Right Node Raising in an Indexed PSG*

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1. Introduction

Right Node Raising (henceforth, RNR) constructions have been one of the most difficult constructions to analyze. They have peculiar properties which cannot be easily accounted for with standard mechanisms. Traditionally, they have been regarded as involving "movement". Hence the "factor" in RNR has been assumed to be "moved/displaced" from the conjuncts. For example, Gazdar (1981) provides an analysis of RNR under this assumption. However, RNR shows several characteristics which we cannot expect from a displacement construction, as we will see in section 2. Based on these characteristics, some approaches (McCawley 1982, Steedman 1985) provide analyses which do not assume displacement. But they do not seem to provide satisfactory accounts for all the special characteristics of RNR, as we will see in section 3. I will propose a new approach for RNR in section 4 under the Indexed Phrase Structure Grammar (IPSG) framework of Chae (1992). The basic idea behind this approach is that the factor remains in the second conjunct and the gap in the first conjunct is licensed by this factor.

2. Basic Facts

RNR is realized in a coordinate structure. It applies to conjoined Ss, VPs

or NPs ending in identical (sequences of) constituents[1]:

(1) a. Alice composes, and John performs, *Philadelphia–style punk rock music.*

   b. In these days, few people learn or indeed see any point in learning, *the languages of Homer and Virgil.* (Quirk et al. 1985: 977)

   c. [John's affection for and admiration of *his parents*] is remarkable.

The italicized expressions in these examples are what is called the factor of RNR.

Now let us examine some special characteristics of RNR, which differ from the behavior we expect from displacement constructions. First, the factor in RNR need not be a constituent (contra Gazdar 1981, McCawley 1988), as was observed in Abbot (1976):

(2) a. Smith loaned, and his widow later donated, a valuable collection of manuscripts to the library.

   b. I borrowed, and my sisters stole, large sums of money from the Chase Manhattan Bank.

The factors in these examples are not constituents. In this sense, RNR cannot be used as a sufficient condition for constituency.

Second, the factor in RNR can be a 0/1–bar expression even though the distribution is limited:

(3) a. John wants just any, but I want the very best, portrait of Elvis.

   b. *Ted has always wanted a, so I've given him my, coffee grinder.

McCawley (1988: 529) gives two question marks about the grammaticality of sentence (a), but native speakers around me agree that it is acceptable. For such sentences as (b), the unacceptability seems to be due to some phonological restrictions rather than syntactic ones, as is argued by McCawley. The indefinite article *a* is a bound word and hence may not be separated from its host.

Third, the factor in RNR does not have syntactic "prominence" over the

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[1] The conjuncts in RNR may not be connected with a conjunction as was pointed out to me by Paul Deane (personal communication):

i) Don't actually hate, just be willing, to swim in the pool.

conjuncts. We can see this from the facts of antecedent–anaphor relations (Levine 1985):

(4) a. Mary$_i$ said, and I happen to agree, that she$_i$ needs a new car.

b. *She$_i$ said, and I happen to agree, that Mary$_i$ needs a new car.

If the factor is displaced from the conjuncts and hence "c–commands" them, sentence (b) would be grammatical.

Fourth, RNR does not obey island constraints for most speakers (cf. Wexler and Culicover 1980):

(5) a. John gave a briefcase, and Harry knew someone who had given a set of steak knives, to Bill. (Levine 1985)

b. John knew a man who wanted to take, but everybody who was in the concert already owned, a picture of John Lennon.

c. [Anyone who likes, or anyone who thinks their family would like, a vacation] is welcome to this club.

We cannot *wh*–extract (a part of) the factor when one of the positions from which the factor was "displaced" is in the configuration of an island ((6a) compared with (6b)):

(6) a. *To whom did John give a briefcase and Harry know someone who had given a set of steak knives e? (cf. (5a))

b. Which book did Kim believe, and Sandy eventually prove, that Chris had stolen e from the British museum?

Sentence (6a) would be grammatical if the factor is displaced from its "original" position, because the factor would not be in the configuration of an island any more.

All the characteristics observed thus far indicate that the factor is not displaced from the conjuncts but stays in its site of origin in the second conjunct. In this respect, we need to pay attention to Wexler and Culicover's (1980: 301) observation that the factor in RNR "always behaves, vis-à-vis all constraints on analyzability, just as it would if it were in its original position".

3. Previous Analyses

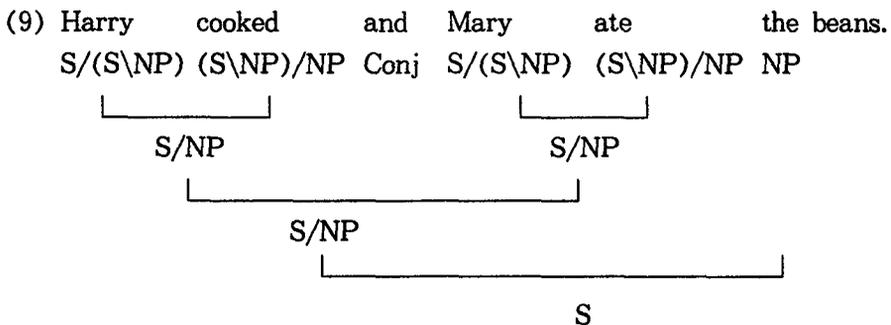Gazdar (1981: 178) provides the following rule to analyze RNR constructions:

(7) [$_\alpha$ α/β β], where α ranges over clausal categories and β can be any phrasal or clausal category.

