

Gapless Relative Clauses as Clausal Licensors of Relational Nouns^{*}

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This paper presents a novel analysis of so-called gapless relative clause constructions such as Mandarin *xiangpi ranshao de weidao* (literally, ‘the smell that rubber burns’). Such constructions have been observed in East Asian languages. It is claimed that the Head noun of such relative clauses are relational nouns, and the clauses are their licensors. Syntactically, the Head nouns are predicates and the clauses are subjects. Compared to regular relative clause constructions, gapless relative clause constructions denote a reversed predication relation between the Head nouns and the clauses. Compared to complement clauses of nouns, gapless relative clauses denote external rather than internal argument of nouns. This new analysis explains a series of differences of the constructions from either regular relative clause constructions or noun-complement construction. Analyzing such constructions helps us to recognize a new type of complex nominals, in addition to the modification and complementation types. The absence of such constructions in English is accounted for by the fact that there is no clausal subject in English. The paper shows that clauses in Chinese and gerund forms in English may occur in true subject positions, and thus may license relational nouns.

Key words: relative clause, gapless relative clause, relational noun, Mandarin

1. Introduction

Relative clause (henceforth RC) constructions in Mandarin have the following internal-order: the adnominal clause, the functional particle *de*, and the modified noun (called Head noun):

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- (1) [tan gangqin] de nühai
play piano DE girl
'the girl that played the piano'

Since Tang (1979:243, 289), it has been noted that Mandarin has a special type of RC construction, as shown in (2).

- (2) a. [Lulu tan gangqin] de shengyin
Lulu play piano DE sound
'the sound which (is produced by) Lulu's playing piano'
b. Wo wendao-le [[mama chao cai] de weidao].
I smell-PRF Mom fry vegetable DE smell
'I smelled the smell from Mom's vegetable-frying.'
c. Wo jisuan-chu-le [[qiche zhengzai xingshi] de sudu].
I calculate-out-PRF car PROG run DE speed
'I calculated the current speed of the car's running.'
d. [Lulu bu gen wo hezuo] de daijia
Lulu not with I co-operate DE price
'the price which (is charged in) Lulu's not cooperating with me'
e. [Lulu zuobi] de xiachang
Lulu cheat DE consequence
'the consequence which (results from) Lulu's cheating'
f. [Lulu jiu ren] de huibao
Lulu save people DE reward
'the reward which (is gained by) Lulu's saving people'
g. Ta shou-shang you [[du-she yao] de shang]]
he hand-on have poisonous-snake bite DE wound
'There is a wound that results from a poisonous snake's biting on his hand.'

Unlike English examples such as *the time when I left*, such constructions do not have any syntactic position for a relative pronoun, there being no relative pronoun in Mandarin. Such constructions may not be translated into RC constructions in English, being expressed instead in the form of gerunds:

- (3) a. *the sound that Lulu played a piano
b. *the consequence that Lulu cheated
(4) a. the sound from Lulu's playing a piano
b. the consequence of Lulu's cheating

The gapless RC construction is also observed in other East Asian languages, such as Japanese (Murasugi 1991, Matsumoto 1997) and Korean (Yoon 1993, Cha 1997, 1999) as in (5). It is also called the *pseudo-relative clause* (Kim 1998, Chung & Kim 2003) or *sloppy relative clause* construction (Tsai 1997).

- (5) a. [sakana-ga yakeru] nioi (Japanese)
 fish-NOM burn smell
 ‘the smell of fish burning’
 b. [komwu-ka tha-nun] naymsay (Korean)
 rubber-NOM burn-ADN smell
 ‘the smell of rubber burning’

So far, gapless RC constructions have been analyzed either in a similar way as regular RC constructions, such as (1) (Murasugi 1991, Tsai 1997, Cha 1999, Chang 2006), or similarly to noun-complement constructions, such as (6) (Kim 1998, Huang, A. Li, and Y. Li 2000). One can see that in all three Mandarin nominal constructions a clause is followed by *de* and then by a noun.

- (6) [Lulu hui tan gangqin] de yaoyan
 Lulu can play piano DE rumor
 ‘the rumor that Lulu can play piano’

Putting aside the operations to derive the surface order of the gapless RC construction in the relevant language, in the RC approach, in both regular and gapless RC constructions, the Head noun is analyzed as the subject and the clause as the predicate, in a nominal-internal predication relation, whereas in the noun-complement approach, in both noun-complement constructions and gapless RC constructions, the Head noun is assumed to take the clause as its complement. In this paper, I present differences of gapless RC constructions from both regular RC constructions and noun-complement constructions. Some of these differences are reported for the first time, so far as I know. The differences do not support the two approaches.

