NUMBER IN JAPANESE AND CHINESE*

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1. Introduction

It has long been noted that there is a split among languages between those that have classifiers and those that have number. For instance, Greenberg (1972) reports that languages with classifier system tend to lack number morphology. Chinese, Japanese, Burmese, Bengali, and Thai are generally treated as languages that employ rich classifier system (Allan 1977). On the other hand, Germanic and Romance languages such as English, German, French, and Italian are often classified as languages that introduce number morphology instead of classifiers. Languages in the former group are often referred to as classifier languages, and those in the latter group are conventionally called number languages. This typological dichotomy has been widely assumed.

The main purpose of this paper is to examine the widely accepted dichotomy through the comparative syntax of Chinese, Japanese, and English. In this paper, we present mainly two arguments to challenge the conventional view. One is that classifier system in Chinese and number system in English have overlapping properties at the level of syntax. For instance, both Chinese classifiers and English number morphology head functional projections above NP, viz. Classifier Projection, or CLP for short, and Number Projection, or NumP, respectively. Further, both of the projections are specified with similar syntactic features. The other argument concerns the diversity of classifiers among classifier languages. We show that Chinese and Japanese classifiers are syntactically different. For instance, Chinese classifiers head functional projections, while the Japanese counterparts do not; they are modifiers by contrast.

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This paper is organized as follows. Section 2 is meant to show that English NumP and Chinese CLP are syntactically quite similar contrary to the typological difference between English and Chinese. In 2.1, we review Cheng and Sybesma (1998) and Tang's (1990) proposal that Chinese classifiers head independent projections dominating NP in parallel with English NumP, and provide an additional argument for it. 2.2 deals with Doetjst's (1997) argument for the similarity between Chinese CLP and English NumP. It is that both of them are specified with a common syntactic feature, a countability feature. Section 3 is dedicated to show some syntactic differences between Japanese and Chinese CLPs. In 3.1, we introduce Saito, Lin, and Murasugi's (2008) argument that Japanese CLP is an NP-adjunct in contrast with Chinese CLP, and argue that the countability feature in Japanese CLP should not be syntactic but semantic. 3.2 deals with the syntax of the Japanese number morphology, *-tati*. There, we review Ueda and Haraguchi's (2008) analysis of it as Num, and argue that the syntactic countability feature is specified in NumP in parallel with English and in contrast with Chinese. This section suggests that classifiers diverse among classifier languages, and that Japanese is syntactically similar to English rather than Chinese though it is typologically a classifier language. Section 4 concludes this paper.

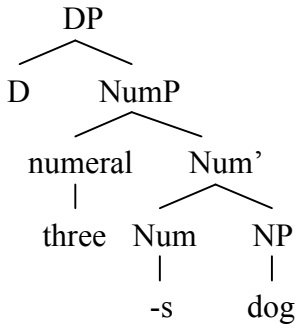
2. English NumP and Chinese CLP

In this section, we discuss the comparative syntax of English NumP and Chinese CLP. In 2.1, we compare the syntactic structures of English number and Chinese classifiers, and argue that they are quite similar contrary to the typological differences. The argument for the similarity receives further support in 2.2. There, we show that features in English Num and Chinese CL overlap.

2.1. Similarity in Structure

Since Ritter's (1991, 1995) pioneering work on the DP-internal syntax, it has been widely accepted that number morphology heads an independent functional projection dominating count NP, NumP. According to Delfitto and Schroten (1991) and Li (1999), Num takes a numeral as its specifier. Given their assumption, an English noun phrase like *three dogs* will schematically have the structure as in (1).

(1)



Cheng and Sybesma (1998) analyze Chinese CLP in parallel with English NumP. That

is, Chinese CLP is also an independent functional projection above NP in their analysis. It is observed by Cheng and Sybesma (1998, 1999) and Tang (1990) that classifiers can be followed by the modification marker *de*, as in (2).[1]

(2) a. san bang (de) rou
three CL-pound DE meat

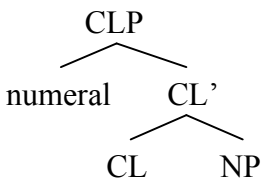
'three pounds of meat' (Cheng and Sybesma 1999: 515)

b. san wan (de) tang
three CL-bowl DE soup

'three bowls of soup'

Without going into details, Cheng and Sybesma (1998), along with Tang (1990), propose that classifier constructions with *de* and those without *de* are different in their structures. In the sequence [Numeral-CL-N], the classifier head CL is a head in the noun phrase. There is no modification relationship with the N. The structure they propose for *de*-less classifiers is as follows.

(3)



On the other hand, the numeral classifier in sequence [Numeral-CL-*de*-N] is in a modifier-modifee relationship with the N. More specifically, Cheng and Sybesma (1998) analyze it as a relative clause; it is an instance of the subject relativization, as in (4), where CLP is the predicate of Small Clause, SC.

(4) $[_{DP}\ [_{NP}\ [_{CP}\ Op_i\ [_{SC}\ t_i\ CLP\ ]\ [_{C}\ de]]\ [_{NP}\ N]]]$

We do not discuss Cheng and Sybesma (1998) and Tang's (1990) arguments for their proposal here, but provide an additional argument for it.[2] The argument concerns the distribution of the suffix *yishang* 'more than'. It is known to occur at the right edge of

[1] Cheng and Sybesma (1998) observe *de* only with a sub set of classifiers called mass classifiers, which are cannonically found to occur with mass nouns. However, Tang (2005) observes *de* with those in the rest of the set, called count classifiers, which are found to occur only with count nouns, as well, as in (i).

(i) ta mai-le wu li (-de) pingguo.
he buy-ASP five CL DE apple

'He bought apples sorted in accordance with number 5.' (Tang 2005: 443)

[2] More decisive evidence will be provided later in section 3. It comes from NP ellipsis.

quantity expressions, as in (5).