This rule says that the factor in RNR is rightward extracted and that the conjuncts are constituents (which have gaps). However, all the characteristics of RNR observed in section 2 go against this displacement hypothesis. The factor need not be a constituent or a phrasal (2–bar) expression. And it does not have any syntactic "prominence" over the conjuncts. Most of all, RNR does not obey island constraints.

Steedman (1985) and Dowty (1988) provide a categorial analysis of RNR constructions. Using a Type Raising mechanism and Functional Composition,

(8) a. Type Raising: B $\Rightarrow$ A/(A\B) or A\(A/B)
    b. Functional Composition Rule: A/B + B/C $\Rightarrow$ A/C

they give the following analysis for RNR:

(9) Harry   cooked   and   Mary   ate   the beans.
    S/(S\NP) (S\NP)/NP Conj S/(S\NP) (S\NP)/NP NP
      └──────────┘   └────────┘
          S/NP   S/NP
        └──────────────────────────────────┘
                  S/NP
                └────────────────────────────────────┘
                              S

RNR is analyzed as a non–constituent conjunction. No explicit displacement of the factor is assumed, unlike Gazdar's (1981) analysis. However, some kind of displacement is implicit in the analysis itself because the factor is combined with the rest of the sentence at the last stage.

Notice that Steedman (1985: 542) and Dowty (1988: 183) assume that RNR does obey island constraints contrary to our assumptions. Thus the following sentence is bad to them:

(10) I know the woman who painted, and you met the man who stole,
the picture that Harry was so fond of.

This kind of sentence is blocked by the same extraction island constraints as those which operate on "leftward movement" constructions. These extraction constraints are stated as constraints on the application of Functional Composition because extraction is carried out by means of a Functional Composition rule (Dowty 1988: 181):

(11) a. Complex NP Constraint on Functional Composition
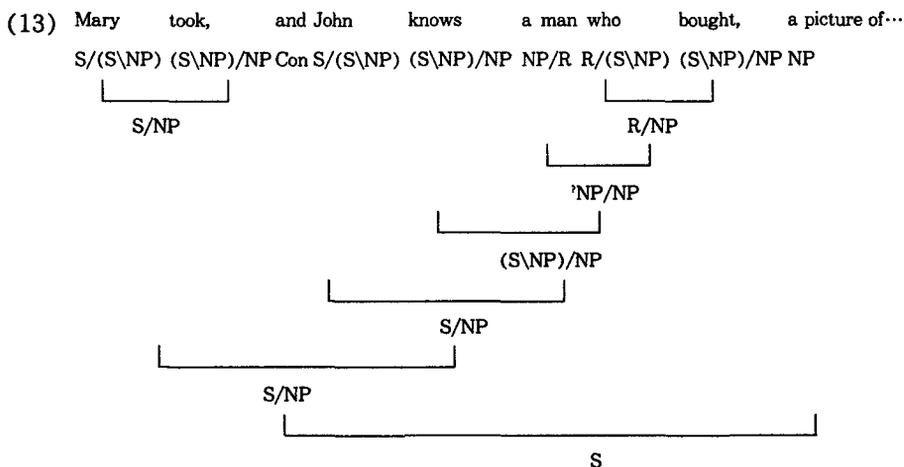
$$A/B + B/C \Rightarrow A/C, \text{ where } B \neq N\backslash N$$

b. *everyone   who   meets

NP/R   R/(S\NP)   (S\NP)/NP

|_____|

R/NP

|_____|

*NP/NP

Expression (11b) is ungrammatical because it requires the application of Functional Composition prohibited by (11a), under the assumption that R is a type of N\N. Notice that sentence (10) contains subexpressions which are prohibited by (11a).

The displacement implicit in this analysis of RNR causes some problems. First, let us consider sentence (3a), which has a 0/1–bar expression as its factor. The sentence will be ruled out by the mechanism which prevents the extraction of 0/1–bar expressions in other displacement constructions:

(12) *Portrait of Elvis, John wants just any.

