To the memory of my mother

The Syntax of the So-Called Internally-Headed Relative Clauses
A Study of Korean Clause Structure[1]

Louis-H. Desouvrey

louish8@gmail.com

December 2010

It is shown that in Korean, just as in English, relative clauses are built from two standalone structures linked to each other by coreference. A relative element in one clause must obligatorily refer to a non clausemate antecedent. Because Korean relative *kes* cannot successfully adjoin to its head, it is either deleted, yielding what is classified as an EHRC, or remains in situ in a structure similar to a matrix clause in English, known as an IHRC. Multiple readings in the latter, which arise because the relative is a pronoun, as opposed to an anaphor, are sometimes hindered by a vector effect and the very nature of the representation. Along the way, it is argued that the so-called case-markers are in fact a type of referring elements, named thematic pronouns, making up a symbiosis with their argument. This analysis has considerable interests elsewhere in Korean grammar and suchlike languages.

Keywords Thematic pronoun, relative pronoun, vector, scalar, case, coreference, semantic features, incorporation, symbiosis, stray erasure, derivation extension number, non-linear syntax.

1. Introduction

In this paper I aim to provide a unified account of relative clauses in Korean, focusing on the the so-called internally-headed relative clauses (hereafter IHRC). This kind of construction, apparently absent from better known languages, like English, is ipso facto associated to a series of universals such as word order, overt case marking, head position, etc. It may not be otherwise with traditional grammatical theories which rely on near-surface descriptions and abstract phrase structures rather than essential characteristics and constituting parts of lexical elements or morphemes, namely features.

Taking features into account, and relying on the correct clause division (cf. Desouvrey 1997), I show that IHRCs, traditionally understood as a clause in which the relative element and its antecedent are clausemate, cannot exist to the extent that such clauses are standalone structures linked to one another by coreference, precisely between the relative element and the head noun. It is shown that Korean does not have IHRCs, anymore than English. All types of relative clauses proceed from a similar input in Korean as well as in English. Feature structures of the relative elements in each language determines whether or not the relative element can be incorporated to its antecedent in order to yield a complex NP. While in English-like languages the relative pronoun can incorporate to its head, forming a complex NP, Korean relative *kes,* can't adjoin to its head, resulting in either the so-called IHRC or deletion of the relative pronoun in externally-headed relative clauses (EHRC).

The paper is organized as follows. In the next section, the assumptions that mislead into the fallacy of IHRCs are briefly reviewed, and then the reader is hinted to the similarity between English and Korean relative clauses. In section 3, the theoretical framework is exposed while analyzing the structure of Korean referring elements, namely nominals (or NPs), relative pronoun, and the so-called case markers. I take a fresh look at the latter, arguing that they are in fact referring elements, which I call "thematic pronouns" for reasons that will become clear in due course. In addition, I suggest that the R-node, which serves to make a three-way distinction between referring elements, actually holds the thematic features of pronouns and referential expressions. In section 4, I consider various constraints that affect the linking of the relative clause to the main clause, showing that its impossibility, as well as multiple reading, follows from constraints on the representation, which are not peculiar to Korean grammar. In section 5, the obligatory deletion of the relative pronoun in EHRCs is accounted for along the lines of the Linearization Convention (Desouvrey 2000), and then a comparison is made with English in order to strengthen the analysis. Section 6, concludes the paper with a discussion of the results.

2. The problem

2.1 Complement clause

In generative grammar, every clause generally consists of a VP and a series of abstract functional

projections, including a tense and a complementizer, C, which looks like a clausal affix, as shown in (1a). A restrictive clause is one which is the complement of some NP, or head noun, as in (1b). A relative pronoun (X), coreferent with the head, may be present in the restrictive clause, but it does not crucially defines the subordinate clause as does the complement position of the CP.

(1)   a. $[_{CP}$ C $[_{IP}$ I $[_{VP}$ V $[_{NP}$ N $[_{VP}$ V $[_{NP}$ N]]]]]]

        b.   ...$[_{NP}$ N$_i$ $[_{CP}$ C ..X$_i$..]]

(1b) is precisely considered to be an externally headed relative clause, since the head noun is external to the CP, the modifying clause. Advocates of analyzes like (1b) apparently observe that in certain languages, things could be the other way around: the head noun may appear inside the modifying clause, as in (2), which is known as the internally-headed relative clause.

(2)   ....$[_{NP}$ $[_{CP}$ C $[_{IP}$ ..X$_i$ .. NP$_i$ ...]]

Can this kind of clause, in which the relative pronoun and its antecedent are clausemates, really exist? In the view of clause structure proposed in Desouvrey (1997), this kind of structure may not be possible in natural languages. It appears to be a direct consequence of the X-bar theory, which allows endless expansion of the syntactic structure. Certain X-bar linguists do not subscribe to a structure like (2). In order to avoid it, specific claims must be made. Thus, Cole (1987) has to suggest that there is a phonologically null pronoun which is referentially co-indexed with an NP that serves as a head to the modifying clause, as shown in (3). In Cole's view (translated here into current Chomskyan phraseology), there are no internally-headed relative clauses, at least in the the family of languages he was considering, namely Quechua.

(3) $[[[...NP_i..._{IP}]$ C $_{CP}]$ e$_i$ $_{NP}]$

On the other hand, working on Korean, Kim (2004) argues for the structure in (4), where x is a relative marker (not a relative pronoun) and N, a pronominal element, specifically the morpheme *kes*. The embedded IP, which she refers to as an IHRC, still has a non clausemate antecedent, just like in Cole's analysis.

(4)   [[[... NP$_i$... x $_{IP}$] N$_i$ $_{NP}$] D $_{DP}$]

Jhang (1994), however, comes up with a true IHRC, which is the complement of the complementizer (*kes*) as shown in (5). The NP head, though, is not co-indexed with anything in the structure. Rather the whole NP, as an argument of the matrix verb, bears a grammatical case which, under his assumption, makes it possible to recover the meaning.

(5)   [[[... NP ...] C $_{CP}$] $_{NP}$]-Case

What unifies all these analyzes is the representation of clauses which are obtained by recursive embedding and by the lack of a relative pronoun. In Korean, morpheme *kes*, which is mandatory in this construction, is either analyzed as a kind of pronoun or a complementizer, consistent with the Principle and Parameters Theory under which no other options are available.

In Desouvrey (1996, 1997), revisited in Desouvrey (2008a), it is argued that the complementizer is a referring element, specifically a relative pronoun/anaphor, whose antecedent is the subject of the complement clause. Thus if the complementizer is really a relative pronoun, the subordinate clause in (6) can be qualified as an IHRC, since the relative pronoun and its head are clausemates.

(6)   Mary thinks [that$_i$ Paul$_i$ is a thief]

However, this may not be the case because, in fact, *that* cannot be in the same clause as *Paul*. Unlike current practices in generative grammar, I argue that each clause is generated as an independent structure which only contains legitimate meaningful elements, minimally a subject and a predicate, as seen in (7). Morpheme *that* is not a clausal affix, but a pronominal argument of *think*. (Incidentally, notice that each clause is formed by a series of binary mergers; projections and category labels do not bear any theoretical relevance.)

(7)   [Mary [thinks that$_i$]]   [[Paul$_i$ [is [a thief]]]

In (7), there is no structural dependency between the two clauses. The dependent clause is simply the one that can't exist without the other. The *that*-clause is obviously dependent, since in order to

make sense it needs an antecedent which is the subject of the independent clause, as discussed in Desouvrey (1996, 1997, 2008).

The analysis in (7) holds for every type of relative clauses. For instance, if two simple clauses are in a relative type dependency, they can be represented as in (8), where X is a relative argument whose antecedent is either S or O in the other clause.

(8) a. [S V O] [X V O]

  b. [S V O] [S V X]

It has been observed by various scholars that IHRCs occur mainly in head final languages (Jhang 1994, Jo 2003, Kim 2004, etc.). A derivation with either (8a) or (8b) as input yields, in English-like languages, a head initial structure. However, under this analysis, (7) is a head final structure in a language that is not traditionally classified as head final. As I will show, the so-called IHRC originates from a structure similar to (7).

2.2 Relative pronoun *kes*

Consistent with the traditional model of clause structure, in which subordinate clauses must contain a designated subordinating marker, *that* in English for instance, many researchers are led to look for (or posit) an analogous element in other languages. Their criterion seems to be the following: if an element appears in the context of a subordinate clause, and if generally it has no specific meaning, it must be a complementizer. Thus, in the following Korean sentence (cf. Jhang 1994:2,1b), the bracketed part is an accusative clause, as indicated by the accusative marker *ul*, which takes scope over the whole *kes-clause*, where *kes* is the complementizer marking the subordinate clause, as Jhang argues.[2]

(9)   John-i [khemphyuthe-ka kocangna-n   kes]-ul   kochi-ess-ta

---

2 In this paper, the interlinear renditions are those of their authors, namely Jhang (1994) and Kim (2004), who adopt Yale Romanization to transcribe Korean into Roman characters. In Jhang's examples, I retain *kes* instead of COMP, along with Kim. Both authors use the following abbreviations: NOM nominative, ACC accusative, ADN adnominal, PST past, IND indicative, COMP complementizer, COP copula TOP topic, DECL declarative, REL relative, IMPRF imperfective, PSS passive, DAT dative, GEN genitive, HON honorific, PRE present, and PROG progressive.

J.-NOM computer-NOM   out of order-ADN kes-ACC repair-PST-IND

'John repaired the computer that was out of order.'

There is no unanimity on the status of *kes*, however. In Korean linguistic literature, apparently it is mostly taken to be either a complementizer (cf. Jhang 1994), or a pronoun (cf. Kim 2004, and references therein).[3] The complementizer analysis can be discarded, without further consideration, as an artifact of an ill-theory, since we know that this notion does not exist even in English. On the other hand Kim, along with other researchers, essentially proposes that *kes* is a pronoun that refers to the head noun inside the relative clause, as seen above. Taking this idea one step further, I claim that *kes* is a relative pronoun, and therefore it must have a non clausemate antecedent. Thus, parallel to English (7), sentence (9) can best be seen as initially made of two independent structures, a main clause and a dependent clause, as shown in (10). In the right-hand clause, the verb takes two argument, the subject *John-i* and the object *kes-ul*. Likewise in the left-hand clause, the argument structure of the verb is satisfied by its argument *khemphyuthe-ka*.[4] Both clauses are linked together by reference: the antecedent of *kes* is presumably the subject of the left-hand clause, as descriptively indicated by underlining. Under this analysis, (10) is no more a syntactic IHRC than English (7), and the right-hand clause, which includes relative *kes*, is syntactically the dependent clause..

(10)   [khemphyuthe-ka kocangna-n] [John-i kes-ul kochi-ess-ta]

It is clear that *kes* is the direct object of its clause, since it bears the so-called accusative affix *ul,* and the argument structure of each verb is satisfied. The only notable difference with English (7) is that the relative in (10) is not at an edge of its clause, which is normal, since Korean is an SOV language. Relative *kes* exactly has the same function as English *that*. The latter serves to introduce clausal complements of verbs such as *to think*. Korean *kes* is also used in the same context. Indeed, IHRCs and ordinary complement clauses have the same structure in

---

3   Jo (2003), among others, affirms that *kes* has various functions; it is a nominalizer affix and in certain contexts a noun with minimal semantic contents, which can be translated by 'thing'. Jo adds that it converts a preceding clause into an NP (p.551). My understanding of Jo's ideas is that *kes* can be a pronoun.

4   I assume that Korean SOV order is underived, that is, this order is normally the input. I leave this matter for future research.