Instead of treating the clause of a gapless RC construction as either a modifier or complement of the Head noun, I shall claim that the clause is in fact the subject of the Head noun, which is a predicate. In other words, gapless RC constructions express a predication relation that is just in the opposite direction to the one that is expressed by regular RC constructions.

Before I start my argumentation, I wish to clarify that I am not discussing the kind of pseudo-gapless RC construction as in (7) ((7b) is a near Mandarin counterpart of a Japanese example mentioned in Kuno 1973 and (7c) is from Riemsdijk 2003).

- (7) a. liang ge bian xiangdeng de sanjiaoxing
two CL side equal DE triangle
'a triangle such that the two of the three sides have the equal length'
- b. mei ge zhou dou bi Riben hai da de na ge guojia
each CL state even than Japan still big DE that CL country
'the country each state of which is even bigger than Japan'
- c. a rectangle such that the long sides are twice the length of the short sides

In data like (7), the Head noun and an argument in the RC have a part-whole relation, with the Head noun as the whole-denoting element and the clause-internal argument as the part-denoting element. In (7a), for example, the Head noun *sanjiaoxing* 'triangle' expresses the whole, and the subject in the RC, *liang ge bian* 'two sides' means the two sides of the triangle, and thus part of the triangle. The part-denoting elements in such RCs do not have any denotation independent of the Head noun. They belong to the B-type of E stated in Na & Huck's following *Argument Condition* of RCs:

- (8) *The Argument Condition* (Na & Huck 1993:200):
A relative clause must contain an element E that the clause predicated something of, where E is either
A: a gap coindexed with the clause head, or
B: a nominal whose denotation is thematically subordinate to that of the clause head.

I assume that this E is associated with a possessor-denoting gap, and it is this gap that is related to the Head noun of a pseudo-gapless RC construction. Therefore, the construction is not a gapless RC construction. Such a construction exhibits the full range of properties of regular RCs. For instance, the RCs can be stacked, as in (9), whereas the clauses of real gapless RC constructions may not be (see §2.4).

- (9) liang ge bian xiangdeng de mianji dengyu 45 pingfang limi de sanjiaoxing
two CL side equal DE area be 45 square cm DE triangle
'a triangle such that its two sides are equal and its area is 45 cm²'

I assume that the computation of the construction is similar to that of regular RC constructions. In this paper, I analyze real gapless RC constructions only.

This paper is structured as follows. In §2 and §3, I present how gapless RC constructions are different from regular RC constructions and noun-complement constructions, respectively. In §4, I propose my own analysis. I then explain in §5 why English does not have the construction. Section 6 is a summary.

2. Differences between gapless and regular RC constructions

Four differences between gapless RC constructions and regular RC constructions are presented in this section.

2.1 The heads of gapless RCs must be relational

Relational nouns are terms of kinship and other social relationships, terms of intrinsic characteristics, such as *speed* and *distance*, picture nouns, measure nouns, terms of part of a whole such as *handle* (vs. the whole-denoting nouns or possessor such as the noun *rectangle* in (7c)) (see de Bruin & Scha 1988, Déchaine 1993:§2.4.3.7, among others).

As noted by Huang et al. (2000), the Head nouns of gapless RC constructions are relational (contra Cha 1999:29), whereas those of regular RC constructions are not relational. The Head noun of a gapless RC construction must express certain intrinsic characteristics of an eventuality (the term eventuality covers both event and state). In the regular RC construction in (10a), the Head noun is *ren* ‘person’, which is not a relational noun. This noun may not be the Head of a gapless RC construction, as seen in (10b), regardless of how reasonable the intended meaning might be.

- (10) a. chao cai de na ge ren
 fry vegetable DE that CL person
 ‘the person who fried vegetables’
- b. *Mama chao cai de na ge ren
 Mom fry vegetable DE that CL person
 Intended: ‘the person who was with Mom when the latter fried vegetables’
 Or: ‘the person for whom Mom fried vegetables’

2.2 Optionality

In an out-of-the-blue context, a construction is well accepted in the absence of a regular RC, whereas a construction is not accepted if only the Head noun of a gapless RC shows up, in the absence of the gapless clause. For instance, one may start a conversation with (11b) or (12b), in the absence of a cell phone in the discourse. In contrast, one may not start a conversation with either (13b) or (14b), in the absence of a special smell in the discourse.

