An Extended Lexical Relational Structure Treatment of Denominal Verbs*

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Ahn, Sung-Ho. 2002. **An Extended Lexical Relational Structure Treatment of Denominal Verbs.** *Korean Journal of English Language and Linguistics* 2-1, 77-95. This paper claims Hale and Keyser's (1992, 1993a, 2001) Lexical Relational Structure (LRS) theory should be slightly extended by allowing the syntactic principles for the "referential" component to apply to the "manner" component. Then, it shows this extension allows us to deal with most of Clark and Clark's (1979) denominal verbs, except that cases like *butcher* may further demand Hale and Keyser's (2001) p-signature copying treatment. It also argues that this extension is further supported by a more satisfactory treatment of the distribution of non-bridge verbs, and of an asymmetry in ditransitive passives.

1. English Denominal Verbs

Clark and Clark (1979) observe that English denominal verbs include eight categories that can be exemplified with the following examples:

(1) a. We will saddle the horse.   [placeables]
    b. Jack will shelve the books (in an hour).   [places]
    c. I want to summer in Paris.   [time intervals]

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    d. He butchered the cow skillfully.   [agents]

    e. Many people witnessed the accident.   [receivers]

    f. The pharmacist powdered the pills of aspirin.   [results]

    g. John worded his opinions very carefully.   [antecedents]

    h. The policeman handcuffed the thief quickly. [instrument]

Works like this have given rise to the question: What are possible words?

2. Hale and Keyser's (1993a) Lexical Relational Structure (or LRS)

Hale and Keyser (1992, 1993a) propose that their LRS, a restrictive theory on argument structure, can answer the question on possible words with regard to verbs of locatum and verbs of location, illustrated in (1a-b). They assume that LRS is constrained by syntactic principles as in (2) and schematically representable as in (3).

(2) a. Unambiguous Projection: Each lexical head determines an unambiguous projection of its category, as in (3).

    b. Full Interpretation: A category may have a specifier only when it has a predicate-type complement, which requires a subject.

(3)

```
              XP
             /  \
           YP    X′
                /  \
               X    ZP
```
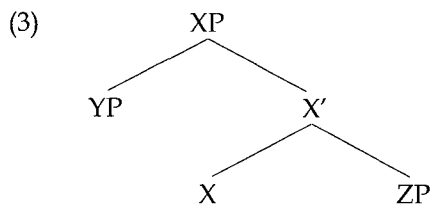
The syntactic categories and relations in LRS are systematically associated with elementary semantic units and relations, as follows.

(4) a. V -- (dynamic) event   N -- individual(?)

     A -- state   P -- interrelation

   b. complementation -- implication

    specifiers -- thematic roles

In their theory, the LRS's for the verb *saddle* in (1a) and for the verb *shelve* in (1b) can be represented as (5a)[1] and as (5b) (=Hale and Keyser (1993a:(7)), respectively:

(5) a.

```
              V'
            /    \
          V       VP
                /    \
              NP      V'
              |      /   \
  (these horses) V       PP
                       /    \
                      P      NP
                             |
                           saddle
```

b.

```
              V'
            /    \
          V       VP
                /    \
              NP      V'
              |      /   \
   (her books) V        PP
                      /    \
                     P      NP
                            |
                          shelf
```

