

A Syntactic Analysis of the Shadow Arguments of Denominal Verbs

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1. Introduction

A language provides us with a finite set of words and very limited syntactical forms to convey messages in everyday life. However, surprisingly, there are no limits on the expressible in any language. One of the ways that present-day English produces a new mode of expression is using nouns, especially palpable and concrete nouns, as verbs to denote actions or events. Using a noun as a verb seems to permit us to express rather complex ideas more economically with one word as the following examples show.

- (1) a. Bill Christmased in Philadelphia.
- b. Bill flossed his teeth after every meal.
- c. Bill elevatored to the third floor.
- d. Bill helicoptered to New York.
- e. Bill caroled all day long.

The main attention of this paper will be paid to the special adjunct-type arguments that denominal verbs can co-occur with. Pustejovsky (1996) classifies the underlined phrases in (2) as shadow arguments, distinguishing them from true adjuncts and from true arguments. Apparently, the underlined prepositional phrases in (2.a-c) seem to be plain adjuncts while the underlined noun phrases in (2.d-e) behave like arguments. For the latter, the non-obligatory occurrence of the arguments can be attributed as a property of the verbs: they alternate between a transitive and an intransitive use. However, the intriguing common property of the underlined phrases in (2) that is worth attracting our attention is that they closely re-specify the demoted core part of the main verb.

- (2) a. He fanned his face with a newspaper.
- b. He keeps mopping his forehead with his handkerchief.
- c. He screened his eyes with his hand.
- d. He affixed two suffixes.
- e. He danced a waltz.

In the following, I will mainly deal with configurational uniqueness of shadow arguments of denominal verbs in English and Korean, showing that shadow arguments are not only semantically but also syntactically distinguishable from true adjuncts and arguments. The Lexical Relational Structure

proposed by Hale and Keyser (1993, 1997, 1998, 2000: henceforth, HK) will give us an advantage of accounting for the distinctive syntactic status of shadow arguments. Furthermore, I will discuss what implications the syntactic nature of shadow arguments can make with respect to *agent* denominal verbs.

To do so, I will first discuss what shadow arguments and denominal verbs are in section 2. In section 3, I will summarize HK's general framework for denominal verbs and their analyses for shadow arguments. In section 4, I will propose my own analysis and further elaborate it with various types of denominal verbs and with Korean denominal verbs. Analyzing the shadow arguments of denominal verbs, I will revisit the derivational structure of agent-type denominal verbs.

2. Shadow arguments and denominal verbs

Pustejovsky (1996) treats the following underlined phrases as shadow arguments. He defines shadow arguments as parameters that are semantically incorporated into lexical items and that are expressible only under a specific condition: i.e. the shadow argument stands in a sub-typing relation to the hidden argument that is incorporated into the verb as shown in (3).

- (3) a. Mary buttered her toast with margarine/*with butter.
 b. Mary and John danced a waltz/*a dance.
 c. Harry elbowed me with his arthritic elbow/*with this elbow.

HK (1997) attempt to deal with such data within their framework and HK (2002) further extend their view, arguing that, in fact, there are two types of constructions that re-specify the conflated arguments: *True cognate object* construction and *hyponymous argument* construction. *True cognate object* constructions are transitive constructions headed by a denominal verb whose object is headed by a noun that is root-identical to the verb as in (4.a) and (4.b). In *hyponymous argument* constructions illustrated in (4.c) and (4.d), the object is headed by a hyponym of the conflated element.

- (4) a. She slept the sleep of the just.
 b. He laughed his last laugh.
 c. He danced a jig.
 d. He bagged the potatoes in a gunnysack.

HK (2002:71p) justifies the distinction of the two constructions on the basis that *strict cognate object* construction does not permit hyponymous objects and also reject pronominalization of the cognate object as shown in (5). However, the distinction is not well motivated on the empirical grounds as well as on configurational grounds. Thus, I will not distinguish the two constructions and uniformly term the underlined phrases in (3) and (4) as shadow arguments, following the terminology of Pustejovsky (1996).

- (5) a. *John slept the sleep of the just and Bill slept it too.
 b. *John laughed the last laugh and Bill laughed it too.

c. *Robin laughed the laughs of the Rat Pack, and Jonathan laughed them too.