(5) a. Ta he-le tang [san wan-yishang]
he drink-ASP soup three CL-bowl-more-than

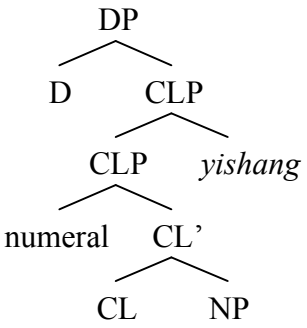
'He drank more than three bowls of soup'

b. Ta mai-le bi [shi zhi-yishang]
he buy-ASP pen ten CL-more-than

'He bought more than ten pens.'

Let us assume that it is suffixed to CLPs. Then, if we assume Cheng and Sybesma's (1998) analysis, it is predicated that it will never follow CL in the *de*-less sequence, as in (6a); it is impossible to obtain the sequence [Numeral-CL-*yishang*-N] with their structure, unless the CLP is adjoined to the NP, as in (6b).

(6) a.



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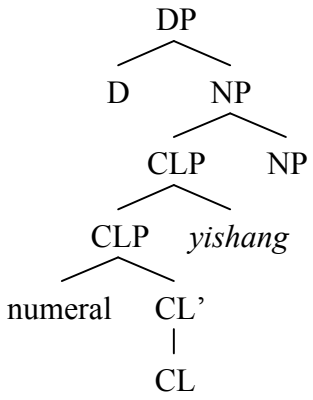


The prediction is indeed born out, as in (7).

(7) a. *san wan yishang tang
three CL-bowl more-than soup

Lit: 'more than three soup'

b. *san ge yishang ying'yu danci
three CL more-than English word

Lit: 'more than three English words'

Interestingly, we observe that the grammaticality of (7) improves with the insertion of *de*, as in (8).

(8) a. san wan yishang-de tang
three CL-bowl more-than-*de* soup

'more than three bowls of soup

b. san ge yishang-de ying'yu danci
three CL more-than-*de* English word

'more than three English words'

Cheng and Sybesma's (1998) analysis of *de*-less sequences can capture the possibility of the suffixation in (8). Recall that they analyze them as the predicates of SC, as in (9).

(9) $[_{DP}\ [_{NP}\ [_{CP}\ Op_i\ [_{SC}\ t_i\ CLP\ ]\ [_{C}\ de]]\ [_{NP}\ N]]]$

We can obtain the surface word order of (9) with this structure, as illustrated in (10).

(10) $[_{NP}\ [_{NP}\ [_{CP}\ Op_i\ [_{SC}\ t_i$ CLP-yishang] *de*] NP]]

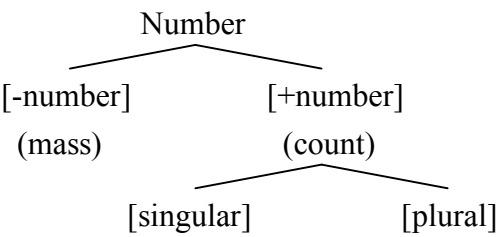
The distribution of *yishang* is thus well captured by Cheng and Sybesma's (1998) analysis.

2.2. Features

We have shown in 2.1 that English NumP and Chinese CLPs are structurally akin to each other: both are functional projections that take NP as their complement. In this subsection, we discuss the features specified in the projections, and argue that they overlap. The argument for the similarity between them receive further support.

Castillo (2001) proposes that Num in languages like English is specified with [±number]. The feature [+number] represents countability, and it is realized as number morphology. We assume that it selects N with the feature [+count]. On the other hand, the feature [-number] represents uncountability, and it is, according to Delfitto and Schroten (1991), simply not phonologically realized in languages for reasons we do not know. We assume, following Delfitto and Schroten (1991), that Num specified with the silent feature selects N containing [-count]. Castillo further proposes that [+number] is subdivided into [singular] and [plural] features. The latter is phonologically realized as *-s* in English. The former feature does not surface with a phonological content in English, but it does in some languages like Hindi and Greek. For instance, in Hindi, some class of masculine singular nouns are marked with *-a*, and some class of feminine singular nouns are marked with *-i*. The number system Catillo proposes is something as follows:

(11)



(Castillo 2001: 83)

Doetjes (1997) proposes that Chinese CLs are specified with [±number].[3] Her proposal is based on the selection properties of adnominal quantifiers. She observes that there are two types of cardinal numeral quantifiers: those that combine with count singular nouns, such as *one* or *a*, and those that combine with plural nouns such as *two* or *three*. According to Doetjes, these two types of adnominal quantifiers correspond to two categories, NumP [singular], and NumP [plural] respectively, under the assumption that NumP is projected above NP. On the other hand, in classifier languages like Chinese, cardinal numerals, occur with classifiers, which are not marked with singular or plural, as exemplified in (12).[4]

(12) a. yi ben shu
one CL book

'one book'

b. san ben shu
three CL book

'three books'

Given that CLs do not contain [singular] and [plural], then it is not clear how the selection properties of numerals are satisfied. Then, she proposes that there are features that satisfy both [singular] and [plural], or those that are more abstract than these two features, in CLs, that is, [+number].

The existence of [+number] in Chinese CL receives support from Doetjes (1997) and Cheng and Sybesma's (1998, 1999) observation that a subset of CLs, which they call count classifiers, select count NP in the same way as Num [+number], or Num [singular] and Num [plural]. Num in English takes only count NP as its complement. It does not select mass NP but only count NP, as exemplified in (13).

(13) a. dog-s, book-s, cat-s

b. *water-s, *salt-s, *furniture-s

Doetjes (1997) and Cheng and Sybesma (1998, 1999) observe that a subset of classifiers are found only with nouns which refer to entities that are readily countable, that is, count nouns. The classifier *ge* represents the class of such classifiers. Doetjes (1997) observes that, though this classifier is used most frequently and generally, as illustrated in (14), it never co-occurs with nouns that refer to substances that do not present themselves in discrete and countable units, that is, mass nouns, as in (15).

