Peaches and Plums

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Remarks on Classifiers and Nominal Structure in East Asian

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Remarks on Classifiers and Nominal Structure in East Asian[*]

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We investigate the numeral classifier (NC) construction in Chinese and Japanese with an aim to draw implications on nominal structure and semantic mapping in general. Our main conclusions are: (i) UG makes available two syntactic strategies for the NC: as a head and as an XP modifier, and (ii) Chinese resorts to the head option while Japanese employs both. Our analysis employs insights from both Watanabe (2006) and Saito et al. (2008) but also differs from them in several crucial respects.

Key words: classifier, floating quantifier, noun phrase structure, specificity

1. Introduction

Whether or not languages vary regarding the presence or absence of functional heads in the nominal domain has been an issue of interest from a syntactic point of view (see Bošković 2008) as well as from a semantic point of view (Chierchia 1998a, 1998b). Against this background, this paper investigates in some depth the architecture of the nominal expression in Chinese and especially Japanese. We will argue that these languages indeed have an abstract functional projection on top of the lexical domain (i.e. NP). Here is a summary of the main theoretical points of this paper.

(1) a. UG makes available two syntactic strategies for the Numeral Classifier (NC): as a head and as an XP modifier.
    b. Chinese resorts to the former option while Japanese employs both.[1]
    c. Chinese and Japanese have (optional) functional layers in the nominal domain.
    d. Specificity is syntactically encoded in the nominal representation (Hudson 1989; Muromatsu 1998; Borer 2005 among others, as opposed to other approaches that treat specifics as choice function variables, cf. Reinhart 1997; Winter 1997).

The empirical domain of investigation for this paper is the numeral classifiers (NCs), which has been the focus of intensive research for many years. Regarding Chinese, we basically follow

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[1] This is very much in line with Li's (2007) conclusion.

previous studies such as Tang (1990), Cheng and Sybesma (1999), and Li (1998, 1999) among others and assume that the classifier is a head selecting NP, as shown in (3a) and (3b).

(2) san-ben(*-de)   shu
    three-CL   book
    'three books'

(3) a.   #P   b.   CLP

           #   CLP   #   CL′

               CL   NP   CL   NP

The NC in Japanese appears in at least three different environments. It can occur pre-nominally (accompanied by the genitive marker -*no*), as in (4a). It can also appear post-nominally, as in (4b). In this case, the numeral classifier is sandwiched between the noun and the case particle. Also, it can appear away from the nominal that it modifies, as shown in (4c).[2] Following the long line of research in Japanese syntax, we will assume here, without any discussion, that the pre-nominal and post-nominal NCs are part of the nominal domain.

(4) a. Taro-wa   **10-ko-no**   gyooza-o   tabe-ta.   (pre-nominal NC)
         Taro-Top 10-CL-Gen dumpling-Acc eat-Past
         'Taro ate 10 dumplings.'
    b. Taro-wa   gyooza   **10-ko**-o   tabe-ta.   (post-nominal NC)
         Taro-Top dumpling   10-CL-Acc   eat-Past
    c. Taro-wa   gyooza-o   (kinoo)   **10-ko** tabe-ta.   ('floating' NC)
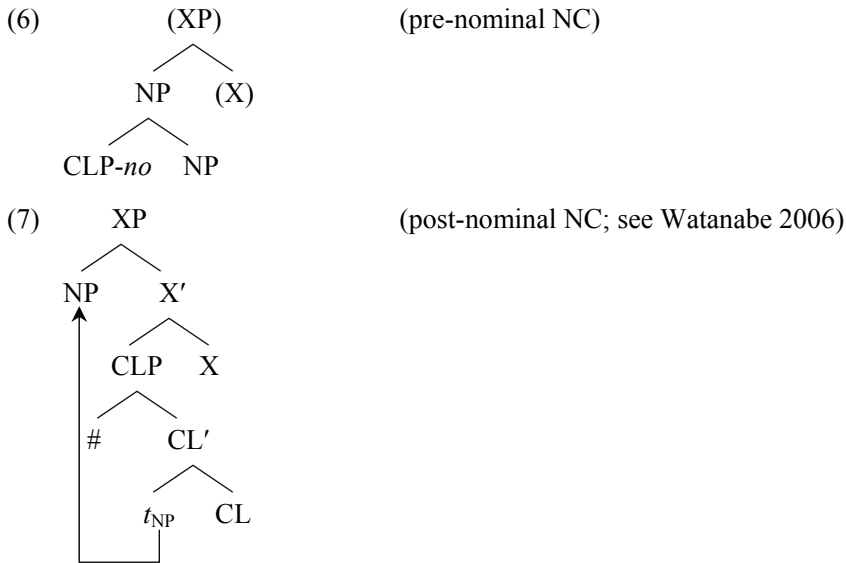   Taro-Top dumpling-Acc yesterday 10-CL eat-Past

Focusing mainly on the contrast between the pre-nominal and post-nominal forms, we will argue for a non-unified analysis of the NC in Japanese, as summarized in (5) (see Giusti 1991 and Shlonsky 2004 for proposals regarding a dual syntactic status of cardinal expressions in languages other than Chinese and Japanese). This is a departure from Watanabe's (2006) unified analysis (although we adopt his analysis of the post-nominal NC construction).

(5) a. pre-nominal NC: an adjunct at the NP-level
    b. post-nominal NC: a head selecting what's on the left as its complement[3]

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[2] We will focus on the object-oriented NC, although our analysis applies equally well to the subject-oriented NC as well.

[3] The two strategies roughly correspond to the two classifier structures discussed by Ionin and Matushansky (2006).