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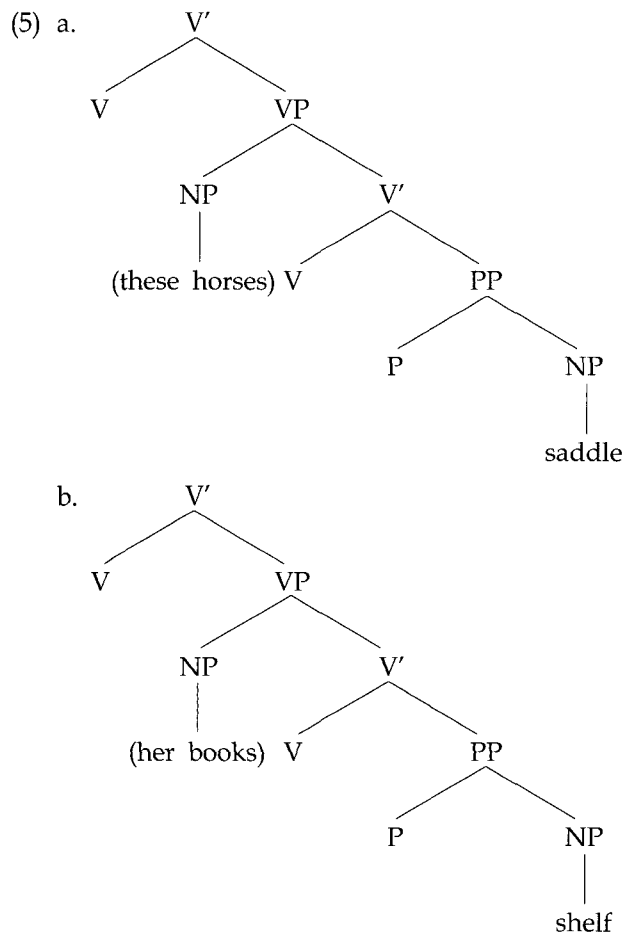
[1]This structure, from Hale and Keyser (1992:(35)), is interpreted to roughly mean 'causes these horses to come to be with a saddle.'

In these structures, the nouns *saddle* and *shelf* are to undergo head-movement to produce a lexical verbal complex as in (6):

(6) [v[v[p[N *shelf*] P] V] V]

Then, they observe that the imaginable verbs in (7) are impossible lexical items:

(7) a. *She churched the money. (cf. She gave a church her money.)
     b. *He bushed a trim. (cf. He gave a bush a trim.)
     c. *They housed a coat of paint. (cf. They gave a house a coat of paint.)

To exclude these impossible verbs theoretically, they surmise that head-movement cannot originate from a subject position, and that the indirect object is a sort of inner subject in the spirit of Larson (1988). Given these, the verbs in (7) cannot exist.

Next, observe the contrasts between *get* and the *splash*-type verbs, on the one hand, and *put* and the *smear*-type verbs, on the other: The first show the transitivity alternation as in (8) and (10), while the second do not as in (9) and (11).
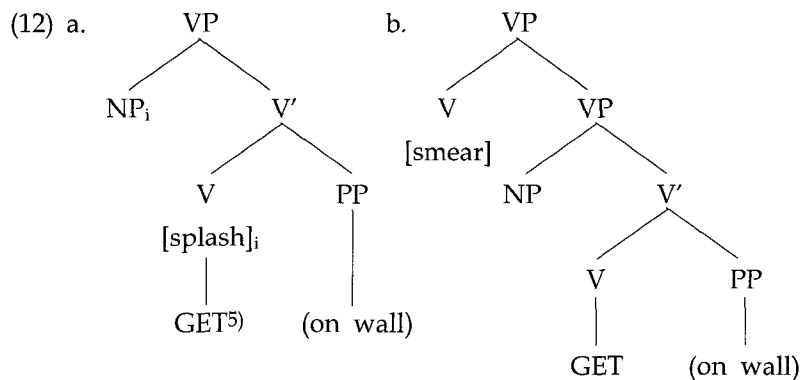
(8)   a. The pigs got mud on the wall.
      b. Mud got on the wall.
(9)   a. We put mud on the wall.
      b. *Mud put on the wall.
(10) a. The pigs splashed[2] mud on the wall.
      b. Mud splashed on the wall.
(11) a. We smeared[3] mud on the wall.

---

[2]Hale and Keyser (1993a:(62)) note that this type of transitivity alternation shows up with verbs like *drip, dribble, pour, squirt,* etc.

[3]Hale and Keyser (1993a:(62)) note that transitivity alternation is also impossible with verbs like *daub, rub, wipe,* etc.

          b. *Mud smeared on the wall.