[3] She calls the features [±countability]. However, since they crucially correspond to Castillo's [±number], we use his terminology in this paper.

[4] Doetjes (1997) presents a counterargument to the claim that the classifiers are silently marked with singular or plural, and cardinal numerals select the features. See Doetjes (1997: Ch. 7) for details.

(14) a. yi ge ping'guo
one CL apple

'one apple'

b. yi ge xuexiao
one CL school

'one school'

c. yi ge xing'qi
one CL week

'one week'

(15) a. *yi ge shui
one CL water

b. *yi ge mi
one CL rice

c. *yi ge tang
one CL soup

CLs like *ge* thus co-occur only with count NP, just as Num does. This similarity is readily explained if we assume that they contain [+number].

A natural question that arises is whether there is evidence that CLs may contain [-number] as well, since the number features are binary according to Castillo (2001). The conclusion seems to be positive. Cheng and Sybesma (1998, 1999) observe that there are a subclass of classifiers that canonically co-occur with mass nouns in contrast with count classifiers like *ge*. Classifiers in this group are called 'mass classifiers', or 'massifiers' for short, by them. Classifiers like *ping* 'bottle', *ba* 'handful', and *wan* 'bowl' in (16) belong to this group.

(16) a. san ping jiu
three CL-bottle liquor

'three bottles of liquor'

b. san ba mi
three CL-handful rice

'three handfuls of rice'

c. san wan tang
three CL-bowl soup

'three bowls of soup' (Cheng and Sybesma 1999: 514)

However, the selection properties of mass classifiers are not so straightforward as count classifiers; some properties are unique to Chinese. As Cheng and Sybesma (1999) mention, some mass classifiers like *xiang* 'box' and *dai* 'bag' co-occur not only with mass nouns but also with count nouns, as in (17).

(17) a. yi xiang ping'guo
one CL-box apple

'a box of apples'

b. san dai ping'guo
three CL-bag apple

'three bags of apples'

Moreover, mass classifiers co-occur even with count classifiers like *li* 'piece', as in (18a), and mass classifiers like *dai* 'bag', as in (18b).

(18) a. yi xiang wu li ping'guo
one CL-box five CL apple

'a box of five apples'

b. yi xiang san dai ping'guo
one box three CL-bag apple

'one box of three bags of apples'

Count classifiers make contrast with them in this selection property. Count classifiers never select classifiers as in (19).

(19) *yi li yi xiang ping'guo
one CL one CL-box apple

Lit: 'one, one box of apples'

Thus, mass CLs display an overlapping selection property with [-number], but they have some idiosyncratic properties, too. We leave for future research this difference between Num [-number] and Chinese CL [-number].

To conclude this subsection, let us consider similarities and differences between the features in English Num and Chinese CL. Recall that, according to Castillo (2001), Num is specified with [±number] and that it contains either [singular] or [plural] in the case of

[+number]. In Chinese, in parallel with English, CL is specified with [±number]. Where Num and CL differ is that the feature [+number] is not subdivided into [singular] or [plural] in CL.

3. Chinese CLP and Japanese CLP

In the previous section, we have shown that English NumP and Chinese CLP are quite similar in structure and features contrary to the typological difference. In this section, we discuss the comparative syntax of Chinese CLP and Japanese CLP, and argue that they are different in structure and the status of features though they are both classifier languages. 3.1 deals with the structure and features of Japanese CLP. There, we review Saito, Lin, and Murasugi's (2008) argument that Japanese CLP is an NP-adjunct, while Chinese CLP is a functional projection above NP, and argue that CL is not specified with the syntactic feature [+number] in Japanese. 3.2 is meant to show that Japanese is more like English than Chinese in that [+number] resides in Number but not in CL. In this subsection, we introduce Ueda and Haraguchi's (2008) proposal that Japanese projects NumP like English, and argue that [+number] sits there.

3.1. Structure and Features

3.1.1. Saito, Lin, and Murasugi (2008)

Saito, Lin, and Murasugi (2008) present an analysis of Japanese CLP in comparison with Chinese. They argue that Japanese CLP is structurally a modifier. More specifically, it is an NP-adjunct. One piece of evidence comes from the surface order of Japanese classifier constructions. In Japanese, classifiers always follow numerals in the surface orders, as in (20).

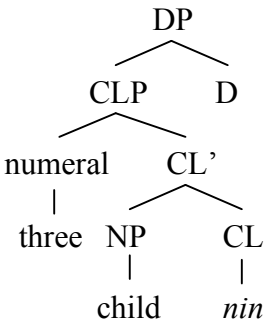
(20) a. san nin-no kodomo
three CL-*no* child

'three children'

b. *san kodomo nin(-no)
three child CL-*no*

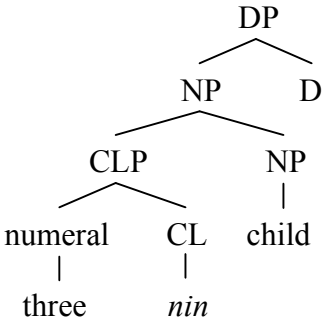
However, the correct surface orders are not predicated under the assumption that classifiers head CLPs and that numerals occur in their specs in parallel with Chinese. This is because Japanese is (widely assumed to be) a head final language, and classifiers should then appear post-nominally as in (20b). The following structure illustrates the possibility of deriving (20b).

(21)



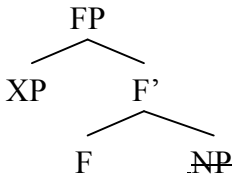
The analysis of CLP as an NP-adjunct, however, allows us to obtain the correct surface word order, as illustrated in (22).

(22)



More decisive evidence comes from NP deletions. Saito and Murasugi (1990) argue that the deletion of a complement NP is allowed only when the spec of its functional projection, FP for short, is filled, where the spec of the FP is an argument position, as illustrated in (23).