As shown in (6), we propose that the pre-nominal NC occurs pretty low in the nominal structure as an adnominal adjunct (see also Saito et al. 2008 and Miyamoto 2009). The post-nominal NC is more interesting. (7) is essentially what is proposed by Watanabe (2006). The classifier heads the Classifier Phrase (CLP) and the number phrase sits in the specifier of this projection. And the NP complement of the classifier head undergoes movement inside the nominal domain. Crucially, there is an abstract projection on top of CLP. This projection, we argue, is optionally present with the pre-nominal NC construction in Japanese (and in Chinese). In what follows, we will discuss three areas in which the pre-nominal NC and the post-nominal NC show an asymmetry: scope, specificity, and nominal-internal ellipsis. Based on such asymmetries, we will motivate a non-uniform analysis of the NC construction.

(6)   (XP)   (pre-nominal NC)

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          (XP)
         /    \
       NP      (X)
      /   \
  CLP-no   NP
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(7)   XP   (post-nominal NC; see Watanabe 2006)

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       XP
      /  \
    NP    X′
    ↑    /  \
       CLP   X
      /   \
     #    CL′
         /   \
      t_NP    CL
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2. Nominal-internal scope interactions

Let us start with the first point of asymmetry between the pre-nominal and the post-nominal forms. As we have already seen, the NC appears pre-nominally, post-nominally, or away from the nominal that it modifies. This distribution is not limited to NC. Some other quantifiers also appear in those three environments, such as *subete* '$\forall$':

(8) a. Taro-wa   **subete-no** gyooza-o   tabe-ta.   (pre-nominal $\forall$)
          Taro-Top $\forall$-no   dumpling-Acc eat-Past
          'Taro ate all of the dumplings.'
  b. Taro-wa   gyooza-o   **subete** tabe-ta.   (floating $\forall$)
          Taro-Top   dumpling-Acc $\forall$ eat-Past
          'Taro ate all of the dumplings.'

    c.   Taro-wa   gyooza   **subete-o**   tabe-ta.   (post-nominal ∀)
         Taro-Top   dumpling   ∀-Acc   eat up-Past
         'Taro ate all of the dumplings.'

Now consider the following pair, where the NC and *subete* co-occur. The order in (9a) is ungrammatical, while (9b), in which the NC appears pre-nominally and *subete* post-nominally, is fine.

(9) a. *Taro-wa   **subete-no**   gyooza   **100-ko**-o   tabe-ta.   (*∀-no N NC)
         Taro-Top ∀-Gen   dumpling 100-CL-Acc eat-Past
      b. Taro-wa   **100-ko-no**   gyooza   **subete**-o   tabe-ta. **(NC-no N ∀)**
         Taro-Top 100-CL-Gen umpling   ∀-Acc   eat-Past
         'Taro ate all of the 100 dumplings.'

We assume with a long line of research (see Murasugi 1991; Kawashima 1998; Watanabe 2006, 2008 among many others) that the post-nominal element in Japanese is a head selecting what is on its left as the complement. This makes sense as Japanese is known to be a strict head-final language, disallowing any expression other than some quantity expressions (in particular, the NCs) to appear following the noun. The contrast in (9) shows that the post-nominal quantity expression is structurally higher than the pre-nominal one. We propose that the pre-nominal NC always appears as part of the NP, hence within the scope of the post-nominal quantity expression in (9). (10a) is the underlying structure of the ungrammatical (9a) under our analysis, and (10b) the underlying structure of the grammatical (9b), prior to the NP movement to spec of XP above CLP.

(10) a.   *CLP   b.   CLP
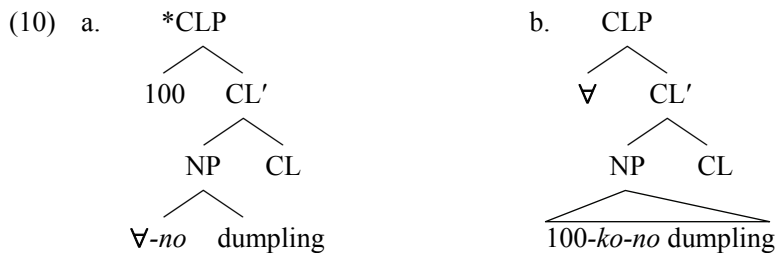
(10a) is ungrammatical because '100' has scope over 'all dumplings', and (10b) is grammatical because 'all' c-commands '100 dumplings'. Thus, the contrast between (9a) and (9b) can be reduced to the contrast between **100 all dumpling* and *all 100 dumpling* in English, and whatever principle that explains this latter contrast.

    After NP in (10a-b) is moved to spec of XP, we have (9a-b) respectively. What is crucial for us is that the moved NP is obligatorily reconstructed for the purpose of scope calculation. Why this is so remains unclear but we will briefly return to this issue in §5, where we show that the same property holds in the floating classifier construction.

3. Specificity (Downing 1996; Kakegawa 2000)

Specificity is another area in which the pre-nominal NC and the post-nominal NC behave differently. To our knowledge, the connection between specificity and the three types of classifier constructions in Japanese has been overlooked in the literature. Following the lead of Downing (1996), we would like to establish the following three-way contrast summarized in (11).

(11)　a.　Pre-nominal NC:　　specific, non-specific
　　　　b.　Post-nominal NC:　　specific, *non-specific
　　　　c.　Floating NC:　　　　*specific, non-specific

The following quote from Downing (1996) substantiates this point.

(12)　"…. the vast majority of Type 2 (Post-nominal) forms in my sample appeared in non-initial mentions of the referents, where they repeated information about number already known to the addressee. The information value of the numeral-classifier pair in these cases was thus quite attenuated by comparison with the Type 1 (Pre-nominal) construction, where it frequently carries new information about number, and Type 4 (Q-float) construction, where it must do so."