Korean. As Kim (2004a) points out, the denotation of the embedded clause, whether an entity or a fact, depends on the nature of the embedding verb. For instance in (11) (adapted from Kim 2004a, ex. 3), the matrix verb triggers a factual interpretation, while in (12) (her (1)), it triggers an entity reading.

(11)　　　　John-un [totwuk-i tomangka-nun kes]-ul al-ess-ta

　　　　　　J.-TOP [thief-NOM run.away-REL.IMPRF kes]-ACC know-PST-DECL

　　　　　　'John knew that the thief was running away.'

(12)　　　　John-un [totwuk-i tomangka-nun kes]-ul cap-ess-ta

　　　　　　J.-TOP [thief-NOM run.away-REL.IMPRF kes]-ACC catch-PST-DECL

　　　　　　'John caught the thief running away.'

To grasp the difference between English and Korean, consider the structure of the English equivalent of the preceding examples. One can posit for both the very same structure, as seen in (13) (coreferent elements are underlined). In (13a), relative *that* is intended to refer to the whole clause, but actually it refers to the closest referring element inside it, namely *the chief*. In fact, what matters in that structure is that the relative has a proper scalar antecedent to license it, not the nature of the antecedent. A structure like (13b), however, which shows a Korean pattern, may not make it to the output; since this verb does not select for a clausal argument; the antecedent of *that* must (and can) be unambiguously an NP. As I will show, the difference between Korean and English lies precisely in the fact that the relative pronoun in (13b) (or its equivalent (13c)) can adjoin to its head in order to make a complex NP, free of ambiguity, as seen in (14). However, in a complement clause like (13a), the head of the relative is not intended to be *the chief*, and therefore adjunction, or incorporation, will never take place.[5]

(13)　a.　　　[John knew <u>that</u>] [<u>the chief</u> was running away]

　　　b.　　*[John caught <u>that</u>] [<u>the chief</u> was running away]

　　　c.　　*[John caught <u>the chief</u>] [<u>that</u> was running away]

5　Only restrictive relative clauses adjoin to their head. In non restrictive clauses, a simple adjacency of the relative pronoun and its head is required. Embedding is obtained by movement of the main clause subject to the left edge of the relative clause, just like the subject of the matrix clause in Korean IHRCs (see below).

(14)   John caught [the chief=that was running away]

Now the question that arises is why Korean *kes* cannot incorporate to its antecedent, like English *that*, which would allow it to avoid all the fuzzy interpretations the IHRC is known for. As I will show, the so-called case markers are free morphemes, more precisely pronouns, some of which are vector, and therefore they cannot easily adjoin to another element. The adjunction referred to here is, of course, temporal adjunction (represented as usual with the equal sign), a process by which two segments are attached with an association line running from x-slot to x-slot, as discussed in Desouvrey (2000, and below). On this view, the adjunction process yields a single bimorphemic element.

3. The structure of Korean referring elements

3.1 NPs and pronouns

Unlike English, Korean NPs bear an affix that defines its grammatical role and semantic relationship with other elements. Thus the questions that deserve our attention now are: (a) what is the nature of the case affix? and (b) how does it contribute to the reference of the stem?

The nature of the affixes is a controversial subject in the literature. In general, they are considered to be either free morphemes, bound morphemes, clitics, or phrasal affixes (see Yoon 2005, and references therein), but above all case markers. The feature-based syntax, as implemented with the non-linear representation, makes it possible to capture the real nature of these elements. Clearly, the affixes represent various relations, including nominative, accusative, goal, source, etc. In traditional Korean grammar, the case affixes comprised two subgroups: nominative, accusative and genitive are referred to as grammatical case, while locative, dative, passive are known as semantic case markers (cf. Ko 2008, Yoon 2005, etc.). Given the theory of coreference proposed in Desouvrey (2003/under review), I wish to suggest a novel analysis of these elements. I claim that they are all referring elements of a special type, which I shall call "thematic pronoun" (ThP). If they are pronouns, it must be the case that they are free morphemes under the natural assumption that the antecedent of a referring element cannot be a part of itself. There are two facts that are in full agreement with us. First, such element can be stacked up (cf.

among others Yoon 2004), that is, a stem can bear two such affixes; if there were case markers, one would expect no NP to bear more than one case, and similarly if they were affixes, it would be difficult to explain why two opposite affixes are merged with a single stem. Moreover, as we will see, relative *kes* can take two or three different antecedents at the same time, which suggests it has an extra R-node provided by the so-called case affix.

　　　Clearly, I take the semantic affixes to be a thematic pronouns, and therefore they must have a root node that expands to an R-node, as shown in (15b).[6] The root node determines whether a referring element is a scalar (Φ) or a vector (Ω). It seems that all of them, but nominative, and instrumental, are scalar (see below). As for nouns or NPs, I suggest that they have a double root node, a scalar and a vector, underlyingly inert, and represented with a blank space within brackets, as shown in (15a). It might follow from this state of affairs that they lack the R-node, which implies that their terminal feature, or referential feature, is floating, that is, unattached to the morpheme with an association line.

(15)　　　　　a.　　　NP　　　　　　　b.　　　ThP
　　　　　　　　　　　[ ]　　　　　　　　　　　Φ/Ω
　　　　　　　　　　　　　　　　　　　　　　　　|
　　　　　　　　　　　　　　　　　　　　　　　　R

　　　　　　　　(P)
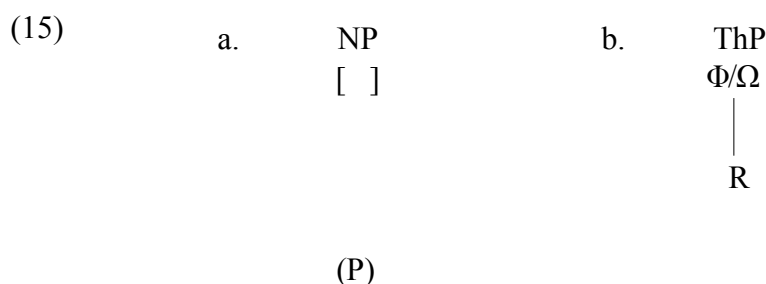
If this representation is correct, it appears that both elements are complementary. Indeed, when a thematic pronoun is merged with an NP in the syntax, both elements enter in a mutual benefit association, which I shall refer to as symbiosis: the ThP gives its root node to the NP, by spreading of its R-node, while the floating R-feature of the NP is attached to the ThP's R-node, as shown below. Once the R-node is spread, the root feature that matches the root node of the ThP becomes dominant or active, while the other remains in a recessive state.[7]

6　I consider only the referential branch of their tree. They may have other syntactic features, for instance abstract case.

7　The recessive R-feature may become active, which enables the relative pronoun to refer to the all the arguments of the embedded clause, three at most (see below).

(16)

```
        NP      ThP
        Φ/Ω     Φ/Ω
           `.    |
             `.  |
               `.R
                `.
                  `.
                    P
```
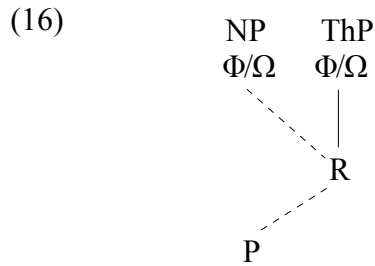
Thus thematic pronouns are specified as to whether they are scalar of vector, while NPs lack any feature but the terminal one (noted as P, Q, etc.), which links them up to the real world. Relative *kes* must be much like an NP, since as an argument it must have a ThP. In the literature, *kes* is often mentioned as a kind of neutral element with very little, if not null, specifications, which would be the source of its vagueness. The present representation allows to capture this observation. Just like nominals, one can posit that it lacks a proper root node, and therefore its R-node is not anchored. When merged with a ThP, it acquires a root node and its R-node is then activated, as seen in (17).

(17)   a.

```
        Kes     ThP
        [ ]     Φ/Ω
                 |
                 |
        (R)      R
```

b.

```
        Kes     ThP
        Φ/Ω     Φ/Ω
          `.    |
           `. ´ |
           ´ `. |
        R        R
```
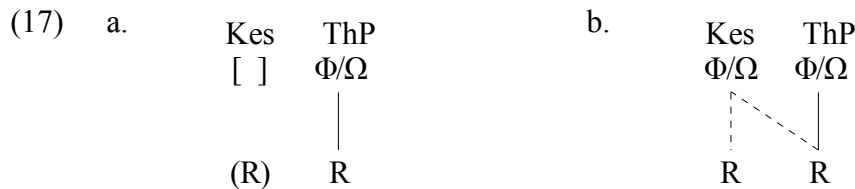
3.2 Verb features

In a theory that puts features and their interaction to the center stage, verbs must be examined carefully, for they are the main element towards which others are gravitating.

The tree structure proposed in Desouvrey (2000) and elsewhere can be adopted for Korean. Basically, the verb must provide for the features of its arguments. Concretely, let's take a three-place verb. It must have three Agr-nodes (class nodes, as opposed to terminal features), one for each argument, and all of them expand to a K-node (also a class node), which holds abstract Nominative (subject), Accusative (direct object), and possibly Oblique (indirect object) cases, as shown in (18). In addition, the subject Agr includes a bare Ω-node, which means that the

argument has to be a vector. Likewise, the direct object AgrO contains a bare Φ-node, which becomes the theme by default. As for the indirect object AgrO, its Φ-node can be linked either to Goal (or Dative), Source, or Locative. Other semantic features, for instance Instrumental and Genitive, do not seem to be directly supported by the verb, as is the case of adjuncts in general.

(18)

```
                          Verb stem
              ┌──────────────┼──────────────┐
            AgrS           AgrO           AgrO
          ┌──────┐       ┌──────┐       ┌──────┐
          Ω      K     Φ      K     Φ      K
                 │              │     │              │
                 N              A   Go/So            O
```
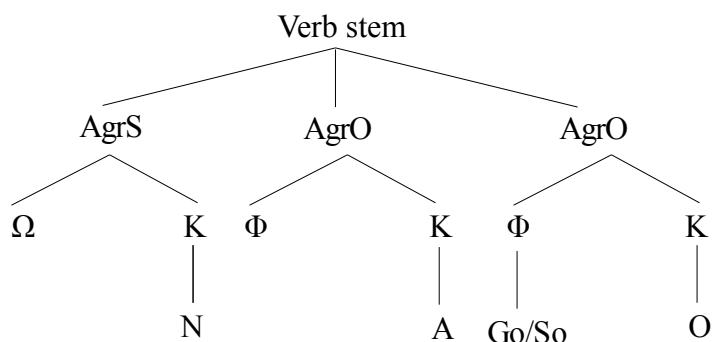
Although both the subject and the direct object are unspecified for semantic feature, it is not the case that they are interchangeable. The subject is expected to be a vector, since AgrS contains an Ω-node. On the other hand, no scalar element unspecified for Goal or Source can be the indirect object.