(23)



Their analysis excellently accounts for the contrast between (24) and (25).

(24) a. [Taro-no taido]-wa yoi ga, [Hanako-no ~~taido~~]-wa yokunai.
Taroo-*no* attitude-TOP good but Hanako-*no* attitude-TOP good-not

'Though Taro's attitude is good, Hanako's isn't.'

b. [Rooma-no hakai]-wa [Kyooto-no ~~hakai~~]-yorimo hisan datta.
Rome-*no* destruction-TOP Kyoto-*no* destruction-than miserable was

'Rome's destruction was more miserable than Kyoto's.'

(Saito, Lin, and Murasugi 2008: 253)

(25) *[Hare-nohi]-wa yoi ga, [ame-no ~~hi~~]-wa otikomu.
clear-*no* day-TOP good but rainy-*no* day-TOP feel-depressed

'Clear days are OK, but I feel depressed on rainy days.'

(Saito, Lin, and Murasugi 2008: 253)

The examples in (24) are grammatical with or without deletion, while the deletion makes the example ungrammatical in (25). The generalization is that [argument-*no*] licenses the ellipsis, but not [adjunct-*no*]. There is independent evidence that arguments can move to the spec of the functional projection, but adjuncts cannot. Thus, the movement of *the city* in (26b) is licensed, but that of *then* in (26c) is not.

(26) a. [$_{DP}$ the [$_{NP}$ destruction of the city then]]

b. [$_{DP}$ the city's [$_{NP}$ destruction *t* then]]

c. *[$_{DP}$ then's [$_{NP}$ destruction of the city *t*]] (Saito, Lin, and Murasugi 2008: 253)

The contrast between (24) and (25), then, is expected. For instance, in (24b), *Kyooto* being the object, can move to the spec of DP and the NP-deletion is licensed, as in (27a), while, in (24a), *ame*, being an adjunct, can not move up there to license the deletion, as in (27b).

(27) a. b.

The analysis of Japanese CLP as an NP-adjunct receives support from NP-deletion. They do not license the deletion of NP, as demonstrated in (28).

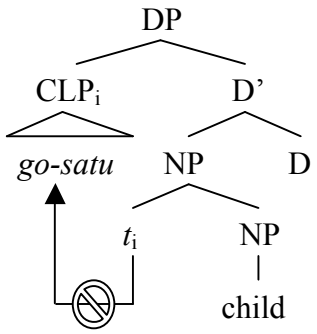
(28) *Taroo-wa [san satu-no hon]-o katta ga,
Taroo-TOP three CL-*no* book-ACC bought but,
Hanako-wa [go satu-no ~~hon~~]-o katta.
Hanako-TOP five CL-*no* book-ACC bought

'Taroo bought three books, but Hanako bought five.'

(Saito, Lin, and Murasugi 2008: 262)

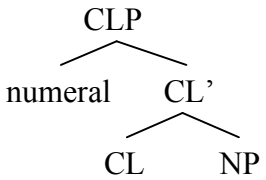
The ungrammaticality of (28) is correctly predicted if the string *go satu-no* is an adjunct, which is unable to raise to the spec of DP, as illustrated in (29).

(29)



Notice that NP-deletion also provides supportive evidence for Cheng and Sybesma's analysis of Chinese CLP. Under their analysis, the sequence [Numeral-CL-N] has a structure as in (3), repeated in (30).

(30)



In (30), there is a spec-head agreement in the functional projection, CLP, and this provides a satisfactory context for the deletion of NP. As predicted, the deletion is possible, as exemplified in (31), which corresponds to (28).

(31) Suiran Zhangsan mai-le [san ben shu], dan LiSi mau-le [wu ben ~~shu~~].
though Zhangsan buy-ASP three CL book but LiSi buy-ASP five CL book

'Zhangsan bought three books, but Lisi bought five'

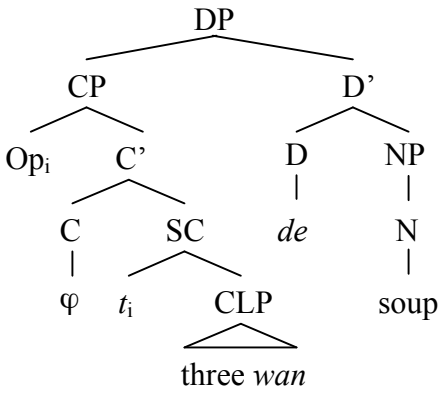
(Saito, Lin, and Murasugi 2008: 262)

Notice further that NP-deletion also provides evidence for Cheng and Sybesma's (1998) analysis of the sequence [Numeral-CL-*de*]. Recall that they analyze CLP in the string as a modifier, or a relative clause. For instance, assuming Simpson's (2002) hypothesis that *de* is D and that a relative clause preceding *de* is its specifier, a noun phrase like (32) will have a structure as in (33).

(32) san wan de tang
three CL-bowl *de* soup

'three bowls of soup'

(33)



(33) also provides a context for NP deletion in that the spec of D is filled with CP. The prediction the analysis makes seems to be born out, as in (34).

(34) Suiran Zhangsan he-le [san wan de tang], dan Lisi he-le
though Zhangsan drink-ASP three CL-bowl *de* soup but Lisi drink-ASP
[wu wan (de) ~~tang~~].
five CL-bowl *de* soup

Lit. 'Though Zhangsan drank three bowls of soup, Lisi drank five bowls of.'

The analysis of Japanese CLP as an NP-adjunct in contrast with Chinese CLP well captures the distribution of the Japanese counterpart of the Chinese suffix *-yishang*, *-izyoo* 'more than'. Recall that *-yishang* occurs at the edge of quantity expressions, as in (5), repeated in (35), and we assumed that they are adjoined to CLP.