- (11) a. Ta bu xihuan wo mai de shouji.
 he not like I buy DE cell phone
 ‘He does not like the cell phone that I bought.’
 b. Ta bu xihuan shouji.
 he not like cell phone
 ‘He does not like cell phones.’
- (12) a. Wo mai de shouji hen gui.
 I buy DE cell phone very expensive
 ‘The cell-phone I bought is very expensive.’
 b. Shouji yiban hen gui.
 cell phone generally very expensive
 ‘Cell phones are generally expensive.’
- (13) a. Ta bu xihuan wo chao cai de weidao.
 he not like I fry vegetable DE smell
 ‘He does not like the smell of my frying vegetables.’
 b. *Ta bu xihuan weidao.
 he not like smell
- (14) a. Lulu chao cai de weidao hen nong.
 Lulu fry vegetable DE smell very strong
 ‘The smell of Lulu’s frying vegetables is strong.’
 b. *Weidao hen nong.
 smell very strong

2.3 Gapless RCs indeed have no gaps

The clauses of gapless RC constructions, by definition, contain no syntactic gaps that are semantically associated with the Head nouns. There is simply no syntactic position for such a gap, as argued in Cha (1999). Were the position available, we would expect either a copy of the Head noun, as in (15b), or a pronoun co-indexed with the Head noun, as in (15c), to occur in the clause. However, we see that both (15b) and (15c) are unacceptable.

- (15) a. [qiche xingshi] de sudu
 car run DE speed
 ‘the speed of the car’s running’
 b. *[qiche sudu xingshi]
 car speed run

- c. *[qiche ta_i xingshi] de sudu_i
 car it run DE speed

This is the third difference between gapless RC constructions and regular RC constructions: the latter have, but the former do not have, any gap in the clauses that is semantically related to the Head noun.

One might wonder whether the Head noun of a gapless RC is related to a clause-internal silent event argument. The answer is negative for the following reasons. First, the Head noun does not encode an event at all. Thus there is no way to co-index the Head noun with any event argument in the clause of a gapless RC construction. Second, the gapless clauses allow not only event reading, but also state (i.e., non-event) readings (contra Tsai 1997, Cha 1999). We have seen event-denoting gapless clauses in data like (15). The following data show that both individual and stage-level states can be encoded by the clauses of gapless RC constructions:

- (16) a. [Xiao Li congbai Lulu] de chengdu (IL state)¹
 Xiao Li admire Lulu DE degree
 ‘the degree of Xiao Li’s admiring Lulu’
 b. [[Lulu rezhong-yu yundong] de haochu] xianeryijian. (IL state)
 Lulu wild-about sport DE benefit obvious
 ‘The benefit from Lulu’s being wild about sport is obvious’
 c. Zhe jiushi [[Lulu gangcai shengqi] de houguo]. (SL state)
 this be Lulu just angry DE consequence
 ‘This is the consequence of Lulu’s being angry just now.’

One might insist that the assumed silent event argument may also denote a state, and this argument is related to certain silent element in the Head noun. However, it seems that exactly the same dependency might also be assumed to occur in regular RC constructions in which the adnominal clauses express either events or states. Were this the case, both gapless and regular RC constructions would have this event argument dependency between the clause and the Head noun, and they differ only in the fact that there is a clause-internal gap in one construction but not in the other construction. Then we are back to the original observation. Nothing new has been said.

¹ As pointed out by Chang (2006:49), data like (16a) and (2c) show that, gapless RC constructions do not have to express a cause-effect relation (contra Cha 1999). Moreover, gapless RCs in Chinese allow negation and aspect markers, as seen in (2d) and (2c), respectively. According to Cha (1999), no negation or certain types of tense marker may occur in gapless RC constructions in Korean.

2.4 Stacking

Regular RCs may be stacked (Jackendoff 1977:185), whereas gapless RCs may not be stacked:

- (17) a. [Baoyu xie _] de [[Daiyu langsong _] de shi]
Baoyu write DE Daiyu read.aloud DE poem
'the poem that Baoyu wrote and Daiyu read aloud'
b. *[Baoyu tan gangqin] de [[Daiyu chang ge] de shengyin]
Baoyu play piano DE Daiyu sing song DE sound

3. Differences between gapless RC and noun-complement constructions

Two differences between gapless RC constructions and noun-complement constructions are presented in this section.

3.1 The occurrence of evaluative adverbs

No evaluative adverb is allowed in gapless RCs, as noted by Chang (2006:73). This is shown in (18a). However, no such constraint is found in noun-complement constructions, as seen in (18b).

- (18) a. *Wo wendao-le [Lulu {xingkui/juran} zhu-fan de weidao]
I smell-PRF Lulu fortunately/unexpectedly cook rice DE smell
Intended: 'I smelled the smell of Lulu's {fortunately/unexpectedly} cooking.'
b. Wo tingshuo-le [Lulu juran qiang-le yinhang] de baodao
I hear-PRF Lulu unexpectedly rob-PRF bank DE report
'I heard the report that Lulu unexpectedly robbed a bank.'

