

A Note on Direct and Indirect Modification

Yoshihiro Kubo* & Rai Tei**

1. Introduction

Adjectives have traditionally been divided into two types: attributive and predicative adjectives. The former is a DP-internal modifier while the latter is a DP-external modifier, i.e., a predicate of copula sentences. This traditional distinction is based on positional-structural differences. For DP-internal modifiers, another related distinction has been made, i.e., direct and indirect modification proposed by Bolinger (1967), Sproat&Shih (1988, 1991) and Cinque (2003). It has been observed that across languages, several phenomena in the nominal domain seem to be sensitive to restrictivity, which leads to the following assumption:

(1) Complementarity hypothesis

In NP structures, the syntax of restrictive modifiers differs from that of non-restrictive modifiers; it is involved in the syntax of direct vs. indirect modification. The latter has the syntax of relative clauses, as discussed in Alexiadou&Wilder 1998, Bouchard 2002, Cinque 2010, Sproat&Shih 1988.

Can this hypothesis hold among languages? Sproat&Shih (1991) points out that in Mandarin Chinese, indirect modification adjectives are construed with the noun via a linker, whereas direct modification adjectives are bare; only the latter show the fixed ordering. In other words, direct modification adjectives are subject to the ‘Adjectival Ordering Restriction (AOR)’ whereas indirect modification adjectives are not.

On the other hand, in Japanese direct modification adjectives seem to violate the AOR as shown below:

(2) a. omoshiroi akai hon

interesting red book

b. akai omoshiroi hon
red interesting book

Then, the following questions arise:

- (3) a. In Mandarin Chinese, direct modification adjectives are subject to the AOR whereas indirect modification adjectives are not. Is it a correct generalization?
b. In Japanese, direct modification adjectives are not subject to the AOR. Is it true?
c. If generalizations (A) and (B) are plausible, why so?
d. Why are indirect modification adjectives in Chinese not subject to the AOR?

This paper is an attempt to answer these questions.

1. Two types of NP modifiers

Adjectives have so far been dealt with syntactically and semantically. One syntactic approach is a traditional distinction which is based on positional-structural differences: attributive vs. predicative adjectives, i.e., DP-internal modifier vs. DP-external modifier (predicates of copula sentences), or prenominal and postnominal adjectives (Cinque 1994). Another semantic approach is a difference between intersective and non-intersective adjectives.

- (4) a. Mary is a beautiful dancer.
b. Mary is a dancer and Mary is beautiful.
c. Mary dances beautifully.

(4a) is ambiguous in that it means (4b) and (4c). In the first reading (4b), two predicates are conjoined, and adjective modification in (4a) can be regarded

* Professor, Faculty of Humanities, Fukuoka University

** Lecturer, School of Japanese Language and Culture for International Students, Fukuoka University

as a conjunction of properties, which is called ‘intersectiveness’. In other words, the set of the entities denoted by the noun (‘dancer’) and the set of the properties denoted by the adjective (‘beautiful’) intersect. On the other hand, in the second reading (4c), the adjective modifies Mary’s dancing, where the adjective is non-intersective.

Another related distinction among DP-internal APs is direct vs. indirect modification proposed in Bolinger (1967), Sproat&Shih (1988, 1991) and Cinque (2003). According to Sproat&Shih (1988, 1991), in direct modification the adjective modifies the noun directly, which is non-predicational, whereas in indirect modification the adjective indirectly modifies the noun, meaning that it forms part of a relative clause, i.e., predicational.

Direct modification adjectives are only subject to the adjective ordering hierarchy by Vendler (1968), as pointed out in Sproat&Shih (1991):

- (5) Adjective Ordering Restriction (AOR)
 Quality > size > shape > color > origin
 (Vendler 1968)

Prenominal adjectives in English and other languages are subject to the AOR which is based on semantic classes of adjectives, as shown in the following contrast:

- (6) a. the big white vase
 b. *the white big vase
 (7) a. the interesting English textbook
 b. *the English interesting textbook

Then, the classification of direct and indirect modification by Sproat&Shih (1988, 1991) reveals that direct modification is subject to the AOR while indirect modification is not.

- (8) Direct modification
 a. is subject to the AOR
 b. permits intersective and non-intersective modifiers
 (9) Indirect modification
 a. is not subject to the AOR
 b. permits intersective modifiers only

When direct and indirect modification adjectives are combined, the former invariably appears nearer to the

head noun.

- (10) Indirect modification > direct modification
 (11) a. The visible stars include Aldeberan and Sirius. (Cinque 2010)
 b. The invisible visible stars include Aldeberan.