(35) a. Ta he-le tang [san wan-yishang]
he drink-ASP soup three CL-bowl-more-than

'He drank more than three bowls of soup'

b. Ta mai-le bi [shi zhi-yishang]
he buy-ASP pen ten CL-more-than

'He bought more than ten pens.'

In parallel with it, the Japanese *-izyoo* also appears at the edge of quantity expressions in the case of quantifier float constructions, as in (36).

(36) a. Kare-wa suup-o [san bai-izyoo] nonda
he-TOP soup-ACC three CL-bowl-more-than drank

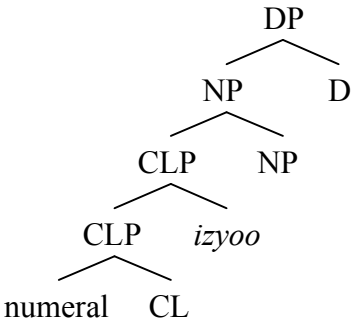
'He drank more than three cups of soup.'

b. Kare-wa pen-o [go hon-izyoo] katta
he-TOP pen-ACC five CL-more-than bought

'He bought more than five pens.'

Given that it is also adjoined to CLPs like the Chinese counterpart, it is predicted that it follows quantity expressions in the sequence [Numeral-CL-N] if they are adjuncts, as illustrated in (37).

(37)



Indeed, the prediction is born out as exemplified in (38).

(38) a. san bai-izyoo-no suup
three CL-bowl-more-than-*no* soup

'more than three bowls of soup'

b. mi tu-izyoo-no eitango
three CL-more-than-*no* English word

'more than three English words'

Notice that the Chinese counterparts are out without *de*, as in (7), repeated in (39), in contrast with the sequences in (38).

(39) a. *san wan yishang tang
three CL -bowl more-than soup

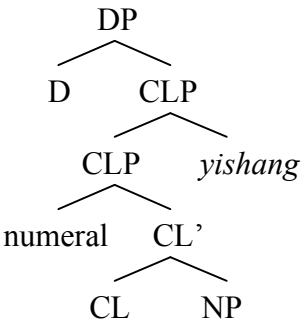
Lit: 'more than three soup'

b. *san ge yishang ying'yu danci
three CL more-than English word

Lit: 'more than three English words'

(39) is ungrammatical because the CLP is a projection above NP and yishang cannot surface between the quantity expression and N thereby, as illustrated in (6a), repeated in (40).

(40)



The contrast between (38) and (39) provides further support for the analysis of Japanese CLP as an NP-adjunct.

3.1.2. Ueda and Haraguchi (2008)

Ueda and Haraguchi (2008) provide a supportive argument for Saito, Lin, and Murasugi's (2008) hypothesis that Japanese CLP is an NP-adjunct. The argument concerns the comparative syntax of Japanese and Chinese number markers. Japanese has some suffixes that represent plurality, and *-tati* is one of them. Chinese has a plural suffix, *-men*, which is similar to *-tati* in many ways. For instance, they are both attached to common nouns, proper nouns, and pronouns, as exemplified in (41).

(41) a. (Japanese)
gakusei-tati, Taro-tati, watasi-tati
student-*tati* Taro-*tati* I-*tati*

b. (Chinese)
xuesheng-men, XiaoQiang-men, wo-men
student-*men* XiaoQiang-*men* I-*men*

Ueda and Haraguchi's (2008) argument is based on Li's (1999) analysis of *-men*. Let us first briefly review it.

The spirit of her proposal is that *-men* is to be analyzed as a true plural marker like *-s* in English though it has some unique properties that are not observed with *-s*. She attempts to give principled accounts for these unique properties. One of its peculiarities is the special interpretation it yields when it is appended to proper nouns. Consider the following examples.

(42) a. xuesheng-men
student-*men*

'the students'

b. XiaoQiang-men
XiaoQiang-*men*

'XiaoQiang and his associates'

The suffixed common noun *xuesheng-men* in (42a) denotes a uniform set of students like *students* does in English, whereas, in (42b), the suffixed proper noun XiaoQiang-men denotes XiaoQiang and people associated with him. We henceforce call the former interpretation the plural interpretation, and the latter the associative interpretation. Another unique property of *-men* is that it cannot occur with a quantity expression when it is attached to a common noun, as exemplified in (43).

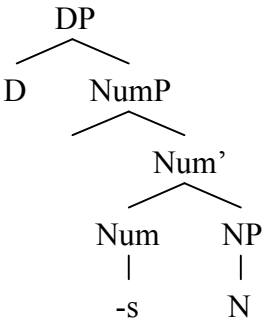
(43) *san ge xuesheng-men
three CL student-*men*

'three students'

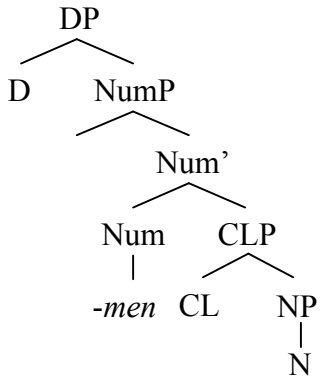
Thus, there are some evidence against analyzing *-men* as a straightforward plural marker.

Nevertheless, Li argues that *-men* is a true plural marker, and proposes that the patterns, it exhibits, in contrast with *-s*, can be attributed to the Chinese nominal constructions and it morphological properties. In her analysis, English and Chinese nominal structures are essentially the same except for the presence of CLP in the latter. DP, NumP, and NP are projected in both of the languages. In Chinese, however, CLP is projected between NumP and NP when a classifier appears in a noun phrase. Compare the two nominal structures in (44).

(44) a.



b.