Moreover, under this representation there are only the following Cases in the system: nominative (N), accusative (A), and perhaps oblique (O), just as in Romance (cf. Desouvrey 2000). In my view, all of what is referred to as Case markers in Korean linguistics are in fact pronouns overtly expressing semantic relations, hence the name of thematic pronouns. Now it is matter to relate the feature structure of these thematic pronouns with those of verbs. I suggest that this is realized through the R-node of referring elements, which are in fact expressions of the semantic relations, as I will show in the next section. In Desouvrey (2003), and subsequent works, the R-nodes are just class nodes whose purpose is to set a three-way distinction between referring elements, semantic relations being apparently not crucial to track down coreference in English and suchlike languages.[8]

---

8   By overlooking the nature of the R-node, Desouvrey (2003) resorts to the notion of domain (a reminiscence of
    Binding Theory), which now can be dispensed with under the novel view that the R-nodes hold the thematic

3.3 The contents of the R-node

As suggested above, the so-called case markers are free morphemes, precisely pronominal elements that carries their own R-node, consistent with Desouvrey (2003). They must agree with the selecting verb, as any other element, in the sense that their feature must be compatible with the verb. The subject Agr and the direct object Agr pose no problem, for in principle their unspecified Ω/Φ-node are compatible with any expansion of their counterpart in the argument. However, with the indirect object, whose Φ-node expands to some feature, the argument must bear a similar feature, unless it is left unspecified. Now, since the verb has no R-node, it must be the case that the latter is a place holder for some class of features. I suggest that the R-node of a referring element is in fact its thematic feature. For instance, the representation of the goal (or dative) marker *ey* is as shown below.[9]

(19)
　　　　　ey-DAT
　　　　　Φ
　　　　　│
　　　　　Go

　　The morphemes usually referred to as nominative and accusative are not cases and more generally do not carry any R-feature at all in Korean grammar, and perhaps in every natural language grammar; they are specified for a null semantic feature that will be identified with the symbol 'Ø' in the representation. This specification enables them to stand for various semantic features, including Agent, Theme, Experiencer, according to the verb.[10] The next natural move is to assume that specified semantic features are mutually incompatible. That is, one expects a terminal feature P to spread only to a compatible thematic feature. This is formulated in (20).

(20)　　　　　A terminal feature P can spread to a R-node (a semantic feature) if its mother
　　　　　　　node (i.e. its own R-node) is either identical to the target or unspecified.

9　The other semantic features to be used in this paper is So (Source) and In (Instrumental).

10　Under this view, the nominative and the accusative markers do not carry any other relevant feature and therefore are pure morphemes that the language chooses to maintain, most likely to harmonize the paradigm by avoiding a morpheme gap. This view seems to be supported by the fact that they are omittable in colloquial speeches.

Let us now return to sentence (9), which initially consists of the two independent and unattached structures seen in (10), conveniently repeated below under (21a). Recall that *kes* is a referring element, and coreference relation is indicated by underlining. Under the assumptions discussed above, it has the non-linear representation shown in (21b) (omitting irrelevant class nodes). Since the nominative pronoun is a vector, the linking of *kes* to feature P is realized through another vector, yielding a scope conflict. Put another way, the subject of the *kes*-clause opposes the acquisition of a proper antecedent by *kes*. We may note that this problem would persist under a different ordering of the clauses, for the verb too is a vector, and would oppose the spreading of whatever vector from its right.[11]

(21)   a.   [khemphyuthe-ka kocangna-n] [John-i kes-ul kochi-ess-ta]

computer-NOM out of order-ADN John-NOM kes-ACC repair-PST-IND

   b.
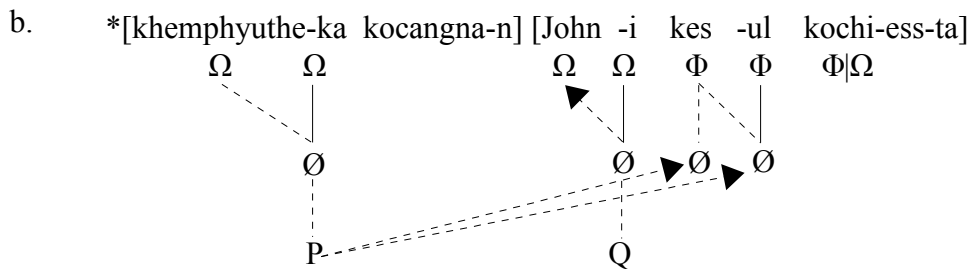
To overcome this difficulty, I suggest that the subject of the *kes*-clause moves to the left edge of the independent clause, which yields the apparent embedding of IHRCs (just as in nonrestrictive clauses in English). Another desirable effect of this movement is that *kes* becomes closer to its antecedent, the independent clause, thus satisfying an adjacency requirement which is a hallmark of relative pronouns; this is shown in (22). Now the obvious question is why the subordinate verb, *kocangna* 'out of order', does not block the spreading, since Korean verbs are vector. The answer is direct and simple: it is not a vector in such a context, or more precisely it loses its vector property. Here the crucial assumption is that the so-called adnominal affix, *(u)n*, is a vector just as the verb stem, and therefore the vector-hood of the latter is absorbed by the affix, which is a normal property of the representation. In other terms, the so-called adnominal

---

11 Notice that the Φ and Ω nodes of the verb do no expand further. However, the verb normally includes the feature of the argument, and it can mimic the null feature of the argument if need be (Desouvrey 2000).

affix or nominalizer (Jo 2003), also named a relative marker (Kim 2004) is used as a vector switch. This analysis is supported by two pieces of indisputable evidence. Firstly, the verbal affixes used with matrix verbs can never appear in the embedded IHRCs, presumably because they don't have the capacity to switch off any vector. Second, as is sometimes mentioned in the literature, IHRCs, or *kes* clauses, are incompatible with negation, which is universally a vector: the matrix verb can be negated, unlike the embedded verb. In the present analysis, negation would be an additional vector, and therefore it has the property to prevent *kes* from acquiring an antecedent.

(22)   [John -i [khemphyuthe-ka kocangna-n] [kes -ul   kochi-ess-ta]
         Ω   Ω   Ω   Ω   Φ   Φ   Φ|Ω

                 Ø   Ø   Ø   Ø

                 Q   P
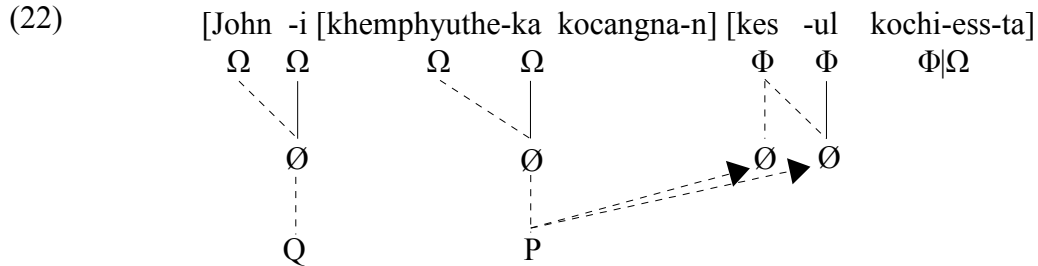
To emphasize, in this theory coreference is a spreading process by which a higher-end referring element assigns a feature to a lower-end one. The highest end is a referential expression, while the lowest end is an anaphor, the pronoun being in the middle. Coreference between a pronoun and a referential expression (the antecedent) can be thwarted only by a vector, otherwise a pronoun can take whatever available R-feature as antecedent. Thus, (22) is not ambiguous, since there is only one referential expression in the embedded clause. In addition, terminal features P and Q are not in the same plane, unlike R-nodes, which are therefore sensitive to the ban on line crossing.

However, when two arguments are present, the number of interpretation augments accordingly. Consider the following example, (23), bracketed consistently with our view of clause structure (cf. Jhang 1994, Kim 2004). There are three possible readings, which can be accounted for under this theory.[12] For the sake of clarity, the non-linear representation is reproduced three times, one for each reading, as seen in (24) (irrelevant nodes are omitted). In (24a), the subject of the embedded clause spreads to both R-nodes of the relative, while in (24b)

---

12 Apparently, Jhang (1994) does not mention the third reading.

the object of the embedded clause assigns its feature to both R-nodes of the relative. The third reading is obtained when each argument of the embedded clause acquires an R-node of the relative, (24c). We may emphasize that the third reading would not be possible without an extra R-node provided by the thematic pronoun, for *kes* does not have the plural capability, being devoid of specific content, as mentioned in the literature (cf., for instance, Jo 2003, Y.-B. Kim 1996, etc.), and therefore could not take two features at the same time.[13]

(23)   John-i [koyangi-ka cwi-lul ccoch-ko-iss-nun][kes-ul cap-ass-ta]

         J-NOM   cat-NOM mouse-ACC chase-PROG-be-ADN kes-ACC catch-PST-IND

         'John caught the cat that was chasing the mouse.'

         'John caught the mouse that the cat was chasing.'

         'A/the cat was chasing a/the mouse, and John caught them both.'

(24)   a.

         'John caught the cat that was chasing the mouse.'

       b.
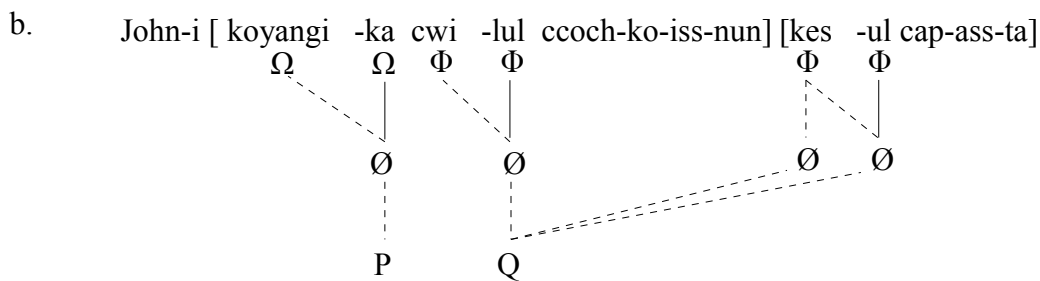
         'John caught the mouse that the cat was chasing.'

---

13 The use of multiple R-nodes to mark plurality is discussed in Desouvrey (2006) with Chinese data.

c. John-i [koyangi -ka cwi -lul ccoch-ko-iss-nun] [kes -ul cap-ass-ta]
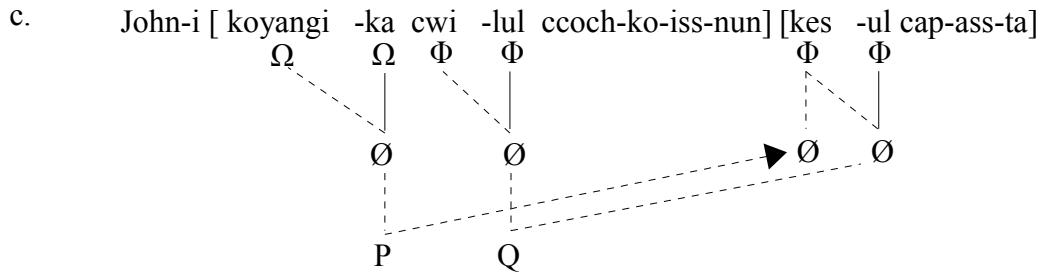
'A/the cat was chasing a/the mouse, and John caught them both.'

In the same vein, the following example contains an embedded clause with three arguments. The relative pronoun may refer to each argument individually or collectively to all of them, as Kim points out (see her fn.6, p.19). In the plurality reading (25b), the recessive R-node of *kes* is enacted, as suggested above (see fn.7).

(25) a. John-un [Mary-ka ku alumtawun yepaywu-ekey Sue-lul sokayha-ko iss-n-un]

J.-TOP M.-NOM that beautiful actress-DAT S.-ACC introduce-COMP COP-IMPRF-REL

[kes-ul (takaka-se) kkyeanasstas]

kes-ACC (approach-and) hugged.

'Mary was introducing Sue to the beautiful actress and John hugged her/them all.'