As discussed in Bolinger (1967), Cinque (2010) and others, (11a) is ambiguous in that stars are visible at the time of utterance (indirect modification) or stars are intrinsically visible (direct modification). However, (11b) is not ambiguous in that the stars which are intrinsically visible are currently invisible, where the first adjective is involved in indirect modification and the second adjective direct modification. In addition, direct modifying adjectives resist premodification, as shown in the contrast between (12a) and (12b):

- (12) a. a ridiculously red Italian car
 b. *an Italian ridiculously red wine

Nonetheless, there are some counterexamples, as pointed out in Alexiadou&Wilder(1998), Teodorescu (2006), and Svenonius(1994). First, an A + N sequence has an idiomatic meaning.

- (13) a. a red Italian car: color > origin
 b. an Italian red wine: origin > color

In (13a), which preserves the AOR, “red” indirectly modifies “car”, and indicates the color of red. But in (13b), which is not subject to the AOR, “red” directly modifies “wine”, and a “red wine” has actually a deep purple color, but not so with a red car. In other words, when the A+N sequence has an idiomatic meaning, it is invisible to the AOR. Second, when a prenominal adjective has focus interpretation, the focus adjective is fronted in the DP, leading to the violation of the AOR, as shown below:

- (14) a. big square table (size > shape)
 b. *square big table (shape > size)
 c. SQUARE big table

Except for the above instances, according to Chao, Mui&Scott(2001), Sproat&Shih(1991), in constructions of direct modification in many languages with a productive class of adjectives, multiple adjectival modifiers can be subject to the AOR.

Furthermore, Sproat&Shih(1991) provides evidence to support the classification of direct and indirect modification. Sproat&Shih (1991) points out that in Mandarin Chinese, indirect modification adjectives are construed with the noun via a linker, whereas direct modification adjectives are bare; only the latter show the fixed ordering, as shown below:

- (15) a. size > color
 xiao de lu de huaping
 small LINK green LINK vase
 b. color > size
 lu de xiao de huaping
 green LINK small LINK vase
 (16) a. size > color
 xiao lu huaping
 small green vase
 b. *color > size
 lu xiao huaping
 green small vase

Basically, Cantonese adjectives are similar to their Mandarin counterparts in a sense of what Duanmu (1998) points out that although many Mandarin adjectives seem to be quite productive in the form A+N. He also notes that Zhu (1980) argues that there are also many cases in which no free combinations in A+N form with nouns are shown.

- (17) a. bai zhi *bai shou (Mandarin)
 'white paper' 'white hand'
 b. san syu *san tauh (Cantonese)
 'new book' 'new head'

(18) direct modification

Mandarin:

- qian zongtong *gao ren
 'former president' 'tall person'

Cantonese

- chihn jyu-jik *gou syuh
 'former chairman' 'tall tree'

(19) indirect modification

Mandarin

- *qian de zongtong gao de shu
 'former president' 'tall tree'

Cantonese

- *chihn ge jyu-jik gou ge syuh
 'former chairman' 'tall tree'

In the next section, we will examine Chinese premodifying adjectives with respect to the AOR.

2. Adjectival modification in Chinese

2.1 Examples

Sproat&Shih (1991) argues that in Chinese, if the linker *de* appears, the modification is indirect and then they need not follow the AOR; if the adjectives are bare, the modification is direct and they show the fixed ordering. See the examples below:

- (20) a. size > color
 xiao de lu de huaping
 small LINK green LINK vase
 b. color > size
 lu de xiao de huaping
 green LINK small LINK vase (= (15))
 (21) a. size > color
 xiao lu huaping
 small green vase
 b. *color > size
 lu xiao huaping
 green small vase (= (16))
 (22) a. size > shape
 xiao fang huaping
 small square vase
 b. *shape > size
 fang xiao huaping
 square small vase

However, there are some counterexamples we have to consider:

- (23) a. color > size
 [lu se] xiao huaping
 green color small vase
 b. shape > size
 [fang xing] xiao huaping
 square shape small vase

In Chinese, *lu se* 'green color' and *fang xing* 'square shape' are usually used as nouns, but in (23), they modify the head nouns, so they should be treated as modifiers. Furthermore, since there is no so-called linker *de* in (23), those bare modifiers should be subject to the AOR and then we may predict that (23) be ruled out just like (21b) and (22b). The fact,

however, is that they are fully acceptable.

Here comes the point: is Chinese prenominal modification subject to the AOR? If the answer is positive, we have to explain why (23) does not follow the AOR. We agree that direct modification adjectives in Chinese strictly follow the AOR, but we consider the definition of direct/indirect modification, or the status of the modification, to be the key, instead of the linker *de*. We will discuss the details in the next section.

2.2 De-less modification

Based on Sproat & Shih (1988, 1991) and Duanmu (1998), every sequence ‘adjective/noun N’ is in fact *a compound* i.e., a word, whereas the modification structure with *de*, ‘adjective/noun *de* N’, is unanimously assigned phrasal status, due to the presence of *de*.

