N'-Ellipsis and the Structure of Noun Phrases in Chinese and Japanese[*]

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It has been assumed since Kitagawa and Ross 1982 that noun phrases in Chinese and Japanese are quite similar in structure. They are N-final in surface word order, they employ "modifying markers" (*de* in Chinese and *no* in Japanese) extensively, and they require classifiers for numeral expressions. In this paper, we argue that contrary to appearance, they have quite distinct structures. We examine N'-ellipsis in the two languages, and present supporting evidence for the hypothesis argued for by Simpson (2003), among others, that Chinese noun phrases are head-initial. According to this hypothesis, *de* is D and a classifier heads another projection within DP. Japanese noun phrases, on the other hand, are head-final. *No* is a modifying marker, as proposed by Kitagawa and Ross (1982), and classifier phrases are adjuncts modifying nominal projections. Our discussion shows that Kayne's (1994) analysis N-final relatives applies elegantly to Chinese but not to Japanese. It thus suggests the Japanese relative clauses are head-final throughout the derivation.

1. Introduction

In this paper, we pursue a comparative syntax of noun phrases in Chinese and Japanese. It has been widely assumed that the structures of noun phrases in these two languages are quite similar. For example, they are both N-final on the surface and they both employ "modifying markers" extensively as shown in (1)-(2).

(1)   *Chinese*
　　　　a.　Laowang de che
　　　　　　　　de car
　　　　　　'Laowang's car'
　　　　b.　yong shitou de gongji
　　　　　　with stine *de* attack
　　　　　　'attack with stones'

(2)   *Japanese*
　　　　a.　Haruki no kuruma
　　　　　　　　no car
　　　　　　'Haruki's car'
　　　　b.　isi -de   no koogeki
　　　　　　stone-with *no* attack
　　　　　　'attack with stones'

Further, Chinese and Japanese are both classifier languages. This is illustrated in (3) and (4).

> (3)   *Chinese*
>   san   -ben shu
>   three-CL book
>   'three books'
>
> (4)   *Japanese*
>   san   -satu no hon
>   three-CL *no* book
>   'three books'

In this paper, we argue that despite these appearant similarities, the noun phrase structures in Chinese and Japanese are radically different. We compare the distributions of the Chinese "modifying marker" *de* and its Japanese counterpart *no*, and also examine the patterns of N'-ellipsis observed in these languages. Based on this, we present evidence that Chinese is head-initial, where *de* is D and a classifier is also a head in the nominal projection. Japanese, on the other hand, is head-final and the modifying marker *no* is a contexual Case marker. The analysis for Chinese that we arrive at is similar to the one proposed in Simpson 2003, and that for Japanese is more or less the traditional one. The comparative study on Chinese and Japanese shows that Kayne's (1994) antisymmetry theory, which entertains the hypothesis that phrase structure is universally head-initial, accounts elengantly for relative clauses in Chinese, but not for those in Japanese. This paper suggests then that Japanese relative clauses are generated head-final from the very beginning of the derivation.

In the following section, we go over the similarities as well as the differences in the distrubutions of *de* and *no*. In Section 3, we present and argue for the head-initial analysis of Chinese and the head-final analysis of Japanese. We show there, based on the examination of N'-ellipsis, that the constituent that precedes *de* is always in DP Spec while *no* accompanies phrases in a variety of positions. In Section 4, we summarize our proposals, comparing our analysis of Japanese noun phrases with Watanabe's (2006).

2. The Distributions of *de/no* and Kitagawa and Ross's (1982) Mod Insertion Rule

As noted above, *de* and *no* show similarities in their disctributions. More examples are listed in (5) and (6) to illustrate this point.

> (5)   *Chinese*
>   a.   Luoma de huimie
>   Rome   *de* destruction
>   'Rome's destruction'
>   b.   mingtian   de tianqi
>   tomorrow *de* weather
>   'tomorrow's weather'

      c.   yu   Laowang de huimien
          with   *de* interview
          'interview with Laowang'

(6)   *Japanese*
    a. Rooma no hakai
       Rome *no* destruction
       'Rome's destruction'
    b. asu   no tenki
       tomorrow *no* weather
       'tomorrow's weather'
    c. Haruki-to   no intabyuu
             -with *no* interview
       'interview with Haruki'

(5c) and (6c), in particular, show that the distributions of *de/no* are wider than that of *'s* in English. Given this, Kitagawa and Ross (1982) hypothesized that *de* and *no* are general modifying markers and proposed the following insertion rule to account for their distributions:

(7)   <u>Mod-Insertion</u>
    $[_{NP} \dots$ XP N$^{\alpha}$] $\rightarrow$ $[_{NP} \dots$ XP Mod N$^{\alpha}$], where Mod = *de/no*.

This rule inserts *de/no* after any constituent that is a sister of a projection of N.

However, it is also known that there are differences in the contexts where *de* and *no* appear. One case, noted by Kitagawa and Ross (1982), is when the XP in (7) is a relative clause. *De* is obligatory after a relative clause while *no* is never premitted in this context, as shown in (8)-(9).

(8)   *Chinese*
    [wo zuotian   kanjian] *(de) ren
     I   yesterday see   *de* person
    'the person I saw yesterday'

(9)   *Japanese*
    [watasi-ga   kinoo   mita] (*no) hito
     I   -NOM yesterday saw   *no* person
    'the person I saw yesterday'

As (7) has no specification on XP, it predicts the Chinese pattern. Kitagawa and Ross (1982) postulates the following Japanese-particular Mod-deletion rule to account for non-occurrance of *no* after relative clauses:[1]

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[1] One can parameterize the formulation of (7) as in (i) for Japanese and obtain the same effect.

    (i) $[_{NP} \dots$ XP(-tense) N$^{\alpha}$] $\rightarrow$ $[_{NP} \dots$ XP(-tense) Mod N$^{\alpha}$], where Mod = *no*.

(10)　Mod-Deletion (Japanese)
　　　$[_{NP} \ldots$ XP(+tense) Mod N$^{\alpha}] \rightarrow [_{NP} \ldots$ XP(+tense)　N$^{\alpha}]$, where Mod = *no*.

Another context where the distributions of *de* and *no* differ is when a noun is quantified by a numeral. As already shown in (3)-(4), *no* appears after *numeral+classifier* but *de* does not. The examples are repeated in (11)-(12).[2]

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

(12)　*Japanese*
　　　san -satu *(no) hon
　　　three-CL　*no*　book
　　　'three books'

In addition, *no* follows nominal adjuncts and apparently licenses them as in (13), while *de* never appears in this context as (14) shows.

(13)　*Japanese*
　　　a.　ame no hi
　　　　　rain *no* day
　　　　　'rainy day'
　　　b.　gakusei no hito
　　　　　student *no* person
　　　　　'a person who is a student'

(14)　*Chinese*
　　　a. *yu de tian
　　　　　rain *de* day
　　　　　'rainy day'
　　　b. *xuesheng de ren
　　　　　student　*de* person
　　　　　'a person who is a student'

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[2] The situation with Chinese is slightly more complex. Cheng and Sybesma (1998) make a distinction between genuine classifiers and "massifiers," which are measure words such as *bei* 'cup' and *bang* 'pound'. Notably, the latter can be followed by *de* as shown in (i).

　　(i)　a.　san -bei (de) shui
　　　　　　three-cup　*de* water
　　　　　　'three cups of water'
　　　　b.　san -bang (de) rou
　　　　　　three-pound　*de* meat
　　　　　　'three pounds of meat'

The examples discussed in the text all involve genuine classifiers.

