

A Note on the Structure of Mandarin Adjectives

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Abstract

This research note attempts to clarify the differences between 2 kinds of adjectival modifications, direct and indirect modifications, in Mandarin on the bases of the frameworks of Cinque (2010), which suggests there are two ties or layers, and Zhang’s (2007) root analysis. Furthermore, with a further research on the evidences from old Mandarin examples, I suggest there is a previous derivation of adjectival modification before entering computation system.

Keywords: adjective, structure, Mandarin, old Chinese

1. Introduction

One of the issues widely discussed on adjectival modification is the linearization of involved adjectives. According to Vendler (1968), there is an ordering restriction as shown in (1).

- (1) Quality > size > shape > color > origin
 a. a big round table size > shape
 b. * a round big table shape > size
- (2)a. a red Italian car color > origin
 b. an Italian red wine origin > color

However, the examples in (2) shows that in some cases they do not follow the ordering restriction given in (1). The difference between (2a) and (2b) and their violation against (1) cause a further research on attributive adjectives. Sproat & Shih (1988, 1991) and Cinque (2003, 2010) provide an assertion. That is to divide adjectival modifications into 2 kinds, *direct modification* and *indirect modification*. Furthermore, Sproat & Shih argue that only direct modification adjectives can be subject to the strict ordering, which is called as ‘Adjectival Ordering Restriction (hereinafter referred as AOR)’.

Sproat & Shih’s (1991) work on the adjectival modification in Mandarin and assume that if the linker *DE* appears, the modification is indirect and hence they need not follow AOR; on the other hand, the modification is direct and they show the fixed ordering if the adjectives are bare, as shown in (3) and (4).

- (3) *DE*-expression
 —> indirect modification
 —> free order
DE-less expression (bare adjectives)
 —> direct modification
 —> following the AOR

- (4)a. xiao de lu de huaping
 small LINK green LINK vase
 size > color (indirect)
- b. lu de xiao de huaping
 green LINK small LINK vase
 color > size (indirect)
- c. xiao lu huaping
 small green vase
 size > color (direct)
- d. *lu xiao huaping
 green small vase
 *color > size (direct)
- e. xiao fang huaping
 small square vase
 size > shape (direct)
- f. *fang xiao huaping
 square small vase
 *shape > size (direct)

However, (5 a) and (5 b) are counterexamples showing that Sproat & Shih’s bare-direct assumption is quite dubious. Without linker *DE*, those bare modifiers should be subject to the AOR, but they do not follow it.

- (5)a. [lu se]¹ xiao huaping color > size
 green color small vase
 'a small green vase' (or 'a small vase which is green')
- b. [fang xing] xiao huaping shape > size
 square shape small vase
 'a small square vase' (or 'a small vase which is square')

Sproat & Shih (1991) sum up other properties on the direct/indirect modifiers. One of them is that direct modifiers are closer to the core (head noun) than indirect modifiers.

- (6) indirect modifiers > direct modifiers > head noun
- a. hei-de xiao shu
 black-DE small book
 'a black small book' (or 'a small book that is black')
- b. *xiao hei-de shu
 small black-DE book
 'a small black book'

If we assume that monosyllabic adjective *xiao* 'small' is a direct modifier and *lu se* 'green color' and *fang xing* 'square shape' are indirect modifiers, (7) can be well explained through the property of direct/indirect modifiers in linear order shown in (6).

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

The questions arise here: are *lu se* 'green color' and *fang xing* 'square shape' real indirect modifiers and what is the difference between monosyllabic adjective *lu* 'green' and bi-syllabic phrase *lu se* 'green color'? How should we treat *DE*-less modifiers (bare modifiers)? In order to answer these questions, let us see some similar examples in Vietnamese and Thai, in which only post-nominal adjectives are permitted.