- (24) ‘A-N’ and ‘N-N’ compounds:
xiao-fei ‘small-cost’ = ‘tip’
da-yi ‘big-coat’ = ‘overcoat’
hong-hua ‘red-flower’ = ‘safflower’ (plant used in traditional Chinese medicine)
cha-hua ‘tea-flower’ = ‘camelia’
longtou ‘dragon-head’ = ‘tap’
huo-che ‘fire-vehicle’ = ‘train’

But it is not correct to automatically deduce compounds i.e., word status from the simple absence of *de*. For besides the ‘A-N’ and ‘N-N’ compounds illustrated above, there exist numerous ‘A-N’ and ‘N-N’ sequences where the head noun is accessible and which accordingly have to be assigned phrasal status (cf. (25)). They thereby sharply contrast with compounds where this accessibility is precisely excluded (cf. (26)), according to the *Lexical Integrity Hypothesis* formulated in Huang (1984).

- (25) Wo juede [_{NP} huang chenshan] bi
 I think yellow shirt compared:to
 [_{NP} hong -de Ø] haokan
 red -SUB pretty
 ‘I think that yellow shirts are prettier than red ones.’ (Paul 2005)
- (26) *Amei bu xiang chi [_{N⁰} hong-hua],
 Amei NEG want eat red-flower=safflower
 [_{NP} huang-de] hai keyi
 yellow-SUB still acceptable
 Lit: ‘Amei doesn’t want to take safflower, yellow ones are still ok.’ (Paul 2005)

- (27) *Lexical Integrity Hypothesis* (Huang 1984):
 First, subparts of a word cannot be conjoined;
 Second, subparts of a word are not visible to interpretation rules;
 Third, anaphoric rules cannot refer to a subpart of a word.

Therefore, *huang chenshan* ‘yellow shirt’ in (25) has a phrasal status; *hong-hua* ‘safflower’ in (26) has a (compound) word status. Let us consider more examples provided in Feng (2001):

- (28) a. color > size
 bai da guar
 white big gown
 ‘a white unlined long gown’
 b. *size > color
 da bai guar
 big white gown

Based on the AOR, modifiers of color must be nearer to the head noun than those of size. Feng (2001) concludes that *da-guar* ‘unlined long gown’ is a compound. Since its internal structure is invisible to the ordering restrictions and (28b) is ungrammatical due to a violation of the *Lexical Integrity Hypothesis*.

In fact, the compound *da-guar* ‘unlined long gown’ and those listed in (24) are similar to those idiomatic A+N sequences, as we have mentioned in the previous section. Once the A+N sequence has an idiomatic meaning, it will not be subject to the AOR any longer. See (13) repeated below:

- (29) a. a red Italian car: color > origin
 b. an Italian red wine: origin > color (= (13))

Furthermore, Paul (2005) argues that it is not suitable to analyze the differences between (30a) and (30b) with Feng (2001) because ‘green vase’ could not be a compound word.

- (30) a. size > color
 xiao lu huaping
 small green vase
 b. *color > size
 lu xiao huaping
 green small vase (= (16))

With respect to multiple adjective modifications,

most of the studies only discuss the modifications with two adjectives. In this paper, we would like to take the case in which more than two adjectives are involved into consideration.

- (31) a. size > shape > color
 da fang lu huaping
 big square green vase
- b. ?size > color > shape
 da lu fang huaping
 big green square vase
- c. *shape > size > color
 fang da lu huaping
 square big green vase
- d. ?shape > color > size
 fang lu da huaping
 square green big vase
- e. *color > size > shape
 lu da fang huaping
 green big square vase
- f. *color > shape > size
 lu fang da huaping
 green square big vase

As we can see from (31), only (31a), which is subject to the AOR, is perfect. The reason why (31b) and (31d) is more acceptable than the others might be that *da lu* ‘big green’ may have an idiomatic meaning, ‘deep green’, and *da huaping* ‘big vase’ may have a focus interpretation and thus have a presupposition like there are other small vases. The most important point we should notice here is that in (31b) and (31d) the syntactic structures may have changed slightly and thus the acceptability changes subsequently. In our opinion towards *da lu*, a compound adjective with an idiomatic meaning, is correct, we can expect that *da lu* is not in the same level with *fang* ‘square’, which is a monosyllabic adjective and should be regarded as a direct modifier. Considering the syntactic level, we can easily infer that direct modifiers cannot be further to the head noun than compound ones which might be indirect modifiers. That is the reason why (31b) is much better than (31c). On the other hand, *da* cannot be generally combined with *fang* to form a compound with the meaning of ‘great square’ in Chinese, therefore the three adjectives in (31e) are in the same level and should be regarded as direct modifiers. As a

result, (31e) is ruled out because of contravening the AOR. Even if *da huaping* in (31f) may have a focus interpretation, it is still unacceptable since the same-level direct modifiers, *lu and fang*, do not follow the AOR.