Second, it is not clear how the categorial system can be modified to describe the dialect which admits sentences like (10). In this dialect RNR does not obey island constraints (čf. (5)). We will need a mechanism which prevents extraction from islands in the leftward movement constructions but not in RNR. I think, however, that such a mechanism would not be easy to construct because extraction from both types of these constructions is basically the same (except the direction of extraction). Even though we manage to provide such a mechanism for those sentences containing islands,

(13) Mary   took,   and John   knows   a man who   bought,   a picture of···
      S/(S\NP) (S\NP)/NP Con S/(S\NP) (S\NP)/NP NP/R R/(S\NP) (S\NP)/NP NP
          |_____| |_____|
             S/NP   R/NP
                                                  |_____|
                                                     'NP/NP
                                         |_____|
                                              (S\NP)/NP
                                    |_____|
                                         S/NP
                          |_____|
                             S/NP
                          |_____|
                                          S

(notice that we have assumed that [NP/R + R/NP] is a possible combina-
tion contra (11a)) the categorial analysis here cannot account for the
ungrammaticality of the (*wh*–)extraction or Topicalization out of a factor
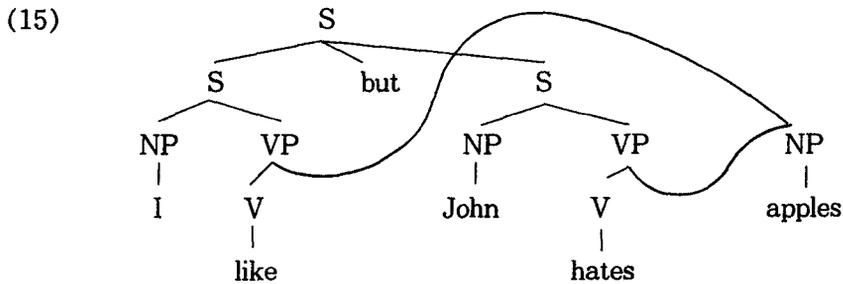which is in an island:

(14) a. *Elvis Presley, Mary took, and John knows a man who wanted
         to buy, a picture of.
      b. Elvis Presley,   Mary took, and   John··· buy, a picture of
         S\(S/NP)   S/NP   S/NP   NP/NP
                             |_____|
                                   S/NP
                                      |_____|
                                         S/NP
                          |_____|
                             S (Topicalization)
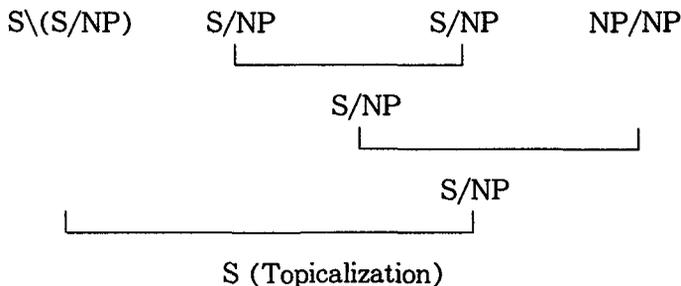
Under the analysis in (13), the factor is not in the configuration of an is-
land. Thus sentence (14a) should be OK as we can see in (14b). However,
it is ungrammatical even to those who have no island constraints in RNR
(cf. (6)).

McCawley (1982, 1988) provides an analysis which overcomes many of
the problems of previous approaches. In his analysis, the factor is connected
with each of the conjuncts:

(15)

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                          S
              S          but        S
          NP      VP          NP        VP       NP
          |        |          |          |        |
          I        V         John        V      apples
                   |                      |
                  like                  hates
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The factor has a special status in the sense that it has two mothers. It is a part of the first and second conjuncts at the same time, which implies that each unit of a conjunct plus the factor has its own identity as a clause. But the factor stays in the "original" position in the second conjunct. The analysis in (15) does not have the problems of the categorial approach because no (implicit) displacement is involved.

However, there are some problems with McCawley's approach. First, his analysis goes beyond the limits of the traditional tree analysis. Because the factor has more than one mother node, his system produces non-standard, "tangled" trees[2]. Second, he assumes that the factor in RNR is a constituent. But we have seen that non-constituent factors are also possible (cf. (2)). In this case, the analysis tree would be a bit more complex because there are two two-mother constituents.

Aside from these metatheoretical considerations, we have some counter-examples to McCawley's analysis. Remember that each conjunct and the factor is analyzed as being a grammatical unit. There are cases where this unit is not grammatical by itself, even though it is OK in a RNR construction:

(16) a. '*I was yesterday unhappy.

    cf. 'I was yesterday, and Tom is today, unhappy.

b. "I gave to the old lady a ring.

    cf. I gave to the old lady, and John presented to Mary, a ring.

These examples indicate that the conjunct plus factor unit in RNR has a

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[2] The "tangled" trees themselves would not be necessarily wrong if we have enough motivation for them. However, other things being equal, it would be better to stick to the (traditional,) well-constrained trees. The set of possible trees here is far more restricted than that allowed in McCawley's system.

special status, which is different from those cases where it is out of RNR. If we assume that the unit has the same status as an independent clause, we cannot account for the data in (16).