3.2 Accommodating an animate adnominal

An animate adnominal may occur to the left of an entire noun-complement construction, with an agent reading, whereas no such adnominal may occur to the left of an entire gapless RC construction.²

² The only possible context for the string of (19b) to be marginally acceptable is an ellipsis context, as in (i) (I thank an anonymous reviewer for helping me to realize this):

- (19) a. Lulu de [Baoyu fabiao-le lunwen de yaoyan]
 Lulu DE Baoyu publish-PRF article DE rumor
 ‘Lulu’s rumor that Baoyu published an article’
 b. *Lulu de [Baoyu tan gangxin de shengyin]
 Lulu DE Baoyu play piano DE sound

It is necessary to point out that if an animate adnominal is inside the clause of a gapless RC construction, as in (20a) and (20b), the example is fine, as predicted. In (20a), it is possible to group the string *Lulu de zhe ge jihua* ‘Lulu’s this plan’ together as the subject of the embedded clause. Similarly, in (20b), it is possible to group the string *Lulu de lixi* ‘Lulu’s interest’ together as the subject of the embedded clause. When we control the data, using two proper names in a row in (19) to rule out this grouping possibility, the contrast is clear. Another way to show the contrast is to add another animate adnominal to the left of (20a) or (20b). Since there is no way to include the adnominal in the embedded clause, the unacceptability of (21a) and (21b) is parallel to that of (19b).

- (20) a. [[Lulu de zhe ge jihua] bei fougjue] de {daijia/xiachang}
 Lulu DE this CL plan BEI reject DE price/consequence
 ‘the price/consequence of the rejection of Lulu’s this plan’
 b. [[Lulu de lixi] zengzhang] de haochu
 Lulu DE interest increase DE benefit
 ‘the benefit of the increasing of Lulu’s interest (of her bank account)’
 (21) a. *Lao Li de [[[Lulu de zhe ge jihua] bei fougjue] de {daijia/xiachang}]
 Lao Li DE Lulu DE this CL plan BEI reject DE price/consequence
 b. *Lao Li de [[[Lulu de lixi] zengzhang] de haochu]
 Lao Li DE Lulu DE interest increase DE benefit

We conclude that gapless RC constructions are syntactically and semantically different from either regular RC constructions or noun-complement constructions.

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- (i) Zheli you Lulu shoulu de Daiyu chui dizi de shengyin,
 here have Lulu record DE Daiyu blow flute DE sound
 nali you Lulu ~~shoulu~~ de Baoyu tan gangqin de shengyin.
 there have Lulu record DE Baoyu plan piano DE sound
 ‘Here is the sound of Daiyu’s playing of a flute, and there is the sound of Baoyu’s playing piano, and both were recorded by Lulu.’

4. Our new analysis of gapless RCs as clausal licensors of relational nouns

4.1 Clausal subjects and nominal predicates

We have shown in §2.1 that the Head nouns of all gapless RCs are relational nouns. Relational nouns have argument places to be saturated, and thus need licensors. Semantically, the relation between relational nouns and their licensors is not modification. Syntactically, relational nouns have a local (i.e., non-adjunction) relation with their licensors. Specifically, a relational noun is a predicate and its licensor is a subject of 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.

Relational nouns such as *linju* ‘neighbor’ are licensed by individual-denoting elements, such as the proper name *Lulu* in (22a), but not eventuality-denoting element, such as *na chang dongluan* ‘that CL turmoil’ in (22b). In contrast, relational nouns such as *houguo* ‘consequence’ are licensed by eventuality-denoting elements, such as the clause *Lulu gangcai shengqi* ‘Lulu was angry just now’ in (23a), or the nominal *na chang dongluan* ‘that CL turmoil’ in (23b).

- (22) a. Lulu de linju
Lulu DE neighbor
‘Lulu’s neighbor’
b. *na chang dongluan de linju
that CL turmoil DE neighbor
- (23) a. Zhe jiushi [[Lulu gangcai shengqi] de houguo].
this be Lulu just angry DE consequence
‘This is the consequence of Lulu’s being angry just now.’
b. Zhe jiushi [[na chang dongluan] de houguo].
this be that CL turmoil DE consequence
‘This is the consequence of that turmoil.’

Certain relational nouns such as *weidao* ‘smell’ are licensed by either a nominal, such as *na pan cai* ‘that plate of vegetable’ in (24a), or a clause, such as *Mama chao cai* ‘Mom fried vegetables’ in (24b).

- (24) a. na pan cai de weidao
that plate vegetable DE smell
‘the smell of that plate of vegetables’

- b. *mama chao cai de weidao*
 Mom fry vegetable DE smell
 ‘the smell of Mom’s frying vegetables’

Relational nouns are always predicates. If their nominal licensors are subjects, so are their clausal licensors. Thus, in the gapless RC construction in (24b), the relational noun *weidao* is the predicate, and the clause *Mama chao cai* is the subject.