There are also some examples showing free word order, in which *de* is cliticized after every adjective, in Cheung (2012). As space is limited, we will not pursue it in this paper.¹

As for *de*-less modification, Sproat & Shih (1988) suggests that it is restricted to monosyllabic “light” adjectives and considers this constraint as an additional argument for the word status of ‘A/N-N’ sequences. But it is not plausible. On the contrary, both bisyllabic adjectives as well as complex modifiers, which are consisting themselves of a ‘modifier-modifiee’ structure, are allowed in the *de*-less modification structure.

- (32) a. yi-ge [qigua] xianxiang
 1-CL strange phenomenon
 ‘a strange phenomenon’ bisyllabic adjective
- b. yi-ge [hei qi] yigui
 1-CL black lacquer wardrobe
 ‘a black-lacquered wardrobe’ complex modifier
 (Fan 1958)

It then follows from the above analysis that in order to explain the differences between (30a) and (30b), using the compound/phrase level only is not enough. And from the examples given above, we can see that the direct modification adjectives are subject to the AOR if we eliminate those idiomatic A+N sequences or those so-called phrase-level modification adjectives. Furthermore, with or without *de* is not the criteria to distinguish between direct and indirect modifications. Therefore, what we have to do is to make a clearer definition or standard about direct and indirect modification. Considering space limitations, we leave this topic for further study.

2.3 Cheung (2012)

Cheung (2012) mainly discusses Chinese ‘Adj+*de*’ modification. Following Sproat & Shih (1991) and among the others, Cheung agrees that Chinese allows free ordering of multiple prenominal adjectives with *de*. And beyond the proposals, Cheung gives some

¹ For details, see Cheung (2012).

facts of Chinese modification:

Fact 1: ‘Adj+*de*’ sequences are ambiguous in that they have a hierarchical reading and a conjoined reading.

- (33) yi-jian pianyi de shishang de waitao
One-Cl cheap DE fashionable DE coat
i. ‘a cheap fashionable coat’
(hierarchical reading)
ii. ‘a cheap and fashionable coat’
(conjoined reading)

- (34) yi-jian shishang de pianyi de waitao
One-Cl fashionable DE cheap DE coat
i. ‘a fashionable cheap coat’
(hierarchical reading)
ii. ‘a fashionable and cheap coat’
(conjoined reading)

(Cheung 2012)

Fact 2: ‘Adj+*de*’ sequences can freely occur in three different positions as reported by Aoun & Li (2003), regardless of whether the adjectives are predicative or non-predicative.

- (35) (i) Demonstrative+ (ii) Numeral+ (*) Classifier+
(iii) Noun

Cheung (2012) proposes that ‘Adj+*de*’ sequences are adjuncts to DP, NumP, or NP, but not to CIP. But Cheung does not give us any reason and does not discuss the syntax of ‘Adj+*de*’ construction. Furthermore, Cheung does not give a clear mechanism what can be used to explain the ambiguity between hierarchical reading and conjoined reading.

Besides those points we mentioned above, there are some other questionable analyses.

- (36) piaoliang de na san-ge nuhai
pretty DE that three-CL girl
‘those three pretty girls’ (Cheung 2012)

(36) is used to explain that ‘Adj+*de*’ sequences can freely occur in the three positions shown in (35) without changing the meaning. If we think carefully about the meaning, however, we will find out there is a slight difference in meaning. The literal meaning of (36) are not ‘those three pretty girls’, but ‘the three girls who are pretty’ with an intended meaning ‘there are

some other girls who are not pretty’. It means that the presupposition is different from the normal pattern, the position (iii) in (35) or the examples in (37).

- (37) An ‘Adj+*de*’ sequence appearing in position (iii) in (35)
a. na san-ge piaoliang de nuhai
that three-CL pretty DE girl
‘those three pretty girls’
b. na san-ge zhuyao de renwu
that three-CL main DE task
‘those three main tasks’

Furthermore, we argue that the judgment about the examples related to position (ii) in (35) is not appropriate.

- (38) An ‘Adj+*de*’ sequence appearing in position (ii) in (35)
a. na piaoliang de san-ge nuhai
that pretty DE three-CL girl
‘those three pretty girls’
b. na zhuyao de san-ge renwu
that main DE three-CL task
‘those three main tasks’

Firstly, we doubt whether (38a, b) are grammatical. Even if they might be used in some occasions, the pronunciation, or the stress, of ‘na’ is different from the normal pattern. Mostly it will be pronounced as ‘ne’ which is a sound with non-stress or a weakest stress.

As to the ambiguous reading, if we omit the second *de*, the conjoined reading disappears and only the hierarchical reading is left as shown in (40). We suggest that the point whether ‘the nearest adjective + head noun’ can be treated as a compound should be taken into consideration.