Chinese would employ compounds or relative clauses to express (14), as shown in (15).

> (15)   *Chinese*
>   a.   yu -tian
>   rain-day
>   b.   [shi xuesheng] de ren
>   be student   *de* person

In the following section, we examine N'-ellipsis in Chinese and Japanese, and argue that *no* is a contextual Case marker, as in Kitagawa and Ross's (1982) analysis, while *de* is a D head, as proposed by Simpson (2003). We show that this explains the differences between *de* and *no* noted in this section.

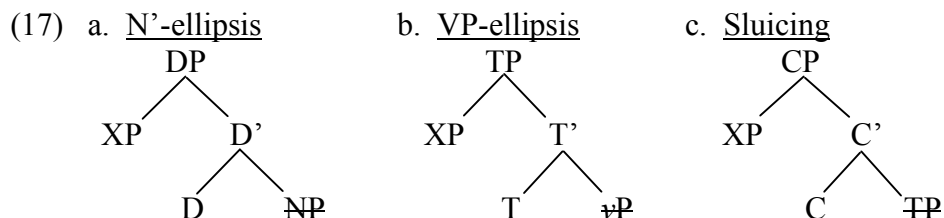## 3. The Grammatical Status of *de* and *no*

The argument based on N'-ellipsis that *no* is a contextual Case marker is already laid out in Saito and Murasugi 1990. This is summarized in the following subsection. Then, we present our argument for the analysis of *de* as D in Section 3.2. Finally, we discuss the structure of Chinese relative clauses in Section 3.3.

3.1. No *as a Contextual Case Marker*

Let us briefly discuss the general properties of N'-ellipsis before we examine the relevant Japanese data. As noted in Jackendoff 1971, N'-ellipsis is possible only when it strands a genitive phrase. Thus, the following contrast obtains:

> (16) a.   I have read Bill's book, but I haven't read [$_{DP}$ John's [$_{NP}$ ~~book~~]]
>   b.   *I have edited a book, but I haven't written [$_{DP}$ a [$_{NP}$ ~~book~~]]
>   c.   *I have seen the book, but I haven't had a chance to read [$_{DP}$ the [$_{NP}$ ~~book~~]]

Saito and Murasugi (1990), and Lobeck (1990) consider this an instance of a more general phenomenon. That is, the major cases of ellipsis (N'-ellipsis, VP-ellipsis, and sluicing) all involve functional heads (D, T, C), and in each case, the deletion of the complement is allowed only when the Spec position is filled.[3] This is illustrated in (17).

> (17) a. N'-ellipsis   b. VP-ellipsis   c. Sluicing
>   DP   TP   CP
>   /   \   /   \   /   \
>   XP   D'   XP   T'   XP   C'
>   / \   / \   / \
>   D   NP   T   vP   C   TP

Thus, the so called N'-ellipsis is NP-deletion within DP and it is licensed only when a

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[3] More precisely, the works cited propose that the deletion of the complement is allowed only when the Spec agrees with the head.

genitive phrase occupies the DP Spec position. Sluicing is TP-deletion within CP and it takes place only when a Wh-phrase moves into CP Spec. Contrasts of the following kind, noted by Ross (1969), illustrate this generalization:

(18) a.   John bought something, but I don't know [$_{CP}$ what [$_{TP}$ ~~he bought *t*~~]]
  b. *John insisted that he turned in his homework, but I wasn't sure
       [$_{CP}$ whether [$_{TP}$ ~~he turned in his homework~~]]
  c. *John insisted that he turned in his homework, and Bill reported to Mary
       [$_{CP}$ that [$_{TP}$ ~~he turned in his homework~~]]

(18b) does not meet the condition illustrated in (17c) if *whether*, like *that*, is not in CP Spec but is a C head. Similarly, VP-ellipsis is deletion of *v*P within TP, as shown in (17b). This generalization can be extended to examples like (19), where a numeral appears in an argument position by itself.

(19)   John bought [$_{QP}$ three [$_{NP}$ books]], and Mary bought [$_{QP}$ five [$_{NP}$ ~~books~~]]

If a numeral occupies the Spec position of the functional head Q, this case also falls under the pattern in (17).

Saito and Murasugi (1990) examine the noun phrase structure in Japanese on the basis of the generalization on N'-ellipsis illustrated in (17a). There is a complication in this language because it is not obvious what phrase occupies the DP Spec position. In English, we know that a genitive phrase is in DP Spec. But the distribution of *no*, which corresponds to *'s* in many cases, is wider than the English genitive as noted above. For example, a Japanese noun phrase can contain multiple *no*-phrases as shown in (20).

(20) a.   yuubokumin no tosi no hakai
       nomad   *no* city *no* destruction
       'the nomad's destruction of the city'
  b.   Taroo no Yooroppa-e no ryokoo
          no Europe   -to *no* trip
       'Taroo's trip to Europe'

Are the *no*-phrases all in DP Spec or just some of them? Saito and Murasugi argue that N'-ellipsis provides an answer to this question.

It seems that Japanese allows N'-ellipsis sometimes but not always in similar contexts. Thus, (21a-b) contrast sharply with (22a-b).[4]

(21) a.   [Taroo no taido] -wa   yoi   ga,   [Hanako no ~~taido~~] -wa   yokunai
          no attitude-TOP good though   no attitude-TOP good-not
       'Though Taroo's attitude is good, Hanako's isn't'

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[4] See Saito and Murasugi 1990 for detailed discussion of these and other relevant examples. As noted there, there is a homonym *no*, which corresponds roughly in meaning to the pronoun *one* in English, and it is necessary to construct examples that exclude this interpretation of *no* in order to pinpoint the possible contexts for N'-ellipsis.

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

(22) a. *[Hare no hi] -wa   yoi   ga,   [ame no ~~hi~~] -wa   otikomu
          clear *no* day-TOP good though rain *no* day-TOP feel-depressed
          'Clear days are OK, but I feel depressed on rainy days'
     b. *Taroo-wa   iti -niti -ni [san -satu no hon] -o   yomu ga,
             -TOP one-day-in three-CL *no* book-ACC read   though
         Hanako-wa [go -satu no ~~hon~~] -o   yomu
             -TOP five-CL *no* book-ACC read
          'Taroo reads three books in a day, but Hanako reads five'

(21a-b) are fine with or without ellipsis, while ellipsis in (22a-b) makes the examples ungrammatical.
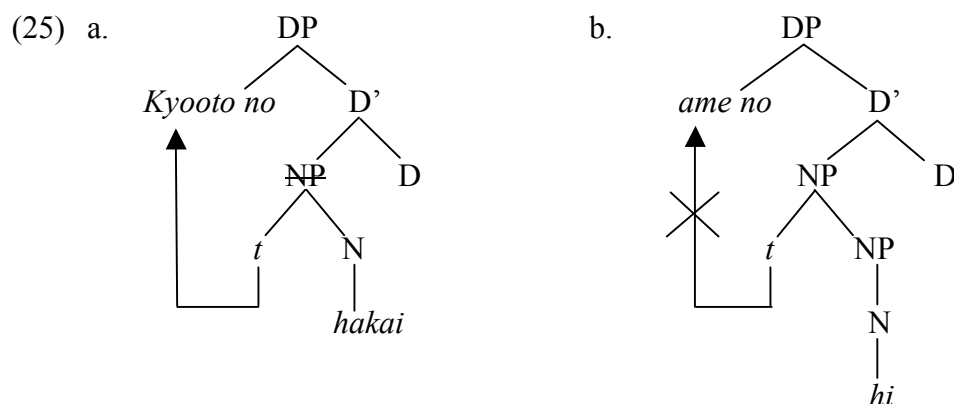
   If we compare (21a-b) and (22a), a clear generalization emerges. The stranded *no*-phrase is a subject in (21a), and an object in (21b). That is, they are arguments. In (22a), on the other hand, *ame* 'rain' is an adjunct. The generalization, then, is that *argument+no* licenses the ellipsis of the following material, but not *adjunct+no*. And there is indenpendent evidence that arguments can move to DP Spec but adjuncts cannot. Thus, (23b) contrasts with (23c).

