Syntax and Semantics of English Nonrestrictive Relative Clause Constructions[*]

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Pak, Sooran. 2008. **Syntax and Semantics of English Nonrestrictive Relative Clause Constructions.** *The Linguistic Association of Korea Journal,* *16*(4), 213-245. Previous studies do not agree with the exact nature of NRCs (nonrestrictive relative clause, e.g. *The teacher has rich sons, who are doctors*) on the syntactic and semantic perspective. The goal of this articleis to illustrate that NRCs are modifiers syntactically, and that at the same time, in terms of semantics, they behave differently from the other normal restrictive modifiers. NRCs are more like parentheticals in the semantic point of view. I will show how to merge these conflicting syntactic and semantic behaviors of NRCs into one and a single feature structure of the grammar in the framework of HPSG by revising present system. Moreover, I capture the conjunctive behavior of NRCs and make it possible to apply the new system into other kinds of parentheticals such as *comment clauses.*

Key Words: English relative clause, nonrestrictive relative clause, restrictive relative clause, parentheticals, HPSG

1. Introduction

The exact nature of restrictive relative clauses has long been the focus of discussion both in transformational grammar and non-transformational grammar since Ross (1967). However, the spotlight has

seldom been turned onto nonrestrictive relative clauses. Look at the sentences below:

(1) a. The teacher who is poor has rich sons who are doctors.
    b. The teacher, who is poor, has rich sons, who are doctors.

There are many unclear points about the relation between the antecedents and the relative clauses. There has been a dispute about the syntactic relation between the antecedent and the relative clause, and the meanings of the sentences and the prosodic streams are also different, but there has not existed any proper structure to show the differences in the framework of Head-driven Phrase Structure Grammar(HPSG)[1]. In the present state of scant literature and varied opinions, this study is focused on the syntactic and semantic behaviors of nonrestrictive relative clause constructions and on the analyses of them.

As has been noted, relative constructions can be divided into two groups depending on its restrictiveness: restrictive relative clause(RRC) constructions and nonrestrictive relative clause(NRC) constructions. In the framework of HPSG, I propose an NRC is a relative construction syntactically attached to its constituent, but is under the constraint of parentheticality, in semantic and prosodic point of view. It will be shown how these differences can be reconciled in a straightforward way. In section 2, the characteristics of NRC will be provided. In section 3, previous studies on this construction are briefly mentioned. In sections 4, the syntactic and semantic behaviors and the parentheticality of NRC are elaborated on, and at the end of the proposal in section 5, theoretical analyses and realistic illustrations of NRC expressions will be given.

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1) According to the definition made in Pollard and Sag (1994:1), HPSG is "an integrated theory of natural language syntax and semantics," whose framework is characterized as non-derivational and sign-based. For the general introduction to Head-driven Phrase Structure Grammar, the detailed illustration of the framework, and the specific differences from other grammars such as GB or LFG, please refer to Pollard and Sag (1994), Sag et al. (2003), or Ginsburg and Sag (2000) etc.

2. Characteristics of NRC constructions

Brief characteristics of NRC constructions are given in this section. The first difference can be found in the relative pronouns each construction uses. In RRCs, *that* relatives, bare relatives, and free relatives appear[2], and these relatives are not possible in NRC constructions. Only partial cases of *wh*-relative pronouns such as *which* and *who* can initiate NRCs which follow explicit antecedents.

When it comes to the verb usage within the clauses, RRC constructions can be finite, infinitival, or reduced with regard to their verb forms within the clause. Oppositely, however, only finite verb forms appear in NRC constructions.

Moreover, the choice of antecedents are much freer in NRC constructions than in RRC constructions. In RRC constructions, only NPs can serve as antecedents, but in NRC constructions, various cate- gories, such as sentences, VPs, APs, AdjPs, and PPs can be the head of the antecedent phrases. NRC constructions even take proper nouns as their antecedents, which are not possible in the case of RRC con- structions. Also, it is generally accepted that NRC constructions do not take indefinite articles like *every* or *no* as a part of their antecedent; that is, NRC must be outside the quantifier scope of the antecedent. This has been provided as one of the major differences between RRC and NRC constructions through the literature. However, counter ex- amples do exist, and the reason of the ungrammaticality of quantified sentences may have little to do with syntax or scope; rather, it is a matter of discourse context or pragmatics(See Arnold (2007) with regard to detailed characteristics and example sentences for the explanation made above).

The next characteristic is found through the prosody the NRC constructions bear. According to Quirt et al. (1985), RRCs are connected to their antecedent prosodically (5.64:394), but not NRCs. They explain

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2) There is disagreement on whether free relative clause constructions can be considered as an RRC construction. I will not stick to the discussion on whether it is an RRC or not, since it will lead the whole study off the focus.

in 17.22:1257 that an NRC has a tone unit boundary with a pause which occurs together. The tone unit pattern preceding the relative clause (onset~nucleus~pause) is repeated in the relative clause. However, typically, there is no tone unit boundary before the RRC. In addition, Jackendoff (1977) remarks that NRCs cannot have a focused element in it. Generally, as Arnold (2007) and others point out, focused element presupposes another element that can be contrasted with it. NRCs cannot bring a contrast set interpretation (which will be elaborated on in the following section). Therefore, the element in the NRC cannot be focused.

The last feature of NRC construction is checked in the semantics. Roughly, an NRC simply adds information to its host clause, but an RRC confines the meaning of its antecedent. Moreover, as Arnold (2007) suggests, a contrast set can be introduced to RRC constructions, but this is not the case in NRC constructions. I will revisit this issue in detail later in chapter 4.

3. Previous analyses and problems

According to the outline Vries (2002:203) provides, there have been two major positions toward the structure of NRC constructions. One is the *constituency* point of view that the antecedent and the NRC form constituency, and the other is the *orphanage* position that they do not show any constituency. In the *constituency* view, an NRC is a comple- ment of determiner (Smith 1964), adjoined to the antecedent (Jackendoff 1977; Perzanowski 1980) or a coordinated phrase to the antecedent (de Vries 2000a). In contrast, *orphanage* advocates argue that the NRC is a coordinated structure to the host clause at deep structure (Ross 1967; Emonds 1979), a discontinuous constituent (McCawley 1982), or gener- ated not on a grammatical level but on a post-grammar (or discourse) level where all the other operations are over (Safir 1986, Fabb 1990). In this section, I will briefly look into two studies of constituency view, Arnold (2007) and de Vries (2002, 2006b), defending against the orphan- age view.

3.1. Arnold (2007): syntactic integrity

Basically Arnold (2007) denies the Radical Orphanage (RO) point of view, which suggests that an NRC is generated on a different tier after all the other grammar processes are over. In this RO approach, the antecedent and an RRC form constituency, but the NRC behavior is so different from the RRC that the antecedent and the NRC are not attached to each other in the course of grammar, thus failing to form constituency. In contrast, Arnold (2007) adopts the Syntactic Integrity (SI) approach toward NRC. In his SI assumption, an NRC and its NP antecedent form a constituent, as other RRC plus antecedent construct- ions do. That is, as seen in (2) and (3), the syntactic behaviors of RRC and NRC toward the antecedents are the same, and thus there is no difference between those two constructions with regard to their con- stituency.