(adapted from Kim 2004:150,19)

b. ...[Mary -ka ... yepaywu-ekey Sue -lul ...] [kes   -ul ... kkyeanasstas]
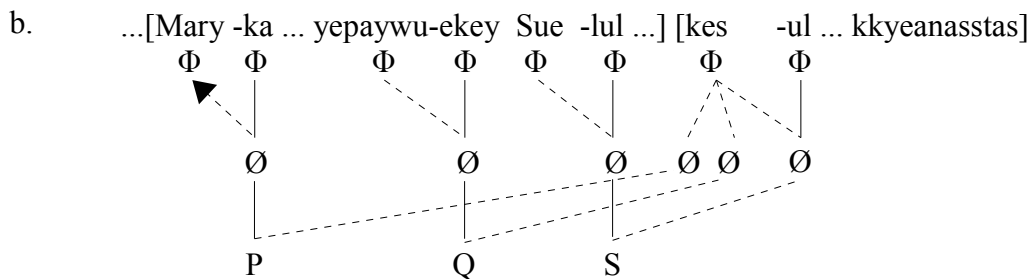
The conclusion is clear: the nature of the representation makes it possible to account in a simple and elegant fashion for the ambiguity of (24) and (25).

4. Constraints on the linking of *kes*

In Korean, IHRCs are affected by a number of processes, which either rule them out in certain

contexts or limit their interpretation in others. In current analyzes, limitations on IHRCs are usually dealt with by the use of semantic and pragmatic considerations. Although I do not systematically deny the role of the latter, I will show that their relevance is drastically downgraded under this theory.

4.1 Vector effect

Consider the example in (26). There are two arguments in the independent clause, and one would normally expect relative pronoun *kes* to pick out either, even both, as antecedent. However, only the first reading is possible, that in which the antecedent of the relative is the direct object of the independent clause.

(26)   [Sonyen-i kong-ul cha-n] [kes-i changmwun-ul kkay-ss-ta]

              boy-NOM ball-ACC kick-ADN kes-NOM window-ACC break-PST-IND

              'The ball that the boy kicked broke the window.'

              Not: 'The boy who kicked the ball broke the window.' (Jhang1994: 31, 37)

The representation of both readings are shown in (27) and (28). We may immediately note that the relative pronoun is the subject of the matrix clause, and therefore remains in situ (it is already at an edge of the clause), while it acquires the object of the dependent clause as its antecedent, yielding the desired result, (27). The second reading, (28), is impossible because both the relative and its intended antecedent are vector, resulting in a scope conflict (cf. Desouvrey 2008, 2009 for similar effects in other languages).

(27)   [Sonyen -i kong -ul cha-n] [kes   -i   changmwun   -ul kkay-ss-ta]

                   Ω   Ω   Φ   Φ   Ω   Ω   Φ   Φ

                   ▼ | | | ▼ | | |

                           Ø   Ø   Ø   Ø   Ø   Ø

                           | |

                           P   Q   R

(28)   *[Sonyen-i kong -ul cha-n] [kes -i changmwun -ul kkay-ss-ta]
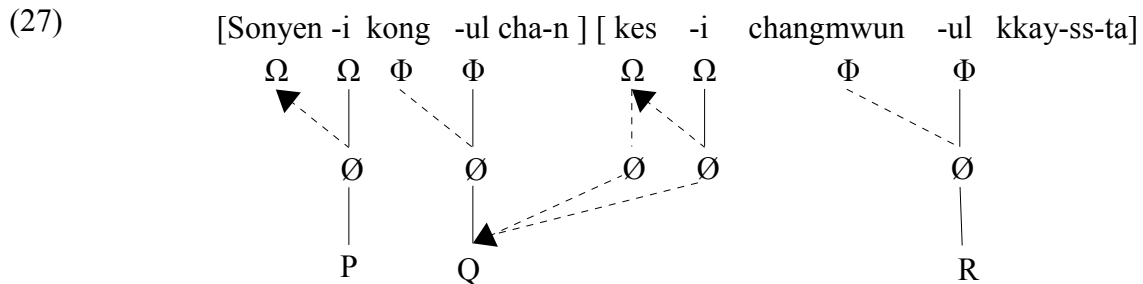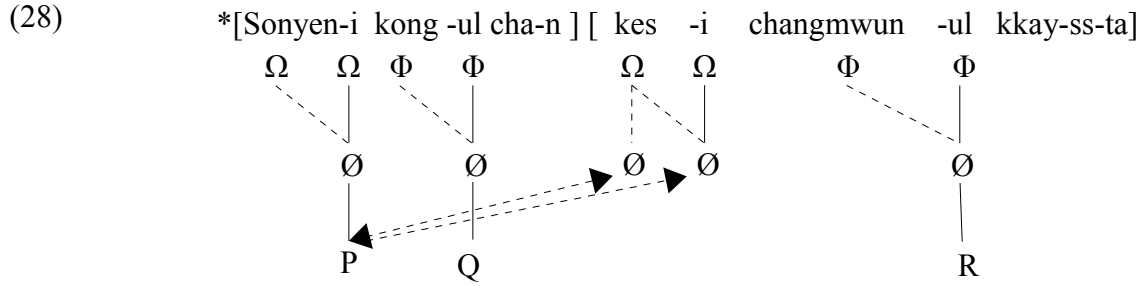
To further illustrate the vector effect, consider the sentence in (29), whose the second reading is not possible, as Jhang emphasizes. Putting clause boundaries at the right place, the non-linear representation is shown in (30). Notice that the passive morpheme being a vector (see below), just like the nominative one, *kes* can only acquire the accusative object as antecedent. (Instead of producing a representation for each reading, each R-node of the relative is conveniently linked to one argument.)

(29)   Changmwun-i [sonyen-i kong-ul cha-n kes]-ey/eyuyhay kkay-ci-ess-ta

            window-NOM boy-NOM ball-ACC kick-ADN kes-by break-PSS-PST-IND

            'The window was broken by the ball that the boy kicked.'

            Not: 'The window was broken by the boy who kicked the ball.' (Jhang:32, 37b)

(30)   Changmwun -i [sonyen -i kong -ul cha-n] [kes -ey kkayciessta]
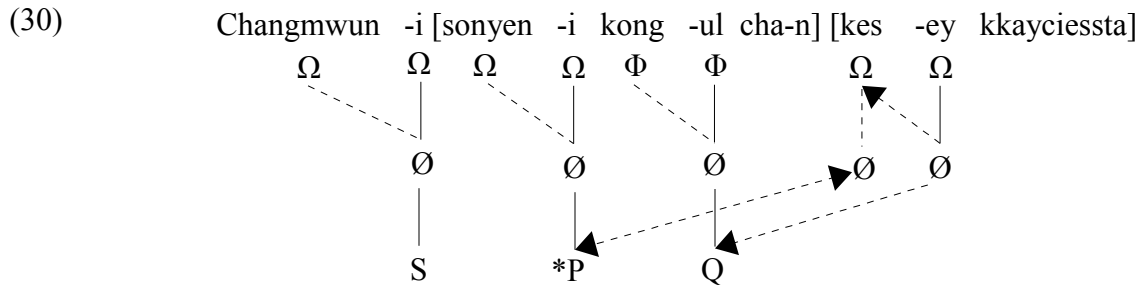
More generally, under passivization the ambiguity disappears, as Jhang points out. In my view, under passivization the relative becomes a vector, thanks to the nominative pronoun, and therefore can no longer take the subject of the embedded clause as its antecedent. To further illustrate this point, consider the sentence in (24), which normally has three ambiguous readings. when passivized, the ambiguity disappears, since the embedded nominative subject is excluded

as a possible antecedent by virtue of being a vector; compare (31) with (25) above.

(31)   [koyang -i cwil -ul ccochkoiss-nun] [kes -i John -ekey caphiessta]
             Ω   Ω   Φ   Φ   Ω   Ω   Φ   Φ   Φ

                          Ø   Ø   Ø   Ø   Go   Go

                       * Q   S   P

'The mouse that the cat was chasing was caught by John.'

Not: 'The cat that was chasing the mouse was caught by John.'

Consider the following sentence, (32), in which the relative is accompanied with the Instrumental thematic pronoun. The latter is compatible with both the subject and the object, which bear a null semantic specification, consistent with (20). However, the relative normally picks up the object of the embedded clause as antecedent; the subject may not be an antecedent, since trivially coffee cannot be made with the boy. Clearly in (32), one reading is apparently warranted by pragmatic reasons. Now, relying on the benefit of hindsight, suppose that the instrumental marker is a vector, just like the nominative Case, hence its Ω-specified root node, as shown in (33). As a vector, instrumental *kes* cannot acquire the subject of the embedded clause as antecedent. Under this hypothesis, pragmatic considerations are irrelevant in this example.

(32)   John-i [sonyen-i mwul-ul kkulhi-n] [kes-ulo khephi-lul mantul-ess-ta]

             J.-NOM [boy-NOM water-ACC boil-ADN] [kes-with coffee-ACC make-PST-IND]

             'John made coffee with water which the boy boiled.'

(33)   John-i [sonyen -i mwul -ul kkulhi-n] [kes -ulo khephi -lul mantul-ess-ta]
              Ω   Ω   Φ   Φ   Ω   Ω   Ω   Ω

                        Ø   Ø   In   Ø

                      *P   Q   Q

If (33) is correct, one can predict that an instrumental relative can never have the subject of transitive verbs as antecedent. The following sentence, which is not sensitive to pragmatic effects, bears out this prediction. As seen in the representation in (35), *kes-ulo* conflicts with its intended antecedent, hence the ill-formedness of the sentence.[14] (The relative is shown with one R-node for the sake of simplicity.)

(34)   *John-i [kam-i changmwun-ul kkay-n] [kes-ulo juseu-lul mantul-ess-ta]

         J.-NOM [boy-NOM water-ACC broke-ADN] [kes-with juice-ACC make-PST-IND]

         'John made juice with the persimmon which broke the window.'

(35)   *John-i [kam   -i   changmwun-ul kkay-n] [kes   -ulo juseu-lul mantul-ess-ta]
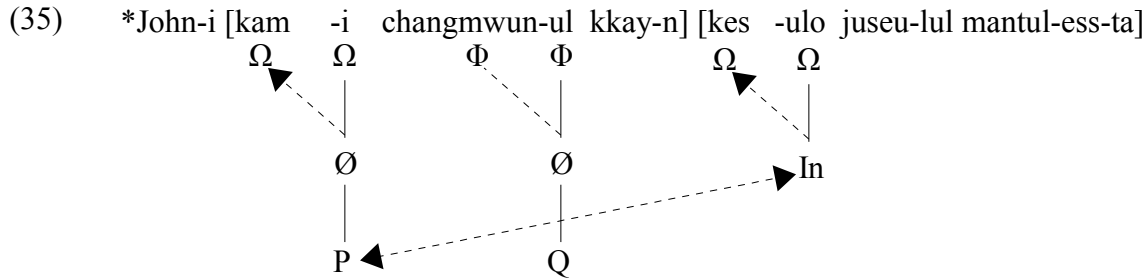
This vector effect, which is not peculiar to Korean grammar, seems to be a strong generalization: a nominative subject cannot be the antecedent of relative *kes* in a symbiosis with *-i/ka* (nominative), *-ulo* (instrumental), and *-ey* (passive). Apparent counter examples to this vector effect are discussed below.

4.2 Stray deletion

As seen so far, the thematic pronoun enacts the root node of *kes*, which then triggers the attachment of its R-node. However, there are cases in which this process fails to take place. As a result, every floating element is erased as stray, and no acceptable IHRC can obtain.

This phenomenon can be observed when *kes* is a source or a goal adjunct in the matrix clause, which leads Jhang to the observation that only instrumental and by-adjuncts seem compatible with IHRCs. Consider the sentence in (36). They are apparently ungrammatical

---

14 This sentence is built with data from Jhang's and Kim's works, but the judgment is my Korean consultant's.

because *kes* is respectively a source and a goal, consistent with Jhang's descriptive generalization.