(23) 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*]]

(24) indicates that more generally, only arguments can undergo A-movement to a Spec position, whether the position is DP Spec or TP Spec.

(24) a.   [TP John seemed yesterday [TP *t* to be sick]]
     b. *[TP Yesterday seemed *t* [CP that John was sick]]
          (cf. [TP It seemed yesterday [CP that John was sick]])

   The contrast between (21a-b) and (22a), then, is exactly what we expect. In (21b), for example, *Kyooto*, being the object, can move to DP Spec and license the deletion of NP, as illustrated in (25a).

(25) a.

```
                DP
            ╱        ╲
     Kyooto no         D'
         ▲          ╱     ╲
         ┃        NP        D
         ┃      ╱    ╲
         ┃     t      N
         ┗━━━━━━━┛     │
                     hakai
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b.

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                DP
            ╱        ╲
      ame no           D'
         ▲          ╱     ╲
         ┃        NP        D
         ✗      ╱    ╲
         ┃     t      NP
         ┗━━━━━━━┛     │
                       N
                       │
                       hi
```

Ame in (22a), on the other hand, cannot move to DP Spec because it is an adjunct. Hence, the example cannot satisfy the licensing configuration of N'-ellipsis in (17a). This is illustrated in (25b). Thus, N'-ellipsis in Japanese follows the general pattern shown in (17).

The example in (26) appears to be problematic for the analysis just presented.

(26) [Kyoo no ondo] -wa [kinoo   no ~~ondo~~]   -yorimo takai
     today *no* temperature-TOP yesterday *no* temperature-than   high
     'Today's temperature is higher than yesterday's'

If *kinoo* 'yesterday' in this example is an adjunct, it should not be able to move to DP Spec and hence, the N'-ellipsis should be illicit. However, the following English examples show that temporal and locative phrases can appear in DP Spec:

(27) a. yesterday's temperature
     b. Taipei's weather

Anderson (1983) argues that those phrases are possessors in the extended sense and can be base-generated at the Spec position. We follow her analysis and assume that they, as well as regular possessors, are merged directly at DP Spec.[5] Then, we correctly predict that (26) is grammatical.

The analysis of N'-ellipsis presented above has implications for the status of *no* and numerals within Japansese noun phrases. Let us first consider the distribution of *no*. We proposed that *ame* 'rain' in (13a), repeated below as (28), cannot move to DP Spec because it is an adjunct, and this is the reason why the N'-ellipsis in (22a) is illicit.

(28) ame no hi
     rain *no* day
     'rainy day'

But note that (28) is grammatical as it is. Then, *ame* must be able to appear within NP (as opposed to DP), accompanied by *no*. It follows that *no*-marked phrases are not

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[5] A piece of evidence for this is presented in Section 3.2 below.

necessarily in DP Spec and that *no* serves as a "modifying marker" within NP. That is, Kitagawa and Ross's (1982) Mod-insertion rule correctly accounts for the distribution of *no*.[6]

Second, the ungrammaticality of (22b), repeated in (29), suggests that numerals are adjuncts within Japanese noun phrases.

(29)   *Taroo-wa   iti -niti -ni [san -satu no hon] -o   yomu ga,
             -TOP one-day-in three-CL *no* book-ACC read   though
         Hanako-wa   [go -satu no ~~hon~~] -o   yomu
             -TOP five-CL *no* book-ACC read
       'Taroo reads three books in a day, but Hanako reads five'

Note that if *go-satu* 'five-CL' is in DP Spec or QP Spec, the N'-ellipsis should be allowed exactly as in the English (19), repeated in (30).

(30)   John bought [$_{QP}$ three [$_{NP}$ books]], and Mary bought [$_{QP}$ five [$_{NP}$ ~~books~~]]

Then, *numeral+no* is not in a Spec position in Japanese. On the other hand, if it is an adjunct and is adjoined to a projection of N, (29) is correctly predicted to be ungrammatical. Like *ame* 'rain' in (22a), it cannot move to a Spec position, and hence (29) fails to meet the licensing condition on ellipsis. Thus, the contrast between (29) and (30) indicates that numerals occupy different positions in Japanese and English.

We have argued in this section that Japanese follows the general conditions on A-movement and ellipsis. Its language specific properties include the *no*-insertion rule, which determines the distribution of *no* as a contextual Case marker. Another related peculiarity of the language is that *numeral+classifier* is licensed by *no* as an adjunct to a projection of N. These properties of Japanese are responsible for the pattern of N'-ellipsis it exhibits. In the following subsection, we turn to the Chinese *de*, and argue that it is quite unlike *no* and is a D.

3.2. De *as the Head of DP*

Simpson (2003) proposes that *de* is D in his pursuit of the antisymmetry analysis of Chinese relative clauses. In this section, we present two pieces of direct evidence for this proposal.

First, recall that *de*, unlike Japanese *no*, can never follow a nominal adjunct. The relevant examples in (14) are repeated below in (31).

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[6] Or the revised formulation of the rule in Fn. 1. If a possessor as in (2a), repeated below in (i), is merged directly at DP Spec as suggested in the text, *no*-insertion should apply in the projections of D as well as N, as proposed in Saito and Murasugi 1990.

(i)   Haruki no kuruma
             no car
       'Haruki's car'

(31) a. *yu   de tian
      rain *de* day
      'rainy day'
   b. *xuesheng de ren
      student   *de* person
      'a person who is a student'

This fact follows directly if *de* is D and the phrases that precede *de* are in DP Spec. It was shown in the discussion of Japanese N'-ellipsis that adjuncts, as opposed to arguments, cannot move to the DP Spec position. Thus, (31a-b) are excluded by the illicit movement of *yu* 'rain' and *xuesheng* 'student' to DP Spec.

     Secondly, both Chinese and Japanese allow multiple *de/no* phrases within a single nominal projection as shown in (32) and (33), but the two languages exhibit a difference here as well.

(32) *Chinese*
   a. Zhangsan de Chiaomusiji de shu
             de Chomsky   *de* book
      'Zhang's book by Chomsky'
   b. qu-nien   liu-ue de xuesheng de kangyi
      last-year June   *de* student   *de* protest
      'last June's protest by the students'

(33) *Japanese*
   a. Taroo no Tyomusukii no hon
          no Chomsky   *no* book
      'Taroo's book by Chomsky'
   b. kyonen   roku-gatu no gakusei no koogi
      last-year June   *no* student *no* protest
      'last June's protest by the students'

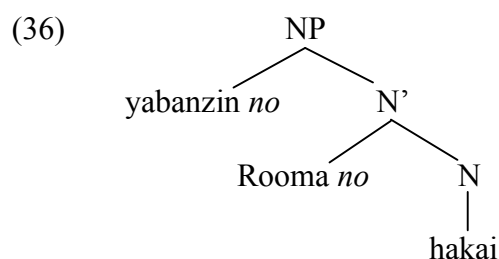In Japanese, two arguments can appear with *no*. The subject and the object are both followed by *no* in (34).