Next, there are cases where the two conjuncts, rather than the unit of conjunct plus factor, should be considered as a unit (at least semantically) (Gazdar 1981: 180):

(17) a. John hummed, and Mary sang, the same tune.
     b. John hummed, and Mary sang, at equal volumes.
     c. John gave Mary, and Joan presented to Fred, books which looked remarkably similar.
     d. The Red Sox beat, and the Giants were beaten by, different teams.

At the moment when we interpret the factor we need information about both of the conjuncts. Each unit of conjunct plus factor is not a possible (semantic) expression. That is, the unit cannot have an independent meaning. The factor should be analyzed as being directly related to the whole conjunction. We can see a similar phenomenon in the following examples:

(18) a. A man just came in and a woman went out who were similar in all kinds of ways.
     b. A man just came in and a woman went out who hate each other like poison. (Gazdar 1981: 178-9)

(19) Tom bought a can-opener and Alice bought a dictionary that were once owned by Leonard Bloomfield. (McCawley 1982: 100)

Even though we can analyze these sentences as Extraposed Relative Clause constructions (with split heads) (cf. Gazdar 1981: 178), we can also analyze these as manifestations of RNR constructions (cf. McCawley 1982: 100).

Under McCawley's analysis, we must be able to provide an explanation of why the sentences in (17-19) are good but the following are bad:

(20) a. ?John hummed at equal volumes. (cf. (17b))
     b. *Tom bought a can-opener that were once owned by Leonard Bloomfield. (cf. (19))

The oddity of these sentences may not be due to syntactic factors[3], but we

must admit that they are, at least, semantically bad.

Before looking at one more problem, notice that only the right–most element in a clause(/phrase) can be the factor in RNR[4]. The right–most element can be the result of Heavy–NP Shift or Extraposition (from the subject/object). Hence, RNR obeys the same constraints as these constructions (Arnold Zwicky, personal communication):

(21) a. *I gave money the volunteers of America.

 b. *I gave money, and John gave rare books, the volunteers of America.

Sentence (21b) is ungrammatical because the direct object of a ditransitive verb cannot be Heavy–NP–shifted, as we can see in sentence (21a).

Based on this observation, let us consider the fact that non–constituents can also be factors in RNR. When non–constituents are involved, the Heavy–NP Shifted version is not a good "input" to RNR:

(22) a. My older brother sells [to insurance executives] [those cars which are the most luxurious in the world].

 b. My younger brother rents [to insurance executives] [those cars which are the most luxurious in the world].

 c. ?*My older brother sells, and my younger brother rents, [to insurance executives] [those cars which are the most luxurious in the world].

 cf. My older brother sells, and my younger brother rents, [luxury sedans] [to insurance executives].

There is a constraint on non–constituent factors. When the Heavy–NP–Shifted element is a part of the factor, the resulting RNR sentence is not grammatical. It seems that only unmarked ordering is allowed in RNR

[3] The plural verb form in sentence (20b) would not cause a syntactic problem if we assume that the relation between the head of a relative clause and the relative pronoun is semantic rather than syntactic (Jacobson 1984).

[4] The generalization here needs to be modified (cf. (31)). We have seen that the following sentence is ungrammatical (cf. (16)):

(i) ?I was yesterday happy. (cf. I was happy yesterday.)

If the generalization is correct, then we must assume that an ungrammatical sentence can be an "input" to RNR.

when the factor is not a constituent. It is not clear how we can account for this fact in McCawley's system. Under his assumption that each conjunct plus the factor is a unit, we would expect that (22c) would be OK because the two input expressions are grammatical, as we can see in (22a–b).

Before leaving this section, I want to point out that we can see a major category mismatch ("lifting") when a functor category and its argument are not adjacent:

(23) a. *I count on that you are trustworthy.
     b. ?I count on, among other things, that you are trustworthy.
     c. ?You can count on John, and that he will be on time.
     d. ?That he will be on time, you can count on.

Usually a preposition does not take a *that*–clause as its object, but it is allowed to when the preposition is separated from the clause as we can see in (23b–d).

We can see the same phenomenon of lifting in RNR constructions:

(24) a. ?I count on, but Mary does not believe, that you are trustworthy.
     b. ??Mary does not believe, but I am willing to count on, that you are trustworthy.

(25) a. ?My theory captures, and your theory proves, that language is innate.
     b. ??My theory shows, but your theory can only capture, that language is innate.
     cf. *My theory captures that language is innate.

(26) a. I dislike, but most people like, to win at poker.
     b. ?I like, but most people dislike, to lose at poker.
     cf. ?*I dislike to win at poker.

(27) a. I enjoy, but Mary hates, to swim in the pool.
     b. ?I hate, but Mary enjoys, to swim in the pool.
     cf. ?*I enjoy to swim in the pool.

These data also indicate that the relation between each conjunct and the factor in RNR is not the same as the corresponding unit out of RNR.