Of course, like regular RC constructions, the predication relation expressed by gapless RC constructions is nominal-internal. In other words, the proposition-denoting element (small clause) is contained in a nominal.

Note that Huang et al. (2000:6) also claim that gapless RCs saturate the argument places of the Head nouns. However, they treat the clauses as complements whereas we treat the clauses as subjects. In the next subsection and the next section, one can see that it is the subject-approach proposed here that is able to explain both the facts reported in §3, and the fact that English does not have the construction.

We can summarize the various relationship patterns encoded by the combination of a noun and a clause as follows. (a) The clause modifies the noun or is the predicate of the noun. This is the pattern of regular RC constructions as in (25a). (b) The clause defines the noun or is the complement of the noun. This is the pattern of the noun-complement constructions as in (25b). (c) The clause licenses the noun or is the subject of the predicative noun. This is the pattern of gapless RC constructions as in (24). There is no conceptual reason to exclude clauses from the subject position of nouns. The existence of gapless RC constructions is thus theoretically predicted. Later, in §5, we shall explain why such constructions do not exist in English.

- (25) a. the vegetables that Mom cooked
 b. the {claim/rumor/statement/event} that Mom cooked vegetables

The above classification is summarized in (26).

(26)	Head noun	clause
Regular RC construction	Modified (subject)	Modifier (predicate)
Noun-complement construction	head	complement
Gapless RC constructions	Licensee (predicate)	Licenser (subject)

As shown in (26), in both gapless RC constructions and regular RC constructions a

predication relation is expressed, however, the predication relation between the Head noun and the clause in one construction is just the opposite of the one in the other construction. Thus, the Head nouns in the two constructions are semantically different, and so are the clauses.³

4.2 Accounting for the properties of gapless RC constructions

Our approach can capture the differences between gapless RC constructions and regular RC constructions presented in §2.

First, a regular RC modifies the Head noun, whereas a gapless RC licenses the Head noun, which is a relational noun. If a modifier is an adjunct, it is syntactically optional. However, a licenser is syntactically obligatory in the presence of the licensee. Thus, while regular RCs are optional, the syntactic positions of gapless RCs are obligatory (§2.2).

Second, gapless RCs do not have gaps (§2.3) simply because they are subjects. Rothstein (1991:145) states that clauses in subject positions may not have any gap, unlike the clause in predicate positions. Elements in subject positions are semantically saturated or licensed and thus contain no open position that is associated with any other element in the construction.

Third, a noun may be modified by several modifiers, but a relational noun may be licensed only once. Gapless RCs may not be stacked (§2.4) simply because a relational noun may not be licensed multiple times. The same constraint is seen in the licensing of a relational noun by a nominal licenser:

- (27) a. *chou doufu de weidao*
 stinky tofu DE smell
 ‘the smell of stinky tofu’
 b. *hujiao-fen de weidao*
 pepper-powder DE smell
 ‘the smell of pepper-powder’

³ One reviewer asked “would modification in regular RCs and predication in gapless RCs be treated on a par, particularly under den Dikken’s framework?” We do not think the two kinds of predication are syntactically the same, even in den Dikken’s (2006) framework. In his framework, a subject and a predicate are the specifier and complement of a head element (Relator). He assumes that there are two patterns of predication: A, the subject is the specifier and the predicate is the complement; and B, the subject is the complement and the predicate is the specifier. If we do not allow a mixed system, we still can distinguish the two types of predication in his framework. For instance, in pattern A, the Head noun of a regular RC is the Specifier and the RC is the complement, whereas the Head noun of a gapless RC is the complement and the gapless RC is the specifier.

- c. *chou doufu de hujiao-fen de weidao
 stinky tofu DE pepper-powder DE smell

The predication relation encoded by gapless RC constructions is also fundamentally different from the noun-complement relation. Our approach thus captures the differences presented in §3. Specifically, first, evaluative adverbs may not occur in islands, including subject islands (Sung 2000), as seen in (28). Complement clauses are not islands, whereas subjects are. Therefore, such adverbs may occur in the complement clauses of nouns, but not in the clauses of gapless RC constructions (§3.1).

- (28) *[Lulu **xingkui** qu Riben] hen heshi.
 Lulu fortunately go Japan very appropriate

Second, since the head noun of a noun-complement takes the complement as its internal argument, the syntactic position of an external argument is still available. That is why the construction can accommodate another animate adnominal, which may take the external argument position and have an agent reading. In contrast, the clause of a gapless RC construction is the external argument of the Head noun; there is no more syntactic position to host another external argument. That is why the construction may not accommodate another animate adnominal (§3.2). We can see that a relational noun behaves like an unergative verb, which does not select internal argument. Like an unergative verb, such a noun is licensed by its external argument (I thank an anonymous reviewer for pointing out to me this unergative property and the following word order constraint).

