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## The Syntax of Relational-Nominal Second Constructions in Chinese

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**Abstract** : This paper studies the syntactic derivation of a Chinese construction in which the second position is consistently taken by a relational nominal. It first analyzes the syntactic structure of a measure phrase construction such as *Lulu gao 170 cm* 'Lulu is 170 cm tall', and identifies the construction as a Relational-Nominal Second Construction, parallel to the well-recognized constructions in East Asian languages in which the second position is taken by a possessee or body part. Then a series of general syntactic properties of Relational-Nominal Second Constructions in Chinese are presented. The paper falsifies the multiple Spec, IP adjunction, and recursive IP approaches seen in the literature. Instead, it proposes that the relational NP and its licensor DP form a complex DP in their base-positions, and then the licensor DP moves to a higher position and the relational NP remains in the remnant of the complex DP. It also argues that this split of the complex DP may happen either at Spec of vP (an early split), or at a higher position when the complex DP has moved to the position (a late split). In addition to this optionality of the timing of the split, there is also an optionality with respect to the size of a moving element, since at the edge of vP, either a small element (the licensor DP) or a big element (the whole cluster) moves. The two kinds of optionality in syntactic operations is not compatible with the assumption that such operations are always driven by local features (Chomsky 1995), but is compatible with the hypothesis that movement is free (Chomsky 2007: 11, 2008).

**Keywords** : Relational-Nominal Second Constructions, split, movement

## 1 Introduction

Relational nouns include terms of family relations (*mother*, *aunt*, *nephew*) and other social relationships (*supervisor*, *boss*); body parts (*foot*, *head*, *finger*); and terms of intrinsic characteristics of entities, such as *speed* and *distance*, *height*, *weight*, *shape* (see de Bruin & Scha 1988, Déchaine 1993: § 2. 4. 3. 7, among others). Such nouns are not semantically saturated themselves. They need a licenser. For instance, the hearer of (1) may not understand the yes-no question if he does not know whose enemy the speaker is talking about<sup>1</sup>.

(1) 'Wo shi diren ma?'  
I be enemy Q

'Am I an enemy?'

Generally speaking, subjects are semantically saturated elements, but predicates are not. The occurrence of a subject semantically licenses the predicate and makes the whole proposition semantically saturated. A relational NP can also precede a predicate, occurring in the syntactic position of a subject. However, the proposition formed by such a subject and a predicate may not occur independently, and it must follow the licenser of the relational NP. In (2a), *mianji* 'area' is a relational noun, and its licenser is *zhe jian fangzi* 'this CL room'. If the licenser DP *zhe jian fangzi* is removed from this example, the resultant string, as seen in (2b), will not be acceptable in the same context. A similar description applies to the data in (3), where the relational NP is *san ge erzi* 'three CL son' and its licenser is *Lao Li*.

(2) Context: Rang wo gaosu ni 'Let me tell you,'

a. Zhe jian fangzi mianji 34m<sup>2</sup>.

this CL room area 34 m<sup>2</sup>

'This room has 34 m<sup>2</sup>.'

b. ' Mianji 34 m<sup>2</sup>.'

(3) Context: Rang wo gaosu ni 'Let me tell you,'

a. Lao Li san ge erzi dou dang-le bing.

Lao Li three CL son all become-PRF soldier

'Lao Li's three sons all have joined the army.'

b. ' San ge erzi dou dang-le bing.

This paper discusses the syntactic derivation of the construction represented by (2a) and (3a). The construction is composed of a definite DP, a relational NP, and an XP, shown in (4). Since a relational nominal consistently occurs in the second position of the construction, I call the construction Relational-Nominal Second Construction (RN2C, henceforth).

(4) DP NPrelational XP

Data like (1a) have been studied by many people, including Chao (1968), Teng (1974), Li & Thompson (1981), Xu (1993), Shyu (1995), Chuang (1997), and Hsu & Ting (2006). However, the special syntactic properties of the relational NP in the construction have not been analyzed. As a consequence, such constructions have been wrongly grouped with constructions that do not contain a relational NP, such as (5):

(5) Taiwan, xiatian hen re.

Taiwan summer very hot

'In Taiwan, summer is very hot.'

In this paper, I separate data like (2a) and (1a) from other constructions in which there are also multiple nominals at the left peripheral, such as (5). Instead, I group (2a) and (1a) with (6),

and study the general syntactic properties of RN2C in Chinese.

(6) Lulu gao 170 cm.

Lulu high 170 cm

'Lulu is 170 cm tall.'

Syntactic issues like the following are explored: in (4), if the left-edge DP licenses the relational NP semantically, what is their syntactic relation? What is the syntactic relation between each of the two nominals and the rest of the construction?

I report that if the relational NP of a RN2C is associated with the external argument of XP, both the NP and the edge DP may occur at the surface position of a subject, but not at the same time. In order to account for a series syntactic properties of the construction, I argue against multiple Spec, IP adjunction, and recursive IP approaches seen in the literature. Instead, I propose that the relational NP and its licenser DP form a complex DP in their base-positions, and then the licenser DP moves to a higher position and the relational NP remains in the remnant of the complex DP. This split of the complex DP may happen either when the complex DP is in its base position, i. e., Spec of vP (early split), or when the complex DP has moved to Spec of IP (late split). In the former situation, it is the edge DP that appears at the surface position of subjects, whereas in the latter situation, it is the relational NP that appears at the surface position of subjects. From a representational viewpoint, the cluster splits either at the edge of vP or a higher position. From a derivational viewpoint, at the edge of vP, either a small element (the licenser DP) or a big element (the whole cluster) moves (contra Akiyama 2004, 2005). The proposed derivation not only is empirically superior to Akiyama's small-size movement approach in covering

the RN2Cs in Chinese, but also theoretically explores a flexibility of syntactic operations.

The paper is organized as follows. In Section 2, I analyze the construction represented by (6), and identify the construction as a RN2C, parallel to (2a) and (1a). In Section 3, I discuss the general syntactic properties of RN2Cs in Chinese. My proposed analysis of the properties is presented in Section 4. Then in Section 5, I show how my proposal also covers another type of RN2C, in which the relational NP is associated with the internal argument of the verb in XP. Section 6 is a summary.

## 2 The Dimensional Noun Second Construction

### 2.1 The alternation of two measure phrase constructions

Observe the alternation between the two measure phrase constructions (7) and (8):

(7) a. Lulu gao 170 cm.

Lulu high 170 cm

'Lulu is 170 cm tall.'

b. Zhe tiao shengzi chang 50 cm.

this CL rope long 50 cm

'This rope is 50 cm long.'

(8) a. Lulu you 170 cm gao.

Lulu have 170 cm high

'Lulu is 170 cm tall.'

b. Zhe tiao shengzi you 50 cm chang.

this CL rope have 50 cm long

'This rope is 50 cm long.'

Two unlikely analyses of the constructions can be ruled out. First,

one might treat the measure phrase *170 cm* in (7a) as the complement of *gao* 'high/height', assuming that the latter is an adjective. However, canonical complements of adjectives in Chinese need a Case licenser, such as *wei* 'for' in (9), which is a counterpart of *of* in similar constructions in English.