(2) RRC construction:
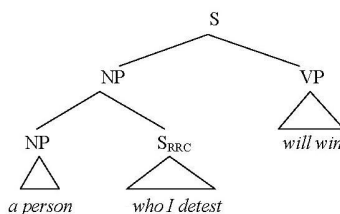
(3) NRC construction:
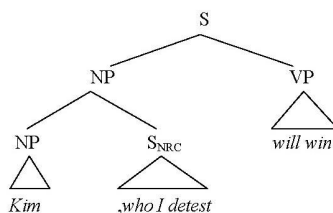
To support his analysis, he explains the syntactic parallels between RRCs and NRCs very well. There are some grammatical processes that work in a similar way on both of them: parenthetical intervention, heavy NP shift, adjunct placement, stacking, extraposition, VP ellipsis, right-node raising, etc. These comparisons of the two constructions

make his anti-RO view clear. In other words, these two structures are similar in their structure, consequently letting the NRC be syntactically not apart from its host clause; that is, in the same way as in an RRC cases, an NRC is syntactically attached to its host clause.

The strong point of his argumentation is that he provides very elaborate explanation for the syntactic integrity of an NRC construction. However, he focuses only on some cases where the antecedents are NPs. More illustrations and elaborations are needed to show that NRC is a consistent phenomenon regardless of the category of its antecedents, and that the syntactic integrity holds the same in every NRC construction. He also misses to clarify the lexical identity of non-restrictive relative pronouns. An NRC has different modificational and semantic properties from an RRC, which should be incarnated in the lexical information structure of the nonrestrictive relative pronoun and the construction.

I agree with him on his syntactic constituency analysis, so his worthwhile work of comparison and explanation will be employed as the background of this paper. Additionally, I will expand the explanation to the other categories of antecedents.

3.2. de Vries (2002, 2006b): coordination analysis

What makes de Vries' analysis original is that he hypothesizes the third type of coordination, added to *and* and *or*: a Specifying Co-ordination, which means 'that is'[3]. NRC is a specifying conjunct providing additional information to (or specifying) the antecedent, and the antecedent and the NRC are conjoined by a phonologically null conjunction **&:**, forming constituency. When a specifying coordination phrase is made, its head is &:. His analysis is as follows:

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3) He uses the term appositive instead of nonrestrictive, so NRC is expressed as ARC (appositive relative clause) in his approach. He chooses this term because NRC is included as a subtype of appositive, even though he admits those two terms are synonyms.

(4) The **CFR** analysis of appositive relativization construction:
    a. An appositive relative is **C**oordinated to the antecedent.
    b. The ARC is a DP, hence a kind of **F**ree relative.
    c. There is **R**aising within the ARC.
(5) a. John, who I know well
    b. $[_{CoP}[_{DP1}\cdots]$ **&:** $[_{DP2}[_{D}N+D][_{CP}[_{DP-rel}[_{NP}t_n]D_{rel}t_{np}]_i\cdots\cdots t_i\cdots]]]$[4]
      John   Ø   who   I know well

One of the advantages of his proposal is that because the antecedent and the NRC form a constituent, it is useful in showing that there is some syntactic connectivity between those two elements, or in explaining some grammatical restrictions on NRC. For example, like a coordination phrase, the antecedent and the NRC can be topicalised together, but may not be separated by preposing only one of the two[5]. It is because Coordinate Structure Constraint[6] can be applied here.

Moreover, he succeeds in incorporating into the syntactic structure the idea that the semantic behavior of NRC is the same as that of coordination(Quirk et al. 1985:983)[7].

Nevertheless, even though his ideas are original, well organized and proofed, to make up and hire another kind of coordinator can be regarded as too much stipulation on grammar. If the new concept should be useful, it could be fitting to other grammatical structures other than NRCs. If this construction is only for the nonrestrictive relative clauses, then it would be hard to gain its generality.

In addition, in his analysis, an NRC is a DP and a kind of free

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4) CoP: coordination phrase

5) According to him, the reason an RRC shows similar behavior is not because it is conjunction also but because it forms a DP (determiner phrase) with its antecedent.

6) CSC: In a coordinated structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct. (Ross 1974:181)

7) Quirk et al. (1985) notes as follows: "NRC has also been considered semantically equivalent to coordinated clauses. Such a classification seems to particularly appropriate in the case of sentential relative clauses, where the relative clause has the rest of the superordinate clause as its antecedent."

relative clause. He does not deal with the cases where antecedents are other than NPs. Same as in Arnold (2007), we do not know what it would be like in other cases where antecedents are APs or VPs.

I agree with him in that semantically an NRC gives additional or specifying information to the antecedent in the meaning aspect as co-ordination does. It should be only in the semantics domain, however. This coordination-like characteristic will be incorporated into the feature structure of the NRC construction.

4. NRCs and other constructions: RRCs and parentheticals

4.1. NRCs and RRCs: syntax and semantics

In this section, the syntactic similarities of the two constructions are discussed, which provide the evidence that syntactically RRCs and NRCs act in the same way in relation to their antecedents. Semantic-ally, however, their behavior is different, and this point will be high-lighted in my proposal section.

4.1.1. Common syntactic behaviors between RRCs and NRCs

To support his claim that an NRC is syntactically integrated to its host sentence, Arnold (2007) makes very detailed comparisons between RRC constructions and NRC constructions. Parenthetical intervention, nominal complement extraposition, adjunct placement, stacking, extra-position, and attachment of the possessive marking clitic *'s* are common phenomena, whether it is an RRC or an NRC. This supports that those two constructions behave in a similar way in terms of the syntactic integrity onto the host clause.

The first syntactic operation that occurs in common is the **paren-thetical intervention**. Parenthetical expressions can intervene between the antecedent and the relative clause regardless of RRC or NRC.

Another common operation is **nominal complement extraposition**.

Nominal complement of the antecedents can be extraposed to the back of the relative clause regardless of whether it is an RRC or an NRC.

The third common operation between an RRC and an NRC is the **adjunct placement**: NRCs can precede RRCs, and vice versa. This would be possible because the syntactic relationship of an NRC and the antecedent is the same as that of RRC.

Fourthly, despite the known belief that NRCs cannot be stacked, **stacking** of NRC is also possible enough if the context is appropriate. Arnold(2007) argues that the ungrammatical cases of the sentences with stacked NRCs are not so much a matter of syntax as it is a problem of discourse or context.

Next, both RRCs and NRCs can be extraposed. **Extraposition** moves an RRC toward the right edge of the sentence, and this applies the same in NRC constructions. This would be impossible if the syntactic structure of those two relative clauses were different.

In addition to those common operations mentioned above, RRCs and NRCs go through the **attachment of possessive marking clitic** *'s* in the same way. Possessive marking clitic *'s* attaches only to the constituents, and behave in the same way both in RRCs and NRCs, thus making it plausible to assume that RRCs and NRCs form constituency with their own antecedents.

   (6) a. The person that ruined the party's mother left early. (RRC)
       b. King Alphonso-who ruined the party-'s mother left early. (NRC)
       c. my mother (who used to live in Edinburgh)'s new flat (NRC)[8]
                                        (Arnold, 2007:284)

Therefore, based on these observations he makes, I assume that an NRC is syntactically attached to its antecedent in the same way as an RRC does[9].

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8) Sentences (6b) and (c) would sound much more natural, he argues, when they are spoken, not written as shown. The visual oddness is due to punctuation, presumably.

9) One of the reviewers suggested me that those syntactic tests employed

4.1.2   Semantic differences

About the manner of modification, there exists a significant difference between RRCs and NRCs. According to the definition Quirk et al. (p. 1239) makes, the modification is "restrictive when the reference of the head is a member of a class which can be identified only through the modification that has been supplied." RRCs such as (7a) go through this kind of modification, and they confine or narrow down the extension of the meaning of the antecedent, restricting the range of the meaning of the antecedent from usual three dogs to specific dogs which like bagels. We don't know how many dogs Tom keeps in total and what their appetites are like. As Arnold (2007) remarks, a contrast set can be introduced into the domain of discourse, with regard to RRC ante-cedents, as in (7b).