(34)   yabanzin no Rooma no hakai
      barbarian *no* Rome   *no* destruction
      'the barbarians' destruction of Rome'

On the other hand, Chinese does not allow multiple arguments with *de*. (35a-b) are grammatical, but the Chinese counterpart of (34) in (35c) as well as its variant in (35d) are not.

(35) a. Luoma de huimie
      Rome   *de* destruction
      'Rome's destruction'

b. manzu   de huimie
    barbarian *de* destruction
    'the barbarians' destruction'

c. *manzu   de Luoma de huimie
    barbarian *de* Rome   *de* destruction
    'the barbarians' destruction of Rome'

d. *Luoma de manzu   de huimie
    Rome   *de* barbarian *de* destruction
    'Rome's destruction by the barbarians'

The Japanese pattern in (34) is expected given our discussion in the preceding section. Since *no* is a contexual Case marker, it can be inserted after the subject and the object as in (36).[7]

(36)

                  NP
             ╱   ╲
    yabanzin *no*   N'
                     ╱ ╲
         Rooma *no*   N
   │
                     hakai

Then, why are the Chinese (35c-d) ungrammatical? Again, the hypothesis that *de* is D readily provides an explanation. Given this hypothesis, (33c-d) are derived as in (37).

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[7] The subject may then move to DP Spec because it is an argument. This is confirmed by the following example of N'-ellipsis:

(i)   [Gakusei no seihu   no hihan] -wa [kyooin no ~~seihu~~   ~~no hihan~~] -yorimo
      student *no* government *no* criticism-TOP faculty *no* government *no* criticism-than
      kibisii
      severe
      'The students' criticism of the government is more severe than the professors''

Note that the object *seihu no* is contained within the ellipsis site. This provides an additional piece of evidence that *no* is inserted within NP. See Kimura 1994 as well as Saito and Murasugi 1990 for relevant discussion.

(37)
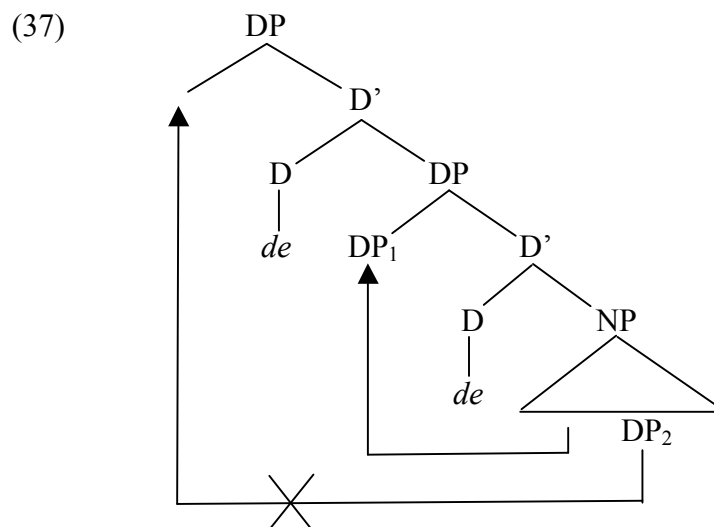
The movement of DP_2 to the higher DP Spec necessarily takes place across the lower DP Spec occupied by DP_1. Thus, the movement violates minimality and (35c-d) fail to be generated.

Note that (32a-b) are predicted to be grammatical as long as Chinese allows DP recursion. We assumed above in the discussion of Japanese N'-ellipsis that possessors as well as temporals and locatives (extended possessors in Anderson's (1983) terms) can be directly merged at DP Spec. Then, *qu-nien liu-ue* 'June, last year' in (32b), for example, can be merged at the higher DP Spec without violating any constraint on movement. Thus, the contrast between (32a-b) and (35c-d) is correctly captured.

We have shown so far that the analysis of *de* as D enables us to explain two differences between Chinese and Japanese; one concerns adjuncts and the other multiple arguments. The analysis is also consistent with the data on N'-ellipsis in Chinese. If *de* is D and the phrase preceding *de* is in DP Spec, we predict that the material following *de* can always be elided. This is so because the configuration for N'-ellipsis in (17a) is satisfied. The prediction is borne out by the following examples:

(38) a. [Zhangsan de che] bi　　　[Lisi de ~~che~~] geng gui
　　　　　　de car　compare　　　*de* car　more expensive
　　　　'Zhangsan's car is more expensive than Lisi's'
　　b. [Luoma de huimie]　　bi　　　[Bali　de ~~huimie~~]　　geng canlie
　　　　 Rome　*de* destruction compare　Paris *de* destruction more disastrous
　　　　'Rome's destruction was more disastrous than Paris's'
　　c. [Taipei de jiaotung] bi　　　[Dongjing de ~~jiaotung~~] geng luan
　　　　　　de traffic　　compare　Tokyo　*de* traffic　　more messy
　　　　'Taipei's traffic is worse than Tokyo's'

There are two more differences between *de* and *no* to be accounted for. One is that only the former appears after relative clauses. This is taken up in the following subsection. The other is that *no* is required but *de* is disallowed after numerals. The relevant examples in (11) and (12) are repeated in (39) and (40).

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

(40) *Japanese*
　　　san　-satu *(no) hon
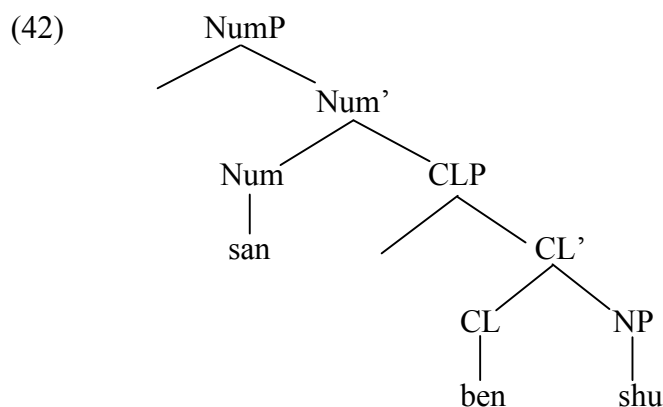　　　three-CL　　*no*　book
　　　'three books'

We examine this difference in the remainder of this subsection
　　　Again, the Japanese pattern is correctly predicted by Kitagawa and Ross's (1982) Mod-Insertion rule. Thus, the case to be accounted for is the absence of *de* in (39). Here, it is a standard assumption by now in the literature on Chinese noun phrases that the classifier heads its own projection as in (41).