Vietnamese:

- (8)a. rượu vang đỏ
 wine red
 'red wine'
- b. Những bông hoa màu đỏ
 flowers color red
 'red flowers'

Thai:

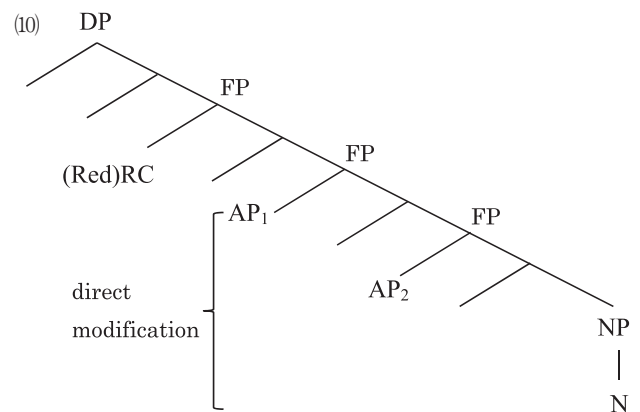
- (9)a. ไวน์แดง
 wine red
 'red wine'
- b. ดอกไม้สีแดง (สี: color)
 flowers red
 'red flowers'

Comparing the pair examples in (8) and (9), we notice that 'red' may be used as an indirect modifier when the morpheme 'color' appears after it.² This may correspond to my previous assumption that Chinese *lu* 'green' is a direct modifier and *lu se* 'green color' is an indirect modifier. As to the mechanism, let us go through some approaches concerning the difference between direct and indirect modifiers.

2. Previous Research

2.1 Cinque's approach

Cinque (2006, 2010) suggests that there are two sources of adnominal adjectives: a direct adnominal modification source, involving merger of the different classes of Aps in the specifiers of various dedicated functional heads of the extended projection of the NP; a (reduced) relative clause source (indirect modification) in which Merge position of (reduced) relative clauses is prenominal, specifically in the specifier of a projection above the projections hosting direct modification Aps.



¹ In Mandarin, *lu se* 'green color' and *fang xing* 'square shape' are usually used as nouns.

² The 'red' in the phrase 'red wine' is usually regarded as an indirect modifier, as shown in (2).

According to Cinque (2010), there are some cross-linguistic evidences to support the hypothesis shown in (10). Firstly, there are languages lacking direct modification adjectives. Baker (2003) shows that in Slave (Athapaskan) adjective can be used as predicates (also within relative clauses) but not as adnominal (direct modification) attributes.

- (11)a. *yenene* (be-gho) *sho* *hij* (Rice 1989)
 woman (3-of) proud/happy 3-is
 'The woman is happy/proud (of him/her)'
 b. **yenene sho* (Rice, p.c. to Mark Baker)
 woman proud/happy
 'a proud/happy woman'

Secondly, there are languages lacking predicative (Indirect Modification) adjectives. According to Ajíbóyè (2001), in Yoruba, adjectives form a closed class and can appear only in adnominal (attributive) position, not in predicate position (hence not in predicate position of a relative clause).

- (12)a. *Mo rí [ajá ñlá]* (=30b) of Ajíbóyè 2001
 I see dog big
 'I saw a big dog'
 b. **Ajá ñlá* (=29b) of Ajíbóyè 2001
 dog big
 'The dog is big'
 (13)a. *Ajá tóbi* (=29a) of Ajíbóyè 2001
 dog be-big
 'The dog is big'
 b. **Mo rí [ajá tí tóbi]* (=30a) of Ajíbóyè 2001
 I see dog be-big
 'I saw a big dog'

Ajíbóyè suggests that an intransitive stative verb, *tóbi* 'to (be) big' (cf. 'to tower') can be used as a modifier only when it is nominalized or used to form a relative clause.

- (14)a. *Mo rí [ajá tí-tóbi]* (=31a) of Ajíbóyè 2001
 I see dog NOM-be-big
 'I saw a big dog'
 b. **Mo rí [ajá [tí ó tóbi]* (=31b) of Ajíbóyè 2001
 I see dog_{REL} 3_{SG} be-big
 'I saw a dog that is big'

With the above evidences, Cinque argues there are two different functions adjectives typically serve: as predicates and as adnominal modifiers. If in a language adjectives qualify as predicates, they will usually appear to be an open or very large class (as predicates typically are). If on the other hand they qualify as (direct) adnominal modifiers (with verbs or nouns taking over the task of expressing "adjectival predication"), they will appear to be a closed class.

Following Cinque's proposal, let us check the A-N expression, *lu se* 'green color' mentioned in (5) and see whether it can function as a predicative modifier or an indirect modifier as we expect.