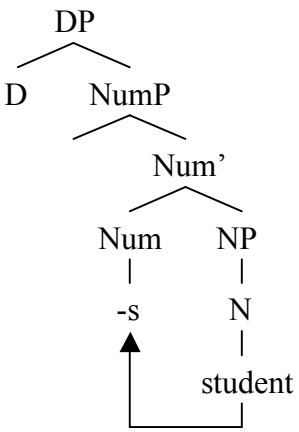


According to Li, plurality is specified in Num in both English and Chinese. Where the two languages differ is the category on which plurality is realized on the surface. In English, plurality is realized on N as *-s*. In Chinese, it is realized as *-men* on either N or D. That is, *-men* can be attached to D as well as N. This accounts for the associative interpretation in Chinese.

Let us consider Li's (1999) analysis in more details to see how *-men* is suffixed to their hosts to yield the plural and associative interpretations. In English, common nouns are suffixed with *-s* through N-to-D movement. They obligatorily move from N to Num when

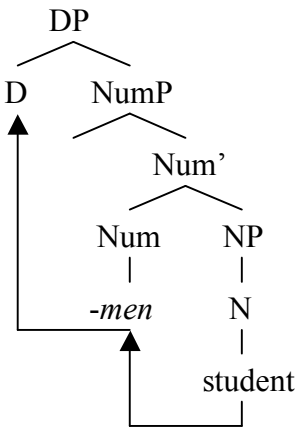
Num contains *-s*, or the plural feature. The derivation of *students* is illustrated below.

(45)

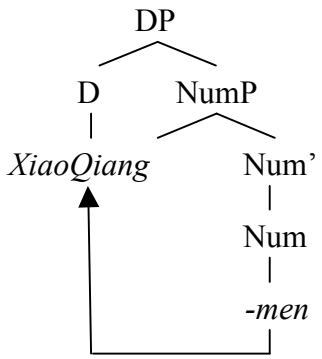


Li proposes that in Chinese, common nouns are suffixed with *-men* through N-to-D movement, as illustrated in (46a), and that pronouns are suffixed with it through Num-to-D movement, where pronouns are assumed to be base-generated in D, as in (46b).

(46) a.

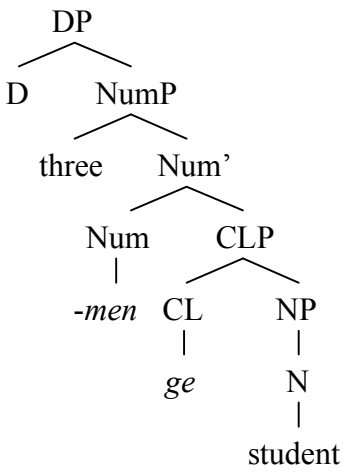


b.



Li's analysis of Chinese noun phrases and *-men* accounts for the ungrammaticality of the expressions like (43), where a quantity expression precedes a suffixed common noun. In her analysis, they are out because the affixation of *-men* to a common noun is possible only when N raises to D through Num. If N raises to D, then it should precede the numeral because it is generated in the spec of NumP. The word order in (43) is possible only when N stays in situ, as in (47), which is impossible by assumption.

(47)



In English, on the other hand, quantity expressions can precede plural-marked nouns because N does not have to move further up to D. The word order as in *three students* is obtained when N raises to Num.

Li's analysis of the Chinese nominal constructions with CLP and *-men* accounts for another puzzling fact. In Chinese, quantity expressions can occur after proper nouns with *-men*, as shown in (48a), but cannot follow common nouns with *-men*, in (48b).

(48) a. XiaoQiang-men san-ge (ren)
XiaoQiang-*men* three-CL person

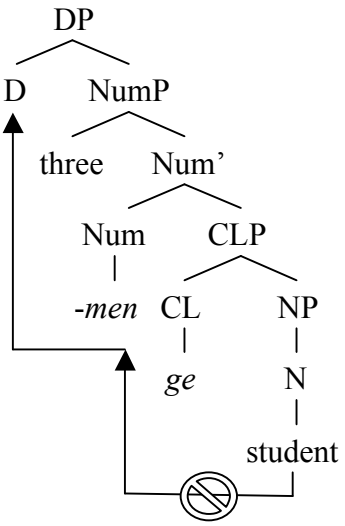
'XiaoQiang (them) three'

b. *xuesheng-men san-ge (ren)
student-*men* three-CL person

'three students'

Recall that N raises to D through Num when a common nouns is suffixed with *-men*, and that Num moves to D when *-men* is suffixed to a proper noun. Then, in (48b), *xuesheng* 'student' must move up from N to D through Num crossing the classifier *ge*. This movement violates the Head Movement Constraint in the sense of Travis (1984) and Chomsky (1986), as shown in (49).

(49)



In contrast, there is no illicit movement in the derivation of expressions like (48a). Num moves up to D without crossing any intervening head when proper nouns are suffixed with *-men*. Li's analysis of the Chinese noun phrases and *-men* thus captures the contrast in (48).

Ueda and Haraguchi (2008) apply Li's analysis of Chinese nominal constructions and the plural marker to Japanese, and show that CLP in Japanese should be analyzed not as a functional projection above NP but as an NP-adjunct to capture some differences between *-men* and *-tati*. Japanese counterpart of (43) is grammatical, as shown in (50).

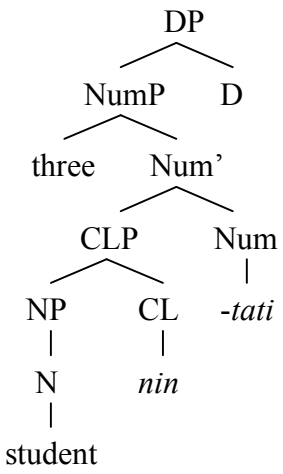
(50) san-nin-no gakusei-tati
three-CL-*no* student-*tati*

'three students' (Ueda and Haraguchi 2008: 234)

That is, a quantity expression may precede a common noun with *-tati*.