(36) a. *Mwul-i [John-i chencang-ul kochi-n] [kes-eyse tteleci-n-ta]

water-NOM J.-NOM ceiling-ACC repair-ADN kes-from leak-PRE-IND

'Water is leaking from the ceiling that John repaired.'

b. *John-i [uysa-ka Mary-lul manna-n] [kes-ey/eykey chaca-ka-ss-ta]

J.-NOM doctor-NOM M.-ACC meet-ADN kes-to visit-go-PST-IND

'John went to the doctor who met Mary.'

(adapted from Jhang 1994:22-23; 24, 25)

Under the present analysis, the ungrammaticality of these sentences follows directly from the nature of the representations. Indeed, as can be seen in (37) and (38), the physical thematic pronoun, as opposed to null one, is absorbed by the verb with which it shares the same feature (cf. Desouvrey 2000). As a result, the root node of *kes* can't be enacted, and its unlicensed floating R-feature is then deleted by a stray erasure rule, just as in phonology.[15]

(37)

*Mwul-i [John -i chencang -ul kochi-n] [kes -eyse tteleci-n-ta]
        Ω   Ω   Φ   Φ   [ ]   Φ   Φ

           Ø   Ø   Ø   [So   So]

           P   Q

(38)

*John-i [uysa -ka Mary -lul mannan] [kes -ey chaca-ka-ss-ta]
        Φ   Φ   Φ   Φ   [ ]   Φ   Φ

           Ø   Ø   Ø   [Go   Go]

           P   Q

---
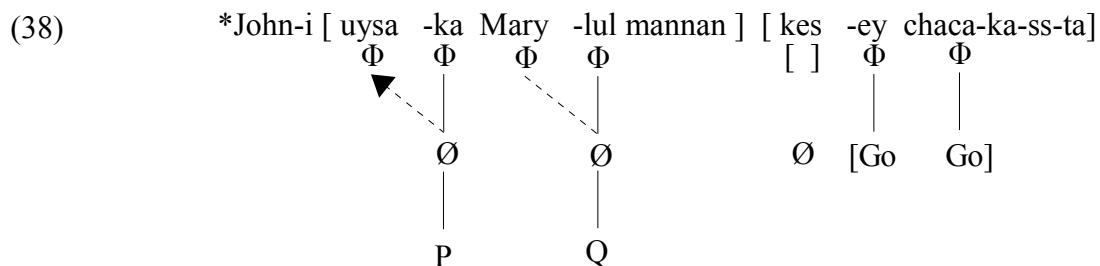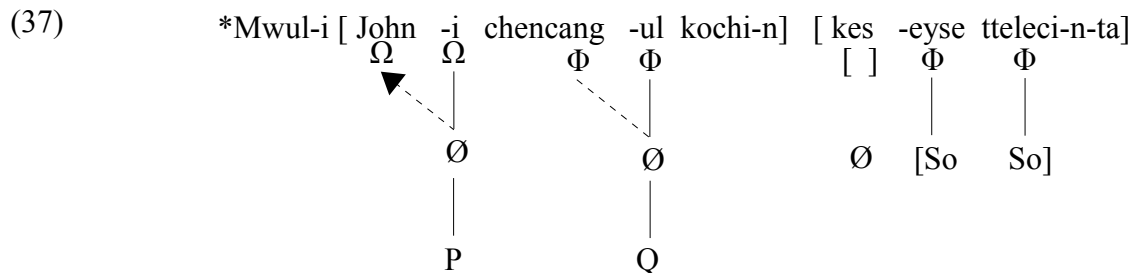
15 The reader unfamiliar with this notion may need to consult a textbook like Kenstowicz (1994), for instance.

Now it is clear that if the thematic pronoun cannot impregnate the stem, ungrammaticality results in, since a rule of stray erasure normally deletes unlicensed features in the representation. To support this analysis, one can show that a structure can be rescued if another pronoun can license *kes*. Before proceeding, let us mention an important property of the representation. In the above examples, the head and its complement each bears the same feature, Source or Goal. By absorbing each other, it appears that they detach from the original tier to make up a new plane. Absorption can take place even when the occurrences of the feature are not adjacent, as I will show, but in such a case they remain in their original tier.

Consider the following sentence in which there are two verbs in the relative clause. Since *kes* appears with the dative marker, it must be the case that it is the complement of a dative (or goal) verb, consistent with (18). Therefore the non-linear representation must be as shown in (40), which reveals that *kes* is licensed by the accusative pronoun of the rightmost NP. This is possible because the adjacent goal features come to make a separate plane, otherwise the ban of line crossing would block that operation.

(39)   John-i [totwuk-i tomangka-n-un]   [kes-ey tay-ko   chong-ul ssoassta**]**
         J.-NOM [thief-NOM run.away-IMPRF-REL] [kes-DAT aim.at-COMP gun-ACC shot]
         'A thief was running away and John shot at him.'

         (adapted from Kim 2004:192;13b)

(40)   John-i [totwuk-i tomangka-n-un] [kes- ey   tay-ko chong   -ul ssoassta]
                      Ω   Ω   Φ   Φ   Φ   Φ   Φ   Φ

                            Ag   ▶Ø [Go Go]   Ø

                            P   Q
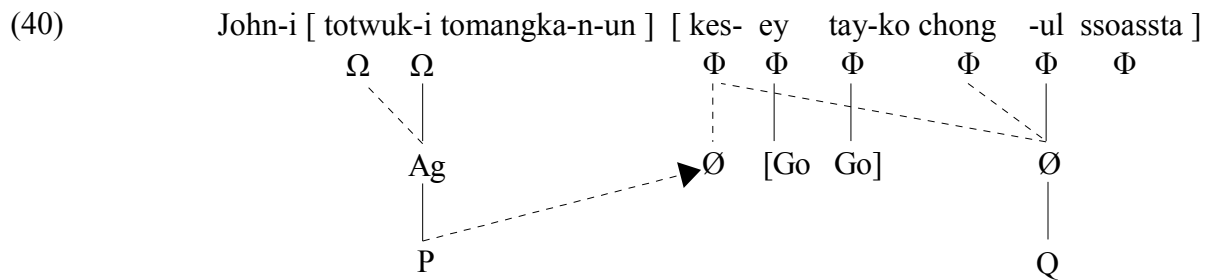
However, if the intervening features are not adjacent to each other, they remain in their plane, which prevents the licensing of *kes* by virtue of the ban on line crossing in the representation. This is illustrated in (42), which represents (41).[16]

16 Structure (41) illustrates the inability of Korean symbiotic phrases to undergo (temporal) adjunction. In effect,

(41)   *John-i [Mary-ka sonyen-ul ttayli-n] [kes-eykey chayk-ul cwu-ess-ta]

              J.-NOM M.-NOM boy-ACC hit-ADN kes-DAT book-ACC give-PST-IND

              'John gave the book to the boy that Mary hit.' (adapted from Jhang (1994))

(42)   *John-i [Mary -ka sonyen -ul ttaly-n] [kes -eykey chayk -ul cwu-ess-ta]
              Ω   Ω   Φ   Φ   [ ]   Φ   Φ   Φ   Φ
              | | | | | | | | |
              Ø   Ø   Ø   [Go   Ø   Go]
              | | |
              P   Q   S

4.3 The genitive anaphor

Unlike other semantic markers, genitive may not appear as a complement of a verb; rather it is always a noun complement. Knowing that the head of a genitive phrase may bear any semantic function, it must be the case that the genitive marker bears a minimal specification in other to accommodate whatever head noun. In addition, the relation between a genitive phrase and its head is always local; indeed both NPs must be adjacent. This suggests that the genitive marker has no thematic node (or R-node) of its own, which means it is an anaphor, just like English anaphor *'s* (cf. Desouvrey 2003/under review).[17]

It should be obvious that a genitive NP restrains the denotation of a head just like a restrictive relative clause. In this theory, a restrictive clause is related to its head by coreference. Thus, if the genitive marker were a pronoun, a simple sentence like (43a) would have the representation in (43b), which shows no relation between the genitive phrase and the nominative-marked head. Moreover, the NPs cannot pair up, since they are both specified for different features in their root nodes, resulting in a total mismatch.

(43)   a.   Mary-uy namphyen-i koyangi-lul cap-ass-ta

---

similar configurations in Romance, in which a feature stands between two identical features triggers the movement of the intervening morpheme, a process quite similar to the gemination effect in non-linear phonology (see Desouvrey 2000).

17 Apparently A. Holmberg claims that genitive does not bear a thematic role in Icelandic, as reported in Yip et al. (1987:228, fn. 5).

M.-GEN   husband-NOM cat-ACC catch-PST-DECL

'Mary's husband caught the cat.'

b.   *[Mary -uy namphyen   -i   [koyangi   -lul cap-ass-ta]]

$$\Phi \quad \Phi \quad \Omega \quad \Omega \quad \Phi \quad \Phi$$

Ge   Ø   Ø

P   Q   S

If instead the genitive marker is an anaphor, both NPs can relate to each other without the mismatch problem. The nominative pronoun can enable the root node of *namphyen* 'husband' as well as that of the genitive marker and its complement altogether, yielding a series of Ω-nodes, as shown in (44). Since the genitive anaphor does not provide any thematic node to *Mary*, the floating terminal feature of the latter (P) must be erased by the stray erasure rule.

(44)   [Mary -uy namphyen   -i   [koyangi   -lul cap-ass-ta]]

$$\Omega \quad \Omega \quad \Omega \quad \Omega \quad \Phi \quad \Phi$$

Ø   Ø

(P)   Q   S
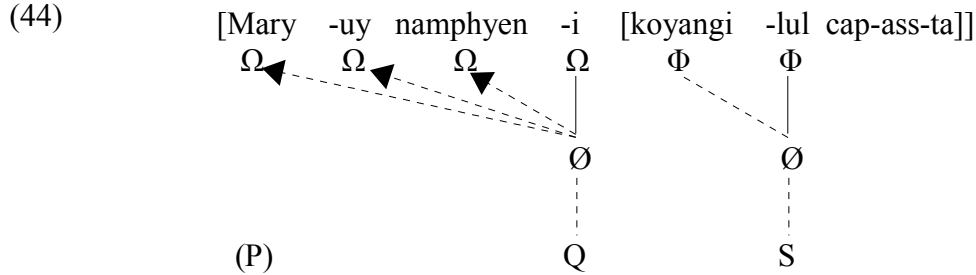
In order to see the correctness of this analysis, consider the following sentences (adapted from Kim 2004:146,13, crediting Shimoyama). As can be seen, the embedded genitive in (45b) cannot head relative *kes*, sharply contrasting with (45a), where the same noun phrase is not embedded inside another one.

(45)   a.   [Enu namca$_i$-na caki anay-lul sonnim-kkey sokayha-n] [kes-ul sonnim-i cwuksi

chingchanhayssta]

[[every man-Q [self wife]-ACC guest-DAT.HON introduce-ADN] [kes-ACC guest-

NOM immediately praised.

'Every man$_i$ introduced his$_i$ wife to the guest$_k$ and he$_k$ praised her immediately.'

b.   *[Enu namca-na caki anay-uy kimpap-ul sonnim-kkey taycepha-n] [kes-ul
          sonnim-i cwuksi chingchanhayssta]
          [[Every man-Q [[self wife]-GEN sushi]-ACC guest-DAT.HON serve-PRF]-REL] [kes-
          ACC guest-NOM immediately praised.
          Intended: 'Every man$_i$ served the guest$_k$ his$_i$ wife's sushi and he$_k$ praised her
          immediately.'