(Downing 1996:228-229)

Downing's discussion is based on her sample data and we can confirm her generalization by placing the NC in several contexts and creating minimal triplets. First, the data in (13) contain an intensional predicate, *sagasu* 'look for'. (13a), with the pre-nominal NC, is ambiguous between specific and non-specific readings; there might be particular nurses that the hospital is looking for, or the hospital is looking for any three nurses. The floating NC construction in (13b) strongly favors the non-specific reading. Finally, and crucially, the post-nominal NC in (13c) predominantly has the specific reading.[4]

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[4]　Two points need to be noted here. First, as pointed out by Downing (1996), a specific interpretation is not forced when the post-nominal NC is used for inventories and lists. We have nothing interesting to say about such cases.
　　(i)　Beddo　huta-tsu　to　　teeburu　hito-tsu-de　heya-wa　　ippai　da　roo.
　　　　bed　　2-CL　　and　table　　1-CL-with　room-Top　full　　be　will
　　　　'The room will be full with two beds and one table.'
Second, Takeo Kurafuji and Mamoru Saito independently observe that the post-nominal NC can be accompanied by elements like *-ijyoo* 'over/more than', an indication that a non-specific reading is not impossible with the post-nominal NC. Although a detailed investigation of this issue must be left for future research, we should note here that in a context where a non-specific reading is natural, the post-nominal NC sounds fairly degraded, with or without *-ijyoo*, as opposed to the other two types of the NC nominal.

(13)   a.   Ano byooin-ga   **san-nin**-no kangohu-o sagasi-teiru   (koto)
            that   hospital-Nom three-CL no   nurse-Acc   looking for-Asp fact
            '(the fact that) that hospital is looking for three nurses'

                                                                  (specific, non-specific)

       b.   Ano byooin-ga   kangohu-o **san-nin**   sagashi-teiru   (koto)
            that   hospital-Nom nurse-Acc three-CL   looking for-Prog   fact
            '(the fact that) that hospital is looking for three nurses'

                                                                  (*specific, non-specific)

       c.   Ano byooin-ga   kangohu **san-nin**-o   sagasi-teiru   (koto)
            that   hospital-Nom nurse   three-CL-Acc looking for-Asp   fact
            '(the fact that) that hospital is looking for three nurses'

                                                                  (specific, *non-specific)

We can highlight the same point by placing the NC nominal in a context where a non-specific reading is forced. As shown in (14a-b), the pre-nominal NC and the floating NC are fine in such contexts, while the post-nominal NC in (14c) is not.

(14)   Heikin-suru to, maishuu   kono   byooin-de-wa   .....
       average-do   every week   this   hospital-at-Top
       a.   **san-nin**-no   akanboo-ga   umareru.
            three-CL-no   baby-Nom   be born
            'On average, three babies are born in this hospital every week.'
       b.   akanboo-ga   **san-nin**   umareru.
            baby-Nom   three-CL   be born
       c.   *akanboo   **san-nin**-ga   umareru.
            baby   three-CL-Nom   be born

The same point can also be made on the basis of an existential locational verb context, which is extensively discussed by Kishimoto (2000). Japanese has a construction with a locational verb *iru* 'exist or have'. When it expresses a possessive relation, the object cannot be specific or presuppositional, as shown in (15a).

(ii)   Oodoori-ni   dete, 3-dai ijyoo-no takushii-o mitsukete kite kudasai.
       main street-to go   3-CL over-Gen taxi-Acc   find   please
       'Please go to the main street and find (and bring) more than 3 taxis.'
(iii) Oodoori-ni   dete, takushii-o 3-dai ijyoo   mitsukete kite   kudasai.
       main street-to   go   taxi   3-CL   over-Acc   find   please
(iv)   ??Oodoori-ni-to dete, takushii 3-dai   ijyoo-o   mitsukete kite   kudasai.
        main street   go   taxi   3-CL   over-Acc   find   please
       'Please go to the main street and find (and bring) more than 3 taxis.'

(15) a. *Taroo-ni   sono/hotondo-no/subete-no   kodomo-ga   iru   (koto)
          Taro-Dat   that/most-Gen/all-Gen/   child-Nom   have   fact
          '(the fact that) Taro has that/most/all/his children(s)'

    b. Taroo-ni   takusan-no   kodomo-ga   iru   (koto)
        Taro-Dat   many-Gen   child-Nom   have   fact
        '(the fact that) Taro has many children'

When we place the NC nominal in this context, we obtain the pattern in (16). The pre-nominal NC in (16a) and the floating NC in (16b) are fine but the post-nominal NC is not, as shown in (16c).[5]

(16) a. **3-nin**-no   itoko-ga   iru   hito-wa   te-o   agete   kudasai.
          3-CL-Gen   cousin-Nom   have   person-Top   hand-Acc   raise   please
          'Those of you who have three cousins, please raise your hand.'

    b. Itoko-ga   **3-nin**   iru   hito-wa   te-o   agete   kudasai.
        cousin-Nom   3-CL   have   person-Top   hand-Acc   raise   please
        'Those of you who have three cousins, please raise your hand.'

    c. ??Itoko   **3-nin-ga**   iru   hito-wa   te-o   agete   kudasai.
        cousin   3-CL-Nom   have   person-Top   hand-Acc   raise   please
        'Those of you who have three cousins, please raise your hand.'

Two points are worth highlighting here. First, the post-nominal NC construction (as well as other forms of the NC) need not denote the "greatest element" of the relevant set in the sense of Heim (1991). This is shown in (17). Hence, we assume that the post-nominal NC expression is not definite: rather, it is a specific indefinite expression. Note that (17a) yields both specific and non-specific readings. On the other hand, (17b) yields a non-specific reading only, whereas (17c) has only a specific reading.[6]

(17) Taro went to a store and saw many oil paintings on sale, and …
    a. Kare-wa   **2-mai-no**   aburae-o   katta.
        he-Top   2-CL-Gen   oil painting-Acc   bought
        'He bought 2 oil paintings.'

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[5]   In this sense, the post-nominal NC nominal behaves like specific NPs in Turkish (Enç 1991).