Ueda and Haraguchi (2008) begin the discussion with the assumption that Chinese and Japanese have essentially the same structures except for the Head Parameter. That is, both Chinese and Japanese project NumP and CLP between DP and NP. They further suppose that not only the Chinese *-men* but the Japanese plural marker *-tati* is the morphological realization of Num. Under these assumptions, the Japanese expression in (50) will be assigned the structure in (51).

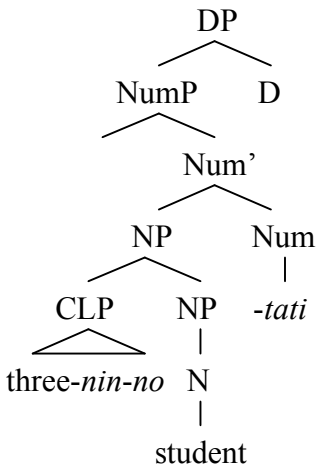
(51)



In (51), N must move up to Num to yield the correct word order. This movement, however, violates the Head Movement Constraint, just as in the case of (49). If N stays in situ, *gakusei* 'student' precedes the classifier *nin* and follows the numeral. Then, we can never obtain the correct word order. Thus, (50) must have a structure distinct from (51). In particular, the grammaticality of (50) suggests that the classifier head should not intervene between N and Num.

Ueda and Haraguchi argue that the desired structure for (50) is in fact proposed by Saito, Lin, and Murasugi (2008). They propose that in Japanese a numeral and a classifier form a constituent and adjoined to NP. According to their proposal, (50) has the structure shown in (52).

(52)



In (52), we have the correct word order. There is no intervening head between N and Num. Hence, nothing blocks the suffixation of *-tati* to the noun whether N is raised to Num or *-tati* hops onto the noun. The grammaticality of (50), thus, follows from the analysis of Japanese quantity expressions as NP adjuncts, and provide further support for Saito, Lin, and Murasugi (2008).

3.1.3. Features

Recall, in 2.2, we argued that Chinese CL is specified with [±number]. Japanese CL, however, is not a proper locus for the syntactic features like [±number] since Japanese CLP is a modifier like Chinese classifiers followed by *de*. Indeed, as observed by Mizuguchi (2004) among others, the Japanese counterparts of Chinese count CLs are sensitive to the presence of a countability feature in NP. That is, Japanese count classifiers like *tu* are found to selectively co-occur with count nouns, as in (53).

(53) a. hito tu-no koppu
one CL-*no* cup

'a cup'

b. huta tu-no kaban
two CL-*no* bag

'two bags'

c. *hito tu-no mizu
one CL-*no* water

However, there is no syntactic selection relation between CL and N in Japanese. In Japanese, CLP and NP are in modifier-modifee relationship. In this sense, the selection relation between CL and N is more semantic than syntax. It is just like the relationship between adverbs and V. It is known that modifiers like adverbs select VPs they are adjoined to. For instance, the adverb *quickly* can be adjoined to VPs [-stative] like *drink tea*, but not to VPs [+stative] such as *know Mary* and *resemble her*. This indicates that [±number] in CL, even if they exist there, should not be syntactic but semantic.

3.2. NumP in Japanese

We have shown in 3.1 that Chinese and Japanese CLPs are different not only in structure but also in feature. This subsection is devoted to show that Japanese is more akin to English than to Chinese in that the features specified in CL in Chinese are specified not in CL but Num in the same way as English.

Building on Li (1999), Ueda and Haraguchi (2008) propose that Japanese also projects NumP. More specifically, they propose that the Japanese number morphology *-tati* can be analyzed as Num and D. Let us briefly review their argument.

Ueda and Haraguchi (2008) observe that the Chinese *-men* and the Japanese *-tati* have many overlapping properties. For instance, as we mentioned in 2.1.2, both can be suffixed to common nouns, proper nouns, and pronouns, as in (41), repeated in (54).

(54) a. (Japanese)
gakusei-tati, Taro-tati, watasi-tati
student-*tati* Taro-*tati* I-*tati*

b. (Chinese)
xuesheng-men, XiaoQiang-men, wo-men
student-*men* XiaoQiang-*men* I-*men*

Another similarity is the interpretations that they yield. Just like *-men*, *-tati* yields the plural interpretation when attached to common nouns, and it yields the associative interpretation when attached to proper nouns, as exemplified in (55).

(55) a. gakusei-tati
students-*tati*

'the students'

b. Taroo-tati
Taroo-*tati*

'Taroo and his associates'

The two suffixes, however, are different in some respects. One of them is that common nouns with *-men* are not construed as associative, as in (56), in contrast with *-tati*.

(56) Xuesheng-men yiqi xue yingyu
student-*men* together study English

'The students (*and their associates) study English together.'

The sentence is not true if the students and their parents are studying English together in (56). Another difference concerns the recursion of the morphemes. Ueda and Haraguchi observe that *-tati* can multiply occur under the associative interpretations, as in (57), while *-men* can never do under any interpretations, as in (58).

(57) a. gakusei-tati-tati
student-*tati-tati*

'the students and their associates'

b. Taroo-tati-tati
Taroo-*tati-tati*

'Taroo and his associates and their associates'

(58) a. *xuesheng-men-men
student-*men-men*

b. *XiaoQiang-men-men
XiaoQIang-*men-men*

Ueda and Hraguchi point out that Li's analysis of *-men* well captures the above observations with it: common nouns with *-tati* are construed only as plural, and Chinese does not allow the multiple occurrence of *-men* on nouns. Recall that in Chinese *-men* yields the associative interpretation only when Num is appended to D. Since common nouns are not base-generated in D, the associative interpretation is not obtainable by assumption. Further, the ban on the recursion of *-men* is explained by the assumption that Num never multiply occurs, as the total ungrammaticality of *dog-s-s* indicates.

The natural question to ask here is why *-tati* can yield the associative interpretation when attached to common nouns, and can multiply occur in sharp contrast with *-men*. Ueda and Haraguchi propose that these properties are attributed to the nature of *-tati*. That is, the plural *-tati* is Num, and the associative *-tati* is D that takes DP as its complement.

