

# Gap in “Gapless” Relative Clauses in Korean and Other Asian Languages

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## Abstract

This paper attempts to argue that the so-called gapless relative clause (GRC) in Korean (Chinese and Japanese as well) can best be dealt with by the Generative Lexicon Theory (GLT) put forward in Pustejovsky (1995). There arises a superficial conflict in the construction: the GRC, with no apparent gap, contains a relative verb that does not directly relate to the head noun in terms of cause-effect relation required between the GRC and the following head noun. The paper shows that this incomplete realization of the cause-effect relation can be fully recovered from the lexical-semantic(-pragmatic) information specified under the GL framework. Thus, the qualia structure of GLT can successfully fill the meaning of the best hidden relative verb in the GRC for the correct interpretation.

Keywords: “gapless” relative clauses, Generative Lexicon Theory, qualia structure, agentive/telic role, Korean

## 1. Introduction

In Korean (Chinese and Japanese as well) the so-called gapless relative clauses (GRC) have been discussed in Cha (1997, 2005), J. Lee 2012, and others, representatively illustrated in (1, 2, and 3) (Adn = adnominal).

- (1) *cause-effect relation with sensory head noun*  
[sayngsen-i tha-nun] naymsay  
fish-Nom burn-Adn smell  
'the smell that comes from fish burning'
- (2) *cause-effect relation with non-sensory head noun*  
[thayphwung-i cinaka-n] huncek  
typhoon-Nom pass-Adn trace  
'the trace left after a typhoon hit'

- (3) *cause-effect relation with non-natural phenomenon*  
[apeci-ka so-lul phal-un] ton  
father-Nom ox-Acc sell-Adn money  
'the money obtained by selling an ox'

It is observed that there exists a semantic cause-effect relation holding between the GRC and its modifying head noun: the content of the adnominal GRC constitutes *cause* and the denotation of its head noun *effect*. Without the cause-effect relation, the GRC is not allowed (e.g., [sayngsen-I tha-nun] ?\*hyangki ('fragrance')/?\*moyang ('appearance') /\*huncek ('trace')). GRC is different from a typical relative clause (RC) like (4) containing a gap which is externally realized as a head noun.

- (4) [apeci-ka  $\Delta$  phal-un] so ( $\Delta=so$  'ox')  
father-Nom sell-Adn ox  
'the ox that father sold'

Also, GRCs are different from noun complements in examples like (5) in that they are not a complement of the head noun:

- (5) [apeci-ka so-lul phal-ass-ta-nun]  
father-Nom ox-Acc sell-Past-Dec-Adn  
somwun/ sasil/cwucang  
rumor/fact/claim  
'the rumor/fact/claim that father sold an ox'

Thus, GRCs in Korean are different from regular RCs, and they are not noun complements; therefore, as most researchers claim, GRCs are like gapless clausal modifiers for the following head nouns (Yoon, JH 1993, Cha 1997, 1998, 2005 in Korean and papers for Japanese and Chinese).

In this paper, we for the first time claim that for the correct, coherent interpretation in GRCs like (3), for example, the required cause-effect relation should be

fully realized by the addition or coercion of a verb like *pel-* ‘earn,’ which comes from the agentive role in the qualia structure of *ton* ‘money,’ in conjunction with the main event predicate *phal-* ‘sell,’ as shown in (6).

- (6) [apeci-ka [[so-lul phal-a] [pel]-n]]  
 father-Nom ox-Acc sell earn-Adn  
 ton  
 money  
 ‘the money that father earned by selling an ox’

We then argue that the meaning of the hidden verb *pel-* ‘earn’ in (3) can be successfully recovered from the reservoir containing the lexical-semantic (-pragmatic) information of the given lexical items specified under the GL framework. In section 2, we observe more related phenomena to claim that recovering the hidden verb has actual empirical bearing as seen in examples like (6). In section 3, we elaborate the current proposal in detail within the GLT, offering the lexical-semantic information of the elements of the GRC construction. In section 4, we briefly discuss cross-linguistic implications of the proposed GL analysis. Finally, section 5 concludes the paper.

## 2 Some Related Phenomena

The typical relative clause (RC) in Korean can appear in the pseudo-cleft, as in (7) (cf. (4)).

- (7) [apeci-ka phal-n kes-un] so-i-ta.  
 father-Nom sell-Adn KES-Top ox-be-Dec  
 ‘What father sold is an ox.’

The GRC, however, cannot appear in the **pseudo-cleft**, as in (8, 9, 10) (cf. (1, 2, 3)).