To capture this contrast, Hale and Keyser propose that LRS consists of two components: "referential" and "manner." First, they specify that the manner-component modifier of a verb in (8) and (10) syntactically modifies the downstairs verb (phrase), as in (12a): [splash] is the "modifier" and describes the manner of the "event depicted by the verb GET and its most prominent direct argument" (p. 90).[4] On the other hand, they specify that the manner-component modifier of a verb in (9) and (11) modifies the upstairs verb (phrase), as in (12b): [smear] is the modifier and relates to the external argument. Second, they assume that the manner component is marked with tags on V, as in (12).
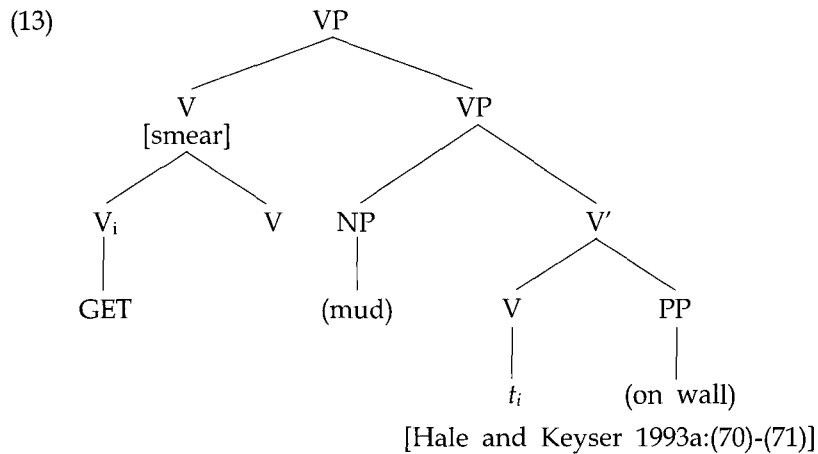
(12) a.

```
           VP
          /  \
       NPᵢ    V′
             /  \
            V    PP
        [splash]ᵢ |
            |     |
         GET⁵⁾  (on wall)
```

b.

```
           VP
          /  \
         V    VP
     [smear] /  \
           NP    V′
                /  \
               V    PP
               |    |
              GET  (on wall)
```

Notice that the [splash] is coindexed with the [Spec, V] NP, which means that the manner component relates to and is "licensed" by the coindexed NP. Hale and Keyser claim that the modifier is licensed even when verbs like *get* and *splash* function as inchoatives with no reference to the external argument.

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[4]For the sentence in (8), we believe, they probably have to assume a default modifier [   ] since no specific modification is made.

[5]This verb is presented in lower case and in parentheses in the original example. The word in capital letters in the present paper indicates that this constant lexical item makes no phonetic contribution to the lexical representation when another verb is available.

Since the modifier [smear] relates to the external argument
which does not show up in the LRS with verbs like *smear*,
however, Hale and Keyser claim that when the lower VP were
used alone for their imagined inchoative use, the manner-
component element would never be licensed, causing un-
grammaticality.

(13)

```
                          VP
                   _____/  _____
                  V               VP
               [smear]        ___/  \___
               /    \        NP         V'
             Vᵢ      V      |         /   \
             |              |        V     PP
            GET          (mud)      |      |
                                    tᵢ   (on wall)
```
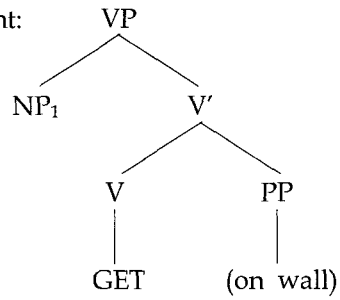
[Hale and Keyser 1993a:(70)-(71)]

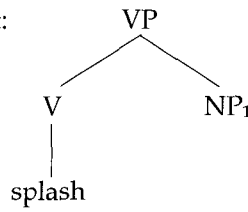## 3. A Minor Extension of Hale and Keyser (1993a)

Hale and Keyser notably do not argue that the manner
component must be represented as a tag on a V node; rather,
they "leave open the question of how it should properly be
represented and of how it is introduced in the LRS
representation" (p. 90). If the manner component were to be
represented as a tag, however, a strange asymmetry would
persist in LRS: the referential component would be subject to
such syntactic principles as the Unambiguous Projection and the
Full Interpretation in (2), while the manner component would
not. A simpler and more natural theory on LRS will be such
that other things being equal, both components are subject to the
same linguistic principles. In other words, the two LRS