(7)   a. Tom keeps three dogs which like bagels.
      b. Tom keeps three dogs which likes bagels, and others which like donuts.

However, as for the NRCs, in the same section Quirk et al. continues,

> *... the referent of a noun phrase may be viewed as unique or as a member of a class that has been independently identified (for example in the preceding context). Any modification given to such a head is additional information which is not essential for identification, and we call it NONRESTRICTIVE.*
>
> (Quirk et al., 1985:1239)

In (8a), the information that Tom's dogs like bagels is no more than simply added one. The fact that Tom has three dogs must be a unique and independent one, so the fact is not affected, changed, or adjusted by the supplemented comment that those dogs like bagels. The three dogs are all Tom has due to the 'totality' interpretation NRC constructions bring to its antecedent.

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here may demonstrate the freedom of those operations, rather than serving as tools to show the structural similarities between RRC and NRC.

(8) a. Tom keeps three dogs, which like bagels.
    b. #Tom keeps three dogs, which like bagels, and others which
       like donuts.

Traditionally, this sort of nonrestrictive modification is said to be brought
as a way of commenting, information-adding, assertion, or supplementing.
This aspect is very similar to the behavior of 'and' co-ordination, giving rise
to the idea of 'Specifying Coordinate Analysis' of de Vries (2002, 2006b).

Additionally, owing to the property of NR pronoun which should in- dicate
an independently existing element in the world, semantically empty nominals
cannot be the antecedent of the relative pronouns, such as a nominal part of
an idiom chunk. One of the famous collocational expressions is *to make
headway*, and because *headway* is not referential or independent, it cannot be
modified nonrestrictively. (e.g. *headway, which we made)

Consequently from these semantic properties of NRC, Arnold (2007)
draws a conclusion that NRCs are not semantically integrated to their
host sentences. I will reflect this restrictive versus nonrestrictive differ-
ence of the semantics onto the feature structure I will propose later.

4.2. NRCs and parentheticals

In Dehé and Kavalova (2007), they divide parentheticals into several
categories[10]: (a) one-word expressions (e.g. *what*, *say*, *like*), (b) sen-
tence adverbials (e.g. *however*), (c) comment clauses and reporting
verbs (e.g. *I think*), (d) nominal appositions (e.g. She claimed that the
new Prime Minister *Jim Callaghan* had offered ...) and nonrestrictive
relative clauses, (e) question tags (e.g. They're called Gasser the people
next door *are they?*), (f) clauses which may or may not be introduced
by a connector, and which can or cannot be elliptical.

According to the definition made by Burton-Roberts (2005), while
being 'hosted' by another expression (i.e. the host sentence) in some

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10) Different scholars use different terms to refer to this linguistic
phenomenon. In Quirk et al (1985), they refer to this as appositive, while Burton
-Roberts (2005) calls this parenthetical. In this thesis, the term parenthetical is
used instead of appositive.

sense, a parenthetical makes no contribution to the structure of the host sentence. Parentheticals are part of the sentence linearly, but it has been controversial whether they can be contained on the hierarchical axis as well. There are two different perspectives on the hierarchical position of parentheticals; one is the orphanage point of view, and the other is the syntactic integrity analysis. (Two perspectives on the NRC status in grammar are originated from those on parentheticals.) In this section, the similarities and differences between NRCs and parentheticals are provided in their prosodic, syntactic, and semantic properties.

4.2.1. Prosody

It is generally believed that in English, a parenthetical expression interrupts the prosodic flow of the frame utterance (Bolinger 1989) and forms its own prosodic domains, set off from their host by pauses. So to speak, discontinuity of the utterance stream of the parenthetical is the most obvious prosodic characteristic a parenthetical brings. Accord- ing to the summary made by Dehé and Kavalova (2007:12), typical prosodic characteristics of parentheticals are surrounding pauses, preced- ing and following prosodic boundaries, lower pitch, diminished loudness, increased tempo, rising-type tones, etc. It is also possible to be marked by higher (rather than lower) pitch. They are marked by falling-rising pitch at the end of immediately preceding material. In short, parentheti- cals can be said to have regular prosodic pattern with minor irregularity depending on situations. This partially inconsistent tendency is observed similarly in NRC constructions. In Auran and Loock (2006), these tonal aspects of the NRCs show characteristics of traditional parentheticals. In conclusion, it can be said that parentheticals and NRCs share the similarity, so to speak prosodic **discontinuity,** and that parentheticals and NRCs have a special characteristic in terms of intonation contour, although it is not an absolute one. The influencing factors may be semantics, pragmatics, or discourse functions.

4.2.2. Syntax

Along with the categorization Dehé and Kavalova (2007) have pro-

duced according to their structural characteristics, parentheticals have their own grammatical behaviors which lead people to argue from two different positions, as mentioned earlier. One of the two analyses is the *orphanage approach*. In this approach, parentheticals are not a part of their host sentence structurally or hierarchically at all. Espinal (1991) and Haegeman (1988) are among the RO apporach, with several supporting grammatical phenomena: parentheticals cannot be the focus of a cleft sentence, cannot be questioned, cannot be located under the scope of quantifiers, cannot be under the c-command domain or scope of any propositional operator from the host structure, etc.

Nevertheless, *non-orphanage approaches* do exist as well, which argue that there are grammatical relations between parenthetical and the host sentence. For example, anaphors in a parenthetical can be bound by antecedents in the host clause, parentheticals can be secondary predicates taking a DP in the host structure as subject, can contain parasitic gaps that are licensed by A′ movement in the host clause, etc. Likewise, Arnold (2007) argues that NRC is also contained in a host sentence as a grammatical element.

Along with these syntactic argument that they both are grammatically connected to the host sentence, there are some differences as well between them, which make these two constructions distinguished from each other. According to Arnold (2007), whereas *and-* and *as-* parentheticals can occur inside their 'host' constituent, NRCs must appear after their antecedents, and *as-* parentheticals can also precede their antecedents, but this is not possible for NRCs.

As a conclusion, the syntactic integrity of parentheticals shows that NRCs are also syntactically integrated onto its host sentence, but the constituency of the antecedent and an NRC resulting from this integrity makes NRC constructions different from other parentheticals conversely.

4.2.3. Semantics and pragmatics

According to Quirk et al (1985), Dehé and Kavalova (2007), etc., traditionally parentheticals have been regarded as serving the functions of modifiers, comments, information-adding, supplementive, assertion, etc. They are understood as conveying speaker's attitude toward the content

of the utterance, expressing the degree of endorsement, or providing some background information. In Blakemore (2005), she argues that the host clause and the parenthetical part make a **collective** contribution to the interpretation of the utterance at the level of implicit content, and the parenthetical is an option which guarantees the derivation of the intended cognitive effects at a minimum cost in processing effort. In Blakemore (2006), she divides parentheticals into two categories: grammatical parentheticals (presumably including nonrestrictive relative clauses, nominal appositions, and parenthetical adverbial clauses), and discourse parentheticals. Discourse parentheticals are related to their hosts at the level of pragmatic interpretation, and they contribute their own cognitive effects. They do not affect the relevance of the host. Auran and Loock (2006) also categorizes NRCs according to the seman- tic/pragmatic background. I agree with the point that NRCs can be included as a special case of parentheticals, but it should be only from a semantic perspective. An NRC does not restrict the meaning of the antecedent, but contributes to the collective meaning of the host sentence.