[6]   A reviewer suggests an interesting possibility. The reason that the post-nominal NC favors the specific reading might be that the NP part of the nominal (e.g. *aburae* 'oil painting' in (17)) is located in the topic position (or, in more general terms, the left periphery) within a larger nominal domain, a position akin to the topic position in a clause. We believe our analysis is fully compatible with such an idea. See §5, where we discuss a suggestion by Luigi Rizzi, which shares the same idea.

b.	Kare-wa	aburae-o	**2-mai**	katta.
	he-Top	oil painting-Acc	2-CL	bought
c.	Kare-wa	aburae	**2-mai**-o	katta.
	he-Top	oil painting	2-CL-Acc	bought

Second, the presence of a classifier head does not force the specific reading in Chinese, as summarized in (18). In particular, the 'CL + N' combination and the 'Num + CL + N' combination are fully compatible with a non-specific reading.

(18) Chinese indefinites (Mandarin and Cantonese; cf. Cheng & Sybesma 1999)[7]
   a. Bare N (e.g. *shu* 'book')   non-specific only
   b. CL + N (e.g. *ben shu* 'CL book')   non-specific only
   c. Num + CL + N (e.g. *san ben shu* 'three CL book')   specific or non-specific

So, why is a non-specific reading missing from the post-nominal NC structure in Japanese? Here we would like to follow Hudson (1989), Ritter (1991), and Muromatsu (1998) among others and assume that the specific indefinite vs. non-specific indefinite distinction is a reflection of the difference in the size of the nominal expression (cf. also Borer 2005). In particular, let us adopt the following:

(19) A specific indefinite nominal has a larger structure than a non-specific indefinite nominal.

This thesis is supported by the Chinese pattern in (18), since Chinese needs a numeral in addition to CL and N in order to yield a specific reading. This is illustrated by the following paradigm involving secondary predication. As Huang (1987) points out, this construction disallows a non-specific indefinite nominal, and only (20c) is grammatical.[8]

(20)	a. *Wo	jiao-guo	xuesheng	hen	congming.
	I	teach-EXP	student	very	intelligent
	b. *Wo	jiao-guo	ge	xuesheng	hen	congming.
	I	teach-EXP	CL	student	very	intelligent
	c. Wo	jiao-guo	yi-ge	xuesheng	hen	congming.
	I	teach-EXP	one-CL	student	very	intelligent

'I taught a (certain) student, and he was very intelligent.'

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[7] We need to leave out the definite vs. indefinite issue. Definiteness is expressed by bare NP in Mandarin and by CL + N in Cantonese (Cheng & Sybesma 1999, 2005).

[8] The traditional view in the literature is that the [CL + N] phrase is derived from the [*yi*-CL + N] phrase via phonological reduction of *yi* 'one' (e.g. Chao 1968; Li 1996, among others). But our viewpoint is in consonance with the position defended by Cheng and Sybesma (1999).

Assuming with Tang (1990) and Cheng and Sybesma (1999, 2005) that the classifier expression in Chinese involves Classifier Phrase, the lack of a non-specific reading for the post-nominal NC in Japanese leads us to infer that it is structurally larger than its Chinese counterpart. This is where Watanabe's analysis comes in handy, as his analysis of the post-nominal NC, shown in (7), would guarantee that the post-nominal NC nominal has more structure on top of the classifier projection, requiring room for hosting the moved NP. Now, we can connect the lack of the non-specific reading for the post-nominal NC in Japanese to either (or both) of the following two factors: (i) the inherently [+specific] nature of X of the XP, or (ii) the size of the post-nominal NC being sufficiently large (cf. Muromatsu 1998). This in turn leads us to assume that this additional XP layer is optionally present with the pre-nominal NC in Japanese as it is ambiguous between the specific and non-specific readings: if XP is present on top of the NP, we obtain a specific reading.

(21) a. bare NP → non-specific
      b. XP   → specific

We will also speculate that this X optionally occurs on top of CLP in Chinese, again depending on interpretation (i.e. specific or non-specific interpretations).[9]

Let us end this section with a remark on the driving force of the NP movement in (7), an issue that Watanabe does not elaborate on. One possibility is that NP moves for some PF reasons. For instance, we can imagine that there is an adjacency requirement between a numeral and a classifier (the classifier in Japanese does not occur on its own; it always requires a numeral). Unless NP moves, it would interfere with this adjacency requirement.[10] Let us consider a possible prediction of this PF-based story. There are two parts to it. First, movement of an NP should not be required if the adjacency between a numeral and a classifier can be achieved by other means (such as NP-ellipsis). Second, recall that XP is assumed to be optionally present for the pre-nominal NC structure. This should be true for the post-nominal NC structure as well. Now, combining these two points, we should expect a non-specific reading to be available in the post-nominal NC construction when ellipsis applies. Let us test this prediction, with a few points in mind. First, as Takahashi (2008) demonstrates, it is in principle possible to elide the NP complement of the post-nominal NC.

(22) Bushu-wa [jibun-ni kansuru hon] 2-satsu-o   yonda.
      Bush-Top   self-Dat   related   book   2-CL-Acc   read

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[9] It is crucial for this hypothesis that X cannot directly select NP in Chinese, unlike in Japanese.

[10] Another possibility, suggested to us by a reviewer, is that the classifier moves past NP, which should yield the Chinese-type order of [number + classifier + N]. This would be impossible if the classifier is a head (as assumed throughout here) and Japanese is a strict head-final language. Movement of the classifier, if attested, should be to the right, not to the left.

> Obama-wa   *e* 3-satsu-o   yonda.
> Obama-Top   3-CL-Acc   read
> 'Bush read two books about himself. Obama read three *e*.'
> *e = jibun-ni kansuru hon* 'book about oneself' (sloppy reading available)

Second, let us imagine a context that eliminates a specific reading. As shown below, the floating NC is fine in this type of context while the post-nominal NC is not.