- (9) Wo (wei) Lulu zihao.  
I for Lulu proud  
'I am proud of Lulu.'

Since there is no Case licenser for the measure phrase in (7a), the measure phrase may not be an argument of *gao* in the construction, and thus I reject this adjective complement analysis. The same comment applies to (7b).

The other unlikely analysis is Xiang (2003), adopted by Liu (2006). It is claimed in this approach that *gao* 'high/height' in (7a) is an adjective and has been moved from a position lower than *170 cm* to the surface position of *you* in (8a). However, the following facts do not support this adjective-raising analysis.

First, *you* in (8a) may have an A-not-A form, encoding a yes-no question, as seen in (10b), however, *gao* in (7a) may not have an A-not-A form, as seen in (10a), although the adjective *gao*, like other adjectives, can be in such a form if it occurs in a predicative position, as seen in (10c).

- (10) a. \*Lulu gao-bu-gao 170 cm?  
Lulu high-not-high 170 cm  
b. Lulu you-mei-you 170 cm gao?  
Lulu have-not-have 170 cm high  
'Is Lulu 170 cm tall?'  
c. Lulu gao-bu-gao?  
Lulu high-not-high

'Is Lulu tall?'

Second, a negative word may precede *you*, but not *gao* in (7a). If *gao* in (11a) and *you* in (11b) are in the same syntactic position, this contrast is unexpected.

- (11) a. \*Lulu {bu/mei/meiyou} gao 170 cm.  
Lulu not/not/not high 170 cm  
b. Lulu mei you 170 cm gao.  
Lulu not have 170 cm high  
'Lulu is not 170 cm tall.'

Third, an adverb such as *juedui* 'absolutely', which modifies a predicate, may precede *you*, but not *gao* in (7a). If *gao* in (12a) and *you* in (12b) are in the same syntactic position, this contrast is, again, unexpected.

- (12) a. \*Lulu juedui gao 170 cm.  
Lulu absolutely high 170 cm  
b. Lulu juedui you 170 cm gao.  
Lulu absolutely have 170 cm high  
'Lulu is absolutely 170 cm tall.'

I conclude that the constructions in (7) and the constructions in (8) are not derivationally related. Specifically, the syntactic position of *gao* in (7a) is not the same as that of *you* in (8a); and similarly, the syntactic position of *chang* in (7b) is not the same as that of *you* in (8b).

The focus of this paper is the syntactic structure of the constructions in (7). I will not discuss the *you* measure phrase constructions in (8) any more<sup>2</sup>.

## 2.2 A nominal analysis of the dimensional element in the *you*-less version

In this subsection I propose my nominal analysis of the dimension-denoting element in the measure phrase construction without *you*, such as *gao* 'high/height' in (13).

(13) Lulu *gao* 170 cm. (= (7a))

Lulu high 170 cm

'Lulu is 170 cm tall.'

In Ma's (1987: sec 6) approach, *gao* in (13) is treated as a subject and the measure phrase *170 cm* as its predicate. But he does not present any argument for this claim. In the following, I present five arguments to show that the adjective-like word *gao* in (13) is not an adjective, and instead it is a dimension-denoting nominal (see Schwarzschild 2006 for the notion of dimension). My conclusion supports Ma's subject analysis.

Argument 1: the dimension element *gao* occurs in the same syntactic position as the nominal *shen-gao* 'body-height' in (14a), the nominal *mianji* 'area' in (14b), and the nominal *zhijing* 'diameter' in (14c).

(14) a. Lulu *shen-gao* 180 cm.

Lulu body-height 180 cm

'Lulu's height is 180 cm.'

b. Zhe jian wo-shi *mianji* 10 m<sup>2</sup>.

this CL sleeping-room area 10 m<sup>2</sup>

'The area of this sleeping-room is 10 m<sup>2</sup>.'

c. Zhe ge panzi *zhijing* 22 cm.

this CL plate diameter 22 cm

'The diameter of this plate is 22 cm.'

Argument 2: The dimension-denoting element may not occur with *hen* 'very', as seen in (15a), indicating that this *gao* is different from the adjective *gao*, which may be preceded by *hen*, as in seen (15b). Since *hen* never precedes a nominal, if *gao* in (15a) is a nominal, the unacceptability of (15a) is explained.

(15) a. 'Lulu *hen gao* 170 cm.

Lulu very high 170 cm

b. Lulu *hen gao*.

Lulu very high

'Lulu is very tall.'

Argument 3: No *name* 'so' may occur to the left of the dimension-denoting *gao*, as seen in (16a). This is in contrast to the *gao* in the *you* measure phrase construction, as in (16b), and in the predicate position, as in (16c). In the latter two constructions, *gao* can be preceded by *name*. Since *name* never precedes a nominal, if *gao* in (16a) is a nominal, the absence of *name* is explained.

(16) a. Lulu ('name) *gao* 170 cm.

Lulu so high 170 cm

'Lulu is 170 cm tall.'

b. Lulu *you* 170 cm (name) *gao*.

Lulu have 170 cm so high

'Lulu is 170 cm tall.'

c. Mei *xiangdao*, Lulu *jurán* name *gao*!

Not think Lulu unexpectedly so high

'(We I) did not know that Lulu is so tall.'

Argument 4: The dimension element may not reduplicate, unlike regular adjectives. In (17a), the adjective *gao* 'high'

reduplicates, whereas *gao* in (17b) cannot:

- (17) a. *gao-gao de da-lou*  
 high-high DE big-building  
 'high building'  
 b. \**Lulu gao-gao (de) 170 cm.*  
*Lulu high-high DE 170 cm*

Argument 5: The dimension element may not have an A-not-A form, unlike regular predicative adjectives. In (18a), the adjective *gao* 'high' is in an A-not-A form, whereas *gao* in (18b) (= (10a)) may not be in an A-not-A form.

- (18) a. *Lulu gao-bu-gao?*  
*Lulu high-not-high*  
 'Is Lulu tall?'  
 b. \**Lulu gao-bu-gao 180 cm?*  
*Lulu high-not-high 180 cm*

The above five arguments support the claim that the dimension element in the construction represented by (13)/(7)/(6) is a nominal rather than an adjective. As a nominal, it is qualified to be the subject of the measure phrase to its right. We will see more arguments for the subject status of the dementional element in 3.4.1.

This conclusion falsifies Xiang (2003) and Liu's (2006) claim that the dimension element *gao* in (7a) is moved to a verbal position, the same position *you* occurs in (8).

### 2.3 Identifying the construction as a Relational-Nominal Second Construction

Dimension-denoting nouns such as *chang*(*du*) 'length', *mi-anji* 'area', and (*shen*)-*gao* '(body)-height' are relational

nouns, and the construction represented by (13)/(7)/(6) has a relational nominal at the second position. The same pattern has been seen in the body part construction such as (19a), and possessive construction such as (19b). They are all RN2Cs, introduced in Section 1.

- (19) a. *Daxiang bizi hen chang.*  
 elephant nose very long  
 'Elephants, their noses are very long.'  
 b. *Lulu nan-pengyou hen boxue.*  
 Lulu boy-friend very knowledgeable  
 'Lulu, her boy-friend is very knowledgeable.'