- (15) The vase is green.
 a. ? *huaping shi [lu se]*.
 vase be green color
 b. **huaping [lu se]*.
 vase green color
 c. *huaping shi [lu se] DE*. (Cleft sentence)
 vase be green color DE
 (16) The vase is small.
 a. ? *huaping shi xiao*.
 vase be small
 b. ?*huaping xiao*.
 vase small
 c. *huaping shi xiao DE*.
 vase be small DE

Although (15a) and (16a) are slightly questionable, they may be completely grammatical if we put an emphasis on *shi* 'be' to make them cleft sentences, which often take forms '*shi...de*' like in (15c) and (16c) and are beyond the scope of this article. Compared with ungrammatical (15b), (16b) is more acceptable and can become perfect if we add an adverb, e.g. *hen* 'very', before the adjective *xiao* 'small'.³ Thus, it is very clear that *lu se* 'green color' in (15b) cannot function as a predicative modifier. The possible reason is that its original category is noun as mention in footnote 1 and nouns are different from adjectives which can function as predicates without verbs in Mandarin.

Even *lu se* 'green color' is not a predicative modifier, it absolutely differs from its monosyllabic expression as discussed in Section 1. In order to clarify whether it is an indirect modifier, I will introduce the following relative approach concerning root analysis.

³ This phenomenon is called Incompleteness Effect (see Tsai (2008) for details).

2.2 Root-based Approaches

In syntactic approaches to morphology, Harley & Noyer (2003), Embick & Noyer (2005) and Borer (2005a, b) suggest that morphemes are divided into abstract or functional morphemes and root or lexical morphemes.

The most important thing in such approaches is that they assume that roots do not contain or possess grammatical (syntactic or syntactic-semantic) features (or properties). This assumption predicts that an element that expresses a certain concept may project in different categories, depending on the formal requirements of the syntactic configuration.

Furthermore, Chomsky’s notion of Merge provides more hints on this topic. Chomsky (2005) suggests that there is just one operation, Merge, with two subcases: internal and external Merge. And the syntactic category should be determined by the label. The labeling algorithm that Chomsky proposes can be summarized as follows: i. In $\{H, \alpha\}$, H an LI, H is the label; ii. If α is internally merged to β , forming $\{\alpha, \beta\}$, then the label of β is the label of $\{\alpha, \beta\}$.

When one element is syntactically merged with another element, the category label for the resultant element must be identical to one or the other of the two elements. In other words, all syntactic complexes are categorically endocentric. However, it is well-known that compounds can be exocentric, i.e., there is no need for the category of the mother to be identical to either of its daughters. Patterns like the following are so productive to make Huang (1998) claim that Chinese is a headless language (all compounds under consideration are in bold print in the following examples).

morphemes	abstract / functional morphemes: [PAST], [PLURAL] features / features that make up articles, pronouns, and classifiers
	roots / lexical morphemes: combinations of sound and meaning / combinations of phonological and conceptual features

(17)a. zhe zhang zhuozi de **da-xiao**
this CL table DE big-small
‘the size of this table’
A-A→N

b. Wo **hao-dai** zhao-le fen gongzuo.
I good-bad find-PRF CL job
‘I have found a job anyhow.’
A-A→Adv

(18)a. yi ge **kai-guan**
one CL open-close

‘a switch’ (e.g. a power switch)

V-V→N

b. yi ge hen **bao-shou** de ren
one CL very keep-defend DE person
‘a very conservative person’

V-V→A

(19)a. Wo yao **wu-se** yi ge zhu-shou.
I want thing-color one CL assist-hand
‘I want to look for an assistant.’

N-N→V

b. hen **mao-dun**
very spear-shield
‘very contradictory’

N-N→A

(20)a. yi jian hen **kai-xin** de shi
one CL very open-heart DE thing
‘a very happy thing’

V-N→A

b. Ta yizhi zai nali **pin-zui**.
he continuously at there poor-mouth
‘He is talking garrulously over there.’

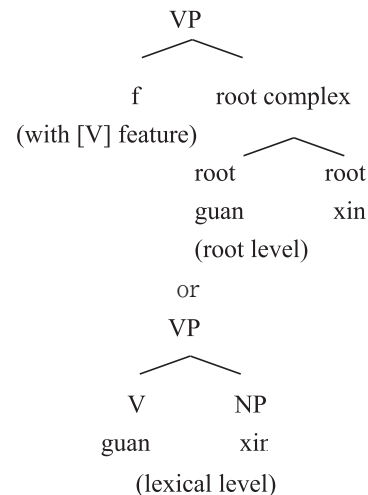
A-N→V

c. yi ben **xiao-shuo**
one CL small-say
‘a novel’

A-V→N

All these compounds in (17) ~ (20) are categorically exocentric. Furthermore, Zhang (2007) mentions that except for the categorical underspecification, there is another type of underspecification: the merger level underspecification.