- (39) weiyi de gongtong de xingqu
sole DE common DE hobby
‘sole common hobby’ (hierarchical reading)
‘sole and common hobby’ (conjoined reading)
(40) weiyi de gongtong xingqu
sole DE common hobby
‘sole common hobby’ (hierarchical reading)
* ‘sole and common hobby’ (conjoined reading)

According to the discussion above, we can see that in

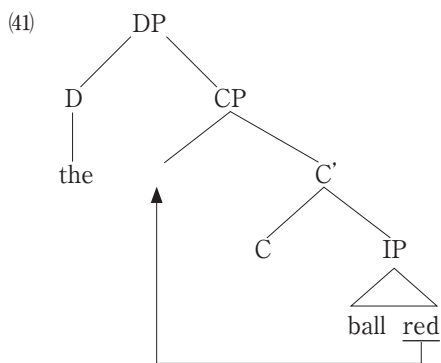
Chinese, the monosyllabic adjectives, treated as direct modifiers, are subject to the AOR, and the distinction between direct and indirect modification is more than whether *de* exists or not. Furthermore, with respect to the word level, compound level or phrase level, which are related to direct or indirect modification, further research about the structure of *de*-less modification, the definition of direct/indirect modification, and even the cases which are complex with both modifications is needed. As to the relationship with various accessible syntactic categories, we suggest that multiple adjective modifications cannot freely occur, as claimed in Cheung (2012), in those three positions shown in (35). Therefore, we should look carefully into the interaction where monosyllabic adjectives and *de*-less bisyllabic adjectives are mixed. We would like to make a further discussion on it in our forthcoming paper. Now, let us try some syntactic analyses in the next section.

3. Syntax of adjectival modification

3.1. Direct vs. Indirect modification

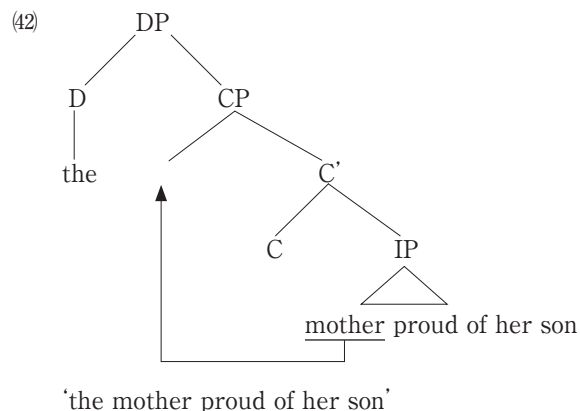
We have seen that in English and Chinese direct modification is subject to the AOR whereas indirect modification is not. The reason for the inconsistency regarding the AOR can be attributed to the difference in derivation.

Indirect modifiers, which are intersective, are introduced as predicates in relative clauses, which is called a relative clause analysis, as supported in Kayne (1994), Sproat & Shih (1988), Alexiadou & Wilder (1998), Alexiadou (2001), Cinque (2010) and others. For example, DP “the red ball” is derived via AP raising as shown below:



In (41), the adjective ‘red’ is generated in a predicative position within a relative clause. The ‘A+N’ order

obtains via AP raising. The predicative adjective, which occurs in the postnominal position, obtains NP raising, as illustrated below.



The relative clause analysis can account for the fact that indirect modification is not subject to the AOR, in that the stacked relative clauses are free with respect to the order of the relative clauses.

- (43) a. Is there anything that you want that you don’t have?
 b. Is there anything that you don’t have that you want?

Moreover, the relative clause analysis can account for the determiner spreading in Greek, as discussed in Alexiadou & Wilder (1988).

However, there are some empirical and theoretical problems with the relative clause analysis. First, as pointed out in Bolinger (1967), not all adjectives can be reduced to a predicative source, in that non-intersective adjectives usually do not have predicative uses, as shown in the following:

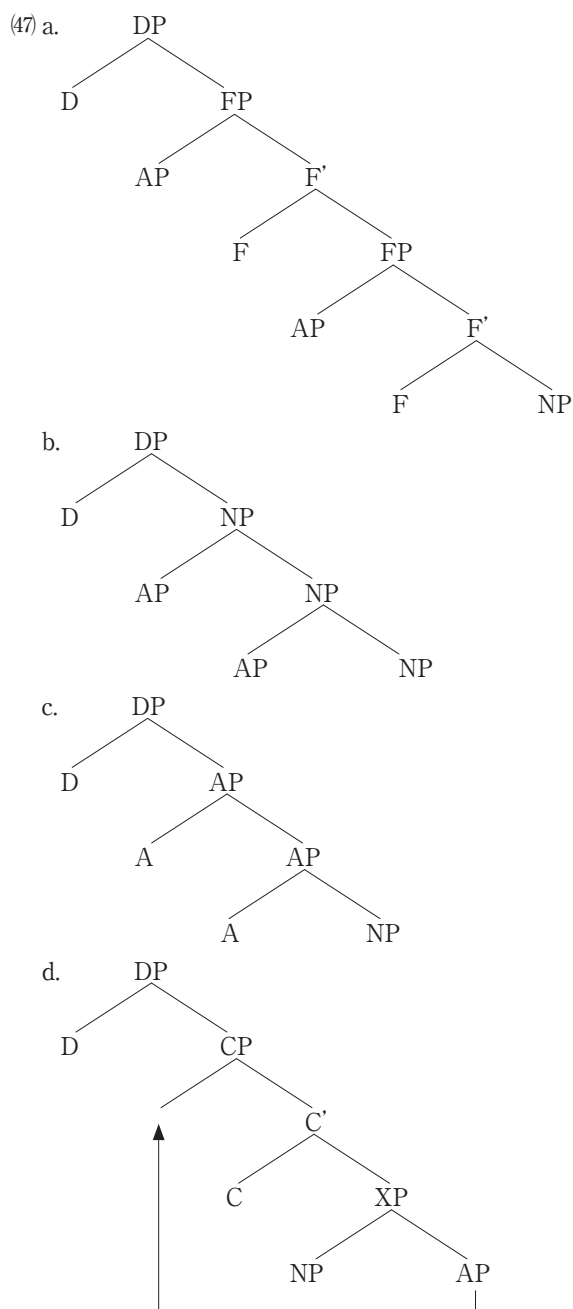
- (44) a. *The president is former.
 b. the former president
 (45) a. *The event is main.
 b. the main event

Note that these adjectives mostly have adverbial sources.

- (46) a. The president was formerly a deputy foreign minister.
 b. The event was mainly arranged to honor Mr. Smith.

Then, they can be assumed to be derived from adverbial predicative positions in clauses other than relative clauses. We will not pursue it here. Second, it is not clear what triggers for the movement into the specifier position of CP. We tentatively assume that the head of CP in DP has an EPP feature, which triggers for the movement. For other problems, see Alexiadou&Wilder (1998) and Alexiadou (2001).

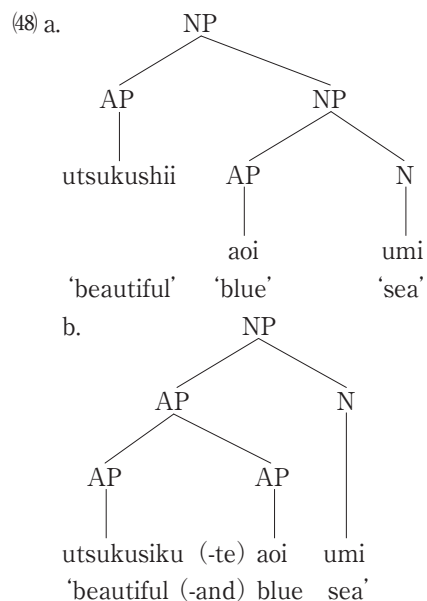
On the other hand, there are four main syntactic analyses of direct modification.



In the first analysis, as shown in (47a), AP is generated in the specifier position of a certain functional category, as pointed out in Cinque (1999, 2003). Cinque (1999, 2003) assumes AP-related functional projections in the NP/DP. The second analysis, as shown in (47b), assumes that adjectival modifiers are optional adjuncts to NP inside DP, as proposed in Alexiadou&Wilder (1998). In the third analysis, as shown in (47c), attributive adjectives are assumed to be heads in the extended projection of NP, as proposed in Abney (1987) and Androutsopoulou (1995). The fourth analysis, as shown in (47d), direct modifier AP can be assumed to be derived from DP containing the relative clause, just like indirect modifier AP, following Kayne's (1994) assumption that all adjectives are generated in a predicative position inside a reduced relative clause. We will not discuss these four analyses here.²

4. Prenominal adjectives in Japanese

Let us recall that Chinese allows free ordering of multiple prenominal adjectives with “de”, as discussed in Section 2. Equally, Japanese multiple prenominal adjectives have a free order, and following Inoue (1983), they have a hierarchical and conjoined relation with the noun, as shown below.



Both hierarchical and conjoined types of prenominal adjectives have a free order.³

² For details, see Kubo&Tei (in preparation).

³ We will not discuss whether there is a difference in meaning between these two types.

- (49) a. utsukushii aoi umi
 beautiful blue sea
 b. aoi utsukushii umi
 blue beautiful sea
- (50) a. utsukushiku(-te) aoi umi
 beautiful (-and) blue sea
 b. aoku(-te) utsukushii umi
 blue(-and) beautiful sea

Free ordering of multiple prenominal adjectives in Japanese holds for most adjectives.