Data like (19) have been studied by many people, including Chao (1968), Teng (1974), Li & Thompson (1981), Xu (1993), Shyu (1995), Chuang (1997), and Hsu & Ting (2006). We now link such data to dimensional RN2Cs such as (7a,b).

The word order of the body part RN2C such as (19a) and the possessee RN2C such as (19b) is identical to that of a dimensional RN2C. In all of these constructions, the edge nominal is the licensor of the relational nominal to their right, and there is a predicate-like element following the relational nominal, XP. These RN2Cs are all covered by the schemer in (4), repeated here as (20):

- (20) DP NPrelational XP

## 3 Main properties and implications

In this section, I present certain general and major syntactic properties of RN2Cs and discuss the implications of the properties.

### 3.1 The edge DP is obligatory to the relational NP

As the semantic licenser of the relational NP, the left edge DP of a RN2C is always obligatory. Recall the acceptability contrast in (2) and (1). Similarly, the following strings in (21) are not interpretable by themselves.

- (21) a. \*Gao 180 cm.  
           high 180 cm  
       b. \*Bizi hen chang.  
           nose very long  
       c. \*Nan-pengyou hen boxue.  
           boy-friend very knowledgeable

This property distinguishes RN2Cs from topic constructions.

- (22) a. (Baoyu) wo gei-guo na ge jiahuo henduo qian.  
           Baoyu I give-EXP that CL guy much money  
           ‘Baoyu, I have given the guy a lot of money.’  
       b. (shuiguo) wo xihuan chi juzi.  
           fruit I like eat orange  
           ‘Among fruits, I like to eat oranges.’  
       c. (Xiatian) Taiwan tebie re.  
           summer Taiwan especially hot  
           ‘In summer, it is very hot in Taiwan.’  
       d. Zhuo-shang, Lulu fang-le yi ben shu.  
           table-surface Lulu put-PRF one CL book  
           ‘On the table, Lulu put a book.’

In (22a) through (22c), the left edge nominal is optional. In (22d), the edge DP *zhuo-shang* ‘table-surface’, which is a topic, is obligatory to the verb, but not to the noun *Lulu*. Thus, the left-edge DP of a RN2C is syntactically different from a topic.

The obligatory occurrence of the edge nominal to the nominal to its left in a RN2C is not captured by Chuang’s (1997) topic approach to the construction. Vermeulen (2005) distinguishes one type of RN2Cs (the possessive type) from topic constructions in Japanese. However, Yoon (to appear) argues against the distinction in Korean. My study of Chinese facts supports Vermeulen’s non-unified approach to the two kinds of constructions.

### 3.2 The edge DP does not have a consistent discourse function

One might still assume that the edge DP of a RN2C is just a subtype of topics, which is obligatory. However, the DP does not have to encode the information of a topic (contra Chuang 1997). It can be a wh nominal, as in (23a). As we know, wh phrases are never topics. The edge DP can also be preceded by a focus marker *shi* or an additive focus marker *lian* ‘even’, as in (23b) and (23c), respectively. Focus markers are not compatible with topics.

- (23) a. Shei fumu dou shang-guo daxue?  
           who parent all go-PRF university  
           ‘Who is the person whose parents have both received university education?’  
       b. Shi Lulu duzi teng.  
           FM Lulu stomach ache  
           ‘It is Lulu who has a stomachache.’  
       c. Lian Lulu dou duzi teng.  
           even Lulu even stomach ache  
           ‘Even Lulu has a stomach ache.’

The edge DP does not have to be a focus, either. It can be a pro-

noun, without any contrastive stress, as seen in (24a). Such pronouns do not encode focus. Also, a discourse context may license a *pro* to occur in the position of the edge DP, as seen in (24b), and a *pro* may not encode a focus.

(24) a. Ni duzi teng ma?

you stomach ache Q

'Do you have a stomachache?'

b. Ques.: Lulu xianzai zenmeyang? Ans: *pro* duzi teng.

Lulu now how stomach ache

'How is Lulu now?' 'She has a stomachache.'

Vermeulen (2005) proposes a focus approach to Japanese multiple subject constructions. The focus approach is not applicable to Korean multiple subject constructions (Yoon, to appear). We can see that the focus approach is not general enough to cover RN2Cs in Chinese, either.

Since the edge DP of a RN2C does not have to be a topic or a focus, it does not have a consistent discourse function. Thus any information structure approach to the constructions (J-Y Yoon 1989, Chuang 1997, Schütze 2001, Vermeulen 2005) is unlikely.

### 3.3 Constituency tests

Three constituency tests are applied to RN2Cs in this subsection.

First, in a RN2C, the combination of the relational NP and the string to its right can appear as a conjunct, indicating the constituent status of the string, excluding the left-edge DP:

(25) a. Lulu [gao 170 cm, zhong 50 kg].

Lulu high 170 cm heavy 50 kg

'Lulu is 170 cm tall, and 50 kg.'

b. Lao Wang [tou teng, jianbang suan].

Lao Wang head ache shoulder ache

'Lao Wang has a headache and a shoulder-ache.'

c. Lulu [jiejie qu-le Deguo, gege qu-le Faguo].

Lulu sister go-PRF Germany brothergo-PRF France

'Lulu's sister has gone to Germany and her brother has gone to France.'

Second, in a RN2C, the combination of the relational NP and the string to its right can appear as a modifier, indicating the constituent status of the string, excluding the left-edge DP:

(26) a. na ge [gao 170 cm] de xuesheng

that CL high170 cm DE student

'the student who is 170 cm tall'

b. na ge [toufa hen chang] de nan-ren

that CL hair very long DE male-person

'the man whose hair is very long'

c. na ge [fumu lihun] de haizi

that CL parent divorce DE child

'the child whose parents have divorced'

Third, in a RN2C, not only the string following the relational NP, but also the combination of the relational NP and the string, can undergo VP ellipsis, licensed by *ye yiyang* 'also same' or *ye shi* 'also be', as seen in (27a) and (27b), respectively.

(27) a. Lulu shengao 180 gongfen, Xinxin shengao

Lulu height 180 cm Xinxin height

ye {yiyang/shi} 180 gongfen.

also same/be 180 cm

'Lulu is 180 cm tall, so is Xinxin.'

b. Wanfan hou, Lulu duzi teng, Xinxin

dinner after Lulu stomach pain Xinxin  
 ye {yiyang/shi} duzi teng.  
 also same/be stomach pain  
 'After the dinner, Lulu felt stomachache, so did Xinxin.'

All of these tests indicate the following constituency of a RN2C, which means that the two nominals in the construction do not form a constituent in their surface positions:

(28) [DP [NPrelational XP]]

In Chinese, when a relational NP and its licenser form a complex nominal, they are linked by the functional word *de*, as in (29). The constituency in (28) means that there is no *de* deletion between the two nominals of a RN2C. Our constituency tests show that the peripheral DP is syntactically external to the rest of the construction. Moreover, *de* deletion from a relational complex is impossible in other contexts, such as the object of the verb *kanjian* 'see' in (29a), the object of the verb *liang-chu* 'measure-out' in (29b), and the object of the preposition *xiang* 'toward' in (29c)<sup>3</sup>.

