classifiers can move to Num to check off the [+Sg] and [+one] in Num, and then moves to D to check off the [+def]. Mandarin and Taiwanese classifiers cannot move to D because their classifiers are [-def]. The derivation crashes because [+def] in D is left unchecked in (7).

head induce movement to support it? Second, numerals are in Spec NumP (Ionin & Mutushansky 2006), and the Num head should encode [Sg/Pl] feature which agrees with Spec NumP (Li 1999). Unless we try to say ‘one’ can also sit in Num head (maybe because it is the only number that agrees with [Sg]), the Num head in Mandarin and Taiwanese cannot be claimed to be lexically filled in Mandarin and Taiwanese.

(6) *Bun syu1* (Cantonese)
 Cl book ‘the book’

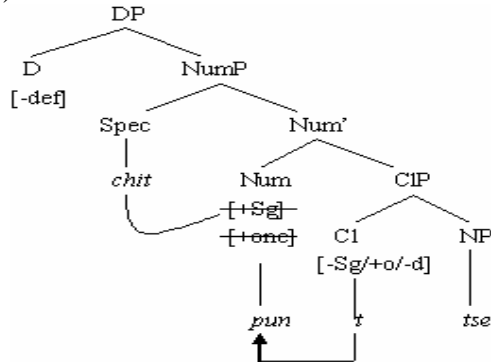


(7) **ben shu* (Mandrain)
 Cl book ‘the book’



The indefinite interpretation of [Cl-NP] is possible in Cantonese and obligatory in Mandarin. In this case, the D has [-def] feature that does not motivate any movement to D. Cantonese and Mandarin classifiers move to Num to check off both [+Sg] and [+one] features in Cl. The unfilled D in both dialects need to be lexically governed, and hence the indefinite interpretation. Our mechanism can also explain why Taiwanese cannot even have indefinite [Cl-NP], but only [‘one’-Cl-NP]. As we propose earlier, Taiwanese classifiers lack the [+Sg] feature. The [+Sg] in Num will be checked off by ‘one’ in Spec NumP as in (8). The presence of ‘one’ is therefore obligatory since the [+Sg] feature in Num will be left unchecked without ‘one’. On the other hand, the presence of ‘one’ in Mandarin and Cantonese indefinite [(one)-Cl-NP] is optional (can undergo phonological deletion) since [+Sg] in Num has been checked by Cl.

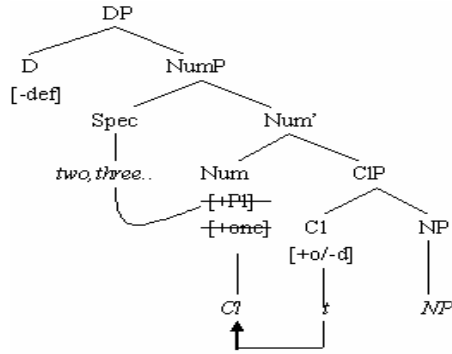
(8) *(*chit*) *pun tse* (Taiwanese)
 (one) Cl book ‘*the book/a book’



The derivation of [Num-Cl-NP] is straightforward after the analysis of [Cl-NP]. Remember that [Num-Cl-NP] can only be indefinite in the three dialects. Since it is indefinite ([-d] in D), there is no movement to D. The [+one] feature in Num is checked off by Cl-raising in all three dialects. Taiwanese checks [+Sg] via Spec-head agreement

in (8) while Cantonese and Mandarin checks [+Sg] via Cl-raising in (6)/(7). When the nominal is plural, the [+Pl] in Num is checked off by the numerals via Spec-head relation in all three dialects in (9) because Cl is [-Pl] in all three dialects.

(9) [Num-Cl-NP]



Unlike Cantonese, Mandarin and Taiwanese can have definite bare NP. Bare NPs, definite or indefinite, are ambiguous between singular and plural readings in (10).

(10)

- a. shu hen-hao kan. (Mandarin; Taiwanese is the same; no definite bare NPs in
Book very-good read \ Cantonese)
'The book/books are very good (to read).'
- b. wo xiang kan shu. (Mandarin; Cantonese and Taiwanese two are the same.)
I want read book
'I want to read a book/books.'

If a nominal is ambiguous in number information, NumP does not have to be projected. In the case of bare NPs, the structure can have only one layer of projection DP above NP [D-N] without any intermediate projection. Following our previous proposal that N in Mandarin and Taiwanese can be [+def], the N can move to D since there is no intervening head. Cantonese cannot have N move to check the [+def] feature in D because its [+def] feature is in Cl (or alternatively, its N is [-def]). When bare NPs are interpreted indefinite (D as [-def]), no movement occurs in all three dialects. This leaves an unfilled D that needs to be lexically governed, and hence the possibility of indefinite bare NPs in all three dialects.