> (23) a.   Tomoko-wa   30-sai   made-ni   kodomo-o **2-ri**   um-itai
>   Tomoko-Top 30-year old by-Dat   child-Acc 2-CL   bear-want
>   to   omotteiru.
>   that   think
>   'Tomoko feels that she wants to give birth to 2 children by the age of 30.'
>   b. *Tomoko-wa   30-sai   made-ni   kodomo   **2-ri-o**   um-itai
>   Tomoko-Top 30-year old by-Dat   child   2-CL-Acc bear-want
>   to   omotteiru.
>   that   think
>   'Tomoko feels that she wants to give birth to 2 children by the age of 30.'

Now we are ready to test the prediction of the above hypothesis. The following example has the floating NC in the first clause, which does not have a specific reading, and the second clause is intended to be derived from the post-nominal NC with the NP complement of the CL elided. This example is fairly degraded, because a specific reading is forced in the second clause, thus contradicting the intended non-specific reading of the clause:

> (24) Tomoko-wa 30-sai   made-ni kodomo-o **2-ri** um-itai   to   omotteiru.
>   Tomoko-Top 30-year old by-Dat child-Acc 2-CL bear-want that think
>   'Tomoko feels that she wants to give birth to 2 children by the age of 30.'
>   *Hanako-wa 25-sai   made-ni **3-nin**-o   um-itai   to   omotteiru.
>   Hanako-Top 25-year old by-Dat 3-CL-Acc bear-want that think
>   'Hanako feels that she wants to give birth to 3 children by the age of 25.'

Thus the NP complement of the CL head cannot simply be elided without movement, which leads us to suspect that the NP movement under discussion takes place for some formal reasons having to do with the presence of specific XP. We will come back to this issue in §5, in connection with the issue of the floating NC.

    Before leaving this section, let us discuss a potential complication arising from this line of argument. First, the example in (24) may be degraded with *3-nin-o* because it would fail to satisfy the well-known parallelism condition on ellipsis: the first clause has a floating NC while the second clause is assumed to contain a post-nominal NC. We should nonetheless point out

that such an objection loses some of its force under the view of the floating NC to be introduced in §5, according to which the floating NC and the post-nominal NC are essentially derived from the same underlying structure and through very similar (almost identical) derivational steps, the only difference between the two being the final landing site of the NP undergoing movement. Still, the parallelism condition may interfere in another way, as noted by a reviewer. Suppose that the floating NC is derived via movement of NP out of a nominal domain (a point we will discuss in §5). Then, the same parallelism condition may force movement of NP in the second clause. If this were so, our test based on (24) would not be able to throw out the possibility that the NP-movement involved in the post-nominal NC is PF-driven, since this NP-movement would force the specific reading for the second clause but the context demands a non-specific interpretation (see (23b)). While we concur that this is a possible (and even reasonable) interpretation of the parallelism condition, whether parallelism forces movement in the second clause in this particular case should be (and we think it can be) settled on empirical grounds. We will revisit this issue in the next section in relation to Watanabe's (2010) argument.

4. Ellipsis within the nominal domain

Nominal-internal ellipsis is yet another domain in which the pre-nominal and post-nominal NC behave differently. First, observe that the NC construction in Chinese allows NP ellipsis (see Saito et al. 2008).

(25)   Suiran   Zhangsan   mai-le   [san-ben   shu],
       though   Zhangsan   buy-Perf   three-CL   book
       dan Lisi zhi   mai-le   [wu-ben   ~~shu~~].
       but Lisi only   buy-Perf   five-CL   book
       'Zhangsan bought three books, but Lisi only bought five.'

Turning to Japanese, observe first that the pre-nominal NC nominal in Japanese does not allow ellipsis, as pointed out by Saito et al. (2008).

(26) *Taroo-wa   [**san-satu**-no   hon]-o   katta   ga,
      Taro-Top   three-CL-Gen   book-Acc   bought   though
      Hanako-wa   [**go-satu**-no   ~~hon~~]-o   katta.
      Hanako-Top   five-CL-Gen   book-Acc   bought
      'Taroo bought three books, but Hanako bought five.'

On the other hand, as we already saw in (22), the post-nominal NC nominal does allow NP ellipsis (see Takahashi 2008), which is confirmed by the fact that the example allows both strict and sloppy readings. This difference naturally follows from our non-uniform view of the

adnominal NC. Assuming that the pre-nominal NC always occurs inside the NP, the lowest nominal projection, it follows that there is no maximal projection within the nominal domain to the exclusion of the pre-nominal NC, which is why examples like (26) are bad. And the Japanese case in (22) and the Chinese case in (25) are treated alike: both involve the CL head with its NP complement elided.

There is an interesting wrinkle to this conclusion, however. Watanabe (2010) argues that the pre-nominal NC does in fact allow ellipsis, contrary to Saito et al.'s claim. Watanabe claims that examples like the following may come from the pre-nominal NC source (as well as from the floating one), as schematically shown in (27b).

(27) a. Taroo-wa [**san-satu**-no hon]-o katta ga,
          Taro-Top three-CL-Gen book-Acc bought though
          Hanako-wa **go-satu** katta.
          Hanako-Top five-CL bought
          'Taroo bought three books, but Hanako bought five.'
      b. Hanako-wa [go-satu ~~hon]-o~~ katta.

But there is evidence that examples like (27a) are derived from the floating NC construction, and not from the pre-nominal NC construction. As Nakanishi (2008) points out, the floating NC (but not the pre-nominal or the post-nominal NC) typically has a distributive reading, which becomes salient when a predicate like *koros*- 'kill' is used. Observe the following:

(28) a. **Go-nin**-no otoko-ga Taro-o koroshita.
          five-CL-Gen man-Nom Taro-Acc killed
          'Five men killed Taro.'
      b. Otoko **go-nin**-ga Taro-o koroshita.
          man five-CL-Nom Taro-Acc killed
      c. *Otoko-ga **go-nin** Taro-o koroshita.
          man-Nom five-CL Taro-Acc killed

With this point in mind, let us reconsider (27). If (27b) can be derived from the pre-nominal NC construction (as well as from the floating NC), as Watanabe claims, then the following example should be acceptable, contrary to the fact.