- (51) a. muzukashii buatsui hon
 difficult fat book
 b. buatsui muzukashii hon
 fat difficult book
 c. muzukashiku(-te) buatsui hon
 difficult(-and) fat book
 d. buatsuku(-te) muzukashii hon
 fat(-and) difficult book
- (52) a. a difficult fat book
 b. *a fat difficult book
 c. an easy and interesting book
 d. *a difficult and fat book
- (53) a. shiroi ookina inu color > size
 white big dog
 b. ookina shiroi inu size > color
 big white dog

In English different semantic groups of adjectives that modify single nouns cannot be coordinated, as shown in the contrast between (52c) and (52d). In contrast, in Japanese different semantic groups of prenominal adjectives can be coordinated, as shown in (51c,d). Given the contrast between (51a, b) and (52a, b), it then follows that Japanese prenominal adjectives are invisible to the AOR.

Therefore, we assume that Japanese prenominal adjectives are not subject to the AOR. Then, a problem arises. Why are Japanese adjectives not subject to the AOR? Let us notice that Japanese adjective modification is similar to Chinese [Adj + de] constructions, in that both types of modification do not

preserve the AOR. We then assume that both types of modification in Japanese and Chinese have the same base structure. In Japanese adjective modification, [N + A (+ A)] can be assumed to be a base structure, and the subsequent Predicate raising, as seen in the previous section, derives [A (+ A) + N] construction, like French and Italian.

Let us remember two types of modifications: direct modification (A + N) and indirect modification (N + A). The latter gets a subsequent operation of predicate raising of adjectives. In other words, adjectival modification is involved in two types of Merge. However, our assumption that Japanese prenominal adjectival modification is similar to Chinese 'Adj + de' modification can lead to an assumption that Japanese prenominal adjectives are involved in indirect modification, since Chinese 'Adj + de' sequences indicate indirect modification, which can undergo the relative clause analysis, as seen in the previous section. Given these assumptions, it then follows that Japanese adjectival modification makes use of indirect modification only, and that one language allow two types of Merge of adjectives while others allow only one type of Merge of adjectives. The former is Chinese, English, etc. while the latter is Japanese, Korean, Javanese, and so on.⁴

There are some evidence to support that Japanese prenominal adjectives are involved in indirect modification and undergo an operation of Merge as predicates in reduced relatives. First, Japanese adjectives are freely modified, just as indirect modifying adjectives do not resist premodification.

- (54) (=12) a. a ridiculously red Italian car
 b. *an Italian ridiculously red wine
- (55) a. hijouni mazui totemo atsui soup
 very unsavory very hot soup
 b. hijouni mazukute totemo atsui soup
 very unsavory-and very hot soup

Second, suppose that Japanese adjectives are merged as predicate, it follows that adjective ordering is irrelevant, just like Chinese 'Adj + de' sequences, as seen in Section 2, which can account for free ordering of prenominal adjectives in Japanese.

⁴ For Korean, see Kim (2004). Kim (2004) assumes that Korean lacks a distinct category of Adjective, and so prenominal adjectives in Korean are predicates inside relative clauses. For Javanese, see Robson (1992). However, Klok (2009) assumes that both types of direct and indirect modification is available in Javanese.

Third, if Japanese prenominal adjectives undergo an operation of Merge as predicates in reduced relatives, conjunctions in the predicate within the relative clause can be correctly predicted to maintain in the prenominal position via predicate raising, as shown below:

- (56) a. John-wa tsuyoi ga yasashii.
 John-topic strong but gentle
 'John is strong but gentle.'
 b. tsuyoi ga yasashii John
 strong but gentle John
- (57) a. John-wa tsuyoi keredomo yasashii.
 John-topic strong though gentle
 b. tsuyoi keredomo yasashii John
 strong though gentle John

Therefore, we can conclude that Japanese prenominal adjectives are involved in indirect modification only.

5. Concluding Remarks

In this paper, we have attempted to answer the questions in (3). First, in Mandarin Chinese, direct modification adjectives are subject to the AOR whereas indirect modification adjectives are not. We have seen that this generalization is plausible. Second, in Japanese, direct modification adjectives seem to be invisible to the AOR. Instead, Japanese prenominal adjectives are involved in indirect modification only. In other words, only indirect modification is available for Japanese adjectives. Third, the reason why indirect modification adjectives in Chinese are not subject to the AOR can be accounted for by the relative clause analysis. Fourth, Japanese adjectival modification makes use of indirect modification only, and one language allow two types of Merge of adjectives while others allow only one type of Merge of adjectives. The former includes Chinese, English, etc. while the latter includes Japanese, Korean, Javanese, and so on. In order to complete our approach, we have to make the mechanism of two types of Merge of adjectives explicit, that is to say, syntax of direct and indirect modification. We will leave it for another occasion.

References

Abney, S. 1987. *The English Noun Phrase in its Sentential Aspect*. Doctoral dissertation, MIT.