components will be preferred to be structurally "homogeneous." Let us pursue this possibility, which is illustrated here.
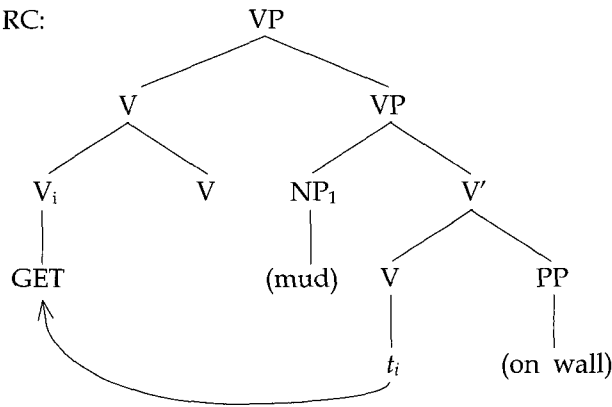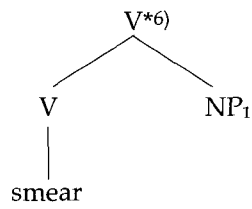
(12') The Referential Component:
(or RC)

$$
\begin{array}{c}
\text{VP} \\
\diagdown \\
\text{NP}_1 \quad \text{V}' \\
\diagdown \\
\text{V} \quad \text{PP} \\
| \quad\quad | \\
\text{GET} \quad (\text{on wall})
\end{array}
$$

The Manner Component:
(or MC)

$$
\begin{array}{c}
\text{VP} \\
\diagdown \\
\text{V} \quad \text{NP}_1 \\
| \\
\text{splash}
\end{array}
$$

(13') RC:

$$
\begin{array}{c}
\text{VP} \\
\text{V} \quad\quad \text{VP} \\
\text{V}_i \quad \text{V} \quad\quad \text{NP}_1 \quad \text{V}' \\
| \quad\quad\quad\quad | \\
\text{GET} \quad\quad (\text{mud}) \quad \text{V} \quad\quad \text{PP} \\
\Lambda \quad\quad\quad\quad | \quad\quad | \\
\quad\quad\quad\quad t_i \quad (\text{on wall})
\end{array}
$$

MC:

$$
\begin{array}{c}
\text{V*}^{6)} \\
\diagdown \\
\text{V} \quad \text{NP}_1 \\
| \\
\text{smear}
\end{array}
$$

---

[6]The asterisk here indicates that a non-specified external argument is needed.

This minor extension of Hale and Keyser (1993a) makes LRS representations look apparently quite different than those in its "original" version in that they come to have multiple, or parallel, structure. Another area to specify is how the two structures in an LRS can be related to each other. A plausible option would connect the related categories by co-indexation, as done in (12')-(13'), but we leave this question basically open for now.

Once we assume the structural homogeneity of LRS and hence the syntactic configurationality of the manner component, first, the revised system seems to be able to cope with the so-called entailment problem, which Hale and Keyser acknowledge as problematic to their system. Consider the following examples.