Since the clause of a gapless RC construction is the argument of the Head noun, and the clause of a regular RC construction is the modifier of the Head noun, it is predicted that when both kinds of clauses are linked to the same Head noun, the argument should be closer to the noun than the modifier. This is indeed the case:

- (29) a. *[Lulu xi che] de [wo tingdao _] de shengyin
 Lulu wash car DE I hear DE sound
 b. [wo tingdao _] de [Lulu xi che] de shengyin
 I hear DE Lulu wash car DE sound
 ‘the sound of Lulu’s washing a car which I heard’

4.3 Gapless RCs constructions and gapless topicalization constructions

Tsai (1997) claims that gapless RC constructions and gapless topicalization constructions (Li & Thompson 1976) such as (30) “are realizations of the same typological

trait.” Tsai claims that like the latter, the relationship between the Head noun and the clause of a gapless RC construction “is not far beyond aboutness, where the exact interpretation has to be pinned down by some semantic or pragmatic conventions.”

- (30) Na chang da huo, xingkui xiaofang-dui lai de kuai.
 that CL big fire fortunately fire-brigade come DE quick
 ‘Speaking of that big fire, the fire brigade quickly came (in time), fortunately.’

As we know, the topic of a gapless topicalization construction functions as a subject semantically. Subject DPs, in contrast to predicate-denoting expressions, are saturated elements and thus do not require any licenser. In (30), *na chang da-huo* is semantically complete, and it does not need the clausal comment to specify its denotation. The Head nouns of gapless RCs, however, do not function as subjects semantically. In contrast, we have argued, they are relational and thus need licensers. Therefore, they need the gapless clauses to specify their denotation. The differences between the two constructions are illustrated in (31):

- | | | | |
|---------|--------------------------------------|----|--------------------------|
| (31) a. | gapless topicalization constructions | b. | gapless RC constructions |
| | topic gapless clausal comment | | gapless clause Head |
| | ↓ ↓ | | ↓ ↓ |
| | subject predicate | | subject predicate |
| | [–relational] | | [+relational] |

4.4 Relation nouns and the copula *shi*

As we know, in a matrix predication a nominal predicate can be linked to its subject by a copula in Mandarin, as in (32). If a relational noun is a predicate and its licenser is its subject, why can the two not be linked by a copula, as seen in (33)?

- (32) a. Lulu shi Yazhou-ren.
 Lulu be Asia-person
 ‘Lulu is an Asian.’
 b. Lulu shi keren.
 Lulu be guest
 ‘Lulu is a guest.’
 c. Zhiban hushi shi Lulu.
 duty nurse be Lulu
 ‘The duty nurse is Lulu.’

- (33) a. *Lulu chao cai shi weidao.
 Lulu fry vegetable be smell
 b. *na kuai xiangpi shi weidao.
 that piece rubber be smell

The unacceptability of both (33a) and (33b) shows that the constraint is on the relational nouns, regardless of whether their subjects are a clause or a nominal.

The absence of *shi* in relational noun constructions can be captured in either a syntactic or a semantic perspective. Syntactically, *shi* never occurs in nominal-internal predication. For instance, a relative clause is the predicate of the Head noun, but *shi* may not occur between the two parts of the nominal-internal predication:

- (34) na ben [Lulu mai _] de (*shi) shu
 that CL Lulu buy DE be book
 ‘the book that Lulu bought’

Semantically, not all kinds of predication relation may be linked by a copula, and the linking is subject to semantic conditions. For instance, a topic-comment relation has been recognized as a subject-predicate relation, however, *shi* may not occur between a topic and its comment:

- (35) Shuiguo (*shi) wo xihuan xiangjiao.
 fruit be I like banana
 ‘Speaking fruits, I like bananas.’

According to Rothstein (1999), a copula is not semantically empty. In Mandarin, a copula may occur between a subject and a nominal predicate if the two have either an inclusion relation, as in (32a) and (32b) (the two sentences can be paraphrased as *X* belongs to the type of *Y*), or an identity relation, as in (32c). The semantic relation between a relational noun and its licensor does not denote either of the two relations. If a copula is not semantically blind, it may interact with the semantics of predication, and interact with different types of predication in different ways. Thus, it is not surprising that the predication of relational nouns rejects *shi*. In short, the incompatibility between *shi* and relational nouns does not challenge the predication analysis.

A related issue is how to identify the predication relations exhibited in the following constructions, in which both a relational noun *baba* and the copula *shi* occur.

- (36) a. Zhangsan shi [Lisi de baba].
Zhangsan be Lisi DE dad
'Zhangsan is Lisi's dad.'
b. Lisi shi [Zhangsan de baba]
Lisi be Zhangsan DE dad
'Lisi is Zhangsan's dad.'