(41)
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          CLP
         /  \
             CL'
            /  \
          CL    NP
```
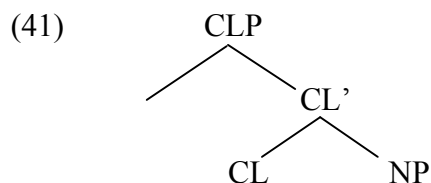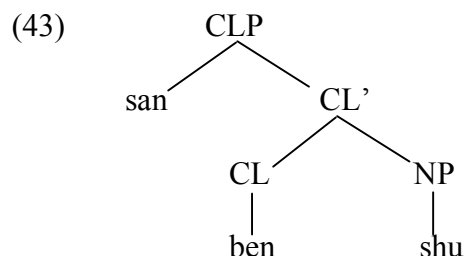
The hypothesis was proposed by Tang (1990), and supporting arguments are provided by Cheng and Sybesma (1999) and Li (1999), among others. The absence of *de* in (39) in fact constitutes a straightforward piece of evidence for this hypothesis. *San-ben* 'three-CL' cannot be in DP Spec since if it were, it should be followed by the D head *de*. On the other hand, if a classifier is an independent head within DP, we correctly predict the absence of *de*.
　　　There are two possibilities for the position of the numeral *san* 'three'. The authors mentioned above hypothesize that the numeral is also a head. Then the structure of (39) is as in (42), where *Num* stands for *Number*.

(42)
```
        NumP
       /  \
           Num'
          /    \
        Num     CLP
         |     /   \
        san        CL'
              /    /  \
            CL    NP
            |     |
           ben   shu
```

An alternative would be to place the numeral in the Spec position of CLP as in (43).

(43)

```
              CLP
             /    \
          san      CL'
                  /    \
                CL      NP
                 |       |
                ben     shu
```

Under either analysis, the numeral and the classifier do not form a constituent. And there is indirect evidence that this is correct. Note first that *san-satu* 'three-CL' in the Japanese (40) is an adjunct to the noun *hon* 'book', and hence is a constituent. It is then not surprising that it can appear independently in a position not adjacent to the noun, as shown in (44b).[8]

(44) a. Taroo-wa   san -satu no hon -o   katta
                -TOP three-CL *no* book-ACC bought
         'Taroo bought three books'
     b. San -satu, Taroo-wa   hon -o   katta
         three-CL   -TOP book-ACC bought

Here, there is no parallel phenomenon in Chinese, as the total ungrammaticality of (45b) indicates.

(45) a. Zhangsan mai-le   san -ben shu
                  buy-PERF three-CL book
         'Zhangsan bought three books'
     b. *San -ben, Zhangsan mai-le   shu
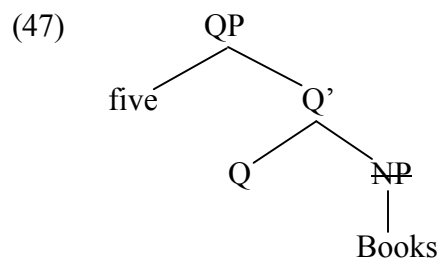   three-CL   buy-PERF book

This is what we expect given the structures in (42) and (43). Since the numeral and the classifier do not form a constituent, they cannot be "displaced."
    Ellipsis provides suggestive data that distinguish between (42) and (43). Recall the account for the English (19), repeated below as (46).

(46)   John bought [QP three [NP books]], and Mary bought [QP five [NP ~~books~~]]

We suggested above that this example satisfies the context for ellipsis as in (47).

---

[8] This is the widely discussed "quantifier float" phenomenon in Japanese. See, for example, Miyagawa 1989 and Kawashima 1998 for detailed discussion of the relevant facts. The former argues that "floating quantifiers" are secondary predicates and are licensed by predication.

(47)

```
              QP
          /        \
       five          Q'
                  /      \
                Q          N̶P̶
                            |
                          Books
```

Q is a functional head, and its complement can be elided when its Spec position is filled. And we argued in Section 3.1 that the Japanese counterpart of (46) is ungrammatical because *numeral+no* in Japanese is an adjunct and consequently cannot occupy a Spec position. The exact Japanese counterpart of (46) is shown in (48).

(48) *Taroo-wa [san -satu no hon] -o   katta   ga,   Hanako-wa
          -TOP   three-CL *no* book-ACC bought though   -TOP
       [go -satu no h̶o̶n̶] -o   katta
        five-CL *no* book-ACC bought
       'Taroo bought three books, but Hanako bought five'

Interestingly, Chinese patterns with English in this respect. Thus, the Chinese counterpart of (46) is grammatical.

(49)   Suiran Zhangsan mai-le   [san -ben shu], dan Lisi mai-le
       though   buy-PERF three-CL book but   buy-PERF
       [wu -ben s̶h̶u̶]
        five-CL book
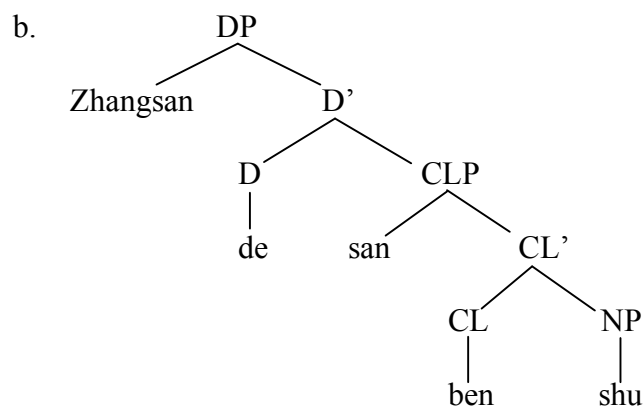   'Zhangsan bought three books, but Lisi bought five'

This is straightforwardly explained with the structure in (43). CL is the relevant functional category and its complement NP can be elided because the numeral occupies the Spec position. We tentatively conclude then that the Chinese noun phrase structure is as in (50).[9]

(50)   a.   Zhangsan de san -ben shu
                   de three-CL book
            'Zhangsan's three books'

---

[9] The conclusion is tentative because there are other possible structures that can accommodate the ellipsis data. For example, we could maintain the number projection with a null head and place the numeral in its Spec position as in (i).

(i)   [$_{NumP}$ san [$_{Num'}$ [$_{Num}$ *e*] [$_{CLP}$ [$_{CL}$ ben] [$_{NP}$ shu]]]]

Then, if CL adjoins to Num, the ellipsis can be analyzed as deletion of the CLP within the Num projection. This, as far as we can tell, is consistent with the proposal in Cheng and Sybesma 1999 to account for the distribution of indefinite noun phrases in terms of the licensing of null Num heads.

b.