(14) a. He is baking bread.   (15)   V*
     b. She is carving a toy.
     c. They are digging a hole.   V   NP
     d. She is writing a novel.
(16) a. He is making bread.   bake   (bread)
     b. She is making a toy.
     c. They are making a hole.
     d. She is producing a novel.
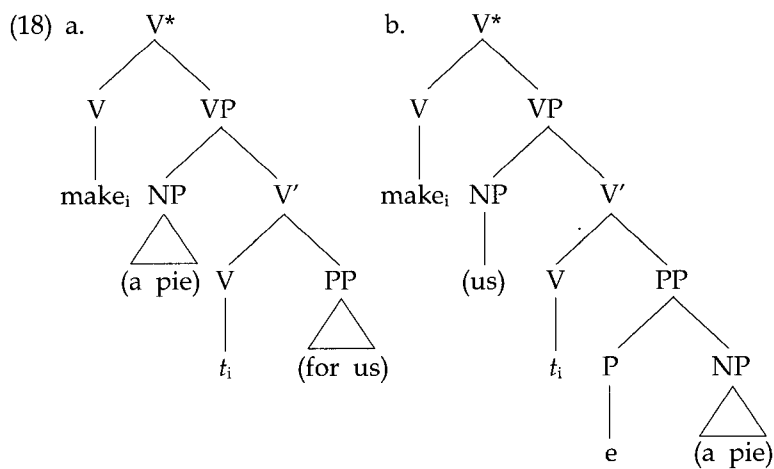(17) a. He made/baked a pie for us.
     b. He made/baked us a pie.
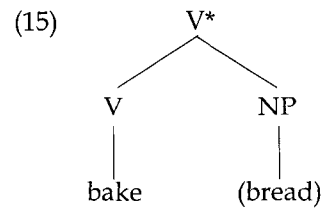
Hale and Keyser observe that the verbs in (14) and (16) alike implicate production of the entities denoted by their object NPs. This semantic fact is captured in their theory by the complementation relation between V and NP. The problem is, even though the same semantic intuition is obtained for the cases in (17), their theory never allows the [v* V NP] for the V and the post-verbal NPs, which means that their theory cannot capture the semantic implication of production with (17).
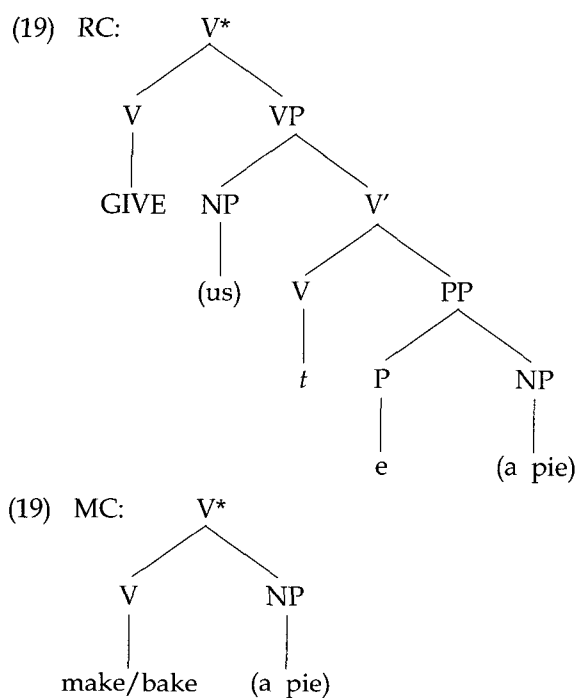
More specifically, they assume (i) that the (overt) verbs of

making in (14) have LRS's similar to the LRS for unergatives containing an abstract V, as in (15); (ii) that their semantic content is rich: *bake* means 'make by the method of baking'; (iii) that the overt verbs in (16) are very close in semantic content to the abstract (light) verb in the LRS for unergatives; and (iv) that the LRS structure is interpreted as an event of production.

Hale and Keyser cannot capture the semantic intuition because they have to analyze those verbs as in (18): The two internal complements should be mediated by a verbal projection and make up a single constituent. Observe *make* never makes a single constituent with the NP (*a pie*) in these structures.

(18) a.

```
        V*
       /  \
      V    VP
      |    / \
   makeᵢ  NP   V′
        /¯¯\  / \
     (a pie) V   PP
             |   /¯\
            tᵢ  (for us)
```

b.

```
        V*
       /  \
      V    VP
      |    / \
   makeᵢ  NP   V′
         |    / \
       (us)  V   PP
             |   / \
            tᵢ  P    NP
                |   /¯\
                e  (a pie)
```

Since the referential component and the manner component are both represented in terms of syntactic categories and their projections and constrained by the same syntactic principles in our extended LRS, the LRS's for *make* and *bake* in (17b), for example, can be represented as follows:

(19) RC: V*

```
              V        VP
              |
            GIVE   NP        V'
                   |
                  (us)   V        PP
                         |
                         t     P        NP
                               |        |
                               e     (a pie)
```

(19) MC: V*

```
              V        NP
              |        |
          make/bake  (a pie)
```

In this lexical representation, we can have the [v* V NP] between the verb *make/bake* and their post-verbal NPs, which implicates production of the entities denoted by the NPs.

4. Additional Denominal Verbs

### 4.1. Denominal Verbs of Results, Antecedents, and Instruments

Denominal verbs of results, antecedents, and instruments (cf. (1f)-(1h)) seem to be treatable quite straightforwardly either in Hale and Keyser's original system or in the revised one, in view of the examples in (20). That is, they can be treated in a very similar way that location and locatum verbs are.

(1) f. The pharmacist powdered the pills of aspirin.   [results]
    g. John worded his opinions very carefully.   [antecedents]
    h. The policeman handcuffed the thief quickly. [instrument]

(20) a. The pharmacist **ground** the pills of aspirin **into powder**

b. John **put** his opinions **into words** very carefully

c. The policeman **caused** the thief to **come to be with a handcuff**.