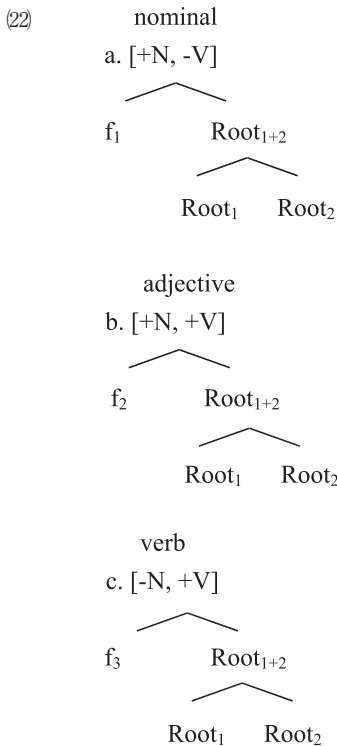
(21)guan xin
close heart
‘be worried about’



Since Chinese characters are basically developed from monosyllabic morphemes, I'd like to examine Zhang's approach by taking the adjectives in old Chinese into consideration.

2.3 Some hints from old Chinese

Most adjectives in old Chinese are monosyllabic morphemes. This means that adjectives in old Chinese are different from those in modern Chinese. Those kind of compounds we listed in (17) ~ (20) will not be found in old Chinese. However, old adjectives can be used as intransitive verbs, nouns, causative verbs, or conative verbs. It will be very hard to derivate adjectives into other 5 different categories. This is similar to the modern compounds whose categories may be decided by selecting **functional element**, as Zhang (2007) assumed.⁴



Bear Zhang's assumption in mind, and let us check the bold words in the following old Chinese examples (23) ~ (26) which are all absolutely adjectives in modern Chinese.

A. as intransitive verb (Intransitive verb + noun)

(23) 可 以 富 国 家, 众
can be used enrich country family enlarge
人 民 ...? (《墨子·耕柱》)
people citizen
Lit. 'Can it be used to enrich (your) country and home, or enlarge (your) people and population...?'
(Cited from *Mozi*)

B. as noun (Numeral + noun)

(24) 四 美 具, 二 难
four beautiful things appear two difficult things
并。 (《滕王阁序》)
appear (at the same time)
Lit. 'Four kinds of beautiful things appeared, and two difficult things happened (at the same time).'
(Cited from *Tengwang Ge Xu*)

C. as causative verb (causative verb + noun)

(25) 既 来 之, 则
already make...come somebody then
安 之。 (《季氏将伐颛臾》)
make...stabilized somebody
Lit. 'Since you have make them come, then (you should) make them stabilized.'
(Cited from *Analects*)

D. as conative verb (conative verb + noun)

(26) 渔 人 甚 异 之。 (《桃花源记》)
fisherman very think...strange that thing
Lit. 'The fisherman think it's very strange.'
(Cited from *The Peach-blossom Fountain*)

As shown in (23) ~ (26), adjectives in old Chinese have multiple usages. The reason is not discussed yet. But if Song's (2009) assumption that adjectives are oriented from verbs is correct, that adjectives are not stable at that time may be a rational answer.

According to our previous analyses, monosyllabic adjectives in modern Chinese are often used as direct modifiers. And one of Watanabe's (2012) conclusions is that direct modification structures have somewhat category-neutral nature. This point is somewhat related to multiple usages of monosyllabic adjectives in old Chinese.

In old Chinese, adjectives can be positioned after

⁴ Zhang (2007) suggests that in the case [A-A→N] of (17), since roots have no category, it is not that two adjectival roots form a noun compound. Instead, the compounding operation should be described as the merger of two property-denoting roots.

nouns and they are generally analyzed as predicate usage. However, in modern Chinese, it is difficult for monosyllabic adjectives to appear in post-noun position alone to function as a predicate modifier, as shown in (27a). Furthermore, comparing (27a) to other examples in (27), we notice that the monosyllabic adjective *hong* ‘red’ may be a predicate modifier with the support from temporal particles like “了”, “过”, coordinative structures⁵ or some other adverbial modifiers. This kind of phenomenon is related to Incompleteness Effect discussed in Tsai (2008).