The non-linear representations of these sentences are given in (46a) and (46b) respectively (irrelevant parts set aside). In (46a), feature P of *anay* 'wife' normally reaches *kes-ul*, after being linked to the R-node, yielding a well-formed sentence. On the other hand, in (46b) it is deleted as a stray, since the genitive anaphor does not provide it with an R-node. Therefore the feature Q of *kimpap-ul* 'sushi' spreads to *kes*, yielding an unwanted result.[18]

(46)   a.   [.... caki   anay   -lul ...] [kes   -ul ....]
                          Φ   Φ   Φ   Φ

                                    Ø   Ø   Ø

                                         P

       b.   *[.... caki   anay   -uy   kimpap   -ul ...] [kes   -ul ....]
                         Φ   Φ   Φ   Φ   Φ   Φ

                                               Ø   Ø   Ø

                          (P)   Q
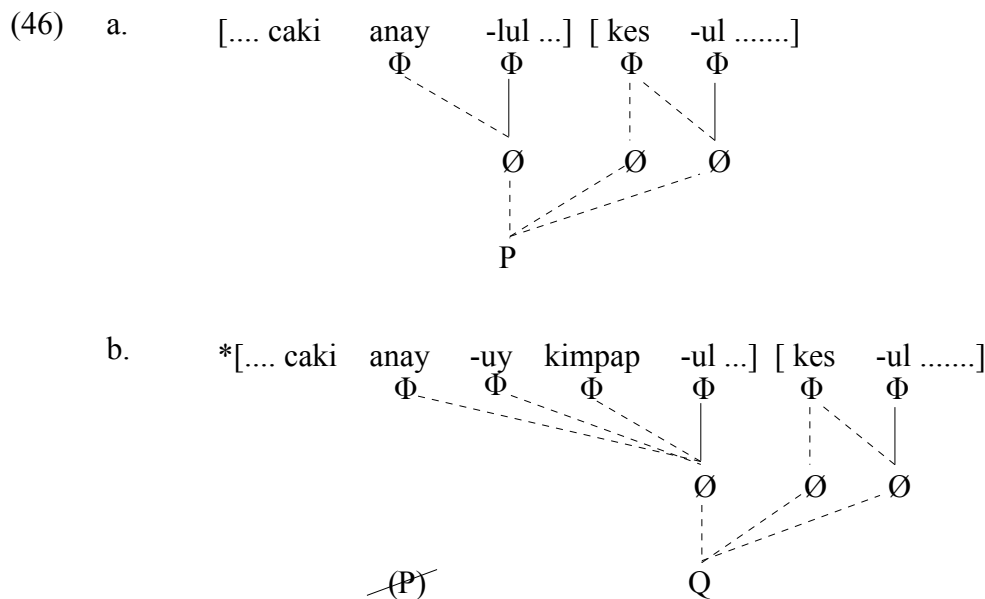
However, the stray feature, P, could survive if the other feature, Q, cannot be an appropriate antecedent. As the only relative pronoun in Korean, *kes* has very little specification so that it is indifferent to whether its antecedent is animate or not. If another pronoun with more

---

18 If the head of the genitive phrase were appropriately chosen so as to avoid pragmatic effects, for instance by the use of *mother* instead of *sushi*, it might be that the relative would refer to both features P and Q, The meaning would be that the guest praised both of them.

specification is used instead of *kes*, one must expect a different outcome. Kim contrasts (45) with the following well-formed sentence, where pronoun, *kunye* 'she' is used instead. Unlike *kes*, it seems that this pronoun can only refer to a human, or perhaps an animated entity. What then happens in the representation is quite different from the previous example. Pronoun *kunye* can't align with the R-node of *kimpap*, since presumably they are not in the same plane: one is animate-specified while the other is not. This state of affairs forces the association of the stray feature P, the only compatible feature for the human-specified pronoun, as shown in (48).

(47)   Enu namca$_i$ -na caki anay$_i$ -uy kimpap]-ul sonnim-kkey taycephayss-ko sonnim-i
            kunye$_i$ -lul cwuksi chingchanhayssta
            Every man-Q self wife-GEN sushi-ACC guest-to serve-COMP guest-NOM she-**ACC**
            immediately praised.
            'Every man served his wife's sushi to the guest and immediately after that the
            guest praised her.'

(48)   [.... caki   anay   -uy   kimpap   -ul .... kunye   -lul ....]
                          Φ   Φ   Φ   Φ   Φ   Φ

                                                   Ø   [Ø   Ø]

                          P   Q
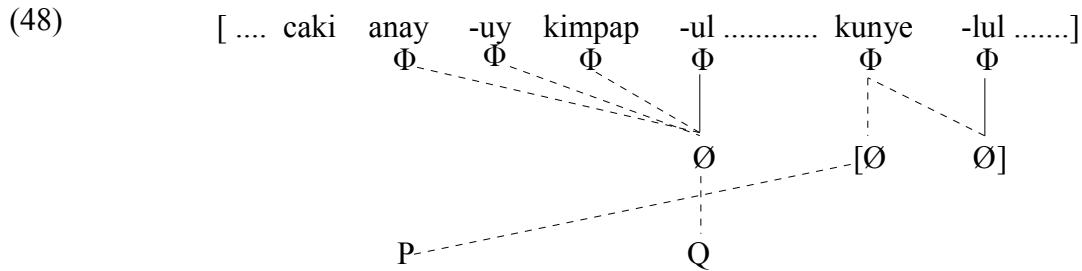
        Before moving on, it should be noted that a a thematic pronoun may apparently be absent in some contexts. In (49), *cwungkyek* 'shock' is not accompanied with a thematic pronoun. In such a case, I assume that it has a normal reference structure, namely a root node, expanding to an R-node, whatever it is, and finally a reference feature, as illustrated in (50).

(49)   [Mary-ka Bill-uy sallinca-la-n-un] [kes-uy cwungkyek **]**
            [M.-NOM B.-GEN murderer-DECL-IMPRF-REL] [kes-GEN shock **]**
             'The shock of the fact that Mary was Bill's murderer'
                                                                (adapted from Kim 2004:193,14c)

(50)   [Mary   -ka   bill   -uy   sallinca-la-n-un] [kes   -uy   cwungkyek]
                Ω   Ω   Φ   Φ   Φ   Φ   Φ   Φ

                         Ø   Ø   Ø   Ø

                         Q   P   Q

Having no judgment in Korean, it is unclear to me whether the genitive marker on *kes* in (50) is the only one possible. However, pending further data, the representation predicts that the goal marker would not be appropriate. In effect, as seen in (51), the thematic pronoun pairs up with the noun, straying the R-node of *kes*, which is normally deleted by the stray erasure rule.

(51)   *[Mary   -ka   bill   -uy   sallinca-la-n-un] [kes   -ey   cwungkyek]
                Ω   Ω   Φ   Φ   Φ   [ ]   Φ   Φ

                         Ø   Ø   Ø   [Go   Go]

                         Q   P   Q

4.4 Symbiosis Inalterability

In this section, I consider cases in which the vector effect seen above, namely the impossibility of vector-to-vector spreading, is apparently violated. This seems to happen with two types of verbs: intransitives and passives. Along the way, I will show that the symbiosis relation, as a semantic phenomenon, persists despite certain syntactic contingencies.

Consider the following examples. In both (52a) and (52b) the complementizer and its antecedent are nominative-specified. However, while the former is grammatical, the latter is not. In our analysis so far, the nominative affix is a vector, and therefore both are expected to be ungrammatical, since vector-to-vector spreading is forbidden.

(52)   a.   [Kam-i kamnamwu-eyse tteleci-n] [kes-i ssek-ess-ta]
   [persimmon-NOM persimmon tree-from fall down-ADN][kes-NOM rot-PST-IND]

'The persimmon which fell down from a persimmon tree rotted.'

b.   *[Totwuk-i pang-eyse nao-n] [kes-i kyeytan-eyse nemeci-ess-ta]

thief-NOM room-from come out-ADN] [kes-NOM stair-from fall-PST-IND]

'The thief who came out of the room fell down from stairs.'

(adapted from Jhang 1994:26,29a,b)

As Jhang observes, in (52a) *tteleci* 'fall down' and *ssek* 'to rot' are unaccusative verbs, while in (52b) *nao* 'to come out' is an unergative verb. This state of affairs turns out to be crucial here. There are many different treatments of these verbs in the literature. The idea I will develop here is that unaccusative verbs include in their tree structure two grammatical relations, even though they only select for one argument, intendedly a direct object. Suppose that the single argument must satisfy both grammatical relations of the verb tree structure. In this theory, it can only do so by merging in the syntax with both the accusative and nominative thematic pronouns, which gives rise to a double symbiosis, as shown in (53). In general, this stacking can be rejected for one or two different reasons, depending of the nature of the affix: (i) the rightmost thematic pronoun cannot assign its R-node to the stem by virtue of the ban of line crossing, a condition that always exists in double stacking, and (ii) the root node of both thematic pronouns may clash if they are different. Both of these conditions are met in (53), which is therefore unacceptable.[19]

(53)

$$\begin{array}{ccc} *\text{Kam} & \text{ul} & \text{i} \\ \Phi & \Phi & \Omega \\ & & \\ \varnothing & \varnothing & \\ & & \\ P & & \end{array}$$
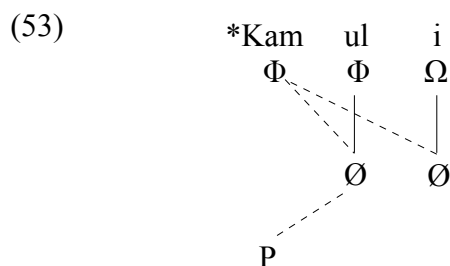
As it is, this structure can't be rescued, unless one of the thematic pronouns is deleted.

---

19 An analysis along the lines of the one proposed for unaccusative verbs might apply to ergative languages as well. Incidentally we may note that Yip et al. (1987), which is based on a nonlinear representation analogous to ours, account for the distinction between ergative and accusative languages by reversing the spreading of the case melody with morphemes so as to proceed from right to left. Though interesting, a similar analysis is not available in the present theory, since we have no evidence so far that a case melody may exist autonomously of the morphemes. In our system, all cases features are lexical, to use their terminology, and are specified in the tree structure of the morpheme; they come to make of a tier by interacting with one another in the syntax.

Since the symbiosis conveys important information regarding the meaning of the structure, it must be preserved through out. A normal compromise in this situation is the deletion of the morpheme without its tree, which signals the constraint violation (cf. Desouvrey 2009, 2008a,b). This is shown in (54). Thus, as can be seen, the stem bears the visible nominative pronoun, although it is underlyingly accusative-specified.

(54)

$$
\begin{array}{ccc}
\text{Kam} & \cancel{\text{ul}} & \text{i} \\
\Phi & \Phi & \Omega \\
\end{array}
$$

Likewise, since the matrix verb is unaccusative, *kes* must have a similar representation, minus the terminal feature, as seen in (55).[20]

(55)

$$
\begin{array}{ccc}
\text{Kes} & \cancel{\text{ul}} & \text{i} \\
\Phi & \Phi & \Omega \\
\end{array}
$$

Now, given (54) and (55), (52a) can be represented as (56). Despite appearances, there is no vector-to-vector (or nominative-to-nominative) spreading in the representation; rather an accusative subject assigns an R-feature to the accusative relative.

---

20 We may note that the operation described in (29) and (30) does not exclude the possibility of stacking thematic pronouns, which does exist in Korean (see among others Yoon 2004). Presumably, the deletion may not take place if the feature of the rightmost affix interacts with other features, as seen above.

(56)   [kam ~~-ul~~ -i kamnamwu -eyse tteleci-n] [kes ~~-ul~~ -i   ssek-ess-ta]
           Φ   Φ   Ω   Φ   Φ   Φ   Φ   Ω
           | | | | | | | |
           Ø   Ø   Ø   Ø   Ø   Ø

           P   Q

As for (45b) we have nothing more to say about it than above. In unergative and transitive verbs, the nominative is real, that is, it is the normal thematic pronoun for these verbs, so that there is no discrepancy between underlying features and overt morphemes. As can be seen in (57), the vectors are trying to acquire each other, yielding an ill-formed sentence, as expected.