4.2. Denominal Verbs of Time Interval

In the case of *summer* a denominal verb of time interval (cf. (1c)), the noun *summer* can be assumed to incorporate into the empty V, as in (21a).

(1)   c. I want to summer in Paris   [time intervals]

(21) a. RC: V*   b. MC: VP
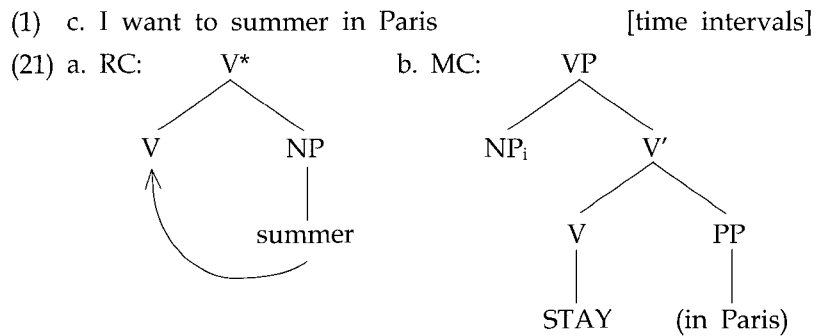
A problem with the original LRS system is that the PP in (1c) cannot be directly incorporated into the referential component (21a) since there is no direct subject-predicate relationship establishable between the NP [summer] and the PP, and since no tagging of a phrase to a lexical category is explored or perhaps proposable. The PP can be treated in the manner component, perhaps as in (21b), in our extended LRS system. The *i*-subscripted NP variable in (21b) must be connected to the external argument, which is not directly represented in (21a). When the two components are combined, the result will be interpreted roughly as 'spend summer staying in Paris.'
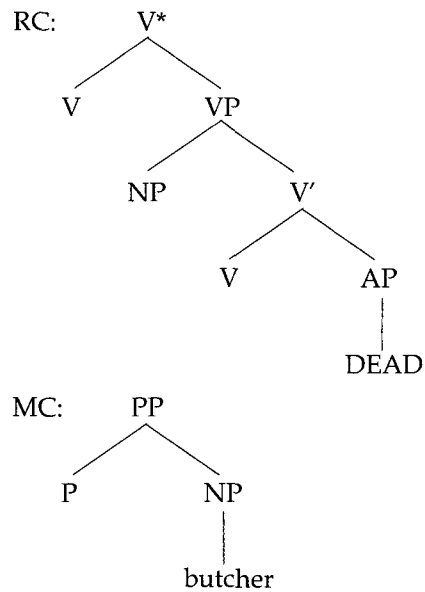
4.3. Denominal Verbs of Agents or Receivers

Denominal verbs of agents or receivers (cf. (1d)-(1e)) are the

most thorny cases. First, the noun *butcher* cannot originate from a subject position although a butcher would best bear an agent role in killing animals. The reason is that incorporation is impossible from a [Spec, V] position. This seemingly means it is impossible to find an argument position for *butcher* in the referential component. Then, what about in the manner component? Well, we can imagine sentence (22), where the NP *a butcher* occurs in a manner adverbial.

(22) He **killed** the cow **like a butcher** skillfully.

Suppose then that the manner component may contain a PP alone. Then the verbal noun *butcher* may be analyzed to have the following LRS:

(23) The LRS of *butcher*

RC:
```
            V*
          /    \
        V        VP
               /    \
             NP       V'
                    /    \
                  V        AP
                           |
                           |
                         DEAD
```

MC:
```
            PP
          /    \
        P        NP
                  |
                  |
               butcher
```

The problem is: How can the N in the manner component end up with being in the empty V position of the referential

component? Since the PP in the manner component should be related to the higher V (or to the event of causation), the N can never in a position lower than either V. This means that it is impossible for the N to move into the V at any stage of the lexical derivation.

For a solution to this problem, one may turn to Hale and Keyser's (2001) "percolation" approach to the problem related to (7). Under this approach, they give up their (1993) incorporation (or head-movement) approach to denominal verbs (cf. (6)), and develop a kind of percolation theory of sound information, "p-signature." Suppose that the structures in the two components should be integrated at some point of "lexical" derivation (cf. Chomsky's (2001) "simplification"). Then, the PP in the manner component should be connected to the higher V or its projection. If p-signature copying is possible across such a relation of "modification," the entire structure V* will have the same p-signature as *butcher*.