5. New analysis toward NRC constructions

5.1. Sag (1997) and the HPSG framework

   As a background of this analysis I take Sag (1997), but the details of his proposals will be revised, for in his analysis NRCs are not taken into consideration.
   Through the HPSG theoretical tradition, it is accepted that every phrase in language is considered to have its own position at the leaf of the hierarchy of grammar, and the hierarchy is structured two-dimens- ionally. These two dimensions are HEADEDNESS and CLAUSALITY, and each phrase or leaf has double identities; one identity is decided by its headedness, and the other by its clausality. A relative clause, like- wise, belongs to these two dimensions at the same time, and there are two kinds of relative clauses in his analysis: *wh-subj-rel-cl*(e.g. who won the prize) and *fin-wh-fill-rel-cl*(e.g. who everyone likes). When this relative clause and the antecedent are conjoined, the phrase is of *hd-rel-ph*.

5.2. Phrasal hierarchies and NRCs

5.2.1. PARENTHETICALITY and subtypes

NRC and parentheticals share some common features. I suppose that NRCs are not parentheticals syntactically, but that they do share several properties with parentheticals which differentiate NRCs from RRCs in prosodic and semantic terms. In other words, the things that make NRCs distinguished from RRCs are the features NRCs have in common with parentheticals. I call these properties as *parentheticality*[11], and introduce a third dimension into the hierarchy of phrases. (For clarification, *parentheticals* refers to the linguistic expressions, and *parentheticality* refers to the characteristic of those expressions.) Parentheticality has as its types *parenthetic* (*prth*) and *unparenthetic* (*unprth*).

(9) Type hierarchy of dimension PARENTHETICALITY:
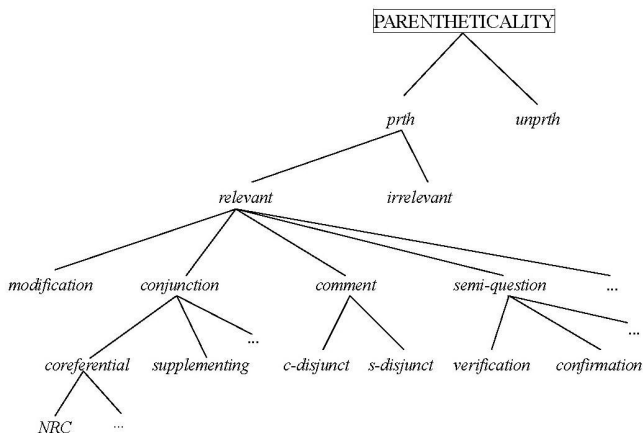
To begin with, I assume that types of parentheticals mentioned in section 4 are instances of *prth*, and normal expressions other than those are of *unprth*. Type *prth* is supposed to have further subtypes, and

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11) Taglicht (1998) poses the need of the third dimension also, which he calls it as 'Continuity'. However, other than mentioning the need, there is no further research following up.

those subtypes are determined according to their distinctive semantic characteristics, since the PARENTHETICALITY is a meaning domain rather than being a syntactic one such as CLAUSALITY or HEADED-NESS[12]. Type *prth* has two subtypes: *relevant* and *irrelevant*. When the content of the parenthetical expression is closely related to the main clause, then it is an instance of type *relevant*, but when it is not, it is of *irrelevant*.[13] As for the type *relevant*, among many possible subtypes I assume there are *modification, conjunction, comment, semi-question*, and etc. One word parentheticals go under type *modification*, for they prepose other expressions and gives additional meanings to them. Expressions of type *conjunction* gives additional information to the main clause, and this type has two subtypes: *coreferential* and *supplementing*. NRCs and nominal appositions are of type *coreferential*, since in the main clause there are items having the same reference with the paren-thetical expressions. However, in the case of *and*-parentheticals, the parenthetical expression just supplements additional information to the main clause. The third type is *comment*, and by the definition made by Quirk et al. (1985), there are two kinds of comment expressions: *content disjunct* and *style disjunct*. Content disjuncts are used to "express the speaker's comments on the content of the matrix clause." On the other hand, style disjuncts serve to "convey the speaker's view on the way they are speaking." (p. 1112) They consider *as*-parentheticals, SV comment clauses such as *I think* or *you know*, and nominal relative clauses as seen in "*What was more upsetting*, we lost all our luggage." to be the former one. *To*-infinitive expressions (e.g. *to be honest*), *-ing* clauses (e.g. *speaking as a layman*), and *ed* clauses (e.g. *stated bluntly*) are instances of style disjuncts. Following the categorization they made, I suppose that type *c(ontent)-disjunct* and *s(tyle)-disjunct* are the sub-types of *comment*. Instances of type *c-disjunct* are typical SV comment clauses, and *as*-parentheticals. In instances of type *s-disjunct* are the latter three verbal constructions mentioned above. In addition, based on

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12) Possibly, type *unprth* is supposed to have further subtypes as type *prth* does depending on the meaning differences, but not will be focused on here.

13) For the detailed explanation and exemplary expressions, please refer to Pak (2008).

the classification Ifantidou-Trouki (1993) made, I assume that attitudinal adverbs, hearsay adverbs, and evidential adverbs are of *c-disjunct*, and illocutionary adverbs are of *s-disjunct*. For convenience sake, let us call the former three kinds of adverbs as non-illocutionary adverbs. This new classification is based on the criteria Quirk et al. made on the characteristic of disjuncts. The fourth subtype of *relevant* is *semi-question*, which is a type for tag questions. Typical tag questions have two functions: *verification* and *confirmation*. When a tag question has a verificational meaning, the speaker is "expecting the hearer to decide the truth of the proposition in the statement", and with the confirmational meaning, the speaker is "inviting confirmation of the statement" and the tag "has a force of an exclamation rather than a genuine question." (Quirk et al. 1985: 811) These two different functions are distinguished by the tone. Verificational tag questions have a rising tone, and confirmational tag questions have a falling tone. For example, if a speaker utters "He likes his job, *doesn't he*?" in a rising tone at the end, he or she is implying that 'I assume he likes his job; *am I right?*' However, if it is stated in a falling tone, the speaker is expressing a strong feeling or conviction about what has been stated right before the tag question. Accordingly, I divide type *semi-question* into two subtypes: *verification* and *confirmation*.

Now we have three dimensions, HEADEDNESS, CLAUSALITY, and PARENTHETICALITY, and presumably, each and every parenthetical expression belongs to the three dimensions at the same time. NRC is of *coreferential* (which is a subtype of **prth** in the PARENTHETICALITY dimension), *wh-rel-cl* (a subtype of CLAUSALITY dimension), and *hd-subj-ph* (or *fin-hd-fill-ph*, a subtypes of HEADEDNESS dimension). The NRC, even though NRCs are not parentheticals, they can be included as instances of the subtype of *prth*, because they share many traits with parentheticals, as seen in section 4. (Those traits, which I will elaborate on in the following sections, are prosodic and semantic characteristics that parenthetical expressions have.) An RRC is a subtype of **unprth**, added to the same subtypes of other dimension. *Unprth* is proposed as the counterpart subtype to *prth* under PAREN-THETICALITY dimension, and the hierarchy in itself is not elaborated

here. So, an RRC is of *unprth* in PARENTHETICALITY dimension, of *wh-rel-cl* of CLAUSALITY dimension, and of *hd-subj-ph* (or *fin-hd -fill-ph,*) in HEADEDNESS dimension. Onto those subtypes of NRCs I will put '*nr-*' at the beginning of the name which their RRC counterparts have, as meaning *nonrestrictive*: *nr-wh-subj-rel-cl* and *nr-fin-wh -fill-cl*. I will change the names for RRC constructions also by putting *r-* in the front, in order for those two constructions to be counterparts of each other: *r-wh-subj-rel-cl* versus *nr-wh-subj-rel-cl* and *r-fin-wh-fill-cl* versus *nr-fin-wh-fill-cl.* Look at the following hierarchy.