- (8) \*[sayngsen-i tha-nun kes-un] naymsay-i-ta.  
 fish-Nom burn-Adn KES-Top smell-be--Dec  
 ‘What fish burns is the smell.’ (Lit.)  
 (9) \*[thayphwung-i cinaka-n kes-un] huncek-  
 typhoon-Nom pass-Adn KES-Top trace-  
 i-ta  
 be-Dec  
 ‘What a typhoon passed is the trace.’ (Lit.)  
 (10) \*[apeci-ka so-lul phal-n kes-un]  
 father-Nom ox-Acc sell-Adn KES-Top  
 ton- i-ta.  
 money-be-Dec  
 ‘What father sold an ox is the money.’

The pseudo-cleft fact displayed in the above examples indicates that head nouns are not the elements of the GRCs, and indicates that GRCs are gapless clausal modifiers for the following head nouns.

The regular RC can appear as a predicate of the relative head noun, whatever grammatical role it may take in the RC, in the form of a topic construction (C. Lee 1973), as in (11). C. Lee argues that an RC head is realized via a topic in the relevant RC.

- (11) ku so-nun [apeci-ka phal-ass-ta].  
 the ox-Top father-Nom sell-Past-Dec  
 ‘The ox, father sold it.’

The GRC, however, cannot form a **topic construction** in which the topic of the relative head noun and its comment predicate cohere, as in (12, 13, and 14). This is a crucial and decisive piece of evidence showing that we need a coerced predicate for compositionality and coherence.

- (12) \*ku naymsay-nun [sayngsen-i tha-n-ta].  
 the smell-Top fish-Nom burn-Pres-Dec  
 ‘As for the smell, fish burns.’ (Lit.)  
 (13) \*ku huncek-un [thayphwung-i cinaka-  
 the trace-Top typhoon-Nom pass-  
 ass-ta].  
 Past-Dec  
 ‘As for the trace, a typhoon passed.’ (Lit.)  
 (14) \*ku ton-un [apeci-ka so-lul phal- ass-ta].  
 the money-Top father-Nom ox-Acc sell Past-Dec  
 ‘As for the money, father sold an ox.’ (Lit.)

We point out that the fact that relative noun heads cannot serve as topics with GRCs in (12, 13, 14), compared with regular RCs like (11), is due to the lack of additional predicate that can fully realize the aforementioned cause-effect relation in the predicative position. This is corroborated by the following representative example where this relation is fully realized.

- (15) ku ton-un [apeci-ka so-lul phal-a  
 the money-Top father-Nom ox-Acc sell  
 pel-ess-ta].  
 earn-Past-Dec

In the above example, the verb *pel-* ‘earn’ is coerced from *ton* ‘money’ as an agentive quale and added to realize the effect fully. The same kind of saving effect is found in the pseudo-cleft, as representatively illustrated in (16).

- (16) [apeci-ka so-lul phal-a pel-n  
 father-Nom ox-Acc sell earn-Adn  
 kes-un] ton-i-ta.  
 KES-Top money-be-Dec  
 ‘What father earned by selling an ox is money.’

Thus, overt coercion of the addition of the relevant predicate is necessary in the **topic** and **pseudo-cleft** constructions for coherence. Putting the head noun in the prominent topic position or in the highlighted focused position is a crucial test to see what is missing conceptually. Although the GRC construction may allow the addition in question by hitting on compatible verbs with no principled basis, as in (17, 18, 19), this construction does not necessarily superficially require it, as seen in (1, 2, 3).

- (17) [sayngsen-i tha-a na-nun] naymsay  
fish-Nom burn arise-Adn smell  
'the smell that comes from fish burning'
- (18) [thayphwung-i cinaka-a namki-n] huncek  
typhoon-Nom pass leave-Adn trace  
'the trace left after a typhoon hit'
- (19) [apeci-ka so-lul phal-a pel-n] ton  
father-Nom ox-Acc sell earn-And money  
'the money that father earned by selling an ox'

It thus appears that in the GRC construction, the head noun and the main event predicate in the GRC are close enough to allow the cause-effect relation to be covertly coerced and recovered in the absence of the additional predicate that helps fully realize the relation. In the next section, we discuss the matter in question in some detail. We will show that GLT can serve the purpose.