Denominal verbs refer to the verbs that are derived from nouns. For palpable and concrete nouns such as butter, elbow, helicopter, etc., the directionality of the derivation seems to be clear but it is not always clear-cut. HK includes such data as dance and sleep in discussing denominal verbs. Yet, HK (2002:90) themselves briefly mention that any derivational process would be entirely redundant if the lexicon contains dance and sleep as verbs complete with phonological matrix. The discrepancy is also found in Korean. Han and Rambow (2000) deal with light verb hata construction combined with Chinese origin activity-denoting nouns. They conclude that those types of activity-denoting nouns are underlyingly neither verbs nor nouns. If certain lexical items are not inherently nouns, can we say that their verbal function is derived from the process of conflation of the nouns? Even though we are facing such a difficulty, we extend the range of “denominal” types and include such data in the current study, as long as they allow shadow arguments, the main topic of this study.

In accordance with Clark and Clark (1973) and Joh (2001), idiomatic denominal verbs such as *sleep one's life away*, *laugh someone off the stage*, *beef up*, *wing it*, etc. will not be considered in this paper since they are involved with a different process of interpretation. Also, we do not concern denominal verbs that are used as participles. In the current study, we will only deal with denominal verbs that are used as main verbs.

3. Hale and Keyser's approach

3.1. Conflation

HK (1993, 1997, 1998, 2002) claim that lexicon projects particular syntactic configurations, so-called Lexical Relational Structures. Lexical Relational Structures (henceforth, LRS) are the representations of the basic meaning of the denominal verbs and their argument structure. Lexical Relational configurations determine the syntactic projection of the arguments of the head. An intriguing property of LRS is that the process applied at LRS obeys the same syntactic constraints that are applied in syntax. In HK (1993; 1998), the relevant process is described as conflation that is a type of incorporation. However, in HK (2002), they shift their concept of conflation into a process of Merge. Before, discussing their each different analysis of shadow arguments, I will shortly introduce HK's ideas about conflation that produces denominal verbs.

HK (1993, 1998) employ conflation that undergoes Head Movement. HK (1993) treats the process of deriving denominal verbs as Noun Incorporation. However, HK (1998) adopts the term conflation that is fundamentally the same as Noun Incorporation but that is configurationally more specific than incorporation. HK (1998: 81) defines conflation as follows:

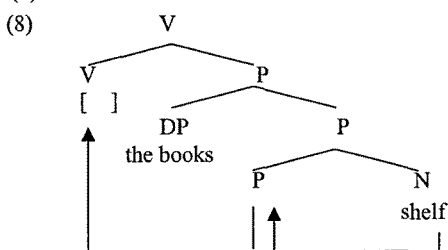
- (6) Conflation refers to the process where phonological matrix of the head of a complement C is

introduced into the empty phonological matrix of the head which selects C.

For the derivation of the denominal verb *shelve* and its argument in (7), HK (1993) provide the syntactic structure as in (8). Conflation for denominal verbs involves a phonologically empty verb indicated with the bracket and a bare nominal root. HK (1998) discuss that English preferably employs zero derivation in contrast with the prevailing derivation patterns of other languages that take overt morphemes. However, fundamentally, there is no big difference between “the categorical realization of lexical nuclei” and “the morphological realization of lexical nuclei.” Phonologically null affix is conceivable for English zero derivation even though it potentially causes theoretical burden to deal with empty elements.

In (8), the noun incorporates into the preposition and the complex (noun + preposition) raises to the phonologically empty verb slot. The movement is motivated by the presence of the empty verb. To get the interpretation, the empty verb must be filled with a phonological matrix. The movement is constrained by the Empty Category Principle stated in (9), the trace of the Head Movement being the relevant empty category [e].

(7) He shelved the books.



(9) Empty Category Principle

[e] (an empty category) must be properly governed.

HK (2002:63), however, modify their view on conflation and define it as a type of Merge. That is, for the derivation of denominal verbs, conflation transfers the p-signature of the noun to the verb. The definition of the new concept of conflation is given in (10). Being defective means either entirely empty or containing an affix. The p-signature is a phonological set of feature matrices that have no effects on the s-signature, the syntactic and semantic features of a syntactic node. Construing conflation as Merge, the label of the phrase is determined by one of the two constituents and the determining constituent becomes the head of the entire construction.

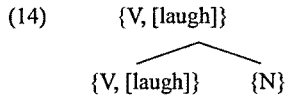
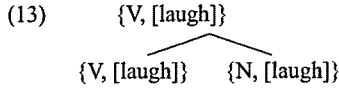
(10) Conflation is a concomitant of Merge, a process of copying the p-signature of the complement into the p-signature of the head, where the latter is defective.

(11) a. He laughed.
b. He bottled the wine.