The denominal verb *witness* in (1e) [*Many people witnessed the accident*] can seemingly be analyzed in a similar fashion: Its LRS contains a PP [[p e] *witness*] in the manner component, and a V* [[v e] NP] in the referential component.

5. Non-Bridge Verbs

Non-bridge verbs like the so-called verbs of manner of speaking (e.g., *whisper, shout,* and so on) are resistant to extraction unlike bridge verbs like *believe, say,* and others.

(24) a. John whispered that he loved the girl next to you.
  b. ?*Who did John whisper that he loved?
(25) a. John said that he loved the girl next to you.
  b. Who did John say that he loved?

The only semantic difference, say, between *whisper* and *say* seems to be that the first contains a semantic property like 'by whispering' in additional to what the second means. If this intuition were to come from the difference in the LRS's of the two verbs, it should be assumed that the first has a sort of VP headed by *whisper* in its manner component while its referential component is almost the same as that for the second. If this were the case, however, it would be difficult to explain the syntactic difference in (25) systematically because the manner component wouldn't affect the argument structure directly.

Suppose, however, that the *whisper*-VP constitutes the referential component while the *say*-VP constitutes the manner one.

(26) RC: VP
                |
             whisper

     MC: VP
             / \
            V   CP
            |
          (say)
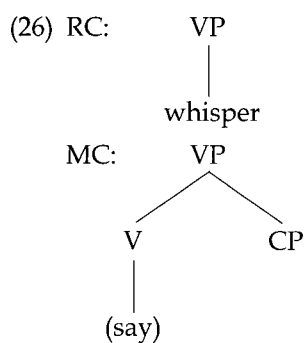
Then, when the two components are "simplified," the output will be interpreted as approximately meaning what the verbal complex "whisper to say (that ...)" does. This is to assimilate the degradedness of (24b) to that of (27).

(27) ?*Who did John whisper to say that he loved?

Here the adjunct infinitival clause constitutes a "barrier" to extraction since there is no L-marking between *whisper* and [*to say* ...] (cf. Chomsky 1986). In the same way, we can reasonably

say that *whisper* in (26) does not L-mark the VP in the manner component.[7]

Can this treatment be extended to factive predicates? Factive predicates show a similar distribution to the verbs of manner of speaking. That is, their complement clauses are resistant to extraction.

(28) a. John regrets that Mary loves Bill.
   b. ?*Who does John regret that Mary loves?

Factive predicates like *regret* "presuppose" the factivity of their complements. Since Kiparsky and Kiparsky (1970), this lexico-semantic fact has been related to the syntactic fact that the factive verbs may select for an NP [*the fact that* ...].

(29) a. John regrets the fact that Mary loves Bill.
   b. ?*Who does John regret the fact that Mary loves?

Since the degradedness of (29b) can be related to the famous Complex NP Constraint of Ross's (1967), it has been tempted to assume that the examples in (28) are similar to those in (29) at an abstract, syntactic level: That is, *regret* takes a complex NP in both cases. This syntactic complication, however, is partly supported by the fact that the complementizer *that* is not deletable in either.

(30) a. ??John regrets Mary loves Bill.
   b. ??John regrets the fact Mary loves Bill.

However, the proposal of syntactic complication is not supported by other syntactic processes like subject-auxiliary inversion after

---

[7]In the LRS for the transitive *whisper* that takes an NP complement, we will assume that the *whisper* in the referential component can be transitive taking an NP object.

passivization.

(31) a. *Is that Mary loves Bill regretted by John?

     b. Is the fact that Mary loves Bill regretted by John?

But suppose that factive predicates are special in that they involve a complex NP in its LRS as in (32), where CP represents the syntactic complement.

(32)
```
              V*
            /    \
           V      NP
           |     /   \
        regret  N     CP
                |
               FACT
```
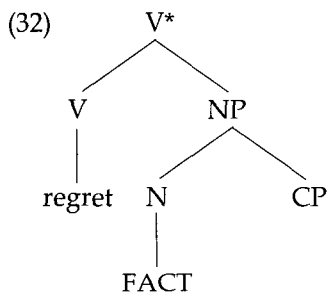
Then, we can account for the factive predicates' resistance to extraction and to the deletion of the complementizer, and the categorial asymmetry illustrated in (29), as well as their factivity presupposition.