(29) Kyonen san-nin-no otoko-ga jiroo-o koroshita.
       last year three-CL-Gen man-Nom Jiro-Acc killed
      *Kotoshi go-nin taroo-o koroshita.
       this year five-CL Taro-Acc killed
       'Last year three men killed Jiro. This year, five men killed Taro.'

This shows that (27b) is derived only from the floating NC source. Witness the following paradigm as a confirmation of this conclusion.

(30) a. Kotoshi   **go-nin-no**   otoko-ga   taroo-o   koroshita.
          this year   five-CL-Gen   man-Nom   Taro-Acc   killed
                                                                        (pre-nominal NC)

      b. Kotoshi   otoko   **go-nin**-ga   taroo-o   koroshita.
          this year   man   five-CL-Nom   Taro-Acc   killed
                                                                        (post-nominal NC)

      c. *Kotoshi   otoko-ga   **go-nin**   taroo-o   koroshita.
          this year   man-Nom   five-CL   Taro-Acc   killed
                                                                        (floating NC)

Summarizing, we have seen that the non-uniform approach offers a straightforward account of three asymmetries between prenominal and post-nominal NC constructions: with respect to scope, specificity and the distribution of NP ellipsis.

Let us end this section by revisiting the issue about the parallelism that we discussed at the end of the previous section. Our conclusion that examples like (27) involve a pre-nominal NC in the first clause and a floating NC in the second indicates that the parallelism constraint on ellipsis is not sensitive to the distinction between the pre-nominal NC and the floating NC. This point is important as we will explore in the next section the hypothesis that the floating NC involves movement of NP out of a larger nominal domain while the pre-nominal NC does not. Now let us reconsider (24) in this light. By the same reasoning, the NP complement of the classifier head in the second clause should not be forced to move by parallelism considerations. The unacceptability of (24) therefore militates against the PF-driven nature of NP-movement involved in deriving the post-nominal NC. That is, the movement to spec of XP is not triggered by a PF requirement of Num-CL adjacency, but for a separate, formal reason.

5. Implications for the theory of floating numeral classifiers

So far we have argued that classifier languages like Chinese and Japanese indeed have an abstract functional projection in the nominal domain. While this functional head is argued to be optional in the pre-nominal NC construction in Japanese and in Chinese, it is obligatory in the post-nominal NC in Japanese. But this difference need not be stipulated as such. Rather, it follows from the fact that the post-nominal NC construction in Japanese involves obligatory NP-movement. Let us conclude this paper with a potential implication of this particular aspect of our analysis for the existence of the floating NC in Japanese and its absence in Chinese, assuming that the floating NC is somehow derived from the adnominal NC form. Given that the floating NC yields only a non-specific reading (see (11b)), we may suppose that it comes

from the pre-nominal source (which is ambiguous between specific and non-specific readings). But the question immediately arises as to why other pre-nominal elements, including adnominal adjectives, cannot be stranded.

(31) Taroo-ga   hon-o   3-satsu/*takai   katta.
      Taro-Nom   book-Acc   3-CL/expensive   bought
      'Taro bought three/expensive books.'

Could the floating NC be related to the post-nominal NC, then? There are in fact several reasons to seriously entertain this hypothesis. First, the hypothesis makes sense especially if the post-nominal NC involves movement of NP as assumed here, following Watanabe (2006). Second, paradigms like the following provide potential empirical support for this line of approach.[11]

(32) a.   Taro-wa   **100   peeji-no**   ronbun-o   yonda.
           Taro-Top   100   page-Gen   article-Acc   read
           'Taro read a 100-page article.'
      b.   Taro-wa   ronbun   **100   peeji**-o   yonda.
           Taro-Top   article   100   page-Acc   read
           'Taro read 100 pages of an article.'
      c.   Taro-wa   ronbun-o   **100   peeji**   yonda.
           Taro-Top   article-Acc 100   page   read
           'Taro read 100 pages of an article.'

Here, *100 peeji* '100 pages', which modifies *ronbun* 'article', yields the same meaning in the post-nominal and floating environments, in contrast to when it appears pre-nominally. Third, this hypothesis is consistent with Jenks' (2010) cross-linguistic generalization that only those classifier languages that have (or allow) the Noun-NC order allow stranding.[12] At the same time, this hypothesis begs the question of why the two constructions differ in terms of specificity. Recall that the post-nominal NC is interpreted as specific while the floating NC is interpreted as non-specific only (see (11)). We speculate that this difference in the domain of specificity may in fact be telling us how to understand the connection between the post-nominal NC and the floating NC. Let us elaborate more on this point.

     Let us revisit the question of what forces the nominal-internal NP movement in the post-nominal NC. Recall that we had a reason to think that the driving force of the NP
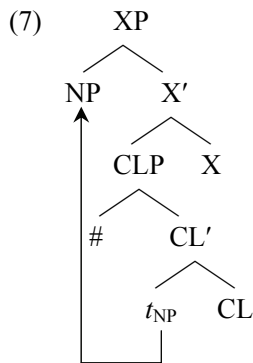
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[11] Thanks to Mamoru Saito for the discussion (but see also Watanabe's 2010 objection). As he points out, however, there does not seem to be a specific vs. non-specific distinction between (32b) and (32c). As a reviewer notes, the phrase in (32) may be a quantity-denoting phrase in the sense of Li (1998), although incorporating Li's analysis into ours is a task that must be left for future research.