(27)a. ?? hua hong.

flower red

‘Flowers are red.’

b. hua hong le.

flower red PT

‘Flowers have been red.’

c. hua hong cao lu.

flower red grass green

‘Flowers are red and grass is green.’

d. hua hen hon.

flower very red

‘Flowers are very red.’

Recall the examples in (15), repeated below as (28). It is very clear that the bisyllabic modifier *lu se* ‘green color’ is different from the monosyllabic adjective *hong* ‘red’, and cannot function as a predicate modifier. If we do a further research on typical indirect modifier, say an expression with *DE* linker such as *lu se de* ‘green color’ in (29), we can say that our target *lu se* ‘green color’ is something between typical direct modifier, monosyllabic adjective *lu* ‘green’, and typical indirect modifier with *DE* linker in Mandarin.

(28)The vase is green.

a. ? huaping shi [lu se].

vase be green color

b. *huaping [lu se].

vase green color

c. huaping shi [lu se] DE. (Cleft sentence)

vase be green color DE (=15)

(29)a. huaping shi [lu se DE]. (not cleft sentence)

vase be green color DE

‘The vase is green.’

This conclusion leads us to a further analysis on the derivation of these *DE*-less adjectival modifier if we still want to follow Cinque’s assumption about direct/indirect modifiers.

3. Proposal

There are a lot of evidences in modern Chinese showing that the monosyllabic morphemes do have a tendency to merge with another morpheme to produce a new expression (compounds or phrases).

(30)a. zhuo zi

table

b. pan zi

dish

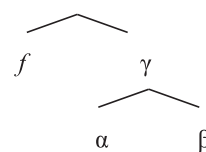
c. hai zi

child

In Chinese, monosyllabic nouns can be merged with a clitic morpheme *zi* without adding any further information to the new form. Although the monosyllabic morphemes have the tendency to merge with other morpheme, they might be different before they enter into the merge. After all, in old Chinese, most of the monosyllabic morphemes are often used as a word independently.

Following Zhang’s idea and the above analysis on old Chinese monosyllabic adjectives, I propose the compounds involving direct/indirect modification should have a structure as in (31).

(31) X or XP (compound)



f: a function to make sure *α* and *β* to form an X (category free, direct modifier) or XP (compound, indirect modifier).

When monosyllabic adjectives do not have any targets to merge to, they can only be used as direct modifiers and then will not cause function *f* to get active. If there is any chance to form a compound, they may take it. At the same time, some hints are required, such as press or pause in pronunciation, to show that they are

⁵ Coordinative structures are often used in Chinese for a good rhythm.

different from their original status.

- (32)a. da hong zhuo
big red table
'a big red table' > ??'a deep red table'
- b. da hong zhuo-zi
big red table
'a deep red table' > ?'a big red table'
- (33)a. size>shape>color
da fang lu huaping
big square green vase
- b. ?size>color>shape
da lu fang huaping
big green square vase

The monosyllabic morpheme *zhuo* 'table' in (32) prefers to merge with its modifier *hong* 'red' if there is no other clitics. Thus, [big [red table]] is preferential to [[big red] table] in (32a), and the reading of *da hong* 'deep red' is much common in (32b) since there is a clitic *zi* after *zhuo* 'table'. Furthermore, the differences also show that the merge between two monosyllabic morphemes is much easier than other derivations.

The reason why (33b) is acceptable then may be that *da lu* 'big green' can have an idiomatic meaning, 'deep green', just like *da hong* 'deep red' in (32b).

According to the similar properties of direct modifiers in Chinese, Vietnamese and Thai, I also argue that the expressions of color, such as *lu se* 'green color', are something between direct/indirect modifiers – *lu* 'green' and *lu se de* 'green + DE linker'. Although it seems that there is a merge in *lu se* 'green color', its undecided category, as a noun or as an adjective, shows that the function *f* in (31) just ensure a form X which is larger than direct modifier *lu* 'green' but not an over-generated compound (with *DE* linker).

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