4. An IPSG Analysis

In this section, I will propose an alternative account for RNR construc-
tions. As a preliminary observation, we can see that the special characteris-
tics of RNR which we have observed in section 2 are a compound effect of
the following special structural/constructional characteristics of RNR:

   (28) a. The parallelism between conjuncts (coordination).
        b. The forward–searching nature of the construction.
        c. The special prosody on the factor.
        d. The preservation of the linear precedence relation.

First, it seems to be easier to identify the "missing" element when there are
two parallel clauses involved than when there is only one clause[5]. Second,
in the case of a forward–searching construction, we can anticipate the
exact place and type of the "filler" (i.e. the factor) with reference to the
missing element in the first conjunct. This is not the case with a backward-
searching (i.e. leftward extraction) construction. Third, the special prosody
on the factor (an intonation break before the factor) acts as a cue for indi-
cating that the factor is exactly the element which is missing.

As for (28d), notice that there are two different types of displacement
(cf. Chae 1992, sec. 2.4): those which do not preserve linear order and
those which do preserve linear order. Backward–searching constructions be-
long to the former and forward–searching constructions, if any, belong to
the latter. Island constraints are (fully) effective only in the backward-
searching constructions. When linear order is preserved, we cannot see the
effect of island violations:

   (29) a. I believe that John, as you know already, told us the truth.
        b. I like a woman who has, as you know already, black hair and
           white teeth.

Even though an element in an island is linearly separated from the rest of

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[5] Strictly speaking, there seems to be only phonological parallelism between the
two conjuncts in RNR. The factor is separated from the conjuncts by an intona-
tional break and hence the two conjuncts seem to be parallel. But the factor stays
in the second conjunct in the syntactic structure, as we will see later. Then, there
is no syntactic parallelism because the first conjunct has a missing element but
the second conjunct does not.

the sentence in (29b), the sentence is still grammatical (cf. McCawley's (1982) analysis).

I think the special structural characteristics of RNR in (28) are enough motivation for a new SLASH–like feature for RNR. This feature will play an important role in accounting for the special characteristics of RNR (especially, the non–adherence to island constraints and the possibility of 0/1–bar factors). This feature will be exempt from all the constraints imposed on the regular SLASH (and GAP) to account for its behavior with respect to island constraints.

Based on the observations above we can provide a new framework for the analysis of RNR. For the theoretical mechanisms I adopt those of Chae (1992), where I have provided a GPSG–style analysis of lexically triggered unbounded constructions employing a stacked LICENSOR feature. The framework is called an "Indexed Phrase Structure Grammar" because it combines mechanisms of GPSGs and Indexed Grammars. The key assumption there is that each lexical item which triggers the construction concerned (i.e. the trigger) has a LICENSOR feature in a stack as a part of its syntactic information in the lexicon. And this feature is responsible for licensing another part in the construction (i.e. the target). The LICENSOR feature is a kind of FOOT feature. But it is different from ordinary FOOT features in the sense that it is lexically–oriented and a stacked feature. It moves around the tree by way of a stack.

The basic idea behind the new approach for RNR is that the factor stays in the second conjunct and the gap in the first conjunct is licensed by this factor. That is, the trigger of the construction is the factor and the target is the gap in the first conjunct. First, I introduce a new SLASH–like feature (say, Double Back SLASH (DBS): \\) for the gap (missing element) in the first conjunct of RNR. This is justified because the RNR gap is different from other gaps as we have seen above. Second, I introduce another FOOT feature [<DBS X> LICENSOR], which originates from the factor and propagates through the tree by way of a stack. This feature licenses the gap in the first conjunct (which is represented as <DBS X>), and is realized as the special prosody of RNR. That is, it is a syntactic cue for the special prosody.

The factor is associated with a stack which has a [<DBS X> LICEN-

SOR] feature. I will use !···! to represent the stack. As we have seen before, only the right—most constituent(s) (of the last conjunct) can have !\\X L! (stacked [<DBS X> LICENSOR]). The value of DBS (i.e. X) can be a whole constituent or a sequence of constituents[6], on which the special prosody will be realized. For example, in the following sentence,

(30) ʾI was yesterday, and Tom is today, <u>unhappy</u>!\\AP L!

the factor *unhappy* has the !\\AP L! feature. Now we can see why the unit of conjunct plus factor is ungrammatical even though it can occur in a RNR construction:

(31) a. ʾ*I was yesterday unhappy.

b. ʾʾI was yesterday <u>unhappy</u>!\\AP L!

Expression (31a) is not a case of Heavy—NP Shift, but (31b) can be regarded as one because of the LICENSOR feature, which makes the AP "heavy"[7].

I propose the following principle to regulate the behavior of the LICENSOR feature[8]:

(32) [<DBS X> LICENSOR] in the stack of a XP[CONJ *a*] node (pops

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[6] Philip Miller (personal communication) pointed out to me that the present approach would be problematic if an adjunct can be a part of the factor. Then, the value of DBS (i.e. X, the factor) would consist of elements from two different levels. However, a sentence of the following sort seems to be ungrammatical:

(i) ʾʾI like, but Mary hates, apples very much.