[12] Head-final languages (Burmese, Japanese, and Korean) and head-initial languages (Thai, Khmer).

movement is formal in nature. So, what exactly is the driving force of this movement? We would like to put forth the following thesis:
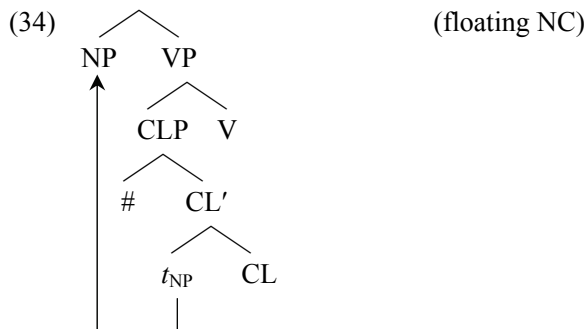
(33) N needs to be visible (i.e. accessible) from outside the extended nominal domain (for the purpose of selection and/or Case).

Taken literally, this means that N(P) cannot be probed by T, v etc. when NP is embedded inside a larger structure (CLP, XP etc.). Accordingly, NP moves so that it becomes visible from outside the nominal domain. Since this is a formal requirement, simply eliding an NP without movement is not an option. Let us examine the structure in (7), repeated below, in light of this consideration.

(7)

```
            XP
           /  \
         NP    X′
          |   /  \
          | CLP    X
          | /  \
          #    CL′
             /  \
          t_NP   CL
```

In this structure, NP moves to the edge of this nominal projection (i.e. XP), and the whole XP acts as an argument (presumably as a result of having NP in its spec), and as a result we get a specific reading.

Now, suppose that this X is optional in the post-nominal NC (X is assumed to be optional in the case of the pre-nominal NC construction). In that case, NP has no choice but to move out of CLP. Note that NP cannot adjoin to CLP as that would be too short a movement: NP, the complement of CL, would be remerging with CL. This is, we suppose, how the floating NC is derived.

(34)   (floating NC)

```
          /  \
        NP    VP
         |   /  \
         | CLP    V
         | /  \
         #    CL′
            /  \
         t_NP   CL
```

Since there is no XP in this case, it should yield a non-specific reading, which is precisely what we find. In short, the post-nominal NC option (i.e. classifier as a head) yields either the post-nominal NC construction or the floating NC, depending on the presence/absence of XP in the nominal domain. If [spec, XP] is available, NP moves and stays there (for economy reasons). If this landing site is not available in the nominal structure, NP moves out of CLP.[13] If correct, this would mean that what underlies the floating NC is an obligatory operation.[14]

Let us discuss four issues arising from the above conjecture. First, there is a slightly different way to look at the difference between the post-nominal NC and the floating NC, while keeping to the idea that the two constructions essentially share the same underlying structure.[15] Instead of distinguishing them in terms of the presence or absence of X in the Numeration, suppose that X is indeed present in both cases, but that the feature specification of X is different: X in the post-nominal NC has some semantic substance (such as [+specific]), on a par with Top and Foc in the clausal left periphery, whereas X in the floating NC only has a formal feature such as an EPP-feature, allowing its spec to be used as an escape hatch. Crucially, once the NP in (7) moves to the spec of XP, a 'criterial position' in Rizzi's (2006) sense, it does not move further (*Criterial Freezing*). This alternative viewpoint is conceivably compatible with the thesis in (19). The post-nominal XP, with a criterial (or substantial) position, may count, in some sense, as more 'full-fledged' than the XP underlying the floating NC (which involves only an EPP-like feature).[16]

Second, since this line of analysis assigns the (almost) identical underlying structure to the post-nominal NC and the floating NC, we may expect the two constructions to behave on a par with respect to scope. Recall that the contrast in (9), repeated below as (35), shows that the NP-movement involved in deriving the post-nominal NC must be necessarily 'undone' for the purpose of scope calculation. In particular, as shown in (10a), the phrase *subete-no gyooza* '∀-Gen dumplings' of (35a) originates as the complement of the classifier head while the number phrase *100* occurs as the specifier of this classifier projection. But once the former phrase moves up into the edge of the nominal domain, as illustrated in (36), the universal quantifier is no longer within the scope of the numeral. If we were to ascribe the ungrammaticality of (35a) to the ban against having the universal quantifier within the scope of the numeral, then

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[13] NP does not pass through the edge of the nominal domain, unlike in Shlonsky's (1991) analysis.

[14] A reviewer cautions us that the movement depicted in (34) might be blocked by the one involved in the derivation of the post-nominal NC, as the movement in the former case seems "longer", taking NP completely out of the nominal domain. But the two derivations cannot be compared as they do not share the same numeration: the former lacks X. The point continues to hold even in the alternative approach to the post-nominal NC and the floating NC to be provided below.

[15] We thank Luigi Rizzi for the suggestion.

[16] According to Cinque (2010), specificity-inducing adjectives (e.g. pre-nominal adjectives in Romance) appear structurally lower than those that are ambiguous between specific and non-specific readings (e.g. post-nominal adjectives in Romance). This appears to be in conflict with (19), which in turn renders this alternative approach worth pursuing.

we would need to ensure that this constraint would look at the representation prior to this NP-movement, or else at the representation where the moved NP is reconstructed back to its original position.

(35) a. *Taro-wa **subete-no** gyooza **100-ko**-o tabe-ta. (*∀-no N NC)
Taro-Top ∀-Gen dumpling 100-CL-Acc eat-Past

b. Taro-wa **100-ko-no** gyooza **subete**-o tabe-ta. **(NC-no N ∀)**
Taro-Top 100-CL-Gen dumpling ∀-Acc eat-Past
'Taro ate all the 100 dumplings.'