In (36a), the relational noun *baba* is licensed by *Lisi* locally, and then the whole nominal *Lisi de baba* 'Lisi's dad' is the predicate of *Zhangsan*. Thus, although technically both *Zhangsan* and *Lisi* are subjects, the former is the subject of the complex *Lisi de baba*, whereas the latter is the subject of *baba* alone. The derivational cyclicity in syntax is crucial here. This removes the worry of an anonymous reviewer, who worries that if both *Zhangsan* and *Lisi* were the subjects of *baba*, which is not the case, (36a) and (36b) would be synonymous.

5. Where are the relevant contrasts between Mandarin and English?

5.1 English does not have clausal subjects

Why does English not have gapless RC constructions? Why are data like (37) not acceptable?

- (37) *the smell that Mom cooked vegetables

My explanation is that English does not have clausal subjects (Koster 1978, Stowell 1981, Alrenga 2005, among others). The apparent subject-clauses (called initial clauses) have been found to be base-generated in a left-peripheral topic position and linked to a phonologically null nominal that occurs in the real subject position (*pro*). (The null nominal is responsible for the agreement with the matrix verb.) This conclusion is based on the differences between initial clauses and nominal subjects, and the similarities between initial clauses and topics. For instance, unlike nominal subjects, initial clauses may not appear after preposed auxiliaries:

- (38) a. Did Medea upset Jason?
b. Did that story really suck?
c. Never before has your lack of qualifications been so obvious.

- (39) a. *Did [that Medea killed her children] upset Jason?
 b. *Has [that we have arrived back at our starting point] proved that the world is round?
 c. *Would [for the Giants to lose the World Series] really suck?
 d. *Never before has [that you are unqualified for this job] been so obvious.

If initial clauses are base-generated at Spec of CP, the unacceptability of the examples in (39) is explained. Preposed auxiliaries appear at C. If an initial clause is base-generated at Spec of CP, a preposed auxiliary has no way to appear to the left of the clause.

Moreover, Emonds (1976) observes that there is a correlation between the impossibility of topicalization and the absence of initial clauses in English appositives. This point can be illustrated by comparing (40a) with (40b):

- (40) a. *John's belief [[_{TOP} the geography course]_i, Bill took e_i] is unfounded.
 b. *John's belief [[that you took the course] helped you] is unfounded.
 c. John's belief [that [your taking the course] helped you] is unfounded.

The parallelism between (40a) and (40b) suggests that initial clauses are base-generated at the surface position of topics, and wherever topics may not occur, initial clauses may not occur, either.

If clauses may not be subjects in general in English, they may not be subjects of a specific type of predicate, relational noun, in this language.

One might wonder why gapless clauses may not also be base-generated at the topic position, like initial clauses. This possibility can be ruled out for the following reason: the predication relation between a relational noun and its licensor is encoded by a nominal-internal small clause, which, by definition, does not have a CP projection to host any base-generated topic. Therefore, there is no way for English to have clausal licensors of relational nouns. This explains why English does not have gapless RC constructions.

5.2 Gerundive subjects in English

We have seen that propositions in gerund forms may license relational nouns. One of the examples in (4b) is repeated here as (41):

- (41) the consequence of Lulu's cheating

If propositions in gerund forms may license relational nouns, we predict that English has gerundive subjects. This is indeed the case. Gerundive subjects behave like nominal

subjects in English. Data like (42) show that gerundive subjects, like nominal subjects, may follow preposed auxiliaries:

- (42) Did his cheating directly help the Patriots win the Super Bowl?

Moreover, Emonds' examples in (40) above also show that the gerundive form in (40c) is in contrast to the initial clause in (40b): the former is in a regular subject position, thus the sentence is acceptable, whereas the latter is in an illegal topic position, thus the sentence is not acceptable.

We also need to clarify that the existence of two possible word orders in licensing English relational nouns is independently accounted for. In (43a), the subject *Lulu* precedes the predicate *neighbor*, whereas in (43b), the predicate *consequence* precedes the subject *Lulu's cheating*. Moreover, the two parts of the predication is linked by *'s* in the former, but by *of* in the latter.

- (43) a. Lulu's neighbor
b. the consequence of Lulu's cheating

As we know, the case-licensors *'s* and *of* are sensitive to whether the case-marked element is human. *'s* as an enclitic licenses the case of a human argument to its left, and *of* as a preposition licenses a non-human argument to its right. The case of the other nominal in each of the complexes, as the projecting element, is licensed by a selecting head externally. The availability of the two orders is decided by the morphological properties of the two linking elements, *'s* and *of*. In Mandarin, only the linking element *de* occurs between a nominal-internal subject and its predicate, and this element is not sensitive to the contrast between human and non-human. Thus, the morphological simplicity of the linking element determines the unified word order: it follows the subject and precedes the predicate, consistently.