3.3.2 [X-Cl/MFK-NP]

This section tries to spell out the possessive and relativized constructions from our feature-checking mechanism. Remember that Cantonese differs from Mandarin and Taiwanese in that classifiers can realize in these two constructions (though it can also use the modifier marker *ge*). However, Mandarin and Taiwanese can only use the modifier markers *de/e*, shown as follows:

Cantonese	Mandarin	Taiwanese
Poss-Cl/ge-N Siuming bun2/ge syu1 Siuming Cl/GE book ‘Siuming’s book’	Poss-de-N Xiaoming de shu Xiaoming DE book ‘Xiaoming’s book’	Poss-e-N Siobeng e su Siobeng E book ‘Siobeng’s book’
RC-Cl/ge-N dit3-zo2 lok6 gaai1 bun2/ge syu1 fall-PFV down street Cl/GE book ‘The book that fell on the street.’	RC-de-N diao-le xia qu de shu fall-PFV down go DE book ‘The book that fell on the street.’	RC-e-N Lap-lo khi e su Fall-PFV go E book ‘The book that fell on the street.’

Since the number information in both relativized and possessive constructions is vague as in (11)/(12), NumP is not projected.⁸

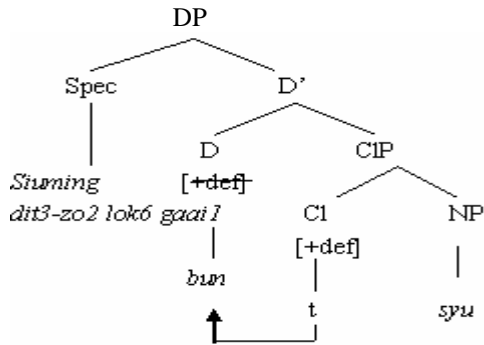
- (11) a. Zhangsan de shu (Mandarin; Taiwanese and Cantonese are the same)
 Zhagnsan DE book ‘Zhangsan’s book(s)’
 b. Siuming bun syu. (Cantonese)
 Siuming Cl book ‘Siuming’s book(s)’
- (12) a. ganggang mai huai-lai de xigua (Mandarin; Taiwanese and Cantonese are the
 just buy come-back DE watermelon \ same)
 b. aamaam maai faan- lai go saigwaa (Cantonese)
 just buy come-back Cl watermelon
 ‘the watermelon(s) that has(have) just been bought ’

The fact that Cantonese can have Cl in both structures is accounted for by the Cl-raising mechanism in (13). Cantonese Cl moves to check the [+def] feature in D while Mandarin and Taiwanese cannot do so because of the lack of corresponding [+def] feature in Cl. This explains the grammaticality of [Poss/RC-Cl-NP] in Cantonese, but the ungrammaticality in Mandarin and Taiwanese.

- (13) a. Siuming bun2 syu1
 Siuming Cl book ‘Siuming’s book(s)’
 b. dit3-zo2 lok6 gaai1 bun2/ge syu1
 fall-PFV down street Cl/GE book ‘The book(s) that fell on the street.’

⁸ However, when number is explicitly expressed as in (i), NumP has to be projected in possessive and relativized constructions.

- (i)
 a. Zhangsan de san ben shu
 Zhangsan DE three Cl book ‘Zhangsan’s three books’
 b. ganggang mai huai-lai de san ke xigua
 just buy come-back DE three Cl watermelon ‘the three watermelons that have just been bought’



To derive Mandarin and Taiwanese possessive and relativized constructions (and also the Cantonese alternative with the modifier marker *ge*), we follow Simpson (2003) and assume that the modifier markers *de/e/ge* are inserted directly in D.⁹ Since D is occupied by the modifier markers at the first place and thus have their [+def] feature checked (or empty D is supported), no further movement is required (N-D movement in Mandarin and Taiwanese; Cl-D movement in Cantonese).

3.3.3 [Dem-(Num)-(Cl)-NP]

Lu (1984) observes that Mandarin can have bare demonstratives as in (14). On the contrary, we observe that Cantonese and Taiwanese cannot in (15)/(16). The presence of *one* is not required in (14) - (16). When the numeral ‘one’ is present, however, it must be accompanied by a classifier.

⁹ Simpson (2003) adopts Kayne’s idea (1994) that the head noun of the relative clause originates in the IP clause and undergoes raising to the Spec CP, which is selected as the *complement* of a D. He assumes that the Mandarin modifier marker *de* is inserted in D, and that the clitic nature of *de* attracts the remnant IP to Spec DP to phonologically support it. Below is the derivation.

- (i) diao-le xia qu de shu (Mandarin)
 Fall-PFV down go DE book
 a. [IP [N book] fall-PFV down]
 b. [DP *de* [CP [IP [NP book] fall-PFV down]]
 c. [DP *de* [CP [NP booki] [IP ti fall-PFV down]]
 d. [DP [IP ti fall-PFV down]k [D *de* [CP [NP booki] tk]]
- ↑

However, Audrey Li (personal communication) points out that relativized construction in Chinese can be an NP, not always a DP, against the analysis of *e/de* as D. For example, DP is not allowed in this position.

- (i) wo ba ta dang-zuo [shijie-shang zui da de da shagua]
 I Ba him treat world-in most big DE big fool
 ‘I treat him as the biggest fool in the world.’

Our proposal will have the same concern since we follow Simpson and insert the modifier marker directly in D.

(14) Mandarin

Zhe ((yi) (ge)) jia duo dian, na ((yi) ge) shao dian.