Note also that in languages like English where the head noun precedes the RC, GRCs and RCs corresponding to (1, 2, 3) and (17, 18, 19), respectively, are not allowed:

- (20) a. \*the smell that fish burns  
b. \*the smell that fish burns and arises  
cf. the smell that arises from fish burning
- (21) a. \*the trace that a typhoon passed  
b. \*the trace that typhoon passed and is left  
cf. the trace that is left from typhoon passing
- (22) a. \*the money that father sold an ox  
b. \*the money that father sold an ox and earned  
cf. the money that father earned from selling an ox

We attribute this contrast to the different word order between the relative head noun and the RC: in English type European languages, unlike in Korean type East Asian languages, the head noun and the main event predicate in the GRC or RC are not close enough, so the cause-effect relation is not allowed to be covertly coerced and recovered. The same is also found in the non-appearance of GRCs in pseudo-clefts and in the predicative position in Korean, as shown in (8, 9, 10) and (12, 13, 14). So the contrast under consideration can find a deeper reason.

### 3. How GL Can Account for the Gap in GRC

One might postulate the predicate *pel-* 'earn' in the underlying structure of GRCs like (3), repeated below, by taking notice of the overt presence of examples like (6), repeated below.

- (3) [apeci-ka so-lul phal-n] ton  
father-Nom ox-Acc sell--Adn money  
'the money obtained by selling an ox'
- (6) [apeci-ka [[so-lul phal-a] [pel]-n]] ton  
father-Nom ox-Acc sell earn-Adn money

'the money that father earned by selling an ox'

Based on the fact that (3) and (6) have almost the same interpretation, ellipsis may be claimed to be involved in deriving (3) from (6) (J. Lee 2012).

But this analysis does not seem to have any repertoire of deep explanatory devices for the above state of affairs. On the other hand, the GL mechanism offers a fundamental answer to the question of where the verb *pel-* 'earn' comes---it is exactly the agentive quale of the (social artifact) noun head *ton* 'money,' which can be represented as follows:

- (23) AGENTIVE (*ton* 'money') =  $\lambda z\lambda x\lambda y\lambda eT$  [*pel-* 'earn'  
(*eT*, *z*, *x*, (by)*y*)]

In (23), *ton* 'money' is something (*x*) that an agent (*z*) *earns by* (causal means) doing something (*y*). The interpretation 'the money which father earns by selling an ox' can be easily obtained by applying this agentive quale. Thus argument coherence of identity between the agent 'father' of the ox-selling causal event that appears in the adjunct clause and the agent 'father' of the money-earning effect that appears in the event phrase or clause is well observed (Pustejovsky 1995). The temporal ordering is also kept by precedence or overlap of the causal event compared to the result event.

We assume that basically the same GL approach can extend to other head nouns like *naymsay* 'smell' and *huncek* 'trace' in the GRCs in (1, 2). These nominal heads have similar cause-effect relations with their perceptual effects. They can be represented by some verbs of arousal, being emitted (by), or result (or leaving behind), etc. to apply to (1, 2) and justify the coerced event functions that show up in (17) and (18). The connective can be the simultaneity marker *-myense* 'when,' 'while,' showing the causing event can directly or almost simultaneously emit perceptual nominals such as smell (of burning fish), sound, and shape.

In (6) a limited set of verbs can appear in place of *pel-* 'earn,' including verbs like *malyenha-* 'prepare,' *mantul-* 'make,' *pat-* 'receive'; all these verbs share the basic meaning of 'obtaining (money as a result of selling an ox in a given context).' The specific choice of a particular verb is determined in a given context. The default is *pel-* 'earn.'

We further extend our analysis to the following interesting contrast:

- (24) a. [apeci-ka so-lul phal-a kaph-un]  
father-Nom ox-Acc sell pay.back-Adn  
ton  
money  
'the money that father paid back by selling an ox'
- b. \*[apeci-ka so-lul phal-a kkwu-/ilh-/  
father-Nom ox-Acc sell borrow-/lose-/  
cwup-un] ton  
find-Adn money  
'the money that father borrowed/lost/ found by selling an ox'

In (24a) the cause-effect relation indirectly holds between the causing event *so-lul phala* ‘selling an ox’ and the following additional verb *kaph-* ‘pay.back’ by the mediation of the verb *pel-* ‘earn,’ as illustrated in (25).

- (25) [apeci-ka [[so-lul phal-a] [pel-e]  
 father-Nom ox-Acc sell earn  
 [kaph-]]--un] ton  
 pay.back-Adn money  
 ‘the money that father paid back by selling  
 an ox and thereby earned’

In other words, the agentive quale of the noun head *ton* ‘money,’ namely, the verb *pel-* ‘earn,’ is consistent with the verb *kaph-* ‘pay.back’ conjunctively as a following event, so this verb can follow the verb licensed by the agentive quale defined above. But this addition is irrelevant to the original GRC. (25) entails ( $\Rightarrow$ ) (24a) but not (24b). Interestingly, example (3), reproduced at the beginning of this section, cannot be interpreted as meaning (24a). This fact confirms our proposal. Since the agentive quale of the noun head *ton* ‘money’ is determined as the verb *pel-* ‘earn,’ with the causing event (in the *-a* adjunct) accompanied, the interpretation of (3) is to be different from (24a) in which the verb *kaph-* ‘pay.back’ is separately added, as seen in (25).