Let us first take a closer look at the multiple occurrence of *-tati* to see their account. Recall that, in both of the examples in (57), the additional markers yield the associative interpretation. That is, recursion is allowed only when the additional markers yield the associative interpretation. It is impossible to have two occurrences of *-tati* with plural interpretation as shown in (59).

(59) *gakusei-tati-tati
student-*tati*(PL)-*tati*(PL)

'The students'

The impossibility of multiple marking for the plural interpretation in (58) can be accounted for under the assumption that multiple occurrence of NumP in a noun phrase is not allowed. This is in parallel with Chinese.

However, the multiple occurrence of *-tati* for the associative interpretation remains to be accounted for. If the analysis of plural *-tati* as Num is on the right track, then we cannot identify the additional associative *-tati* as the head of NumP. Ueda and Haraguchi then propose that the associative *-tati* is a D on the assumption that the recursion of DP is possible. This is consistent with the fact that the associative *-tati* always occurs on the right edge of a noun phrase, as the ungrammaticality of (60) shows.

(60) *gakusei-tati-tati
student-*tati*(ASS)-*tati*(PL)

Given that Japanese is head-final, (60) suggests that the associative *-tati* is in a position higher than Num. If the plural *-tati* is a Num, and the associative *-tati* is a D, the former must be within the complement of the latter, and hence, must precede it. Thus, the ungrammaticality of (60) is predicted.

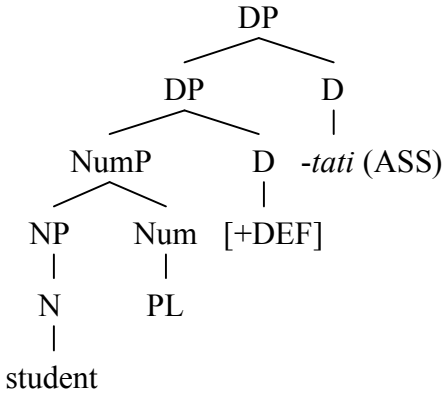
The second property is also explained by their analysis. Nakanishi and Tomioka (2004) and Mizushima (2007) observe that common nouns with *-tati* can have the associative interpretation in addition to the plural interpretation. This is shown in (61).

(61) gakusei-tati-ga koogisita
student-*tati*-NOM protested

'The students (and their associates) protested.'

Note first that a common noun in Japanese can have plural interpretation by itself. Thus, (61) is ambiguous as the translation shows. This indicates that a plural Num can be null or be analyzed as *-tati*. If *gakusei* can be a DP with a null plural Num (meaning 'the students') and the associative *-tati* is a D that takes a DP complement, the associative interpretation of (61) is in fact predicted. The precise structure for *gakusei-tati* in (61) will be as in (62).

(62)



Thus, the analysis of the associative *-tati* as a D renders it possible to capture the associative interpretation of common nouns with *-tati*.

Now, let us consider the features specified in Japanese Num. Recall that Num in English is specified with [±number] and selects N [count]. In fact, the plural *-tati*, or Num, is sensitive to the countability feature of N, and it is not compatible with mass nouns which refer to entities that are not discrete, such as *zinrui* 'mankind', and tyoosyuu 'audience', as exemplified in (63).

(63) a. ??zinrui-tati
mankind-*tati*

Lit: 'mankinds'

b. ??tyoosyuu-tati
audience-*tati*

Lit: 'audiences'

Recall also that we argued that it does not contain syntactic features like [+number] though CL in Japanese is also sensitive to the countability of nouns. It was because CLP in Japanese

is a midifier and is in a modifier-modifee relation with NP. In the case of NumP in Japanese, however, NumP is not an adjunct, but a functional head that takes NP as its complement just in the same fusion as English NumP and Chinese CLP. In this sense as well, Japanese NumP is qualified to be the locus for the syntactic feature [±number].

In Japanese, not CL but Num contains [±number]. This suggests that Japanese is more like English than Chinese. In Chinese, the syntactic features reside in CL, whereas, in English, they are contained by Num. The resemblance between English and Japanese does not follow from the simple typological dichotomy between number and classifier languages.

4. Concluding Remarks

This paper has pursued the comparative syntax of classifiers in Chinese and Japanese and number morphology in English to syntactically re-examine the typological dichotomy between number languages and classifier languages. We have first argued that Chinese classifiers are quite similar with English number morphology at the level of syntax. They both head functional projections above NPs, and are specified with the syntactic features [±number]. These similarities do not follow from the conventional classification of languages. The next argument we presented was that Japanese is syntactically more similar to English than to Chinese though Japanese and Chinese are typologically classifier languages. Japanese and Chinese classifiers are different in structure and the nature of the features specified there. The former are modifiers and not the proper loci for the syntactic features like [±number] in contrast with the latter. In Japanese, the features reside in the number projection in the same way as English.

This study suggests that it is not legitimate to maintain the simple assumption that classifiers are a parametric manifestation of number morphology in languages like Chinese and Japanese. In other words, the implication of this paper is that the parameter is not as simple as [±classifier] or [±number morphology]. Recall representative classifier languages like Chinese and Japanese project number projections, and that Japanese classifiers are adjuncts. The typological distinction between number and classifier languages does not precisely depict the parameter in our grammar. It should be designed more complicatedly and sophisticatedly. The status of classifiers, and even the location of [±number] might be parameterized.

Finally, we would like to make a short remark on Greenberg's (1972) important findings. He reports that classifiers and number morphology are in complementary distributions in many languages. That is, languages with classifier system tend to lack number system. Our study shows that even classifier languages project number projections. If our analysis is on the right track, there is no denying the possibility that languages employing both number and classifier systems exist. According to Greenberg (1972), such languages are rarely distributed in the world. The reason is not clear so far, and I leave it to the future research.

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