(10) Multi-dimensional hierarchy of NRC constructions:

, who left   , who they like
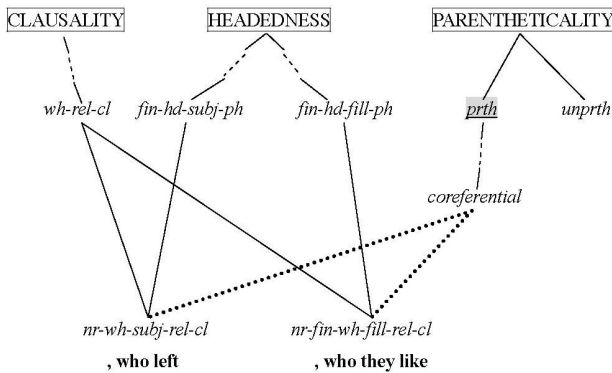
(11) Multi-dimensional hierarchy of RRC constructions:

who left   who they like
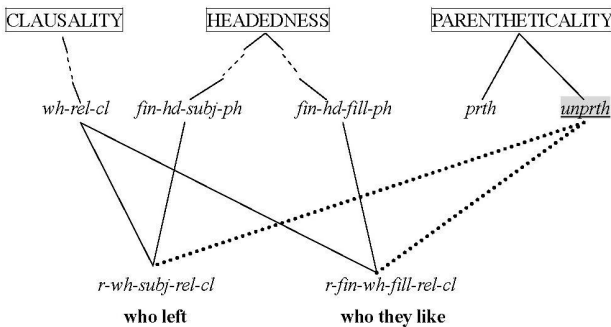
5.2.2. Prosody and semantics

To capture the distinctive characteristics which parenthetical expressions bear, I propose a new constraint, namely **Parentheticality Constraint**.

(12) **Parentheticality Constraint** (PC):
  i. P-PRS value is '+' if a linguistic expression has a prosodically discontinuous contour of parentheticals at the beginning and end of itself; otherwise, it is '—'.
  ii. The SEM value of an expression is the element of the E-SET when it is of prth; otherwise, the SEM value is not included in the E-SET.

$$prth \ \Rightarrow \ \begin{bmatrix} \text{PHON} & \begin{bmatrix} \text{P-LIST} \ < nelist > \\ \text{P-PRS} \ + \end{bmatrix} \\ \text{SEM} & \boxed{1} \\ \text{E-SET} & \{\boxed{1}\} \cup \{ ... \} \end{bmatrix}$$

The first common feature of parentheticals and NRCs I looked into in the earlier sections was its prosody[14]. I propose that parentheticals have a special prosodic feature P-PRS(parenthetic prosody), which marks that the linguistic expression has a distinctive phonological contour different from other normal constituents. As many have observed such as Bolinger (1989) and Dehè and Kavalova (2007), a parenthetical expression brings a discontinuity to the flow of utterance right before where they are spoken. This is the same when it comes to NRC. As Quirk et al. (1985), Auran and Loock (2006), and Arnold (2007) report, NRC causes a discontinuity when it appears. Therefore, it becomes necessary to devise a feature that will separate parenthetical expressions from un-parenthetical ones. By virtue of this constraint, an NRC and other parenthetical expressions will inherit [P-PRS +] value, but for the RRCs and other unparenthetical expressions it is [P-PRS —] because it does not have a parenthetical prosody contour. In the P-LIST[15] list, words uttered by a speaker are listed.

Next, with regard to the semantics, in HPSG literature, specifically in

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14) For the details, please refer to section 2.4 and 4.2.1.
15) P-LIST: phonetic list

Sag et al. (2003)[16], the constitution of SEM(antics) is MODE, INDEX, and RESTR(iction). The RESTR part is composed of SIT(uation), RELN (relation), etc. Subparts of MODE is *prop(osition)*, *ques(tion)*, *dir(ective)*, *ref(erence)*, and *none*. As for INDEX, it is i, j, $\cdots$ type for nominals and s_0, s_1, $\cdots$ type for others. This type stands for *situation*. The RESTR part contains conditions that the entity must meet in order for it to be legitimately referred to by the expression. Among the subparts of those conditions, there is a feature SIT which tells us in what kind of situation the individuals, properties, or relations of the sentence are involved. The RELN indicates what kind of relation is involved.

From this background of semantics, since parenthetical expressions bring additional information to the host clause, the semantic contribution of them should be different from the one that other restrictive modifiers deliver. That is, the modification of the adjective *red* in 'my *red* flowers withered' and in 'my flowers, *red*, withered' is different in its meaning contribution to the modified head 'flower'. In the former sentence, the speaker only tells about the flowers which are red, but not about other flowers of different colors he or she has, thus narrowing down or *restricting* the range of reference from all the flowers he or she has to only the ones that are red. But in the latter, all his or her flowers withered, and all of them are red. Therefore, the meaning that non-restrictive modifiers bring can be said to be additional. This is the same, of course, with NRC constructions. The examples can be replaced from 'my *red* flowers withered' to 'my flowers *which are red* withered,' and from 'my flowers, *red*, withered' to 'my flowers, *which are red*, withered.' Between each paired sentences, there is no difference for interpretation.

As a result, it becomes necessary to find a way to express this additional contribution of nonrestrictive or parenthetical expressions do to the host, separately from the restrictive modification that normal adjuncts do. I propose that there is a set feature E-SET (meaning 'a set

16) From now on, I will use Sag et al. (2003) way of style to show the semantics feature information description, since it is the newest and the most recent version of HPSG generalization.

of extra meanings'), which is a set of SEM values. I suppose that every expression should have this kind of set feature, and if an expression is of *prth*, then it should have its own SEM value as one of its elements, along with other elements that already exist in that set. This feature will mark that the restrictions a phrase has are not restrictive but nonrestrictive or additional. If the expression is not a parenthetical one, then the SEM value of it is not included in the E-SET. The E-SET functions like a kind of a bag where the meanings each expression carries are stored until the sentence becomes root clause. In Ginsburg and Sag (2000), a root clause is defined as a *head-only-phrase*. This clause is specified as [ROOT +] at the moment the sentence is uttered by a speaker. The head daughter is S whose ROOT value is '−', and the content of the head daughter becomes the message argument of the root clause. In this thesis, I only borrow the idea of using feature *ROOT* without the assuming *head-only-phrase* structure to be uttered by a speaker.