In (24b), on the other hand, the verbs *kkwu-* ‘borrow,’ *ilh-* ‘lose,’ and *cwup-* ‘find’ do not constitute a natural effect of the causing event, *so-lul phal-a* ‘selling an ox,’ so there arises a conflict in the information structure. More specifically, the agentive quale of the noun head *ton* ‘money,’ namely, the verb *pel-* ‘earn,’ is inconsistent with the above verbs, so these verbs cannot be licensed by the agentive quale defined above.

#### 4 Some Cross-linguistic Implications

It is reported that GRCs are also observed in Chinese (Zhang 2008, Tsai 2008, among others) and Japanese (Murasugi 1991, Matsumoto 1997, among others).

- (26) Chinese  
 a. [Lulu tan gangqin] de shengyin  
 Lulu play piano DE sound  
 ‘the sound which (is produced by) Lulu’s  
 playing the piano’  
 b. [mama chao cai] de weidao  
 Mom fry vegetable DE smell  
 ‘the smell from Mom’s vegetable-frying’  
 (27) Japanese  
 a. [dereka-ga doa-o tatau] oto  
 someone-Nom door-Acc knock sound  
 ‘the noise of someone knocking at the  
 door’  
 b. [sakana-ga yakeru] nioi  
 fish-Nom burn smell  
 ‘the smell that a fish burns’ (Lit.)

from Korean exactly apply to the same GRCs in these East Asian languages. The most common previous analysis is that the GRC is a simple gapless clausal modifier for the following noun head. Murasugi (1991) and Tsai (2008), among others, claim that the so-called GRCs in Japanese and Chinese, respectively, are not really RCs but just complex noun phrases with gapless adnominal clauses.

Our GL approach, however, offers a more specific, deeper RC analysis on this phenomenon: the agentive quale of the noun heads like *sound* and *smell* above can covertly coerce or recover the appropriate relative predicates that help fully realize the required cause-effect relation. For example, *sound* is something (*x*) that an agent (*z*) *produces by* (causal means) doing something (*y*); *smell* is something (*x*) that is *produced by* (causal means) doing something (*y*).

Zhang (2008) proposes that the GRC is a subject and the following head noun is a predicate in Chinese. Interesting though the proposal is, we do not buy it since different morphology in Korean does not point to it, as can be seen in (1, 2, 3), in which the predicate in the GRC ending with the modifying adnominal maker *-(nu)n*, not being a nominalizer, cannot make the GRC a subject in Korean. Even if the GRC turns into a nominal with the addition of the nominal *kes* after the predicate in question, as seen in the pseudo-clefts in (8, 9, 10), the GRC cannot still function as the subject.

According to Tsai (2008: 116-118), Ning (1993) proposes the VP adjunct analysis for GRCs in Chinese, treating the overtly added or coerced verbal part as a VP adjunct containing a gap. Thus, in the following corresponding Korean examples, repeated below as (28, 29, 30), the phrase enclosed by bracelets is a VP adjunct and contains a trace left by the usual relative movement involved.

- (28) [sayngsen-i tha-a {t na-nun}] naymsay  
 fish-Nom burn arise-And smell  
 ‘the smell that comes from fish burning’  
 (29) [thayphwung-i cinaka-a {t nam-un}]  
 typhoon-Nom pass leave-Adn  
 huncek  
 trace  
 ‘the trace left after a typhoon hit’  
 (30) [apeci-ka so-lul phal-a {t pel-n}]  
 father-Nom ox-Acc sell earn-Adn  
 ton  
 money  
 ‘the money that father earned by selling  
 an ox’

Contrary to Ning, our analysis shows that the causing event is rather realized as an adjunct. The morphological marker *-a* (or, *-myense*) attached to the main event predicate confirms this analysis since it appears at the end of the adjunct clause. This is further syntactically evidenced by the well-known fact that extraction out of an adjunct produces a bad result. The fact that the above examples are good refutes Tsai’s VP-adjunct analysis.

We suggest that the current proposed analysis developed

Notice that the clause containing the main event predicate does not involve any gap, which suggests that this main predicate clause is in turn an adjunct. Since there is no gap here, there arises no adjunct island violation. Thus, Tsai's argument against Ning's wrong adjunct approach is in fact based on false ground.