- (29) a. Wo kanjian-le [Lulu \* (de) nan-pengyou].  
 I see-PRF Lulu DE boy-friend  
 'I saw Lulu's boy friend.'  
 b. Wo liang-chu-le [Lulu \* (de) shengao].  
 I measure-out-PRF Lulu DE height  
 'I measured the height of Lulu.'  
 c. Ta xiang [Lulu \* (de) toufa] pen-le shui.  
 he toward Lulu DE hair spray-PRF water  
 'He sprayed water to Lulu's hair.'

The possible VP-ellipsis in (27a) also suggests that XP is a predi-

cate. Moreover, the possible VP-ellipsis in (27b) suggests that [NP XP] is also a predicate.

### 3.4 The subject properties of the two nominals

#### 3.4.1 The relational NP may surface at the subject position

In this subsection, I argue that if the relational NP of a RN2C is associated with the external argument of XP, it may occur at the surface position of subjects<sup>4</sup>.

First, the relational NP in the construction can be followed by an epistemic modal, which is a raising verb in Chinese (Huang 1988, Lin & Tang 1996):

- (30) a. Lulu erduo yinggai bu-cuo.  
 Lulu ear should not-bad  
 'Lulu's ears should not be bad.'  
 b. Lulu shengao yinggai 170 cm.  
 Lulu height should 170 cm  
 'Lulu's height should be 170 cm.'  
 c. Lulu fumu yinggai hen boxue.  
 Lulu parent should very knowledgeable  
 'Lulu's parents should be very knowledgeable.'

Since a nominal to the left of a raising verb must surface at a subject position, the relational NP in the construction must surface at a subject position.

Second, the relational NP in the construction can be followed by a passive verb, i. e., a *bei*-verb, which also signals that the nominal to its left is a raised subject (Hsu & Ting 2006):

- (31) a. Lulu erduo bei renwei bu-cuo.  
 Lulu ear PASS consider not-bad

- 'Lulu's ears are considered not bad.'
- b. Lulu shengao bei ding-wei 170 cm.  
Lulu height PASS decide-as 170 cm  
'Lulu's height is decided as 170 cm.'
- c. Lulu fumu bei renwei hen boxue.  
Lulu parent PASS consider very knowledgeable  
'Lulu's parents are considered to be very knowledgeable.'

I showed in (27a) that the string to the right of the relational NP of a RN2C, i. e., XP, can undergo VP-ellipsis and thus it is a predicate. The following two facts further support this predicate analysis of the string.

First, the string can be preceded by an adverb such as *you* 'again' and *hai* 'still', as shown in (32) (Teng 1974: 458). The string can also be preceded by speaker-oriented adverbs such as *qeshi* 'indeed', *dagai* 'probably', and *xianran* 'apparently', as shown in (33). All kinds of adverbs occur to the left of a predicate in Chinese.

- (32) a. Lulu you tou teng le.  
Lulu again head ache PRT  
'Lulu has a headache again.'
- b. Lulu hai tou teng ma?  
Lulu still head ache Q  
'Does Lulu still have a headache?'
- (33) a. Lulu yanjing qeshi hen piaoliang.  
Lulu eye indeed very pretty  
'Lulu's eyes are indeed very pretty.'
- b. Lulu shengao dagai 170 cm.  
Lulu height probably 170 cm

- 'Lulu's height is probably 170 cm.'
- c. Lulu fumu qeshi hen boxue.  
Lulu parent indeed very knowledgeable  
'Lulu's parents are indeed very knowledgeable.'

Second, the string can be an A-not-A form, which is a property of predicates:

- (34) a. Lulu erduo ling-bu-ling?  
Lulu ear sensitive-not-sensitive  
'Are Lulu's ears sensitive?'
- b. Zhe jian fangzi mianji gou-bu-gou da?  
this CL room area enough-not-enough  
'Is the area of this room enough?'
- c. Lulu fumu xi-bu-xihuan kan dianying?  
Lulu parent like-not-like see movie  
'Do Lulu's parents like to see movies?'

All of the facts presented in this subsection indicate that in a RN2C, the relational NP is the subject of XP.

The fact that the relational NP may appear at the surface position of subjects also indicates that Akiyama's (2004, 2005) analysis of Japanese RN2Cs is not applicable to Chinese. In Akiyama's analysis, the relational NP of a RN2C is not in the surface subject position, instead, it remains in vP and moves to an additional Spec of IP at LF, covertly.

### 3.4.2 The edge DP may also surface at the subject position

In this subsection, I argue that if the relational NP of a RN2C is associated with the external argument of XP, the edge DP may also occur at the surface position of subjects.

First, the edge DP in the construction can be followed by an epistemic modal, as seen in (35) (see also Teng 1974: (12)):

- (35) a. Lulu yinggai erduo bu-cuo.  
Lulu should ear not-bad  
'Lulu's ears should be not bad.'
- b. Lulu yinggai shengao 170 cm.  
Lulu should height 170 cm  
'Lulu's height should be 170 cm.'
- c. Lulu yinggai fumu hen boxue.  
Lulu should parent very knowledgeable  
'Lulu's parents should be very knowledgeable.'

Second, the edge DP in the construction can also be followed by a passive verb, as seen in (36):

- (36) a. Lulu bei renwei erduo bu-cuo.  
Lulu PASS consider ear not-bad  
'Lulu's ears are considered not bad.'
- b. Lulu bei dingwei shengao 170 cm.  
Lulu PASS decide-as height 170 cm  
'Lulu's height is decided as 170 cm.'
- c. Lulu bei renwei fumu hen boxue.  
Lulu PASS consider parent very knowledgeable  
'Lulu's parents are considered to be very knowledgeable.'

I showed in (27b) that the string to the right of the edge DP in the construction can undergo VP-ellipsis and thus it is a predicate. The fact that the string can be preceded by an adverb further supports this predicate analysis of the string. Adverbs such as *you* 'again' and *hai* 'still' can precede the string, as shown in (37) (Teng 1974: 458). Speaker-oriented adverbs such as *queshi* 'in-

deed', *dagai* 'probably', and *xianran* 'apparently' can also precede the string. In (38a), for example, the adverb *queshi* 'indeed' precedes the string that is composed of the relational noun *yanjing* 'eye' and *hen piaoliang* 'very pretty'. As we mentioned before, all kinds of adverbs occur to the left of a predicate in Chinese.

- (37) a. Lulu tou you teng le.  
Lulu head again ache PRT  
'Lulu has a headache again.'
- b. Lulu tou hai teng ma?  
Lulu head still ache Q  
'Does Lulu still have a headache?'
- (38) a. Lulu queshi yanjing hen piaoliang.  
Lulu indeed eye very pretty  
'Lulu's eyes are indeed very pretty.'
- b. Lulu dagai shengao 170 cm.  
Lulu probably height 170 cm  
'Lulu's height is probably 170 cm.'
- c. Lulu queshi fumu hen boxue.  
Lulu indeed parent very knowledgeable  
'Lulu's parents are indeed very knowledgeable.'

The facts presented in this subsection provide new arguments for Teng's (1974) claim that in a RN2C, the edge nominal is the subject of the rest of the construction, i.e., the combination of the relational NP and XP.

This conclusion is similar to that of Vermeulen (2005: 1343m) on Japanese multiple subject constructions, and to that of Yoon (to appear: sec. 3) on Koearn multiple subject constructions.