6. An Asymmetry in Passives of Ditransitives

An interesting asymmetry is observed in Celci-Murcia and Larsen-Freeman (1999): The indirect object NP readily undergoes A-movement with verbs like *give* in (33), while the indirect object does not easily do so with verbs like *buy* or *make*.[8]

(33) a. John gave Mary a beautiful book of poems.

     b. Mary was given a beautiful book of poems.

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[8] I am grateful to Ms. Kyung-Hye Kim (personal communication) for directing my attention to this interesting fact.
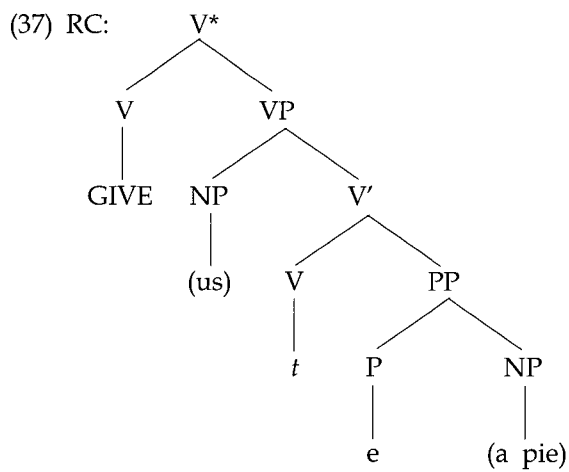
(34) a. He bought her a bunch of roses.

   b. ?(*)She was bought a bunch of roses by him.

(35) a. She made him a kite.
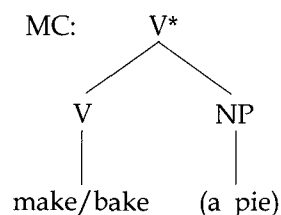
   b. ?(*)He was made a kite by her.

They relate this observation of theirs to another observation that the indirect object in (33a) is an obligatory element, while the indirect objects in (34a) and (35a) are optional ones as in (36).

(36) a. He bought a bunch of roses.

   b. She made a kite.

That is, their generalization is that the optional indirect objects cannot readily undergo A-movement in passives. But, here we have to ask why.

We believe that the asymmetry can find an explanation in our extended version of Hale and Keyser (1993a). Di-transitive verbs like *buy* and *make* have LRS's like (19), repeated as (37).

(37) RC:

```
             V*
           /    \
          V      VP
          |     /  \
        GIVE  NP    V'
              |    /  \
            (us)  V    PP
                  |   /  \
                  t  P    NP
                  |  |    |
                  e  e   (a pie)
```

MC: V*
          / \
        V   NP
        | |
    make/bake   (a pie)

In this dual representation, there will be a conflict in defining the constituent to A-move in a passive: in the RC, the indirect object is defined to be such an element, while in the MC, the direct object is defined as such. We may attribute the degradedness of (34b) and (35b) to that kind of conflict within the LRS of the ditransitive verbs in question. On the other hand, however, the *give*-type verbs can be assumed to have the referential component part only, which will produce no similar conflict.

If this is the right direction to pursue, what does this implicate on the architecture of the theory? This implies that this dual structure is somehow visible to syntactic operations, in conflict with what Hale and Keyser (1993a) assume.

7. Concluding Remarks

In this paper, we have extended Hale and Keyser's (1992, 1993a, 2001) theory (i) by generalizing the syntactic principles onto the manner component, and tried to show that Clark and Clark's (1979) denominal verbs can be mostly dealt with in the slightly extended LRS theory. Remaining problematic cases include verbs like *butcher*, which may demand the p-signature copying treatment that may be found in Hale and Keyser's later (2001) development of LRS, and hence may be accepted as supporting their p-signature copying approach to the denominal verbs over the incorporation one.

The extension of LRS proposed in this paper seems to be

further supported by its more satisfactory treatment of the distribution of non-bridge verbs such as verbs of manner of speaking and factive verbs, and of the A-movement asymmetry among indirect objects of ditransitives.

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