Zhaojing (2012:(6), a paper to be believed to be presented in this workshop) claims that the following noun modification construction from Chinese just involves the Formal Qualia modifier:

(31) hongse de yanjing  
 red eye  
 'red eyes'

Here we can basically agree with Zhaojing that the construction involves Formal Qualia, if the color red is meant to be an inherent property of the eyes. The question is whether this construction could involve any role like Agentive, as implicated by our analysis. The color red here seems to be meant to involve some result of inchoative change from non-red to red because of drinking or other causes. The non-change situation does not but the change situation does involve Agentivity. Nevertheless, the construction could be analyzed as containing a subject gap because it constitutes an intransitive sentence with a stative predicate. This comes from the corresponding Korean example given below.

(32) pwulk-un nwun  
 red-Ad eye  
 'red eyes'

What we note is the presence of the modifying adnominal marker *-un* attached to the attributive adjective as well as to attributive (G)RCs. Without this marker, the phrase is illicit. Thus it would not be implausible to assume the adjectival modifier here is in fact a clause, as has also been suggested in Kaynean approach.

## 5. Residues

### 5.1 How about purpose (telic) quale?

On the other hand, we can tentatively say that the range of GRCs under discussion does not involve any purpose (telic) role. This is because of the head noun Agentive cause-effect relation required between the GRC and the head noun. However, a purpose (telic) quale does not seem to be entirely excluded in some less common contexts. Consider (33) (Prashant Pardeshi p.c.). The purpose of an artifact commercial is to draw the audience's attention intensively in a very short period of time.

(33) hwacangshil-ey mot ka-nun commercial  
 toilet-to not able go-Ad  
 'a commercial that attracts our attention so intensively that we cannot go to the toilet.'

However, if commercial interruptions in a soap opera are used to go to the toilet, the failure of their purpose must be due to the attraction of the soap opera program (Allan Kim p. c. and C. Lee share this intuition). All Agentive interpretations of our GRCs, together with the first telic interpretation of (33), can be based on the lexical-semantic content, but the second telic interpretation of (33) is heavily context-dependent and may be pragmatic. The head NP in (33) must be a subject in a causal adjunct clause in a bi-clausal structure.

An aspectual elliptical clause can form a regular RC easily, requiring a coerced purpose (telic) or Agentive role, as in (34). The coerced predicate *read* or *write* is based on the qualia structure lexical-semantic specification of the artifact nominal *book*. Suppose the subject of (34) is a goat. Then, the coerced predicate in that particular context may be *chew* or *eat*, calling for pragmatics.

(34) Mary-ka shicak-ha-n chayk  
 M-Nom begin-do-Ad book  
 'A book Mary began {to read, to write}.'

### 5.2 How about in the Keenan-Comrie Hierachy?

One may well say that because the Keenan-Comrie Noun Phrase Accessibility Hierarchy treats mono-clausal relative clauses (Keenan and Comrie 1977), based on non-GRCs, the hierarchy is not relevant to the underlyingly bi-clausal and superficially gapless Asian language relative clauses. The hierarchy is about how a grammatical relation NP is accessible to relativization in competition with others in a clause. However, we can suggest that the hierarchy encompass gap-like head NPs in recovered bi-clausal relative clauses in Asian languages; the hierarchy is purported to be semantically based. From a coherent qualia based bi-clausal sentence, an NP in the main clause of the sentence can undergo a relativization operation to form a modifying relative clause with a head NP. So, GRCNP may be at the bottom of the hierarchy, as follows:

(35) Accessibility Hierarchy (AH)

SU > DO > LO > OBL > GEN > OCOMP  
 > **GRCNP**

But it is interesting to note that the same original hierarchy may work recursively in the Agentively coerced main clause within the bi-clausal structure. For that kind of recursivity, the coerced main clause verb better be an intransitive verb *na-* 'come out' for the higher SU 'smell' than the transitive verb *nay-* 'emit' for the lower DO 'smell' in (17). For the sake of causation argument coherence, however, the transitive verb treatment seems more adequate.

In sum, we found that the coerced event function has not been proposed yet, and claim that our GL qualia structure analysis can encompass GRCs in East Asian

languages like Chinese, Japanese, and Korean.

## 6. Conclusion

We attempted for the first time to demonstrate how GL can well account for the mysterious phenomenon of “gapless” relative clauses that appear in at least three Asian languages by means of the event function coercion from the qualia structure enrichment of lexical meanings. We need further studies in the direction of incorporating pragmatic/discourse factors that should also be involved in coherent interpretations of such interesting phenomena.

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