We have also seen that the two nominals of a RN2C do not have to be adjacent. This property excludes a multiple Spec analysis of RN2Cs proposed by Chuang (1997), Ura (1994), Vermeulen (2005: 1358), and Hsu & Ting (2006: 97). The possible separation of the edge DP and the relational NP by elements such as raising verbs also excludes the analysis that the edge DP is an adjunct of the IP in which the relational NP surfaces, proposed in Kuroda (1986), Cole et al. (1990), and Shyu (1995).

If the relational NP of the construction is the subject of XP, the NP and XP form a clause. If the edge DP is the subject of the clause, a clausal predicate is identified. This conclusion is compatible with Teng (1974), Heycock (1993), Vermeulen (2005), and Yoon (to appear: 6). Clausal predicates have been seen in relative clauses and topicalization constructions. The existence of clausal predicates in RN2Cs is not surprising.

### 3.4.3 Only one nominal may appear at the surface position of subjects

The surface position of a subject is vP-external and is not the base-position of any thematic argument. It is impossible for the two nominals of a RN2C both to appear at the surface position of subjects at the same time.

- (39) a. \*Lulu yinggai fumu bei renwei hen boxue.  
Lulu should parent PASS consider very knowledgeable
- b. \*Lulu bei renwei fumu yinggai hen boxue.  
Lulu PASS consider parent should very knowledgeable

In (39a), the edge DP *Lulu* is followed by the raising verb *ying-*

*gai* 'should', indicating that the DP occurs at the surface position of a subject. At the same time, the relational noun *fumu* 'parent' is followed by a passive verb, indicating that the noun also occurs at the surface position of a subject. The sentence is not acceptable. (39b) shows the same point.

This constraint falsifies the hypothesis that RN2Cs have the structure of multiple functional projections (or recursive IPs or IP shell analysis) (Xu 1993, Whitman 2001).

This constraint indicates that the two nominals are disjunctive for the surface position of subjects; only one of them may take the position, and the other must surface in another position.

### 3.5 The availability of a possessive pronoun between the two nominals

It is always possible for a possessive pronoun to occur between the two nominals of a RN2C if the edge one is not a pronoun, and the possessive pronoun must be bound by the edge DP.

- (40) a. Lulu (tai/\* k-de) fumu hen boxue.  
Lulu 3SG-POSS parent very knowledgeable  
'Lulu, her parents are very knowledgeable.'
- b. [Zhe tou daxiang]i (tai/\* k-de) tizhong 100 kg.  
this CL elephant 3SG-POSS weight 100 kg  
'This elephant, its weight is 100 kg.'
- c. [Zhe tou daxiang]i (tai/\* k-de) bizi hen chang.  
this CL elephant 3SG-POSS nose very long  
'This elephant, its nose is very long.'

The availability of the syntactic position for the pronoun distinguishes RN2Cs from dangling topic constructions in Chinese (Li and Thompson 1976), which do not allow such a pronoun:

- (41) a. Na chang da huo, (\* ta-de) xingkui  
 that CL big fire 3SG-POSS luckily  
 (\* ta-de) xiaofangdui lai de kuai.  
 3SG-POSS fire-brigate come DE soon  
 'Speaking of that fire, fortunately, the fire-brigate  
 came soon.'
- b. Zhe kuai cai-di, (\* ta-de) shui diyi  
 this CL vegetable-field 3SG-POSS water first  
 zhongyao.  
 important  
 'Speaking of this vegetable field, water is the most  
 important to it.'

The possessive pronoun in (40) obviously forms a constituent with the relational NP. This constituent is a complex nominal. The availability of the syntactic position for the pronoun indicates that the relational nominal in the construction is just part of this complex.

The obligatory binding relation between the edge DP and this pronoun shows that there must be a dependency between the edge DP and the position of the pronoun, which in turn means that there must be a dependency between the edge DP and the complex constituent that hosts both the possessive pronoun and the relational NP. This supports Barker's (1991) claim that relational nouns contain an implicit argument that is bound by an antecedent, i.e., its licensor.

Since the (implicit) possessive pronoun and the relational NP form a constituent, the surface position of the relational nominal marks the syntactic position of the constituent, which is a complex DP. Therefore, the length of the dependency between the

edge DP and the complex DP can be attested from the length between the edge DP and the relational NP.

### 3.6 The syntactic nature of the dependency

The dependency between the edge DP and the complex that contains the relational NP, recognized in the last subsection, must be a syntactic one, since the relational NP must be C-Commanded by the edge DP. Unlike (42a), the relational noun *erduo* 'ear' is in a higher position than its licensor *Lulu* in (42b), which is not acceptable. In (43), *Baoyu* and *Daiyu* are two conjuncts. Neither c-commands the relational noun *erduo*, thus neither is the licensor of *erduo*. Instead, the whole coordinate complex, *Baoyu gen Daiyu* 'Baoyu and Daiyu' c-commands *erduo* and is the licensor of this relational noun.

- (42) a. Lulu \_ erduo hen ling.  
 Lulu ear very sensitive  
 'Lulu's ears are very sensitive.'
- b. \* Erduo Lulu \_ hen ling.  
 ear Lulu very sensitive
- (43) [Baoyu gen Daiyu] erduo hen ling.  
 Baoyu and Daiyu ear very sensitive  
 'The ears of both Baoyu and Daiyu are very sensitive.  
 Not: 'The ears of Baoyu alone are very sensitive.'  
 Not: 'The ears of Daiyu alone are very sensitive.'

The strict hierarchical order of the two nominals of a RN2C also distinguishes it from topicalization constructions. In the two topicalization examples in (44), the two possible orders of the two nominals are both possible.

- (44) a. Xitian, Taiwan hen re.

summer Taiwan very hot

'In summer, it is hot in Taiwan.'

b. Taiwan, xiatian hen re.

Taiwan summer very hot

'In Taiwan, it is hot in summer.'

Now we need to clarify whether the dependency between the edge DP and the nominal complex of a RN2C, in the absence of an overt pronoun between them, is movement in nature (cf. Akiyama 2004, 2005), or a bound pronoun binding between two base-generated elements (cf. a *pro* proposed in Shyu 1995, among other places).

### 3.7 The locality effects

In a RN2C, the dependency between the edge DP and the complex that contains the relational NP exhibits syntactic locality effects.

First, in an island context, a possessive pronoun must show up:

(45) a. Lulu wo tingshuo-le [[\*(ta-de) yanjing xia-le] de yaoyan].

Lulu I hear-PRF 3SG-POSS eye blind-prf  
DE rumor

'Speaking of Lulu, I heard the rumor that her eyes have become blind.'

b. Lulu wo [zai \*(ta-de) yanjing xia-le zhiqian] jian-guo ta.

Lulu I at 3SG-POSS eye blind-PRF before  
see-EXP her

'Speaking of Lulu, I saw her before her eyes became blind.'

Second, the dependency exhibits the effect of the Minimal Link

Condition. Long-distance dependency is possible for RN2Cs, as seen in (46) (contra Kuo & Lin 2008):

(46) Lulu wo tingshuo erduo hen ling.

Lulu I hear ear very sensitive

'Lulu, I heard that her ears are very sensitive.'