The problem here is not semantic and/or pragmatic. People agree that this sentence sounds terrible even though they can get what it is supposed to mean.

[7] Our approach predicts that sentence (31b) might not be as good as the corresponding unit in the RNR construction. The special prosody on the factor is not the only element which makes the unit so perfect in RNR, as we observed in (28).

[8] Notice that there are some RNR constructions which have more than two conjuncts:

(i) a. I like, (and) Mary loves, but John hates, this dog.

b. Ted is interested in, Alice has done some research on, and you are probably aware that Jenny is a recognized authority on, the circulatory system of flatworms (McCawley 1988: 528).

However, these sentences would not be problematic to principle (32) if we can properly incorporate the function of the conjunction rule into the system.

out of the stack and) licenses the FOOT feature <DBS X> on the node's XP sister.

The XP node which bears a CONJ feature is usually a clause (S). But it can also be other categories as in (1c).

Let me illustrate how the system works with reference to the following example:

(33) Mary loves, but John hates, this dog.
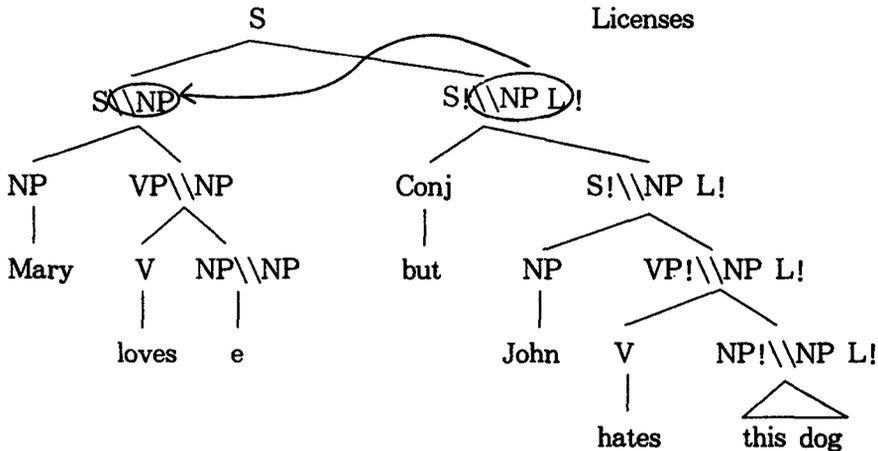
The \\NP (i.e. <DBS NP>) specification on the S node of the first conjunct is required by principle (32) as opposed to free instantiation. Hence the \\NP feature would not propagate onto the highest S node. The propagation of the [\\NP L] feature (i.e. [<DBS NP> LICENSOR]) can be controlled as follows: its upward propagation stops at the moment when it comes out of the stack to license \\NP because it propagates only through a stack. Any downward propagation of it would be blocked due to the fact that only the factor can carry it and the factor always comes at the end of the second conjunct.

Now let us consider how we can account for the special characteristics of RNR and solve the problems of previous approaches. First, the non–constituent factor does not pose any difficulties because the value of DBS, which is represented as X, can be a string of non–constituents as long as it appears clause–finally. Second, the possibility of 0/1–bar factors and the non–adherence to island constraints are ascribed to the special structural char-

acteristics of RNR. These characteristics are implemented in the system by introducing a new SLASH–like feature, i.e. the Double Back SLASH. Third, the factor does not have any syntactic "prominence" over the conjuncts because it stays in its site of origin in the second conjunct.

We have seen in (6) and (14) that a part of the factor cannot be extracted when the conjunct(s) contain islands, a fact which cannot be analyzed properly in the categorial approach. We can handle such examples as follows:

(34) a. *Which pop singer did Mary take, and John know a man who wanted to buy, a picture of?

   b. *N'/NP!\\[NP/NP] L!