By virtue of this new constraint, *which are red* in 'my flowers *which are red* withered' will have (13a) as a part of their feature structure, and will have (13b) in 'my flowers, *which are red*, withered'

(13) a. my flowers which are red withered

$$
\begin{bmatrix}
\text{PHON} & \begin{bmatrix} \text{P-LIST} & < \text{which, are, read} > \\ \text{P-PRS} & - \end{bmatrix} \\
\text{SEM} & \boxed{1} \\
\text{E-SET} & \emptyset
\end{bmatrix}
$$

b. my flowers, which are red, withered

$$
\begin{bmatrix}
\text{PHON} & \begin{bmatrix} \text{P-LIST} & < \text{which, are, read} > \\ \text{P-PRS} & + \end{bmatrix} \\
\text{SEM} & \boxed{1} \\
\text{E-SET} & \{\boxed{1}\}
\end{bmatrix}
$$

In addition, because the E-SET is also about semantics, it should undergo semantic principles such as SIP (Semantic Inheritance Principle) and SCP (Semantic Compositionality Principle). The E-SET value should be maintained through the course of construction to deliver the extra meaning when the sentence is finally completed without missing

any. Therefore, the SCP demands a slight revision. The original one is (15), but the revised one is (16).

(14) **Semantic Inheritance Principle** (SIP):
   In any headed phrase, the mother's MODE and INDEX values are identical to those of the head daughter

(15) **Semantic Compositionality Principle** (SCP, original version):
   In any well formed phrase structure, the mother's RESTR value is the sum of the RESTR values of the daughters.

(16) **Semantic Compositionality Principle** (near final version):
   In any well formed phrase, which is not of prth, the RESTR value is the sum of the RESTR values of the daughters, and the E-SET is the union of the E-SET of daughters.

5.3. Lexical information of *wh*-pronouns

According to Sag (1997), relative pronoun *who* has a lexical entry shown in (17):

(17) *who*:
$$\begin{bmatrix} word \\ CAT & NP \\ CONT & [\,INDEX\,\boxed{3}\,] \\ REL & \{\boxed{3}\} \\ QUE & \{\ \} \end{bmatrix}$$

In a similar way, I suggest the lexical entry of an RRC pronoun *which* would be the same as (17), but as for *which* of NRC, it is not the case. As we have seen earlier, NRCs can have various kinds of parts of speech as their antecedents. So it is necessary to modify its lexical information. I assume that the category of the relative pronoun *which* is not fixed in the lexicon. In effect, none of those two important constraints for relative clause, that is, *hd-subj-ph* or *hd-fill-ph* in Sag (1997) calls for the category value of the subject or the filler to be fixed from their lexical state, but it is proper only when the LOCAL values are the same. The only demand necessary is that the lexical category of the relative pronoun be decided not by itself but by the

element they share index with. Therefore, the lexical information of the relative pronoun *which* should be changed as follows:

(18) relative pronoun *which*:
$$\begin{bmatrix} word \\ \text{CONT} & [\,\text{INDEX}\,\boxed{3}\,] \\ \text{REL} & \{\boxed{3}\} \\ \text{QUE} & \{\ \} \end{bmatrix}$$

By deleting the category information of *which*, regardless of whether it is used in restrictive clause or nonrestrictive clause, the HEAD value of the relative pronoun *which* can be any category depending on the circumstance. As a matter of fact, there will be no problem even though we remove the category value NP from the lexical information of *who* on the same ground.

5.4. *Wh*-relative clauses and parentheticality

5.4.1. Basic constraints for *wh*-relative clauses

Even though I have shown that NRC inherits constraints from *prth*, there still remain unsolved problems. The first one is that the present constraints of *rel-cl* and *wh-rel-cl* in Sag(1997) fail to include the characteristics of NRC constructions, even though they are supertypes of it. Since *rel-cl* and *wh-rel-cl* have as their subtypes both RRC and NRC constructions, *rel-cl* should be unspecified on the category of the antecedent, and the category of *wh-rel-cl* also should be not fixed as a constraint. The present constraints of both constructions in Sag (1997) need to be changed as follows based on the reasoning made above:

(19) *relative-clause* constraint:
$$rel\text{-}cl \;\Rightarrow\; \begin{bmatrix} \text{HEAD} & \begin{bmatrix} \text{MC} & - \\ \text{INV} & - \\ \text{MOD} & [\,\text{HEAD}\ \ X'\lor XP\,] \end{bmatrix} \\ \text{CONTENT} & proposition \end{bmatrix}$$

(20) *wh-relative-clause* constraint:
$$wh\text{-}rel\text{-}cl \;\Rightarrow\; \begin{bmatrix} \text{HEAD} & [\,\text{MOD}\ X'\lor XP_{\boxed{1}}\,] \\ \text{NON-HD-DTRS} & \langle\,[\,\text{REL}\,\{\boxed{1}\}\,]\,\rangle \end{bmatrix}$$

In this revision made above, the category information of antecedent has been changed from [HEAD ***noun***] to [HEAD **X′∨XP**] to be able to include AP or sentential antecedents of NRC, as well as N′ ante-

cedents of RRCs, as you see in (19). This improvement is reflected on the HEAD value of *wh-rel-cl* as seen in (20).

The next problem is that the finiteness of NRC construction is missing in the present system. The present constraint needs to be improved to include the finiteness of the NRC construction, as seen below. By adding V(erb)-FORM feature and specifying it to be finite, the unique characteristic which differentiates NRC from RRC in terms of verb forms is displayed successfully in (21).

(21) *wh-rel-cl* and *prth* constraint:

$$
wh\text{-}rel\text{-}cl \vee prth \quad \Rightarrow \quad
\begin{bmatrix}
\text{PHON} & \begin{bmatrix} \text{P-LIST} < nelist > \\ \text{P-PRS} \quad + \end{bmatrix} \\
\text{HEAD} & \begin{bmatrix} verb \\ \text{V-FORM} \quad finite \\ \text{MOD} \quad\quad \text{XP}_{\boxed{1}} \end{bmatrix} \\
\text{SEM} & \boxed{1} \\
\text{E-SET} & \{\boxed{1}\} \cup \{\dots\} \\
\text{N-HD-DTRS} & \langle [\,\text{REL} \{\boxed{1}\}\,] \rangle
\end{bmatrix}
$$

When it comes to RRCs, with regards to the improvements made on NRCs here, it is expected that in type *wh-rel-cl* ∨ *unprth*, the V -FORM is unspecified, and the MOD value is NP, not XP.

5.4.2. Semantic constraints

NRC is a case of *prth*, and one of the semantic characteristics parenthetical expressions have is that they contribute to the collective meaning of the main clause differently from the way that other restrictively modifying expressions do. That is why I proposed the E-SET feature to the parenthetical expressions in the previous section. In addition to the E-SET feature, I suppose that each terminal type of *prth* has its own relation with the main sentence which is distinctive from what other types have. This aspect can be captured in terms of *situation* that ut- terances carry with them. The present feature structure system as it is cannot express the differences among the situations involved in various utterances. For example, if you look at the sentence 'the teacher who is poor has rich sons who are doctors,'

only one situation is involved: 'the poor teacher has rich doctor sons.' However, in the sentence where NRCs are attached, 'the teacher, who is poor, has rich sons, who are doctors,' there are four situations concerned in total: that is, 'the teacher has rich sons', 'someone is poor', 'some people are doctors', and a situ- ation where all these three separate situations are involved together. The last situation is supposed to be the information understood by a hearer at the moment uttered by the speaker, and the former three ones should serve as arguments of the last one. If the first situation is s_1, the second s_2, the third s_3, and the last s_0, the feature structure system as it is will look like below according to the SIP and other constraints and principles. At the top of the sentence, the only situation left as the INDEX of the whole sentence is s_1, on the course of SIP (which demands the MODE and INDEX values of the mother to be identical with those of the head daughter), even though it should be s_0 where all the three situations are involved.