(57)   *[Totwuk -i pang -eyse nao-n] [kes   -i   kyeytan -eyse nemeci-ess-ta]
          Ω   Ω   Ø   Ø   Ω   Ω   Ø   Ø
          | | | | | | | |
          Ø   Ø   Ø   Ø   Ø

          P   Q   S
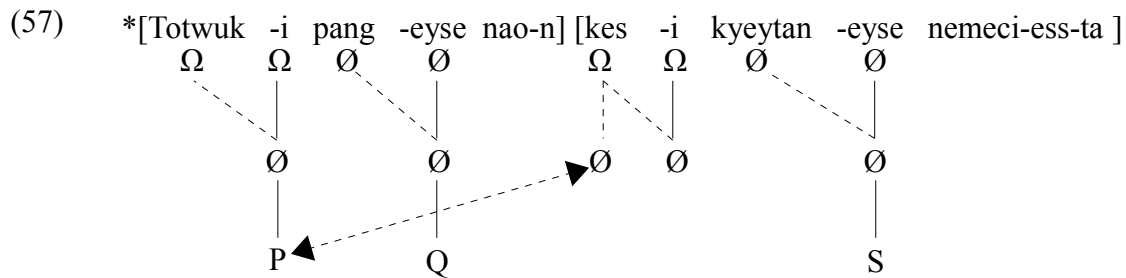
The mismatch analysis of unaccusative verbs, according to which there is a discrepancy between the number of argument and the grammatical relations, is further supported by passive verbs. Passive constructions indisputably imply a grammatical function alternation. This can be seen with the following example. The subject of the matrix clause verb is the relative pronoun, while the embedded clause shows a verb in the passive form. The antecedent of the relative pronoun can only be the subject of the embedded clause, not the passive-marked element, apparently allowing a vector-to-vector spreading.

(58)   [Kong-i sonyen-eyuyhay cha-ci-n] [kes-i changmwun-ul kkay-ss-ta]
            [ball-NOM boy-by kick-PSS-ADN] [kes-NOM window-ACC break-PST-IND]
            'The ball that was kicked by the boy broke the window.' (Jhang 1994:30, 34b)

Here again semantic information conveyed by the symbiosis, persists beyond apparent

grammatical relation changing. The apparent subject of the independent clause includes the accusative pronoun, which still holds the terminal feature of the phrase. As for the passive object, it is intrinsically a vector by the Ω-node of the deleted thematic pronoun. As for the passive marker *eyuyhay* 'by', it may or may not be a vector, it is a pure morpheme providing no feature to the representation. Therefore, the nominative relative pronoun can acquire the pseudo-subject as its antecedent, but not the real passivized subject, as shown in (59).

(59)   a. [kong ~~-ul~~ -i sonyen ~~-i~~ -eyuyhay cha-ci-n] [kes -i changmwun -ul kkay-ss-ta]

5. Externally-headed relative clauses

If *kes* is a relative pronoun, this theory predicts that it should be used in externally-headed relative clauses (EHRC) as well. However, there is apparently no such element in this construction; instead a gap appears where one would expect the relative element. Two possibilities can be envisaged: either the relative pronoun is systematically deleted for some reason yet to be found out or there is no relative element at all. The second possibility can be immediately discarded on the basis of what we now know on IHRCs.

Let us look at certain differences between Korean and English. In English and French, unlike in Korean, the relative element is mostly an anaphor, and by being as close as possible to the head noun, ambiguities are generally avoided. In fact, in many cases the relative is even incorporated to the head noun via adjunction (cf. Desouvrey 2008a). In addition, while in English and suchlike languages the relative is mono-morphemic, in Korean every referring element must generally be completed by symbiosis with a thematic pronoun, as seen above. I will show that this specificity of Korean prevents relative *kes* from being overt in EHRCs.

Consider an EHRC like (60). Consistent with our view on clause structures, its derivation must proceed from input (61). Since the relative pronoun is not adjacent to its intended

antecedent, *khemphyuthe* 'computer', the structure must be modified somehow in order to avoid possible ambiguity. If Korean were like English, it would avoid this ambiguity by adjoining the relative clause to the head noun, yielding a complex NP, as seen in (61b). Why is this incorrect? There seems to have two main reasons: (a) the symbiosis of the head with its thematic pronoun cannot be be broken by the intervening relative clause; (b) the relative pronoun may be in symbiosis with a vector, as is the case in the example at hand, a type of element that is generally resistant to adjunction, which gives rise to a timing tier translation. Notice that it is not a matter of directionality, since adjunction of the relative clause to the left edge of the head would create other problems, as I show immediately. In order to left-adjoin, the relative pronoun would have to move first to the right edge of its own clause, and then the latter would adjoin to the left edge of the head, so that the rightmost segment of the relative is attached to the leftmost segment of the head, as seen in (62). The integrity of the symbiosis is not affected, but the vector adjunction problem still persists, and in addition this structure runs afoul of the linearization convention, (63), that normally takes place at real time (spell out time). Indeed, proceeding from the first element, *John*, there are two time gaps before reaching the association line. Therefore such a structure cannot make it to the output.

(60)   John-un kocangna-n khemphyuthe-lul kochi-ess-ta

              J.-TOP out of order-ADN computer-ACC repair-PST-IND

              'John repaired the computer that was out or order.' (from Jhang 1994:9,5)

(61)   a.   [kes-i kocangna-n] [John-un khemphyuthe-lul kochiessta]

       b.   *John-un khemphyuthe   -lul kochiessta
                                    |
                            [kes-i kocangna-n]

              *[John-un [khemphyuthe=kes-i kocangna-n]-lul kochiessta]

(62)   *John-un   khemphyuthe-lul kochiessta
                                                 |
                     [--- kocangna-n] kes

              *John-un [[__ kocangna-n] kes-i=khemphyuthe-lul] kochiessta]

(63)   Linearization Convention (cf. Desouvrey 1997, 2000)

From the leftmost element in the main timing tier, follow the flow of morphemes and association line without without zigzag.

In fact, I claim that the relative alone does left-adjoin to the head, and its deletion is precisely due to the impossibility of linearizing the structure. I argue that the input structure for Korean EHRCs contains a bare relative *kes*, without a thematic pronoun, as seen in (64a). The rationale for this will be discussed shortly. From this input, the intervening subject of the main clause moves to the left edge of the relative clause, an operation we have already seen in certain IHRCs, yielding (64b). Then, the relative pronoun alone adjoins to the left edge of its head, and is then deleted, due to impossibility of satisfying (63). As a result, a perfect EHRC is obtained, although the relative pronoun can never appear in the output.

(64)   a.   [kes kocangna-n] [John-un khemphyuthe-lul kochiessta]

b.   John-un [kes kocangna-n] [khemphyuthe-lul kochiessta]

c.   John-un [___ kocangna-n] ~~kes~~ = khemphyuthe-lul kochiessta]

Derivation (64) includes three steps, and only three: (a) the input, (b) the movement of the main clause subject, and (c) adjunction and concomitant deletion of the bare relative pronoun. It is thus consistent with the Derivation Extension Number, according to which the number of derivational step must be less or equal to three (DEN≤3; Desouvrey 2007). The last derivational step seemingly contains two different operation, but they do occur on the same structure at the same time. If the bare relative were instead a phrase by symbiosis with the thematic pronoun, a further derivational step would have been created, assuming that morpheme deletion occurs sequentially. This is not expected to vary cross-linguistically, just like the LC, and therefore if it holds for English and French, it does so for Korean as well.

There is evidence to support this analysis. In popular speech a bare *kes* can appear in EHRCs, as Jhang points out (p.13, fn. 8). A casual speaker just moves the bare relative to the right edge of the relative clause, instead of attaching it to the head. The linearization problem does not exist anymore, and therefore there is no need to delete the relative pronoun, as can be

seen in (65).[21]

(65)   John-un [[____ kocangna-n] kes] khemphyuthe-lul kochiessta]

As mentioned above, the subject of the main clause must make room for the relative clause to be adjacent with the head noun. However, just as in IHRCs, it may not move if it is the head of the relative clause. Thus, in the following example, *posek* 'jewelry' remains in situ since it is the antecedent of the relative and it is at the edge of its clause.

(66)   [Totwuk-i kes-ul hwumchi-n] [posek-i kacca-i-ta]
              thief-NOM kes-ACC steal-ADN   jewelry-NOM fake-be-IND
              [Totwuk-i ____ hwumchi-n] ~~kes~~ = posek-i kacca-i-ta
              'The jewelry that the thief stole is fake.' (adapted from Jhang 1994:11, 9)

Under this analysis, one can appreciate the strong structural resemblances between both types of relative clauses. They proceed from an identical input, except that the relative pronoun and the head noun are reversed from one structure to another. To put it differently, in the internally-headed construction the relative pronoun is in what is normally understood as the main clause in the externally-headed construction, as can be seen by comparing (67a) and (67b) (cf. (10) and (61a) respectively).

(67)   a.   [khemphyuthe-ka kocangna-n] [John-i kes-ul kochi-ess-ta] (IHRC input)
              computer-NOM out of order-ADN John-NOM REL-ACC repair-PST-IND
        a.   [kes-i kocangna-n] [John-un khemphyuthe-lul kochiessta] (EHRC input)
              [REL-NOM out of order-ADN] [J.-TOP computer-ACC repair-PST-IND]

It is interesting to compare these structures with their English counterparts: (68a) would be an IHRC, while (68b), an EHRC. We can now close in on the differences between both languages. First of all, notions such as head final or head initial obviously do not matter, since the

---

21 According to Jhang, the omission of the thematic pronoun is frequent in colloquial speech. However, its absence in (65) is normal, in my view. Since this construction is found only in popular speeches, it might well be the source of the general omission of the thematic pronoun in that register, given that specific rules tend to be overgeneralized after a period of time for reason of economy (or harmony).

linear order of the clauses is not relevant; rather one order is chosen to the extent that it allows to minimize derivational steps. As mentioned above, what does matter is the fact that, unlike Korean, English has nothing like the symbiosis phenomenon, which is incompatible with adjunction. Therefore in both structures, the relative pronoun incorporates to the head noun, yielding the same result, as seen in (69).

(68) a. [John repaired <u>that</u>] [the <u>computer</u> was out of order] (IHRC input)

 b. [John repaired the <u>computer</u>] [<u>that</u> was out of order] (EHRC input)

(69) a. John repaired [the <u>computer</u>=<u>that</u> was out of order] (IHRC output)

 b. John repaired [the <u>computer</u>=<u>that</u> was out of order] (EHRC output)

In fact, (68a) can yield a quite different output, depending on whether one focuses on the computer instead of John, in which case the *that*-clause has to be considered as the subordinate clause. In such a case, the derivation proceeds like this. The relative pronoun moves to the left edge of its clause, (70b), and then the whole relative clause adjoins to the head noun, which results in the incorporation of the relative pronoun.

(70) a. [John repaired <u>that</u>] [the <u>computer</u> was out of order] (IHRC input)

 b. [that [John repaired ___]] [the <u>computer</u> was out of order]

 c. The [computer=that John repaired] was out of order

Alternatively, from input (70a) the computer may move to the opposite edge of the relative clause, and then the relative pronoun adjoins to it, as shown in (71). In any event, the result is the same and is consistent with DEN.