However, such a long-distance dependency is blocked by a possible local dependency. In (47), for example, the relational noun *erduo* 'car' may not be linked to *Lulu*, crossing the intervening relational noun *nan-pengyou* 'boy-friend'.

(47) Lulu nan-pengyou tingshuo erduo hen ling.

Lulu boy-friend hear car very sensitive

'Lulu's boy-friend, it is heard that his ears (but not Lulu's ears) are very sensitive.'

The two properties of the dependency between the edge DP and the complex that contains the relational NP in a RN2C are expected if the dependency is a movement chain. The occurrence of a pronoun in an island context shows that when the movement is impossible, the resumptive pronoun occurs as the last resort. In other words, in the absence of a pronoun, the dependency is established by movement, and in the presence of a pronoun, the edge DP and the pronoun are both base-generated in their surface positions.

### 3.8 The recursive dependency of multiple relational nominal constructions

A further fact about RN2Cs is that more than two nominals may occur to the left of XP in such a construction:

(48) a. Lulu, didi yanjing xia-le.

Lulu brother eye blind-PRF

'Lulu's brother's eyes got blind.'

b. Lulu. didi gao 190 cm.

Lulu brother high 190 cm

'Lulu's brother is 190 cm tall.'

c. Lulu. nan-penyou fumu hen boxue.

Lulu boy-friend parent very knowledgeable

'Lulu's boyfriend's parents are very knowledgeable.'

Such constructions share properties with RN2Cs which have only one relational nominal. First, all of the non-edge nominals must be relational. For instance, in (49a), between the two non-edge nominals, *na ge ren* 'that CL person' and *yanjing* 'eye', the former is not a relational one. In (49b), the same two nominals are ranged in the opposite order. Neither example is acceptable.

(49) a. 'Lulu, na ge ren yanjing xia-le.

Lulu that CL person eye blind-PRF

b. 'Lulu, yanjing na ge ren xia-le.

Lulu eye that CL person blind-PRF

Second, the edge nominal is never relational. We have seen in (42b) above that the edge nominal may not be relational for a regular RN2C. The same constraint is found on multiple relational nominal RN2Cs. In (50), the edge noun *erduo* 'ear' is a relational noun and the sentence is not acceptable.

(50) 'Erduo, didi yanjing xia-le.

ear brother eye blind-PRF

Third, each relational nominal may be preceded by a possessive pronoun:

(51) Lulu, ta-de fumu tamen-de fangzi hen da.

Lulu 3SG-POSS parent 3PL-POSS house very big

'Lulu's parents' house is very big.'

It is plausible to assume that such a multiple relational nominal construction has a similar dependency found in regular RN2Cs, and the former differs from the latter in that the dependency is recursive.

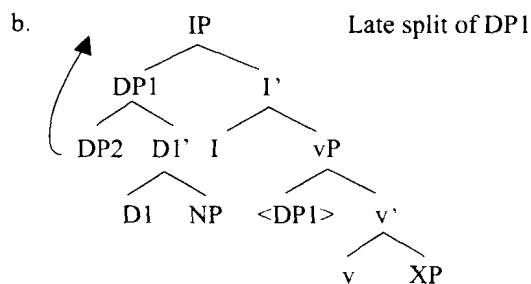
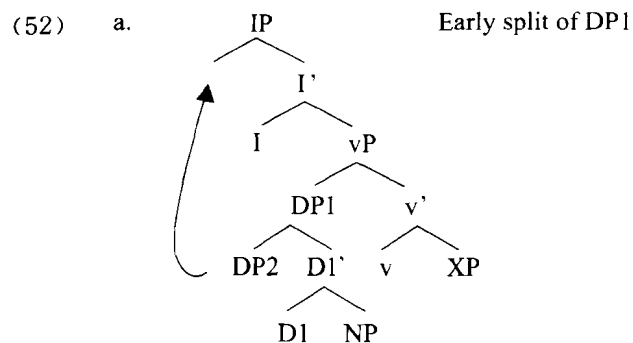
We have concluded in the previous subsections that the dependency is a movement chain, in the absence of a pronoun. Accordingly, it is possible that data like (48) are derived by recursive movement operations.

## 4 Proposal: optionality in syntactic operations

### 4.1 The syntactic positions of the two nominals

I propose that the edge DP and the relational NP of a RN2C form a complex DP in their base-positions, and then the edge DP is raised. The raising of the edge DP means the spitting of the complex DP. After the raising, the edge DP may be interpreted as topic or focus in appropriate contexts, thus it does not have a consistent discourse function (3.2).

I further propose that if the relational NP of a RN2C is associated with the external argument of XP, the edge DP, which is the licenser of the relational NP, is raised either out of the Spec of vP or out of IP. In the former case, it is the edge DP that appears at the surface position of a subject; and in the latter case, it is the relational NP that appears at the surface position of a subject. The former case is an early split, and the latter case is a late split of a complex nominal.



The two versions of the derivation are exemplified in (53):

- (53) a. [IP Daxiang<sub>2</sub> [I' [vP [ \_ 2 bizi ]<sub>1</sub> [XP hen chang]]]] (early split)  
elephant nose very long  
'Elephants, their noses are very long.'

- b. [CP Daxiang<sub>2</sub> [C' [IP [ \_ 2 bizi ]<sub>1</sub> [I' [vP \_ 1 [XP hen chang]]]]]] (late split)

The recursive dependency construction in (48), repeated here as (54a), is derived in the structures in (54b) and (54c). In (54b), DP1 surfaces at its base-position, i. e., Spec of vP; the landing site of DP2 is Spec of IP; and the landing site of DP3 is Spec of a functional head in the C-domain. In (54c), the landing site of DP1 is Spec of IP, the landing site of DP2 is Spec of a functional head in the C-domain, and the landing site of DP3 is Spec of another higher functional head in the C-domain.

- (54) a. Lulu, didi yanjing xia-le.  
Lulu brother eye blind-PRF  
'Lulu's brother's eyes became blind.'
- b. [CP Lulu<sub>3</sub> [IP [ \_ 3 didi ]<sub>2</sub> [I' [vP [ \_ 2 yanjing ]<sub>1</sub> [XP xia-le]]]]]
- c. [CP<sub>2</sub> Lulu<sub>3</sub> [CP<sub>1</sub> [ \_ 3 didi ]<sub>2</sub> [C' [IP [ \_ 2 yanjing ]<sub>1</sub> [I' [vP \_ 1 [XP xia-le]]]]]]]]]

The ingredients of this proposal, their evidence, and their significances are spelled-out in the rest of this section.

#### 4.2 The initial merger of a relational NP and its licenser

In my proposed derivation of RN2Cs, the relational nominal and its licenser are initially merged together, and the result of this merger is represented by DP1 in (52) and labeled as *1* in (53) and (54). Our evidence for the initial cluster-formation comes from the availability of the syntactic position for the possessive pronoun to the left of the relational nominal, and the obligatory dependency between the edge DP and the position, reported in 3.5.