(22) a. The teacher, who is poor, has rich sons, who are doctors.
   b.
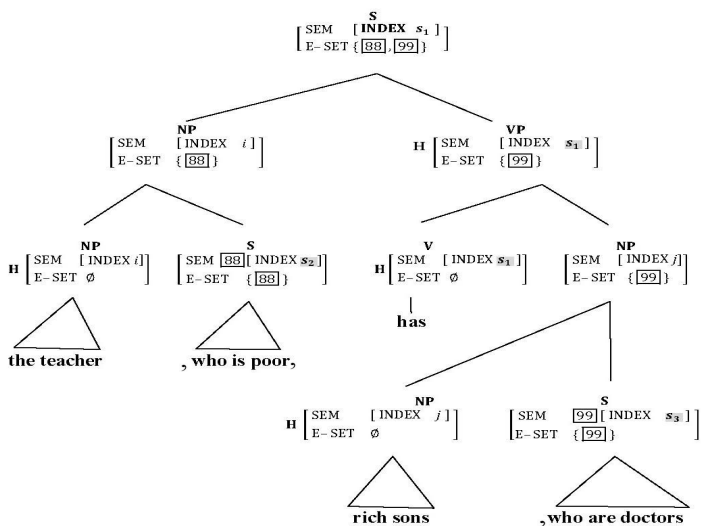
To fix this problem, I suggest that we be able to express the relation of the situations of the main clause and parenthetical expressions in the feature structure of the latter. In addition, I assume that *situation* may have its own subtypes such as s_m (situation of the matrix verb which is the head of the main clause), s_p (situation of the parenthetical expression), sa (situation of intermediate level) and s_A (situation of the root clause where the main clause and the parenthetical expression are composed together and uttered by a speaker)[17].

(23) Subtypes of *situation*:
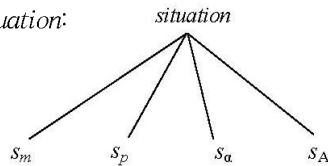
This relation a parenthetical has concerning the main clause can be shown in its semantic information. I hypothesize that the relation an NRC has with its main clause is *coreferentially-conjunctive* one. To include this relational aspect into the feature structure, I propose to breakdown the SEM part of the NRC into subdivisions: C-SEM[18] (core semantics), E-SET, and P-RELN (parenthetical relation). C-SEM shows the semantic information of its own, E-SET is as seen previously, and P-RELN is to display the relation the expression holds with regard to the main clause. If the expression is of *prth*, then the value of this feature will be specified as seen below in (24b), but if it is not, the value will be an empty one. An NRC expression has *cor-cj* (*coreferentially-conjunctive*) relation.

(24) a. new SEM feature structure:

$$\left[\text{SEM} \begin{bmatrix} \text{C-SEM} & ... \\ \text{E-SET} & ... \\ \text{P-RELN} & \langle ... \rangle \end{bmatrix} \right]$$

---

17) This subcategorization of situation is only for the convenience of notation.

18) C-SEM supposedly has the same inner structure as the one of the former SEM, that is MODE, INDEX, and RESTR.

b. SEM specification of NRC:

$$
\left[\text{SEM}\begin{bmatrix} \text{C-SEM} & \boxed{1} \\ \text{E-SET} & \{\boxed{1}\,[\,\text{SIT}\quad s_p\,]\,\} \\ \text{P-RELN} & \left\langle\begin{bmatrix} \text{RELN} & cor\text{-}cj \\ \text{SIT} & s_\alpha \\ \text{ARG} & <s_m,s_p> \end{bmatrix}\right\rangle \end{bmatrix}\right]
$$

Based on this new feature structure of SEM, the situation of NRC in (24b) is expressed in the C-SEM value and the E-SET value (by co -indexing) as s_p, and intermediate situation s_a has been created which takes as its arguments the situation of the matrix verb and the one of the parenthetical expression. The relation of the three situations is expressed as *cor-cj*. If there is only one NRC in the whole sentence, then s_a will equal to s_A. P-RELN is a kind of list, and the values of this feature of the daughters are composed in the list of the mother, which will be made possible by modifying SCP to include this aspect. Remaining problem is that the matrix verb that s_m maps onto is to be found outside of this structure. However, I believe this is possible be- cause there would be no such parenthetical expressions as having no matrix verb in the main clause.

(25) **Semantic Compositionality Principle** (final version):

In any wellformed phrase, which is not of prth, the RESTR value is the sum of the RESTR values of the daughters that are not of *prth*, and the E-SET is the union of the E-SET of daughters: regardless whether it is of prth or not, P-RELN value is the sum of the P-RELN values of daughters.

When the sentence becomes a root clause, the situation value will be s_A, which takes as its arguments s_m and one or more number of s_ps. Look at the following constraint:

(26) **NRC Restriction Constraint (NRC-RC):**

a. In a root clause whose P-RELN is nonempty and its RELN value is of *cor-cj*, in the RESTR list one member is added, whose RELN is cor-cj. The SIT value of this root clause is structure-shared with the SIT value of this new element, which takes as its arguments the SIT value of the head daughter and the elements of P-RELN's ARG lists[19].
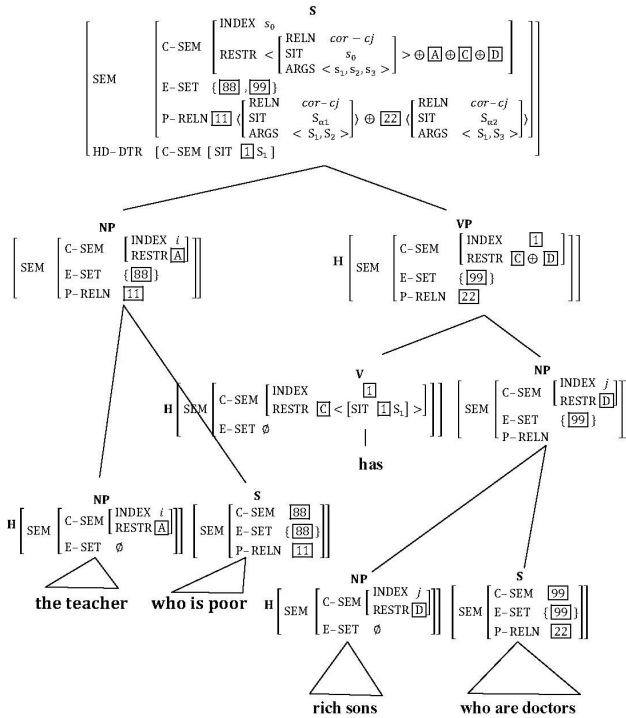
---

19) ⊞ is a hypothetical notation, introduced for the list where more than one lists are put together in an orderly manner. By definition, if there is an element which appears in more than one list, then it should be listed only once in the result list. In the case

Here, the SIT value of the whole sentence is $s_{0(=A)}$, which takes as arguments $s_{1(=m)}$ from the head daughter (that is, the matrix verb *has*), $s_{2(=p1)}$ and $s_{3(=p2)}$ from the E-SET elements.

As the next step, this revision of semantics should be included in the *wh-rel-cl* and *prth* constraint as a final state.