- Alexiadou, A. 2001. "Adjective Syntax and Noun Raising," *Studia Linguistica* 55, 217-248.
- Alexiadou, A. & C. Wilder. 1998. "Adjectival Modification and Multiple Determiners," in A. Alexiadou & C. Wilder (eds.) *Possessors, Predicates and Movement in the DP*. John Benjamins, pp.303-332.
- Androutsopoulou, T. 1995. "The Licensing of Adjectival Modification," *WCCFL* 13, 17-31.
- Aoun, Joseph & Li, Yen-hui Audrey. 2003. *Essays on the Representational and Derivational Nature of Grammar. The Diversity of wh-constructions*. Cambridge, Mass. MIT Press.
- Bolinger, D. 1967. "Adjectives in English: Attribution and Predication," *Lingua* 18, 1-34.
- Bouchard, D. 2002. *Adjectives, Number and Interfaces: Why Languages Vary*. Linguistic Variations 61, North Holland Linguistic Series.
- Chao, W., E.Mui & G.-J. Scott. 2001. "Adjectival Modification in Chinese," paper presented at IACL-10/NACCL 13, Irvine.
- Cheung, Chi-Hang Candice. 2012. "Adjectival Modification in Mandarin: Evidence for the adjunction analysis," *Studies in Chinese Linguistics*, Vol. 33, 41-62.
- Cinque, G. 1994. "On the Evidence for Partial N-Movement in the Romance DP," in G.Cinque, J.Koster, J.Y.Pollock, L.Rizzi & R.Zanuttini (eds.) *Paths Towards Universal Grammar*. Georgetown University Press.
- Cinque, G. 1999. *Adverbs and Functional Heads: a Cross-Linguistic Perspective*. Oxford University Press.
- Cinque, G. 2003. "On Greenberg's Universal 20 and the Semitic DP," in L.-O. Delsing, C. Falk, et al. (eds.) *Grammar in Focus. Festschrift for Christer Platzack 18 November 2003*. Vol. II. Department of Scandinavian Languages, pp. 243-251.
- Cinque, G. 2010. *The Syntax of Adjectives*. MIT Press.
- Duanmu, San. 1998. "Wordhood in Chinese," in Packard, Jerome (ed.). *New approaches to Chinese word formation: Morphology, phonology and the lexicon in modern and ancient Chinese*. Berlin, New York : Mouton de Gruyter, pp. 135-196.
- Fan, Jiyun. 1958. "Xing ming zuhe jian 'de' zi de yufa zuoyong [The grammatical function of *de* between adjective and noun]," *Zhongguo yuwen* 1958, 5, 213-217.
- Feng, Shengli. 2001. "Lun hanyu 'ci' de duo-wei-xing [The multidimensional properties of 'word' in Chinese]," *Dangdai yuyanxue* 3. 3, 161-174.

- Huang, C.-T. James. 1984. "Phrase structure, lexical integrity and Chinese compounds," *Journal of the Chinese Teachers' Association* 19. 2, 53-48.
- Inoue, K. (ed.) 1983. *Nihongo-no Kihon Kouzou* [Basic Structure of Japanese]. Sanseido.
- Kayne, R. 1994. *The Antisymmetry of Syntax*. MIT Press.
- Kim, M-J. 2004. "The Absence of the Adjective Category in Korean," ms. University of Massachusetts.
- Klock, J.V. 2009. "Direct Adjectival Modification in Javanese," *The Proceedings of AFLA* 15, 211-225.
- Kubo, Y. & R. Tei (in preparation) "Syntax of Direct and Indirect Modification."
- Paul, Waltraud. 2005. "Adjectival modification in Mandarin Chinese and related issues," *Linguistics* 43. 4, 757-793.
- Robson, S. 1992. *Javanese Grammar for Students*. Monash Papers on Southeast Asia.
- Sproat, Richard & Shih, Chilin. 1988. "Prenominal Adjectival Ordering in English and Mandarin," *Proceedings of NELS* 18, 465-489.
- Sproat, Richard & Shih, Chilin. 1991. "The cross-linguistic distribution of adjective ordering restrictions," in Georgopoulos, C. & Ishihara, R. (eds.). *Interdisciplinary Approaches to Language. Essays in honor of S.-Y. Kuroda*. Dordrecht et alibi: Kluwer; pp. 565-592.
- Svenonius, P. 1994. "On the Structural Location of the Attributive Adjective," *WCCFL* 12, 439-454.
- Teodorescu, A. 2006. "Adjective Ordering Restrictions Revisited," *WCCFL* 25, 399-407.
- Vendler, Z. 1968. *Adjectives and Nominalizations*. The Hague:Mouton.
- Zhu, D. 1980. *Xiandai Hanyu Yufa Yanjiu* [Grammatical Studies of Modern Chinese], 3-41, Commercial Press.