5.3 Clausal subjects in Mandarin

Unlike English, Mandarin does have clausal subjects. This conclusion has been reached in Tsai (1995:§2.2). One way to support Tsai's conclusion is to show that preverbal clauses pattern with nominal subjects, rather than topics. In (44a) and (44b), we see that the focus marker *shi* may not occur to the left of a topic. In (44c), the focus marker is licensed only when *na ben shu* 'that book' is in a contrastive focus reading, rather than a topic reading. Thus all three examples in (44) indicate that the focus marker may not occur with topics.

- (44) a. (*Shi) na chang da huo, qingkuai xiaofang-dui lai de kuai.
 FM that CL big fire fortunately fire-brigade come DE quick
 ‘Speaking of that big fire, the fire brigade quickly came (in time), fortunately.’
- b. (*Shi) shuiguo, Lulu xihuan juzi.
 FM fruit Lulu like orange
 ‘Speaking of fruits, Lulu likes oranges.’
- c. Shi na ben shu, Lulu kan-guo le, *(bu shi zhe ben shu).
 FM that CL book Lulu read-exp PRT not be this CL book
 ‘It is that book that Lulu has read, not this one.’

In (45a), we see that the focus marker may occur with the subject *Lulu*. Importantly, the focus marker may also occur with the preverbal clauses in (45b) and (45c). If the clauses were in the topic position, the two sentences would be unacceptable, patterning with (44a) and (44b).

- (45) a. Shi Lulu rang ta shifen gaoxing.
 FM Lulu let he very happy
 ‘It is Lulu that makes him very happy.’
- b. Shi [Lulu fabiao-le lunwen] rang ta shifen gaoxing.
 FM Lulu publish-PRF paper let he very happy
 ‘It is Lulu’s publishing a paper that makes him very happy.’
- c. Shi [Lulu xihuan chouyan] hai-le shi.
 FM Lulu like smoke ruin-PRF matter
 ‘It is Lulu’s liking to smoke that ruined the matter.’

We thus conclude that Tsai (1995) is right in claiming that in Mandarin clausal subjects are indeed in subject position rather than in topic position.

The above discussion leads us to see why both Mandarin clauses and English gerundive forms may license relational nouns, whereas English clauses may not. If such nouns are predicates and need to be licensed by subjects, only elements that can be subjects may be their licensors. Both Mandarin clauses and English gerund forms are qualified candidates for subjects, and thus they may license relational nouns. In contrast, English clauses may not be subjects and thus they may not license relational nouns. This explains why Mandarin has gapless RC constructions, whereas English does not.

To complete our analysis, we need to mention that since gerund forms in English are nominals, they need the Case licensor *of* (or some other preposition). Aoun & Li (2003:186) are right in pointing out that the pattern of gapless RC constructions in Mandarin “rather

than being a counterpart of the English [head + Relative Clause], is more like the English Head noun + preposition + XP (a PP) (i.e., [NP [P XP]]), such as [the price [for his killing the boy]], [the sound [of his singing]], [the consequence [of his evildoing]].” We can see that no preposition occurs in gapless RC constructions, simply because the gapless clauses are not nominals.

6. Summary

In this paper, I have presented a new analysis of so-called gapless relative clause constructions in East Asian languages. I have claimed that the Head noun of such relative clauses are relational nouns, and the clauses are their licensors. Syntactically, the Head nouns are predicates and the clauses are subjects. Compared to regular relative clause constructions, gapless relative clause constructions denote a reversed predication relation between the Head nouns and the clauses. Compared to complement clauses of nouns, gapless relative clauses denote external rather than internal argument of nouns. This new analysis explains a series of differences of the constructions from either regular relative clause constructions or noun-complement construction. Analyzing such constructions has helped us to recognize a new type of complex nominals in addition to modification and complementation types. The absence of such constructions in English has been accounted for by the fact that there is no clausal subject in English. The paper has shown that clauses in Mandarin and gerund forms in English may occur in true subject positions and thus may license relational nouns.

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飽和關係子句與關係名詞

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本文從句法結構的角度探討漢語含飽和關係子句的複雜名詞片語，如“橡皮燃燒的味道”。本文認為這種複雜名詞片語中的子句（如上例的“橡皮燃燒”）是主語，而其後的名詞（如上例的“味道”）是謂語。這樣的主謂關係與常規的關係子句複雜結構的子句為謂語名詞為主語的關係正好相反。另外，飽和關係子句是相關名詞的外論元，而補語子句則是相關名詞的內論元。本文亦提出英語因為沒有主語子句，所以沒有含飽和關係子句的複雜名詞片語。

關鍵詞：關係子句，飽和關係子句，關係名詞，漢語