This one Cl plus more a little that one Cl minus a little

‘(I want) more this, fewer that.’

(15) Taiwanese

Chit (chi) *(e) ge gwa, hit (chi) *(e) kiam gwa.

This one Cl plus a little that one Cl minus a little

‘(I want) more this, fewer that.’

(16) Cantonese

Nei1 (jat) *(go3) m4 hou2, go2 (jat) *(go3) sin1 hou2.

This one Cl no good that one Cl only good

‘This (one) is not good; that (one) is good.’

(14)-(16) are deictic in the sense that they are always uttered with pointing gestures. Consider also (17) and (18).

(17) Mandarin

a. zhe yi ben shu

this one Cl book ‘this book’

b. zhe ben shu

this Cl book ‘this book’

c. zhe shu

this book ‘this book/these books’

(18)

a. chit (?chi) *(pun) tse (Taiwanese)

this one Cl book

b. nei (jat) *(bun) syu (Cantonese)

‘this book/*these books’

It is observed from (14)-(18) that Mandarin can optionally delete classifiers while Taiwanese and Cantonese cannot, whether the nominal is deictic (14-16) or generally referential (17/18). Moreover, we find that when the classifier is not present as in (17c), the nominal is ambiguous between plural and singular interpretations. This ambiguity can be better demonstrated in the following context.

(19) Ni **zhe** **sin** dei cheng yi-xia...

your this/these letter/s must weigh a-bit

....**ta** chao-zhong-le / **liang-feng** dou chao-zhong-le.

it overweight-PRF / two-CL all overweight-PRF

‘This/these letter(s) of yours must be weighted...it is/they are both overweight.’

The demonstrative construction with a classifier (17a/b), however, is always singular. Previous literatures (Lu 1984, Li 1996, Au-Yeung 2001) suggest that Mandarin surface [Dem-N] form is derived from [Dem-(one)-Cl-N]. Given the different number interpretations of [Dem-N] and [Dem-(one)-Cl-N], we have reason to believe that [Dem-N] and [Dem-(one)-Cl-N] might have different syntactic structures. Following our previous proposal that nominals that are ambiguous in number information do not project NumP,

bare NPs rather than [CI-NP]. Although we consistently posit that D is projected in every nominal construction, we suggest that not all the intermediate projections have to be projected at any time. For the nominal constructions that have ambiguous number information (e.g. bare NPs, possessives, relativized construction, and Dem-N in Mandarin), it is possible that NumP or CIP is not projected at all.

This paper leaves a lot of room for future research. First, we do not exhaust all the classifier-related structures. Also, it will be interesting to include more diachronic data since classifiers have undergone a long grammaticalization path. Finally, the status of the numeral ‘one’ needs to be further examined.

REFERENCES

- Au-Yeung W H. 2007. *Adjectival-Classifier Predicates in Cantonese and Mandarin*. To appear in *Journal of East Asian Linguistics*.
- Au-Yeung W.H. 2001. *Numerals in the Classifier Phrase of Chinese*. Presented in the First International Conference on Formal Linguistics. Hunan China
- Borer, Hagit. 2005. Structuring sense. Vol. 1. In name only. U.K.: Oxford Univ. Press.
- Cheng, Lisa & Rint Sybesma. 2003. Classifiers in four varieties of Chinese. in G. Cinque and R. S. Kayne (eds.) *Handbook of Comparative Syntax*. Oxford Univ. Press.
- Cheng, Lisa & Rint Sybesma. 1999 (1997, ms). Bare and not-so-bare nouns and the structure of NP. *Linguistic Inquiry* 4, 509-542.
- Chierchia Gennaro. 1998. Reference to kinds across languages. *Natural Language Semantics* 6, 339-405.
- Ionin, Tania & Ora Matushansky. 2006. Composition of complex cardinals. *Journal of Semantics* 23: 315–360.
- Li, Audrey. 1999. Plurality in a classifier language. *J. of East Asian Linguistics* 8, 75-99.
- Li, Audrey. 1998. Argument determiner phrases and number phrases. *Linguistic Inquiry* 29:4, 693-702.
- Li, Audrey. 1997. Structures and interpretations of nominal expressions. Ms. University of Southern California, Los Angeles.
- Li, Audrey. 1996. A number projection. Ms. Univ. of Southern California, Los Angeles.
- Longobardi, G. 1999, The structure of DPs: Some principles, parameters and problems. In *The Handbook of Contemporary Syntactic Theory*, M. Baltin and C. Collins (eds.). London: Blackwell. 563-603.
- Ritter, Elizabeth (1995) On the syntactic category of pronouns and agreement. *Natural Language and Linguistic Theory*, 13, 405–443.
- Simpson Andrew. 2003. Classifiers and DP structure in Southeast Asia. in G. Cinque and R. S. Kayne (eds.) *Handbook of Comparative Syntax*. Oxford University Press.
- Simpson, Andrew. 2003. On the status of modifying DE and the structure of the Chinese DP. in S-W. Tang and L.L. Chen-Sheng (eds.) *On the Formal Way to Chinese Languages*, Stanford: CSLI 74-101.