```
                    DP
              ┌──────┴──────┐
         Zhangsan          D'
                      ┌─────┴─────┐
                      D          CLP
                      │      ┌────┴────┐
                      de    san       CL'
                                  ┌────┴────┐
                                 CL         NP
                                  │          │
                                 ben        shu
```

3.3. Remarks on the Structures of Relative Clauses

In this subsection, we discuss the last difference in the distrubutions of *de* and *no*: the former appears after relative clauses while the latter does not. The relevant examples in (8) and (9) are repeated below in (51) and (52).

(51)   *Chinese*
       [wo zuotian   kanjian] *(de) ren
        I   yesterday see   *de* person
       'the person I saw yesterday'

(52)   *Japanese*
       [watasi-ga   kinoo   mita] (*no) hito
        I   -NOM yesterday saw   *no* person
       'the person I saw yesterday'

We first argue that relative clauses in Chinese are in DP Spec and hence that the occurrence of *de* in (51) is indeed expected. Then, we briefly go over Simpson's (2003) antisymmetry analysis of Chinese relatives, which yields the desired structure. Finally, we note that there are some loose ends in the analysis that need to be tightened.

Let us briefly discuss the Japanese (52) before we start the examination of Chinese relative clauses. As discussed in detail in Section 2, *no* is inserted only after a [-tense] constituent. This is reflected in the Mod-insertion rule for Japanese stated in Fn. 1. Although this is a stipulation, it straightforwardly accounts for the absence of *no* after relative clauses. Further, relative clauses are adjuncts according to the traditional analysis. This works well for Japanese. Adjuncts cannot move to DP Spec as we have seen repeatedly, and this indeed seems to be the case with Japanese relative clauses. Let us consider the following illicit example of N'-ellipsis:
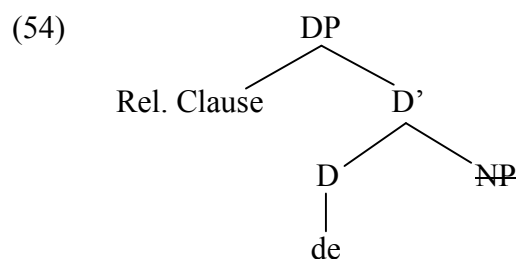
(53) *[[Taroo-ga   kinooo   atta] hito] -wa   yasasii ga,
             -NOM yesterday saw person-TOP kind   though
        [[Hanako-ga   kinoo   atta] ~~hito~~] -wa   kowai
               -NOM yesterday saw person-TOP scary
        'The person Taroo saw yesterday is kind, but the person Hanako saw
        yesterday is scary'

The relative clause *Hanako-ga kinoo atta* 'Hanako saw yesterday', being an adjunct, cannot move to DP Spec, and hence, this example fails to satisfy the condition for N'-ellipsis.

      The situation in Chinese is more complex and interesting. If Chinese relative clauses are also adjuncts, they cannot move to DP Spec. But since they are followed by *de*, they must be in DP Spec if *de* is D as we argued. Here, we have an apparent contradiction. Let us sort out this problem by first examining whether Chinese relative clauses are in DP Spec or not.

      If Chinese relative clauses are in DP Spec, then the Chinese counterpart of (53) should be grammatical. This is so since the example would satisfy the condition for N'-ellipsis as illustrated in (54).

(54)

```
                         DP
                        /  \
              Rel. Clause    D'
                            /  \
                          D     NP̶
                          |
                          de
```

And this prediction is indeed borne out by (55).

(55)   [[Wo zuotian   kanjian] de nanhai] bi   [[ni   zuotian   kanjian]
          I   yesterday see   *de* boy   than   you yesterday see
        de ~~nanhai~~] geng youqian
        de boy   more rich
        'The boy I saw yesterday is richer than the boy you saw yesterday'

Thus we have good evidence that Chinese relative clauses are in DP Spec. Relative clauses after all do not pose a problem for our analysis of *de* as D.

      Then, how do those relative clauses come to occupy the DP Spec position? Here, Simpson's (2003) antisymmetry analysis readily provides an answer. Kayne (1994) proposes a uniform base for N-initial and N-final relative clauses. According to his theory, the English (N-initial) example in (56a) is derived as in (56b).

(56)   a.   the book that John bought yesterday
        b. $[_{DP} [_D \text{the}] [_{CP} \text{book}_i [_{C'} [_C \text{that}] [_{TP} \text{John bought } t_i \text{ yesterday}]]]]$

A relative clause has a D-CP structure, and the head noun directly moves into CP Spec.

N-final relatives are derived with one more step. That is, the TP moves into DP Spec as illustrated in (57).

(57)   [$_{DP}$ [$_{TP}$ John bought t_i yesterday]$_j$ [$_D$ the] [$_{CP}$ book$_i$ [$_{C'}$ C t_j]]]

Simpson (2003) argues that this is the correct way to analyze relative clauses in Chinese, based on the assumption that *de* is D. The structure of (51) will then be as in (58).

(58)
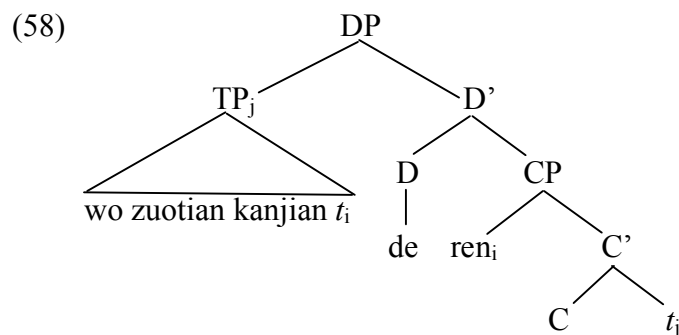
As far as we can see, this analysis still needs some refinements. First, an issue could arise with respect to the unbound trace t_i in (58). Furthermore, the movement of TP to DP Spec apparently violates minimality. However, we believe that there are ways to approach these problems that are not implausible. For example, it is possible that the relative head is directly merged at CP Spec and binds *pro* in the relative clause.[10] For the minimality problem, we suggested in Lin, Murasugi and Saito 2001 that *de* originates in C and moves to D, making CP Spec and DP Spec "equidistant" for TP in the sense of Chomsky 1993. This suggestion was based on Hsieh's (1998) proposal that there is a homophone *de* which appears as C in cleft sentences and also in simple sentences such as (59).[11]

(59)   Laowang yinggai qu Taipei de
                should   go   *de*
         'Laowang should go to Taipei'

In this example, *de* simply stands for mood that has the connotation of affirmation. Although the role of "equidistance" in derivations is far from clear at this point as noted in Chomsky 1995, it may still be possible to solve the problem by refining the formulation of minimality.

It is beyond the scope of this paper to pursue a precise analysis of Chinese relative clauses. But we have argued that they are indeed in DP Spec, and we hope to have shown that Simpson's (2003) antisymmetry analysis is a promising possibility for the explanation of this fact. On the other hand, the comparison of Chinese and Japanese suggests that Kayne's theory of N-final relatives cannot be maintained for the latter. The

---

[10] See Murasugi 2000 for much relevant discussion on this.

[11] If Chinese is consistently head-initial, the TP in (59) must have raised from the complement position of *de* to a higher Spec position.

theory places TP in DP Spec as illustrated in (57) and this is exactly what we want for Chinese. In this language, N'-ellipsis can strand a relative clause as in (55). If Japanese relative clauses, being also N-final, are derived in the same way, we would expect the language to exhibit the same pattern as Chinese with respect to N'-ellipsis. But (53) shows that this is not the case. Our discussion, thus, suggests that the traditional head-final analysis should be maintained for Japanese.[12]

4. Concluding Remarks

We have argued that noun phrases in Chinese and Japanese are quite different in their internal structures. Although *de* and *no* appear to have similar distributions, we have shown that only the latter is a modifying marker in the sense of Kitagawa and Ross 1982, presenting evidence that the former is D. Both Chinese and Japanese are known to be classifier languages. But we have argued that a classifier in Chinese occupies a head position in the nominal structure while *numeral+classifier* in Japanese is an adjunct. Finally, relative clauses are in DP Spec in Chinese and are adjunts in Japanese. Most of our arguments were based on the distribution of *de* and *no*, and the patterns of N'-ellipsis the two languages exhibit.

Our proposal can be made clearer by contrasting it with an alternative proposed in the literature. Before we conclude this paper, we would like to briefly consider Watanabe's (2006) analysis of Japanese. For this purpose, we first discuss Simpson's (2005) analysis of Thai because it employs massive movements similar to the ones used by Watanabe.

Simpson postulates the structure in (60b) for the Chinese (60a), assuming that a demonstrative is D.

(60)   *Chinese*
         a.   zhe san   zuo da fangzi
                   this three CL big house
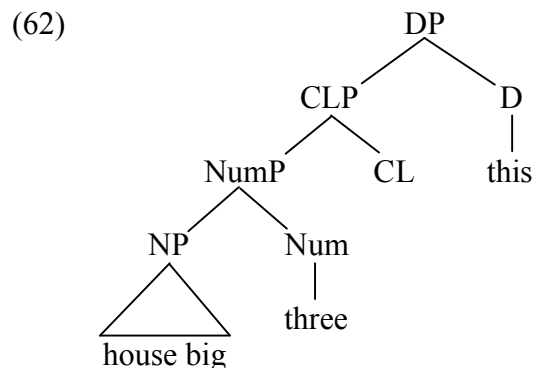   'these three big houses'
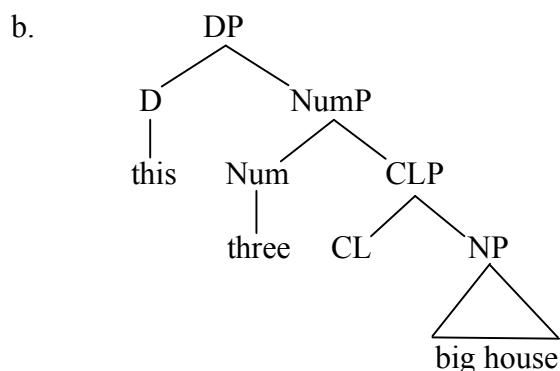
         b.

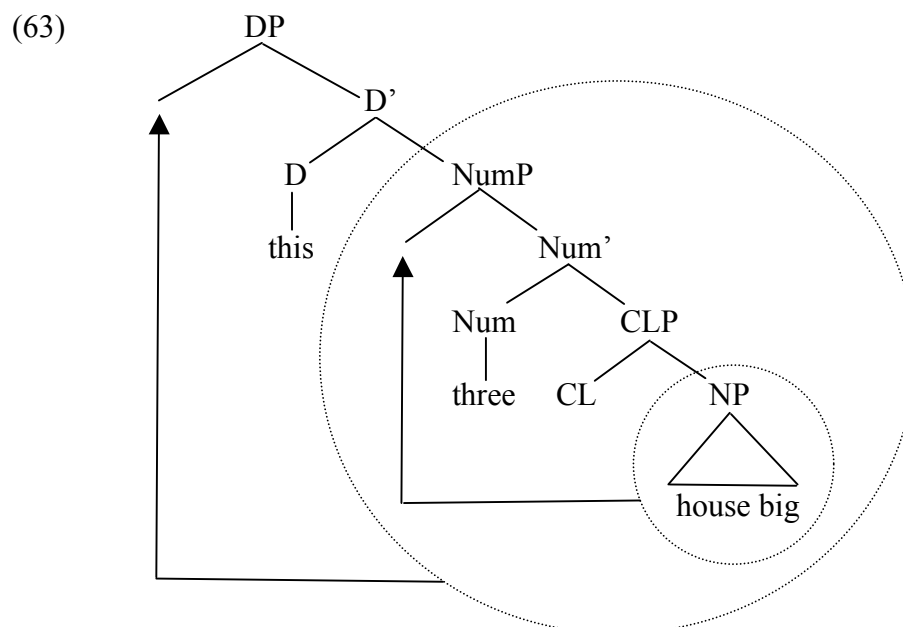Then, he argues that the Thai example in (61) has an identical base structure.

(61)   *Thai*
　　　baan　yai saam lang nii
　　　house big three CL　this

　　　The word order in (61) is different from the Chinese (60). As Thai noun phrases are assumed to be head-final, it is tempting to assign the following structure to the example:

(62)