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              *N'/NP!\\[NP/NP] L!
             /        \
           N'      S/NP!\\[NP/NP] L!
           |        /        \
          man     NP      VP/NP!\\[NP/NP] L!
                  |        /        \
                 who     V      VP/NP!\\[NP/NP] L!
                         |       /        \
                      wanted    V      VP/NP!\\[NP/NP] L!
                                |        /        \
                               to      V      NP/NP!\\[NP/NP] L!
                                       |        /        \
                                      buy      NP       PP/NP
                                            /     \     /    \
                                          a picture  P    NP/NP
                                                     |       |
                                                    of       e
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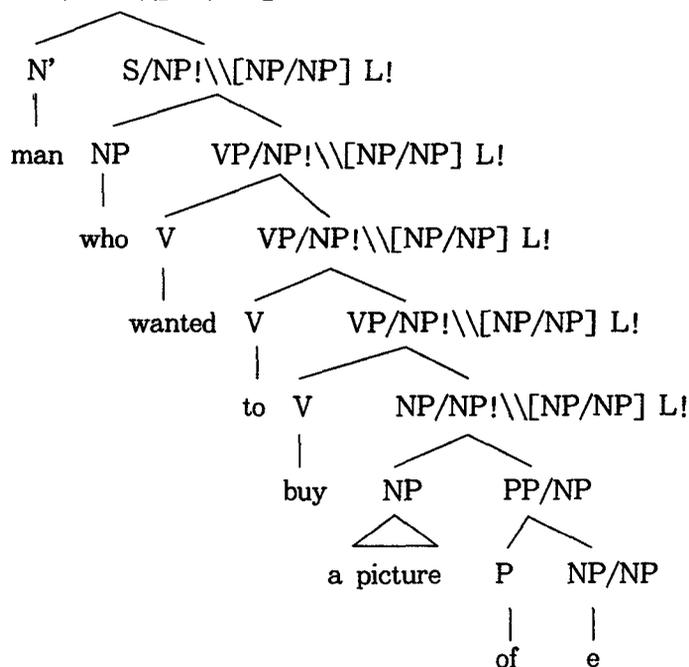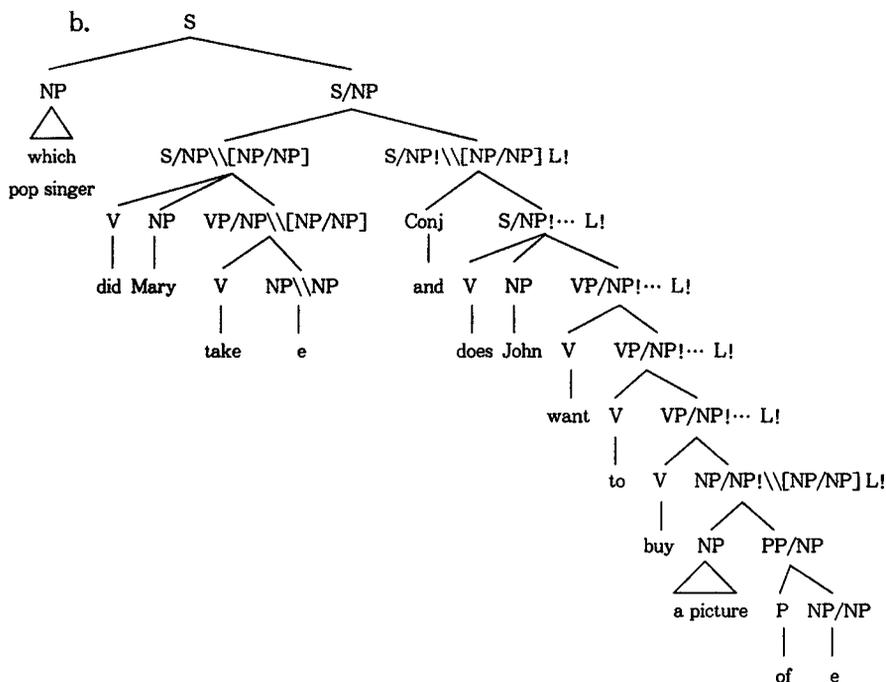
The analysis in (b) shows that a *wh*–extraction out of the factor in an island is ungrammatical just like other extractions out of islands. Notice that we have an independently motivated constraint to prevent inheriting the SLASH from the relative clause onto the top N' node (i.e. the Complex NP constraint).

When neither of the two conjuncts contain islands, the extraction is allowed:

(35) a. Which pop singer did Mary take, and does John want to buy, a
         picture of?

b.   S
                        ┌─────────────┴──────────────┐
                       NP   S/NP
                        △   ┌────────┴────────┐
                     which   S/NP\\[NP/NP]   S/NP!\\[NP/NP] L!
                   pop singer   ┌──────┴──────┐   ┌────────┴────────┐
                                      V   NP   VP/NP\\[NP/NP] Conj   S/NP!··· L!
                                      │   │   ┌──┴──┐   │   ┌────┴────┐
                                     did Mary   V   NP\\NP   and   V   NP   VP/NP!··· L!
                                              │   │   │   │   ┌──┴──┐
                                            take   e   does John V   VP/NP!··· L!
                                                                          │   ┌──┴──┐
                                                                        want   V   VP/NP!··· L!
                                                                              │   ┌──┴──┐
                                                                             to   V   NP/NP!\\[NP/NP] L!
                                                                                   │   ┌──┴──┐
                                                                                  buy   NP   PP/NP
                                                                                         △   ┌┴──┐
                                                                                    a picture   P NP/NP
                                                                                                │   │
                                                                                                of   e

The VP node which dominates *take* has two category-valued features /NP
and \\[NP/NP], but this node (VP/NP$_i$\\[NP/NP$_i$]) is the same as
VP\\NP (cf. A–B–[C–B] = A–C).