(28) *wh-rel-cl* and *prth* constraint (final version):

$$
wh\text{-}rel\text{-}cl \lor prth \Rightarrow
\begin{bmatrix}
\text{PHON} & \begin{bmatrix} \text{P-LIST} < nelist > \\ \text{P-PRS} \quad + \end{bmatrix} \\[2ex]
\text{HEAD} & \begin{bmatrix} verb \\ \text{V-FORM} \quad finite \\ \text{MOD} \quad \text{XP}_{\boxed{1}} \end{bmatrix} \\[3ex]
\text{SEM} & \begin{bmatrix} \text{C-SEM} \quad \boxed{1} \\ \text{E-SET} \quad \{\boxed{1}[\text{SIT} \quad s_p]\} \\ \text{P-RELN} \langle \begin{bmatrix} \text{RELN} \quad cor\text{-}cj \\ \text{SIT} \quad s_\alpha \\ \text{ARG} \quad < s_m, s_p > \end{bmatrix} \rangle \end{bmatrix} \\[4ex]
\text{N-HD-DTRS} & \langle [\text{REL} \{\boxed{1}\}] \rangle
\end{bmatrix}
$$

In this point, the previous PC (parentheticality Constraint) is now revised based on the new SEM structure system, as below[20]:

(29) **Parentheticality Constraint** (PC):
  i. P-PRS value is '+' if a linguistic expression has a prosodically discontinuous contour of parentheticals at the beginning and end of itself; otherwise, it is '—'.
  ii. The C-SEM value of an expression is the element of the E-SET when it is of prth; otherwise, the C-SEM value is not included in the E-SET.

$$
prth \Rightarrow
\begin{bmatrix}
\text{PHON} & \begin{bmatrix} \text{P-LIST} < nelist > \\ \text{P-PRS} \quad + \end{bmatrix} \\[2ex]
\text{SEM} & \begin{bmatrix} \text{C-SEM} \quad \boxed{1} \\ \text{E-SET} \quad \{\boxed{1}\} \cup \{...\} \\ \text{P-RELN} \quad < \cdots > \end{bmatrix}
\end{bmatrix}
$$

---

20) For the constructions where the antecedent and the relative clauses are conjoined, and for the constructions where the antecedents are other than an N′ expression, please refer to Pak (2008).

6. Conclusion

An NRC construction is similar to an RRC one in that syntactically they form constituency with their antecedent, but the former is different prosodically and semantically from the latter, since it brings prosodic discontinuity and extra meaning to its host. From the point of view of prosody and semantics, it is closer to parentheticals rather than to the RRC counterpart. To reconcile this discordance, I proposed a new dimension PARENTHETICALITY on the existing phrasal hierarchy, so that NRCs can inherit those prosodic and semantic characteristics from a type *prth* of this dimension, along with existing ones CLAUSALITY and HEADEDNESS. Also, by introducing new feature types of prosodic and semantic features, it became possible to express this special behavior of NRCs in the one and single feature structure. In addition, the SEM part has been broken into three subparts, that is C-SEM, E-SET, and P-RELN. C-SEM succeeds to the existing SEM features, E-SET is to store nonrestrictive meanings, and P-RELN marks unique relations each subtype of parenthetical expressions has with regard to main clause. The understanding of situation values of the NRCs makes the discussion complete. In conclusion, NRC is syntactically relative clause but prosodically and semantically parenthetical, which this construction can express in a single feature structure by multiple inheritance hierarchy.

The advantage of this study is that, through the extensive study conducted on the semantics in this paper, it becomes more possible to capture the multi-aspectual characteristics of NRC constructions. Moreover, the expanded features of SEM part will make it workable to explore other semantic facets of grammatical phenomenon. Further researches on parenthetical expressions and other nonrestrictive modification constructions will benefit on the theoretic basis made in this thesis. Nevertheless, since the attempts made here on the hierarchy and categorization is relatively superficial, more investigation is called for on the nature and its inner composition of the dimension to gain its adequacy as a grammatical premise or assumption.

References

Arnold, D. 2007. Non-restrictive relatives are not orphans. *Journal of Linguistics 43*, 271-309.

Auran, C. and R. Loock. 2006. Appositive relative clauses and their prosodic realization in spoken discourse: A corpus study of phonetic aspects in British English. *Proceedings of the Workshop on Constraints in Discourse.* Retrieved May 21, 2007, from http://www.constraints-in-discourse.org/cid06/

Blakemore, D. 2005. *And*-parentheticals. *Journal of Pragmatics 37*, 1165-1181.

Blakemore, D. 2006. Divisions of labour: The analysis of parentheticals. *Lingua 116*(10), 1670-1687.

Bolinger, D. 1989. *Intonation and its Uses: Melody in Grammar and Discourse.* London: Edward Arnold.

Burton-Roberts, N. 2005. Parentheticals. In Brown, E.K. (Ed.), *Encyclopaedia of Language and Linguistics.* Amsterdam: Elsevier.

Dehé, N. and Y. Kavalova, 2007. Parentheticals: an Introduction. In N. Dehé and Y. Kavalova (Ed.), *Parentheticals.* (pp. 1-22). Amsterdam/Philadelphia: John Benjamins

Emonds, J. 1979. Appositive Relatives Have No Properties. *Linguistic Inquiry 10*, 211-243.

Espinal, M. T. 1991. The representation of disjunct constituents. *Language 67*(4): 726-762.

Fabb, N. 1990. The Difference between English Restrictive and Non-restrictive Relative Clauses. *Journal of Linguistics 26*: 57-78.

Ginsburg, J. and I. Sag. 2000. *Interrogative Investigations: The Form, Meaning and Use of English Interrogatives.* Stanford: CSLI Publications.

Haegeman, L. 1988. Parenthetical adverbials: The radical orphanage approach. In S. Chiba, et al (Eds.), *Aspects of Modern Linguistics: Papers Presented to Masatomo Ukaji on his 60th Birthday*, 232-254. Tokyo: Kaitakushi.

Ifantidou-Trouki, E. 1993. Sentential adverbs and relevance. *Lingua 90*, 69-90.

Jackendoff, R. 1977. *X′-Syntax: A Study of Phrase Structure.* Cambridge, Massachusetts: The MIT Press.

McCawley, J. 1982. Parentheticals and Discontinuous Constituent Structure. *Linguistic Inquiry 13*, 91-106.

Pak, Sooran. 2008. *Dual Identity of Non-restrictive Relative Clauses in English.* Master's thesis. Seoul National University. Seoul.

Perzanowski, D. 1980. Appositive Relatives Do Have Properties. *NELS X*, 355-368.

Pollard, C. J. and Ivan, A. S. 1994. *Head-driven Phrase Structure Grammar.* Chicago: University of Chicago Press.

Quirk, R., et al. 1985. *A Comprehensive Grammar of the English Language.* Essex: Longman.

Ross. J. R. 1967. *Constraints on Variables in Syntax.* Doctoral dissertatoin. MIT. (Published in 1986 as *Infinitive Syntax!* Norwood, N.J.: Ablex.)

Safir, K. 1986. Relative Clauses in a Theory of Binding and Levels. *Linguistic Inquiry 17*, 663-689.

Sag, I. 1997. English relative clause constructions. *Journal of Linguistics 33*, 431-483.

Sag, I., T Wasow and E. Bender. 2003. *Syntax: A Formal Introduction.* Stanford: CSLI Publications.

Smith, C. 1964. Determiners and Relative Clauses in a Generative Grammar of English. *Language 40,* 37-52.

Taglicht, J. 1998. Constraints on intonational phrasing in English. *Journal of Linguistics 34*(1), 181-211.

De Vries, M. 2000. Appositive Relative Clauses. *Linguistics In the Netherlands 17*, 221-231.

De Vries, M. 2002. *The Syntax of Relativization.* Doctoral dissertation. University of Amsterdam.

De Vries, M. 2006. The syntax of appositive relativization: On specifying coordination, false free relatives and promotion. *Linguistic Inquiry 37*, 229-270.

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