(71) a. [John repaired <u>that</u>] [the <u>computer</u> was out of order] (IHRC input)

 b. The computer [John repaired that]] [___ was out of order]

 c. [The computer=that John repaired] was out of order

In addition, the adjunction capability of *that* enables English to distinguish complement clauses from relative clauses, which share the same structure in Korean. Thus, if the antecedent

of relative *that* must be a clause, instead of a noun, adjunction may not take place, as discussed earlier. For instance, structure (72) is just like an IHRC. However, English speakers know that the computer is not the intended antecedent of the relative, and therefore incorporation of *that* may not take place (see Desouvrey 2008a for details).

(72)   [John thinks <u>that</u>] [the <u>computer</u> is out of order]

We may conclude this section with the following quote:"[T]he content of an IHRC does not restrict the content of its semantic head noun; rather, it restricts the content of the clause within which it is embedded [...]" (Kim 2004:3). It turns out that the English IHRC in (72) is doing just that.

6. Concluding remarks

This analysis presented above does away with the traditional distinction between IHRC and EHRC in Korean, and most likely in suchlike languages as Japanese. Two basic assumptions are crucial: the dismiss of the complementizer analysis in complement and relative clauses, and the division of such clauses into autonomous structures related to each other by coreference. None of this is peculiar to Korean grammar (cf. Desouvrey 1996, 1997, 2008a, 2008b, 2009). The fuzzy interpretation of IHRC, as well as the absence of relative *kes* in EHRC, follows from the repelling of (temporal) adjunction in Korean grammar. The power of this analysis is such that it makes it possible to thoroughly account for various properties of IHRC that other analyzes take for granted, or as their point or departure.

The specific claims that I made for Korean, although they might be surprising for many, are grounded. Consider first morpheme *kes*. If it is not a relative pronoun, what is its role in the IHRC construction? In traditional analyzes, it is treated as a complementizer, a pronominal, a nominalizer, a pro-form, all of which build on Principles-and-Parameters notions like modifiers, as opposed to arguments, phrase structures, functional category, LF-raising, etc. (see Jhang 1994, Kim 2004, for a full review of the literature as well as references). I will only consider two of them: the complementizer and the pronominal analyzes. Both assume that Korean does not have anything like English relative pronouns, without even mentioned *kes* as a possible candidate.

Given their framework, they are led to this view by the absence of a relative pronoun in EHRC. The reasoning seems to be the following. Since EHRCs are constructed in English with relative pronouns, the lack of such elements in Korean similar constructions implies that this language does not have relative pronouns. The appearance of *kes* in IHRCs may not be a clue, since apparently English does not have this construction.

The analysis presented in this paper actually reconciles the complementizer and the pronominal analysis of *kes* by taking the former to be a referring element, a relative pronoun. In my view, the category complementizer does not exist in natural languages; rather universal grammar makes use of the same morpheme in both complement clause and relative clauses. In languages that have object and subject relative pronouns, like French, the object relative pronoun is used to introduce sentential complements, which are always the direct object. In Korean, however, relative *kes* is more flexible, since it can take any thematic pronoun. So the question that arises is the following. What is the difference between a simple pronominal and a relative pronoun? Simply put, a relative pronoun must not have a clausemate antecedent. It is clear that *kes*, in the relevant constructions, may never have a clausemate antecedent, just like *that* in English. Therefore, it must be a relative pronoun, whose function is either to connect two clauses or a clause to a head noun in another clause. If it appears to be used in other types of constructions, it is just like other functional elements that all grammar reuse in various paradigms. After all, English *that*, belongs to the paradigms of deictic as well, just like French *que*/*qui* 'that' which can be either relative (scalar) or interrogative pronouns (vector).

There are differences between *kes* and *that*, however. The relationship between *that* and its head is not the same as that between *kes* and its antecedent. Why is this the case? Various features may be involved, but most likely it seems to be due to the general differences between English and Korean grammars. While English relative *that* is always a scalar, Korean *kes* may be either a scalar or a vector, according to the thematic pronoun accompanying it. In general, vectors are incompatible with temporal adjunction, which puts them on a different timing tier (cf. Desouvrey, 2008a,b). In this theory, if an operation is banned for some elements in a paradigm, in the course of time it eventually applies to every other elements, presumably in order to ease the acquisition process. Therefore, even though most of the thematic pronouns are scalar, they follow the general rule of no adjunction. An adjoined element loses its syntactic autonomy and functions

like an affix modifying a stem, hence the restrictive effect. Having no adjunction capability *kes* does not make a complex NP with its head, unlike English *that*.

In this respect, it is important to note that many researchers assimilate IHRC to non-restrictive clauses, as reported in Kim (2004), who nevertheless points out certain differences between these two kind of structures. What leads them to this path is indeed the fact that non-restrictive clauses, just like IHRCs, may not adjoin to the head, a simple adjacency being apparently sufficient (see fn. 5). Also, it is precisely for this reason that IHRCs in Korean are quite marginal (cf. Jo 2003). In effect, they are a side effect of the lack of head adjunction in Korean, which allows a simple transitive verb (ex. *to catch*) to parasitize a construction normally reserved to verbs selecting for a clausal complement (ex. *to think*).

Finally, this analysis poses the question as to whether or not the notion of grammatical case is needed. The view taken in here is that the so-called case-markers are referring elements entering in a symbiotic relationship with their NP complement, which looks like a clitic doubling in certain Romance dialects (see Desouvrey 2000).[22] However, this analysis does not rule out the existence of cases, which indeed have their node in the tree structure of verbs and arguments of any type. I maintain that languages like Korean may have three abstract cases assigned by verbs, namely nominative, accusative, and oblique, although it is difficult to find out a context where there are crucial. The fact is, unlike the P&P theory, elements with case specification must be licensed by a verb with a similar and valid (i.e not already absorbed) case, whereas caseless arguments are licensed by the lexical structure of the verb, and may incidentally receive a Case.

Let us consider some empirical facts from French, which has three abstract cases, as discussed in Desouvrey (2000, 2005). In (73) the verb *voir* 'to see' takes a direct object to which it assigns accusative Case. This is so, since the argument does not have any Case feature in its tree-structure. If a pronoun stands in the place of the argument, things run differently, however. Instead of the expected (73b), one obtains (73c). Two questions are in order: (a) why is (73b) not grammatical? (b) if case is not a factor, what is the difference between *John* and *le* 'him', other than the trivial fact that one is a nominal while the other is a pronoun? If there are no abstract cases, there must be some other features that distinguish these elements; one that comes to mind

---

22 If C. Kim (2010) is correct, certain question particles in Korean are pronouns. In my opinion, pronominal elements are most likely free morphemes.

is obviously the semantic feature Theme. So one would assume that *le* is inherently theme-specified, while *John* is not. Such an assumption apparently amounts to a name change to the extent that it carries the same prediction regarding (a): the Obligatory Contour Principle forces the theme or the accusative-specified pronoun to evacuate the domain containing itself and the verb, since both are specified for the same feature. The similarity may not go beyond that case, however. In effect, it is difficult to take Theme as the discriminating feature for *John* and *le*, since that feature is generally unspecified, as seen above (see also Desouvrey 2003/under review). Furthermore, *le* must receive from *John* a terminal feature, or R-feature, which is dependent to the thematic node, or R-node. Therefore, it is unlikely that the antecedent has to validate a feature it does not possess, namely the theme node of the pronoun. In addition, there are cases where the pronoun is used with a copula verb, which arguably does not have a thematic role, as in (74), where the pronoun refers to the predicate.

(73)   a.   Marie voit John

                 Marie sees John

         b.   *Marie voit le

                 Marie sees him

         c.   Marie le voit

(74)   -- Es-tu heureuse?

                   Are you happy?

                 -- Je le suis.

                   I it am

Finally, Case features interfere with sentential negation (Desouvrey 2002). In SVO languages, like French and English, the placement of negation depends on its case specification. A nominative-specified negation (e.g. French) appears initially on the subject side of the verb, namely S-N-V-O, and in the reverse order for an accusative-specified one (as in English), S-V-N-O. In this context, a thematic feature cannot replace a case feature.

References

Cole, Peter (1987). The Structure of Internally Headed Relative Clauses. *Natural Language and Linguistic Theory*, 5, 277-302.

Desouvrey, Louis-H. (1996). Case Tier, Clause Structure and the Nature of the Complementizer Trace Effect. Ms.

Desouvrey, Louis-H. (1997). Relativization in French without Complementizer. Proceedings of CLA 1996. Calgary Working Papers in Linguistics.

Desouvrey, Louis-H. (2000). Romance Clitics and Feature Asymmetry: An Autosegmental Based-Approach. Doctoral dissertation. http://ling.auf.net/lingBuzz.

Desouvrey, Louis-H. (2002). Adverbs, Negation and OCP Effects. www.semanticsarchive.net.

Desouvrey, Louis-H. (2003). The Proper Treatment of Coreference Relations. www.semanticsarchive.net.

Desouvrey, Louis-H. (2005). Romance Clitic Clusters: The Case Connection. In Heggie, L. and F. Ordóñez (eds), *Clitic and Affix Combinations*. Amsterdam: John Benjamins.

Desouvrey, Louis-H. (2006). Underspecification and Long-Distance Antecedent: The Case of Chinese Ziji. www.semanticsarchive.net

Desouvrey, Louis-H. (2007). Wh-Interrogatives: The OCP Cycle. www.semanticsarchive.net.

Desouvrey, Louis-H. (2008). Nominal Predication, Relative Clauses and Wh-Extraction: The Amazing Syntax of Haitian Creole Se. http://ling.auf.net/lingBuzz.

Desouvrey, Louis-H. (2008a). Vector Effects on Wh-Interrogatives. http://ling.auf.net/lingBuzz/000755/ and www.semanticsarchive.net.

Desouvrey, Louis-H. (2008b). Superiority Effect and Clitic Placement in European Portuguese. http://ling.auf.net/lingBuzz/000764.

Jhang, Sea-Eun (1994). Headed Nominalizations in Korean: Relative Clauses, Cleft, and Comparatives. Doctoral dissertation. www.sfu.ca/~gerdts/teaching/JhangDiss.pdf.

Jo, Mi-Jeung (2003). The Correlation Between Syntactic Nominalization and the Internally Headed Relative Clauses in Korean. *Studies in Generative Grammar,* 13, 4, 535-564.

Kenstowicz, Michael (1994). Phonology in Generative Grammar. Oxford: Blackwell Publishers.

Kim, Chonghyuck (2010). Korean Question Particles Are Pronominals: A transparent Case of Representing Discourse Participants in the Syntax. http://ling.auf.net/lingBuzz/001157/

Kim, Min-Joo (2004a). Three types of *kes*-nominalization in Korean. In *Harvard Studies in Korean Linguistics*, eds. S. Kuno et al., 479-492. Seoul: Hanshin.

Kim, Min-Joo (2004b). Event-Structure and the Internally-Headed Relative Clause Construction in Korean and in Japanese. Doctoral dissertation. http://ling.auf.net/lingBuzz.

Kim, Yong-Beom (1996). Internally Headed Relative Clauses in Korean. *Language, Information,*

and Computation, 403-413.

Ko, Kil Soo (2008). Korean Postpositions as Weak Syntactic Heads. Http://csli-publications.standford.edu.

Yip, Moira, and Joan Mailing, Ray Jackendoff (1987). Case in Tiers. *Language*, 63, 2, 217-250.

Yoon, James (2004). Non-nominative (major) subjects and case stacking in Korean. In Bhaskararao et al. (eds.), *Non-Nominative Subjects*. John Benjamins, 265–314.

Yoon, James (2005). Non-morphological Determination of Nominal Particle Ordering in Korean. In Lorie Heggie and Francisco Ordóñez (eds.), *Clitic And Affix Combinations: Theoretical Perspectives*. John Benjamin Publishing Company, p.239-282.