```
                        DP
                       /  \
                    CLP     D
                   /   \     |
                NumP    CL   this
                /  \
              NP    Num
             / \     |
            /   \   three
        house big
```

However, Simpson points out that the dominance relation between CLP and NumP in (62) is inappropriate. The classifier should classify not 'three big houses' but just 'big houses'. To put it differently, the NP should first be individuated by the classifier and then be assigned a number. Hence, the NumP should dominate the CLP.

　　　Given this, Simpson assigns the same base structure to Thai as Chinese, and proposes to derive the surface order by movement. That is, starting from (60b), the NP is moved to NumP Spec and then the NumP moves into DP Spec. This yields the surface word order in (61) as illustrated in (63).

(63)

```
                DP
               /  \
              /    D'
             /    /  \
            /    D    NumP
            |    |    /  \
            |   this  /   Num'
            |        /    /  \
            |       /   Num   CLP
            |       |    |    /  \
            |       |  three CL   NP
            |       |          / \
            |       |         / \
            |       |       house big
            |_____|
```

Simpson thus accounts for the word order variation based on a uniform base structure and extensive movement.

Watanabe (2006), on the other hand, is concerned mainly with word order variation internal to Japanese. As shown in (64), a numeral modifying an argument can appear in various positions within a sentence.

(64) a. Taroo-wa <u>hon san -satu-o</u>   katta
               -TOP book three-CL -ACC bought
            'Taroo bought three books'
      b. Taroo-wa <u>san -satu no hon -o</u>   katta
               -TOP three-CL *no* book-ACC bought
      c. Taroo-wa <u>hon -o   san -satu</u> katta
               -TOP book-ACC three-CL   bought

(64b) is what we have been dealing with, and (64c) is an instance of "quantifier float" alluded to in Fn. 8. (44b) is obtained from (64c) by scrambling *san-satu* 'three-CL' to the sentence-initial position. In addition, *numeral+classifier* can be preceded by the associate noun and be followed by a Case marker as in (64a). Watanabe proposes to derive all three word orders from a uniform base as in (65).

(65)
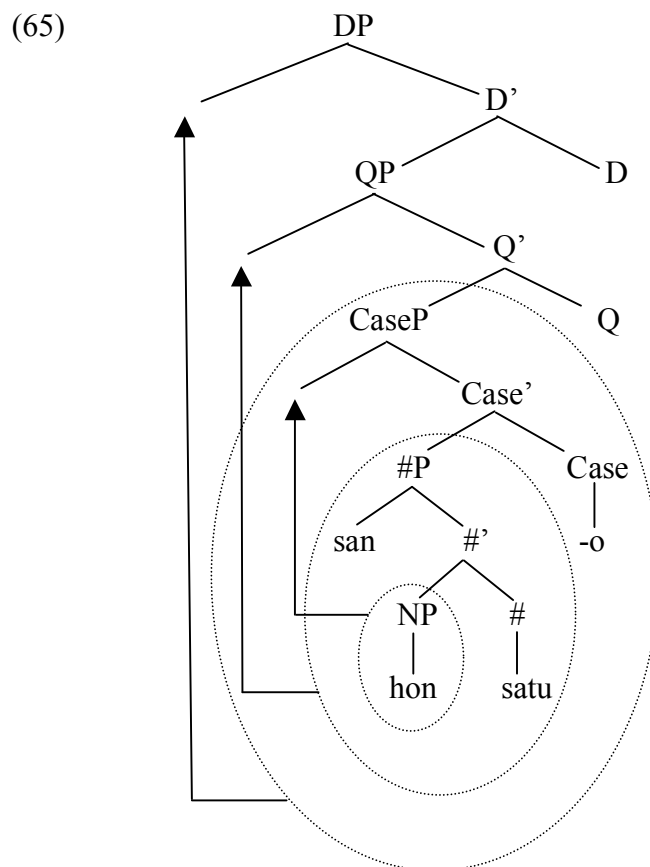
(64a) is derived when the NP moves to CaseP Spec. Then, (64b) obtains with the further

movement of #P to QP Spec. Finally, when the CaseP moves to DP Spec, we have the word order in (64c).

Watanabe's analysis not only relates the three possible word orders in Japanese but also raises the possibility that noun phrase structure is uniform across languages. Although (65) is different from the structure Simpson posits for Chinese and Thai, the similarity is striking. However, the analysis, unfortunately, does not seem consistent with the data discussed in this paper. Aside from the fact that it is unclear how the distribution of *no* is to be acounted for, we would predict that all sorts of ellipsis are possible with the massive movements to Spec positions in (65). For example, the dervation of (64b) places #P in the Spec position of Q, and this should license the deletion of the complement CaseP, which contains only *hon(-o)* 'book(-ACC)'. But we have seen that this kind of ellipsis is impossible in Japanese, in contrast with English and Chinese. The relevant example in (48) is repeated below in (66).

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

Our analysis implies that the universality in noun phrase structure is observed at a more abstract level.[13] For example, *numeral+classifier* can be related to a noun as an

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[13] Unlike Watanabe 2006, we do not have a concrete proposal for the analysis of (64a). One complication is that the relation between the noun and *numeral+classifier* seems to vary considerably in this construction. Thus, we have examples such as (ia-c).

(i)   a.   gurando sanzyus-syuu (no tokkun)
           field   thirty -CL *no* special training
           '(a special training of) thirty rounds of the field'
      b.   azia san -kakoku (no sanka)
           Asia three-CL   *no* participation
           '(participation of) three Asian countries'
      c.   mainiti   san -zikan (no undoo)
           everyday three-CL   *no* exercise
           'three hours of exercise everyday'

These do not have counterparts of the form *numeral+classifier no noun*. The following are all ungrammatical:

(ii) a.   *sanzyus-syuu no gurando
            thirty   -CL *no* field
            'thirty rounds of the field'
      b.   *san -kakoku no azia
            three-CL   *no* Asia
            'three Asian countries'
      c.   *san -zikan no mainiti
            three-CL   *no* everyday
            'three hours everyday'

We leave the investigation of this construction for future research.

adjunct, or in a configuration where a classifier takes the noun as its complement. Japanese employs the former option. This is possible in part because the language has the Mod-insertion rule that licenses nominal adjuncts with *no*. The latter option would be impossible if the classifier has to cliticize to the numeral. Since the language is head-final, the intervening NP would block the cliticization as illustrated in (67).[14]

(67)