(36)
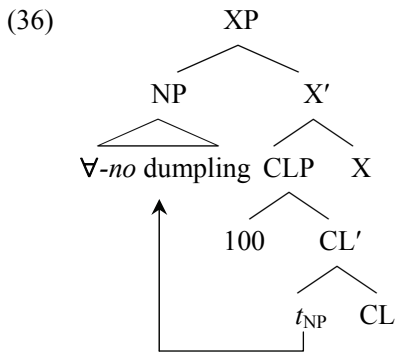
Although the reason for this obligatory reconstruction property remains unclear, it is worth pointing out that the same property holds in the case of the floating NC.[17] The pair of examples in (37) is quite similar to the pair in (35), except that it contains a floating quantifier. In the unacceptable (37a), the numeral classifier is separated from the rest of the object noun phrase by the adverbial phrase *sono toki* 'that time'. The same adverbial phrase is used in (37b) to split up the object noun phrase, but this time, it is the universal quantifier *subete* that is stranded. The contrast that we observe here mirrors the one in (35).

(37) a. *Taro-wa **subete-no** gyooza-o sono toki **100-ko** tabe-ta.
Taro-Top ∀-Gen dumpling that time 100-CL eat-Past

b. Taro-wa **100-ko-no** gyooza-o sono toki **subete** tabe-ta.
Taro-Top 100-CL-Gen dumpling that time ∀ eat-Past
'Taro ate all the 100 dumplings that time.'

We could rule out (37a) by alluding to the same constraint that we did for (35a), that is, the constraint against having a universal quantifier within the scope of a numeral, assuming that *subete-no gyooza* '∀-Gen dumpling' originates inside the object nominal domain, moves out of the nominal domain (into VP or higher), and is reconstructed back to its base position for scope interpretation.

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[17] We thank a reviewer for bringing our attention to this particular point.

Third, a question arises as to how the classifier phrase in Chinese satisfies (33). Consider again the following Chinese data.

(38) san   ben   shu
      three CL   book
      'three books'

```
        CLP
       /    \
     san     CL′
            /    \
          CL      NP
          ben     shu
```
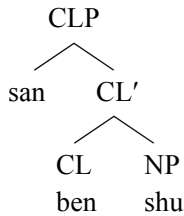
Since Chinese apparently does not satisfy (33) in overt syntax, it must be satisfied in covert syntax in this language. Let us provisionally adopt the hypothesis that Chinese has covert phrasal movement of NP.[18] As we already saw (see (18c)), Chinese NC nominals, such as *san ben shu* 'three books', are compatible with both specific and non-specific readings, unlike the post-nominal NC in Japanese, which strongly favors the specific reading. Let us assume that X is optionally present on top of CLP in Chinese (just like in Japanese). If X is present, NP moves to its spec in covert syntax, and a specific reading is obtained. If X is absent, there is no room for NP-movement inside the nominal domain, and NP is forced to move out, and we get a non-specific reading. This amounts to the idea that Chinese has Q-float in covert syntax.[19]

Finally, and most importantly, a number of questions should arise once we seriously entertain something like (33). If it turns out to be a universal principle, we should expect every language to manifest the effect of (33), in the form of NP-movement or N-movement, overt or covert. While the exploration of such an issue is well beyond the scope of this paper, let us just note that we are also willing to consider a weaker possibility, that is, the possibility it regulates only some of the languages. What we have in mind in this context is the DP vs. NP parameter alluded to at the outset of this paper. Throughout this paper, we have been discussing CL and X (whose identity remains unknown) as projecting on top of an NP in Chinese and Japanese. This line of analysis is incompatible with the nominal parameter in question in its strongest form. But our analysis can in fact be made compatible with a slightly

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[18] Alternatively, Chinese may employ the covert head movement of N to satisfy the condition in question. If this is the right way to look at Chinese, something needs to be said about Li's (1999) proposal that the CL head blocks movement of N to a functional head higher than CL.

[19] This covert Q-float may sometimes be 'overt' (we thank an anonymous reviewer for this point).

(i) Ta   zuotian   shu   du-le   san-ben.
     he   yesterday book   read-Asp   three-CL
     'He read three books yesterday.'

weaker interpretation of this parameter. For example, let us say that these classifier languages are 'disguised' NP-languages. By this we mean the following. Although these languages may realize non-lexical projections in the nominal domain, what really matters for their syntax is in fact an NP: it is an NP, and not the whole nominal expression, that serves as a syntactic argument, entering into Agree relations etc. The extra, non-lexical projections discussed in this paper, while contributing to semantic interpretations either directly (as in the case of a classifier, creating units for counting) or indirectly (as in the case of X, responsible for the specific vs. non-specific divide), are 'extra baggage' that sometimes comes with an NP, hampering the syntactic relation between an NP and external probes such as v and T and forcing the movement of N(P). We believe that this viewpoint, if tenable, is in line with Bošković's (2008) proposal.

6. Conclusion

Based on some new observations about the syntax and semantics of classifiers in Chinese and especially Japanese, we have motivated the (optional) presence of an invisible functional head in the nominal domain in these languages, whose presence is crucially tied to the interpretation of the nominal. We have also argued that UG offers two distinct ways in which the classifier is introduced into the structure, and that Chinese employs one of them while Japanese employs both. Why the two languages pattern the way they do is an interesting question for which we have no concrete proposal to offer at this point. Nevertheless, we would like to point out that this state of affairs may be a fragment of a much larger picture. To provide one example, in our previous work on the comparative study of *wh*-questions (Huang & Ochi 2004), we reached the conclusion that (i) UG allows aggressively non-D-linked *wh*-phrases (e.g. *what the hell*) to be created either in overt syntax or in covert syntax, and (ii) such *wh*-phrases are created in covert syntax in languages like Chinese, overt syntax in languages like English, and in either overt syntax or covert syntax in languages like Japanese. So we have a similar (if not identical) pattern in this domain of grammar, too: Chinese resorts to one of the two options made available by UG while Japanese avails itself of both options.

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