This hypothesis of the cluster-formation, as we mentioned in 3.5, is also compatible with many studies on the syntax of relational nouns. Relational nouns are usually analyzed as containing an implicit argument that is bound by an antecedent, i. e., its licenser (Barker 1991). Syntactically, a relational noun is a predicate and its licenser is a subject, and the two form a proposition-denoting constituent, such as a small clause (Szabolcsi 1983, Kayne 1994, Hornstein et al. 1994, Castillo 2001, Uriagereka 2008). For instance, in *Bill's neighbor*, the relational noun *neighbor* is a predicate and *Bill* is its subject. In my structures in

(52a) and (52b), this predication is encoded by DP1, which is at the Spec of vP. The head of this DP functions as a Relator in the sense of den Dikken (2006), which takes a subject as its Spec and a predicate as its complement.

My hypothesis on the cluster-formation is also similar to Akiyama's (2004, 2005) proposal for the base-positions of the multiple nominals of the possessive type of multiple subject constructions (her MNC1) in Japanese.

Methodologically, this initial merger hypothesis is parallel to Kayne's (2002) analysis of pronouns, in which a pronoun and its licensor, i. e., its antecedent, are merged together and then the antecedent is raised out of the cluster.

The theoretical significance of this initial merger of a semantically unsaturated element and its licensor is that like other formal licensing in syntax, such as theta-role licensing, semantic licensing is also accomplished locally.

#### 4.3 The correlation between *de* and the split of a cluster

In their surface positions, the two nominals of a RN2C do not form a constituent (3.3). But we have argued that in their base-positions, they do form a complex (4.2). Thus, their surface positions must be derived by movement. The movement hypothesis is supported by the availability of the position for a pronoun to the left of the relational NP (3.5), by the obligatory dependency of the pronoun on the edge DP (3.5), and by the syntactic locality effects of the dependency (3.6 and 3.7).

Theoretically, economy constraints on derivations favor movement (work fewer resources harder) over merger (spend!). Thus movement occurs whenever possible, with resumption only

as a last resort (Chomsky 2007, 2008, Deal 2008: 35).

In my proposal for the derivation of RN2Cs, the licensor of the relational nominal moves to a higher position, unless in island contexts. In island contexts, movement is not possible, and thus a resumptive pronoun occurs, as a last resort.

In the early stage of minimalist studies, when a movement analysis was proposed, the motivation of the movement was asked: why do elements move? In the new stage of minimalist studies (Chomsky 2007, 2008), when a movement analysis is proposed, a different question is asked: when is the movement impossible, and why?

In addition to the general locality constraints on movement, I observe that the occurrence of the functional element *de* blocks the split of the licensor from a relational NP. The RN2C in (55a) can be paraphrased into the construction in (55b), in which the relational NP is linked to its licensor by *de*, and the three elements form a complex DP.<sup>3</sup>

(55) a. Lulu yanjing hen piaoliang. (RN2C)

Lulu eye very pretty

'Lulu's eyes are very pretty.'

b. [Lulu *de* yanjing] hen piaoliang. (*de* construction)

Lulu DE eye very pretty

'Lulu's eyes are very pretty.'

Why does *de* block the splitting? It is possible that *de* as a head element has edge-features (i. e., an EPP-like feature; see Chomsky 2007, 2008), and thus it must be adjacent to a Spec element (see Zhang, in press, for arguments for the head status of *de* and the Spec status of the phrase to its left). This hypothesis is

supported by the fact that although a modifier is generally an optional element in syntax, it becomes obligatory if *de* occurs.

The theoretical implication of this discussion of the correlation between *de* and the split of a cluster is that lexical properties of an element such as *de* may decide a movement possibility (a similar conclusion has been reached in Zhang's (2008) study of the relationship between the lexical properties of conjunctions and the mobility of conjuncts).

#### 4.4 The timing of the split and the size flexibility of syntactic operations

The two nominals of a RN2C may both appear at the surface position of subjects, although not at the same time (3.4). In order to account for this flexibility, in my proposed syntactic derivation of RN2Cs, the split of the complex DP can occur either early, as illustrated in (52a), or late, as illustrated in (52b).

From a representational viewpoint, the split occurs either in a low or in a high position, and thus there is an optionality with respect to the height of the cluster splitting. Similar alternation between a low splitting site and a high splitting site of a complex DP is also seen in the left-branch extraction in Polish (Wiland 2008).

From a derivational viewpoint, at the edge of vP, there is an optionality between moving a small element, i. e., the edge DP alone, and moving a big element, i. e., the whole complex DP. So it is an optionality with respect to the size of the moving element.

The optionality in the size of a moving element is in contrast to Akiyama's (2004, 2005) hypothesis that RN2Cs are derived by

raising the edge DP alone from the Spec of vP, instead of the whole complex DP, because the former nominal is smaller in size. This size approach is problematic. Considering RN2Cs this size approach cannot explain the fact that relational NP may occur at the surface position of subjects (see 3.4.1). In her approach, the assumed LF raising of the relational NP from Spec of vP to Spec of IP fails to explain this fact. Considering other constructions, this size approach is too strong to cover the alternation between pied-piping PP movement and preposition stranding movement in English, the alternation between wh-NP movement and the extraction of a left-branch wh-phrase (Boskovic 2005, Wiland 2008), and the alternation between the movement of coordinate complexes and conjuncts (Zhang 2008).

Theoretically, the optionality shows certain flexibility in syntactic computation.

#### 4.5 Other issues

In my proposal, the edge DP is moved from a complex DP, which occurs at a Spec position. This movement seems to violate the Subject Island Condition, in the early split version, and the Left Branching Condition in both early and late split versions. However, counter-examples to both conditions have been found cross-linguistically (Stepanov 2001, Landau 1999, Davies and Dubinsky 2003, Boskovic 2005, Vermeulen 2005: 1338, Wiland, 2008, among others). The following example also shows that the focus fronting of the *lian*'even' nominal (Shyu 1995), does not obey the two conditions.

- (56) [Lian na ge nongfu]i, [[i yifu] dou hen shimao].  
even that CL farmer clothes even very fashionable

'Even that farmer, his clothes are very fashionable.'

Second, in my proposal on the early split of a complex DP, the edge DP is raised and the relational NP remains in the complex, which is at Spec of vP. One might wonder how the Case of the nominal that remains at Spec of vP is licensed if the raised DP has a Case relation with Infl. I assume that the licensing of Case does not have movement involved. According to Chomsky (2007, 2008), only edge features are responsible for movement. Thus the Case feature of the unmoved nominal may be licensed by an Agree relation with a c-commanding head, Infl. Note that RN2Cs exist in various languages, including Japanese, Korean, Indonesian, Vietnamese, Lahu, Hmong, and Hebrew (Doron & Heycock 1999, Ura 1994). Like in Chinese, nominals in languages such as Hebrew do not have morphological case markers. The claim that only languages with rich morphological case markers may have RN2Cs (Vermeulen 2005: 1358) is false. The licensing of the Case of the relational nominals in the constructions should be accounted for in the same way in the languages, and in a similar way as possessor-raising constructions in some languages.

## 5 Splitting of a cluster that is associated with an internal argument

So far, in all of the examples of RN2Cs, the relational NP is associated with the external argument of XP. In this section, I address how my proposal applies to RN2Cs in which the relational NP is associated with an internal argument of the construction. In such RN2Cs, Spec of vP is not an available position for the complex DP, and there is no optionality for the splitting of the com-

plex.