```
            CLP
           /    \
     numeral    CL'
               /    \
             NP      CL
```
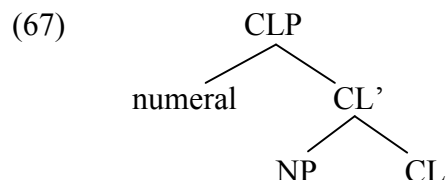
This line of reasoning predicts that if a language is head-final and its classifiers are clitics on numerals, then *numeral+classifier* must be employed as adjuncts. The situation in Chinese is quite different. First, since Chinese is head-initial, the numeral and the classifier are adjacent even if the latter is a head. Further, we have seen that the language does not allow nominal adjuncts within the projection of N. We speculate that this is because those elements require licensers like *no* in Japanese. Since Chinese lacks Mod-insertion, there is no way that nominal adjuncts can appear within NP, and this excludes the employment of *numeral+classifier* as adjuncts. Consequently, classifiers must assume head positions in Chinese.

References

Anderson, Mona. 1983. "Prenominal Genitive NPs." The Linguistic Review 3, 1-25.

Cheng, Lisa Lai-Shen and Rint Sybesma. 1998. "Yi-wan Tang, Yi-ge Tang: Classifiers and Massifiers." Tsing Hua Journal of Chinese Studies 28, 385-412.

Cheng, Lisa Lai-Shen and Rint Sybesma. 1999. "Bare and Not-So-Bare Nouns and the Structure of NP." Linguistic Inquiry 30, 509-542.

Chomsky, Noam. 1993. "A Minimalist Program for Linguistic Theory." In The View from Building 20, Kenneth Hale and Samuel Jay Keyser (eds.), pp.1-52. Cambridge, Massachusetts: MIT Press.

Chomsky, Noam. 1995. The Minimalist Program. Cambridge, Massachusetts: MIT Press.

Hsieh, Chia-Ling. 1998. Guoyu de Jujiao Jiegou: Fenlie yu Zhun-Fenlie Ju [Focusing Construction in Mandarin Chinese: Cleft and Pseudo-cleft Sentences]. Master's thesis, National Tsing Hua University.

Jackendoff, Ray. 1971. "Gapping and Related Rules." Linguistic Inquiry 2, 21-35.

Kawashima, Ruriko. 1998. "The Structure of Extended Nominal Phrases: The Scrambling of Numerals, Approximate Numerals, and Quantifiers in Japanese." Journal of East Asian Linguistics 7, 1-26.

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[14] Note that this problem does not arise if the NP is missing. This allows *numeral+classifier* to have the structure in (i) when it occurs as an adjunct or as a "floating quantifier."

    (i)   [$_{CLP}$ numeral CL]

Kayne, Richard S. 1994. The Antisymmetry of Syntax. Cambridge, Massachusetts: MIT Press.

Kimura, Norimi. 1994. "Multiple Specifiers and Long Distance Anaphora." MIT Working Papers in Linguistics 24 (Formal approaches to Japanese Linguistics 1), 159-178.

Kitagawa, Chisato and Claudia Ross. 1982. "Prenominal Modification in Chinese and Japanese." Linguistic Analysis 9, 19-53.

Li, Yen-Hui Audrey. 1999. "Plurality in a Classifier Language." Journal of East Asian Linguistics 8, 75-99.

Lin, T.-H. Jonah, Keiko Murasugi, and Mamoru Saito. 2001. "Modification and Specification: An Investigation of *No* and *De*." Presentation handout, The 10th Annual Meeting of the International Association of Chinese Linguistics (IACL), University of California, Irvine.

Lobeck, Anne. 1990. "Functional Heads as Proper Governors." Proceedings of the North East Linguistic Society 20, 348-362.

Miyagawa, Shigeru. 1989. Structure and Case Marking in Japanese. New York: Academic Press.

Murasugi, Keiko. 2000. "An Antisymmetry Analysis of Japanese Relative Clauses." In The Syntax of Relative Clauses, Artemis Alexiandou, Paul Law, Andre Meinunger, and Chris Wilder (eds.), pp.231-263. Amsterdam: John Benjamins Publishing Company.

Ross, John R. 1969. "Guess Who?" Papers from the Sixth Regional Meeting of the Chicago Linguistic Society, 252-286.

Saito, Mamoru and Keiko Murasugi. 1990. "N'-deletion in Japanese: A Preliminary Study." Japanese/Korean Linguistics 1, 258-301.

Simpson, Andew. 2003. "On the Status of Modifying DE and the Syntax of the Chinese DP. In On the formal way to Chinese languages, Sze-Wing Tang and Chen-Sheng Kuther Liu (eds.), pp.74-101. Standford: CSLI Publications.

Simpson, Andrew. 2005. "Classifiers and DP Structure in Southeast Asia." In *The Oxford Handbook of Comparative Syntax*, Guglielmo Cinque and Richard S. Kayne (eds.), pp.806-838. Oxford: Oxford University Press.

Tang, C.-C. Jane. 1990. Chinese Phrase Structure and the Extended X'-theory. Doctoral dissertation. Cornell University, Ithaca, New York.

Watanabe, Akira. 2006. "Functional Projections of Nominals in Japanese: Syntax of Classifiers." Natural Language & Linguistic Theory 24, 241-306.