Let us consider the difficulties with McCawley's analysis. First of all, we
do not employ non-standard trees in analyzing sentences (cf. (15)). Hence
non-constituent factors do not make the analysis tree more complex. Sec-
ondly, as we have already observed in (30–31), we do not assume that
each conjunct and the factor forms an independent unit[9]. Because the fac-
tor in RNR has a special feature (i.e. the [<DBS X> LICENSOR]), the

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[9] Carl Pollard (personal communication) pointed out to me that the ungram-
maticality of sentence (i) naturally follows from the ungrammaticality of sen-
tence (ii) under McCawley's theory:

(i) *John gave her$_{ii}$ and I sold Fred, a picture of Mary$_i$.
(ii) *John gave her$_i$ a picture of Mary$_i$.

Sentence (ii) violates one of the principles of Binding Theory. However, the
ungrammaticality of sentence (i) might follow from some other factors. Let us
consider sentences of the following:

unit in RNR is not the same as the corresponding unit outside of RNR.

As for the semantic facts observed in (17–20), which indicate that the factor is directly related to the whole conjunction, we can use the (inherited) LICENSOR feature on the factor as a marker for preventing direct semantic combination of the factor and its sister. The basic idea is that the factor is syntactically licensed in its site of origin but it is semantically licensed "later" when the LICENSOR feature licenses the DBS feature. More specifically, the meaning of the factor is stored in the stack along with the LICENSOR feature and it combines with the combination of the conjuncts when the LICENSOR feature is discharged from the stack (cf. the "Cooper storage").

The problematic case where the factor contains a Heavy–NP–Shifted element as a part (cf. (22c)) can also be analyzed as follows in our system:

(22) c. ?*My older brother sells, and my younger brother rents, [to insurance executives] [those cars which are the most luxurious in the world].

(36)
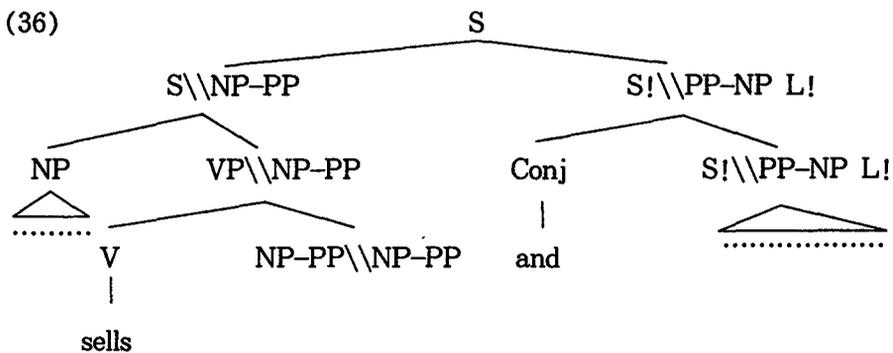
As we can see in (36), there is a mismatch between the value of the \\ in the first conjunct and that of the \\ in the second conjunct. The former is [NP–PP], which is determined by the unmarked ordering of the arguments of the verb, but the latter is [PP–NP], which represents the constituent order in the factor. Hence, the LICENSOR feature cannot license the \\ in

(iii) *I gave her$_i$ a book and a friend of Mary$_i$ gave me a notebook.

Sentences (i) and (iii) are instances of coordinate constructions. The ungrammaticality of sentence (i) may be due to the same factors as those which are responsible for the ungrammaticality of sentence (iii), whatever they may be.

the first conjunct.

5. Conclusion

In this paper, we have provided an IPSG analysis of RNR constructions. The factor of RNR is assumed to be the trigger of the construction, and the target is the gap in the first conjunct. There are some differences between the mechanisms for RNR and those for the other constructions observed in Chae (1992, Chs. V & VI) (*tough–* and related constructions, comparative and result clause constructions). First, the LICENSOR feature licenses only a part of a category (i.e. only a gap) rather than the whole category. Second, strictly speaking, the source of the LICENSOR feature (i.e. the factor of RNR) is not lexical items. Third, syntactic connectivity is established between the gap in the first conjunct and the factor in the second conjunct. This is done due to the fact that the value of DBS (\\) in the LICENSOR feature is the same as the factor, but this connectivity is only syntactic. We have seen before that the factor is directly combined with the whole conjunction semantically. Finally, we employed a special version of the principle which regulates the behavior of the LICENSOR feature. However, I do not think these differences make the present analysis less attractive than without them. RNR requires a special treatment because it has peculiar properties, which separate it from other constructions.

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ABSTRACT

Right Node Raising in an Indexed PSG

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This paper is concerned with the analysis of Right Node Raising (RNR) constructions in English. These constructions have special properties which cannot be handled effectively with traditional mechanisms, regardless of whether some kind of displacement is assumed to be involved or not. Here I propose a GPSG–style analysis of RNR under the Indexed Phrase Structure Grammar (IPSG) framework of Chae (1992). The basic idea behind this analysis of RNR is that the factor remains in the second conjunct and the gap in the first conjunct is licensed by this factor.

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