### 5.1 The internal arguments of transitives

In the derivation of RN2Cs in which the relational NP is semantically related to the internal argument of a transitive verb, the split occurs at Spec of a functional head higher than IP only. This is because the whole cluster is base-generated in VP, and it may neither move to Spec of vP, which is the base-position of the external argument, nor Spec of IP, which is the landing site of the external argument. The only position for the split is a position higher than IP. In (57a), after the complex containing both *Lulu* and *fumu* 'parents' moves to Spec of a functional head higher than IP, *Lulu* alone moves further to the Spec of even a higher functional head, in the C-domain.

- (57) a. Lulu [FP [\_\_ k yanjing]i [IP yisheng zhihao-le \_\_  
i]].  
Lulu eye doctor cure-PRF  
'Lulu's eyes, the doctor cured them.'
- b. \*Lulu yinggai yanjing [IP yisheng zhihao-le].  
Lulu should eye doctor cure-PRF
- c. \*Lulu yanjing yinggai [IP yisheng zhihao-le].  
Lulu eye should doctor cure-PRF

(57b) shows that it is impossible for the edge DP of such a RN2C to precede the raising verb *yinggai* 'should', i. e., at the surface position of subjects. This is because no raising verb may occur in a position higher than IP. For the same reason, (57c) is also unacceptable. Thus there is no flexibility in the site of cluster-splitting; it has to occur in a position higher than IP.

## 5.2 The internal arguments of unaccusatives

As for RN2Cs in which the relational NP is semantically related to the internal argument of a non-inchoative unaccusative verb, the split occurs at Spec of IP only, since the whole cluster is base-generated in VP, and it may not move to Spec of vP, which is not available for non-inchoative unaccusative verbs. In (58a), after the complex containing both *Lulu* and *fumu* 'parents' moves to Spec of IP, *Lulu* alone moves further to the Spec of a higher functional head, in the C-domain'.

(58) a. Luluk [IP [\_\_ k fumu]i lai-le \_\_ i].

Lulu parent come-PRF

'Lulu, her parents have come.'

b. \*Lulu yinggai fumu lai-le.

Lulu should parent come-PRF

c. \*Lulu youkeneng fumu lai-le.

Lulu might parent come-PRF

d. Luluk [IP [\_\_ k fumu]i yinggai lai-le \_\_ i].

Lulu parent should come-PRF

(58b) and (58c) further show that it is impossible for the edge DP of such a RN2C to occur at the surface position of subjects. This is because if it did, the cluster would land at an argument position between I and V. But this position is not available for the unaccusative verb *lai* "come". Thus, the whole cluster must move to Spec of IP directly, and then *Lulu* moves further away, as shown in (58d).

Similarly, if the relational NP of a RN2C is associated with the internal argument of an inchoative (also called causative) unaccusative verb, there is only one splitting site for the DP cluster.

For instance, the verb *chen* "sink" is an inchoative unaccusative verb in Chinese (Huang 2008: 4, among others), and its internal argument is base-generated in VP. In (59a), the edge DP *yuhai zhe* 'victim' precedes the raising verb *youkeneng* 'might', indicating that the DP occurs in the surface position of subjects and the relational NP occurs in Spec of vP. However, the latter position is not a landing site of any movement. Therefore, this sentence is predicted to be impossible. It is indeed unacceptable. In (59b), the relational NP *shiti* 'corpse' precedes *youkeneng*, indicating that the NP occurs in the surface position of subjects, and the position is also the site of the cluster splitting. In this example, the edge DP has moved to the Spec of a functional head higher than IP.

(59) a. \* [IP Yuhai zhe youkeneng [vP shiti chen dao hai-di le]].

victim might corpse sink to sea-bottom PRT

'The victim's corpse might have been sunk to the bottom of the sea.'

b. Yuhai zhe [IP shiti youkeneng chen dao hai-di le].

victim corpse might sink to sea-bottom PRT

'The corpse of the victim might have sunk to the bottom of the sea.'

We can see that if the relational NP is associated with the internal argument of an unaccusative verb, it is the relational NP, rather than the edge DP, that occurs at the surface position of subjects. The position is the unique position for the split of the DP complex.

In this section, I have shown that in the derivation of RN2Cs in which the relational nominal is associated with an internal ar-

gument, Spec of vP is not an available position for the complex DP, and thus there is no optionality for the splitting of the complex.

## 6 Summary

In this paper, empirically, I have first analyzed the syntactic structure of a dimensional measure phrase construction such as *Lulu gao 170 cm* 'Lulu is 170 cm tall', and identified the construction as a RN2C, parallel to the well-recognized possessive and body part RN2Cs. Then I have presented general syntactic properties of RN2Cs in Chinese. In order to account for the properties, I have argued against multiple Spec, IP adjunction, and recursive IP approaches seen in the literature. Instead, I have proposed that the relational NP and its licenser DP form a complex DP in their base-positions, and then the licenser DP moves to a higher position and the relational NP remains in the remnant of the complex DP. I have also argued that this split of the complex DP may happen either at Spec of vP (early split), or at a higher position when the complex DP has moved to the position (late split). In addition to this optionality of the timing of the split, there is also an optionality with respect to the size of a moving element, since at the edge of vP, either a small element (the licenser DP) or a big element (the whole cluster) moves (contra Akiyama 2004, 2005).

The two kinds of optionality in syntactic operations is not compatible with the assumption that such operations must be driven by local features, but is compatible with the hypothesis that movement is free (Chomsky 2007:11, 2008).

### Notes

① Abbreviations used in this paper are as follows: DE: associative marker; EXP: experiential aspect; PRF: perfect aspect; CL: classifier; Q: question particle; PRT: sentence-final aspect particle; FM: focus marker; 3SG: third person singular; 3PL: third person plural; POSS: possessive.

② The *you* measure phrase construction in (i) (= (8a)) might be derivationally related to the *name* 'so' construction in (ii), and both might be related to the *you* comparative construction (iii).

(i) Lulu you 180 cm gao.

Lulu have 180 cm high

'Lulu is 180 cm tall.'

(ii) Lulu you 180 cm name gao.

Lulu have 180 cm so high

'Lulu is 180 cm tall.'

(iii) Lulu you Baoyu name gao.

Lulu have Baoyu so high

'Lulu is as tall as Baoyu.'

③ For more discussion of *de*-deletion in possessive constructions in Chinese, see Cheng (1997).

④ I postpone to Section 5 my discussion of RN2Cs in which the relational NP is associated with the internal argument of the verb in XP.

⑤ The alternation between (55a) and (55b) is parallel to the alternation between a regular RN2C and a construction in which the possessor is followed by a genitive case marker in Japanese. The edge DP moves from a complex DP when it is followed by a nominative case marker, but remains in the complex DP when it is followed by a genitive case marker (see Vermeulen 2005: 1337 and the literature cited there).

⑥ See Huang (2008) and Kuo & Lin (2008) for different derivations of the construction in which an unaccusative verb is preceded by a possessor and is followed by a possessee, as in (i):

(i) Wang Mian qi sui si-le (\*ta-de) fuqin.

Wang Mian seven year die-PRF 3SG-POSS father

'Wang Mian's father died when he was seven years old.'

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