During the Merge for the denominal verbs *laugh* and *bottle* in (11), the head of a lexical projection, a

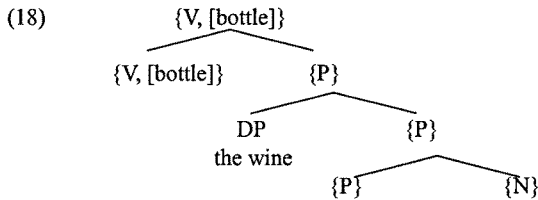
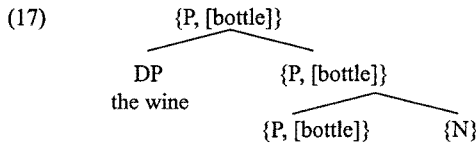
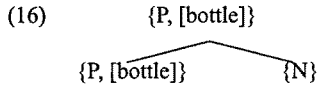
sister to the target verb, is conflated. In the case of the denominal verb *laugh*, the noun that contributes its p-signature to the verb is the sister of the verb and, at the same time, maximally a lexical projection, N, as illustrated from (12) to (14).

(12) Head {V, [∅]} Complement {N, [laugh]}



In the cases of the denominal verb *bottle*, the p-signature ultimately passed onto the verb is from a lexical projection, P, as spelled out from (15) to (18).

(15) Head {P, [∅]} Complement {N, [bottle]}



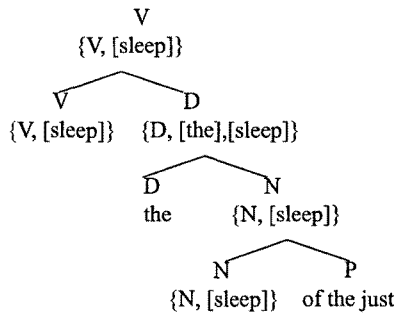
3.2. Hale and Keyser's syntactic analyses of shadow arguments

As illustrated in the previous section, HK (1993; 1998) employ incorporation-like conflation to account for the basic meaning and argument structure of denominal verbs. However, in HK (2002), they propose conflation as a concomitant of Merge. Within the incorporation approach, HK (1997) attempt to account for shadow arguments by re-inserting the arguments into the trace position created by conflation. However, HK (2002) point out that it is impossible for general theoretical reasons and claim that conflation is not noun incorporation but a type of Merge and, therefore, does not leave a trace in any conventional sense as in the structure (20) and (21). Defining conflation as a concomitant of Merge, HK (2002) put forward two different analyses for *strict cognate object* construction as in (19.a) and *hyponymous argument* construction as in (19.b). The essential motivation of shifting their view from incorporation-type conflation to Merge-type conflation is the underlined shadow arguments in (19).

- (19) a. She slept the sleep of the just.
 b. He bagged the potatoes in a gunnysack.

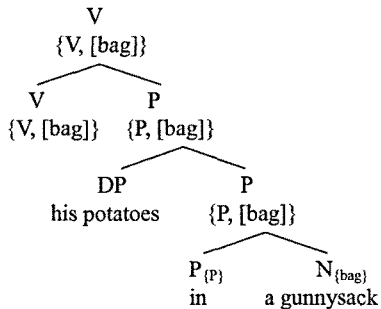
HK (2002:74p) point out that the *strict cognate object* relation generally holds between the verb and an extended projection sister to it. For example, in (20), the conflation applies at long distance: N and V enter into the conflation process since D, the extended projection of N, is the sister of the target head.

(20)



For *hyponymous argument* construction, HK (2002) suggests a structure as in (21). In the structure, the verb does not bear a direct relation to the object of the preposition since the preposition intervenes. To overcome the limitation, HK (2002: 95) proposes that there is a chain of selection extending from the verb to the object of the preposition. Thus, the verb *bag* is brace-coindexed with the nominal complement of the preposition.

(21)



4. A new syntactic analysis of the shadow arguments of denominal verbs

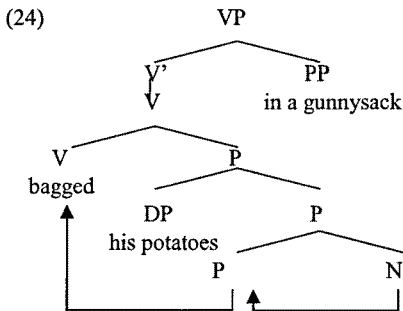
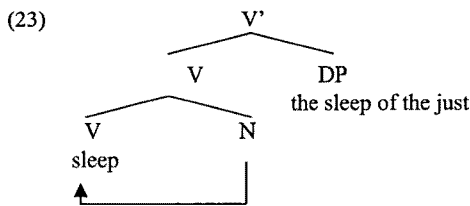
4.1. Analysis

I would like to propose a uniform analysis for shadow arguments of the two constructions of HK (2002) discussed above. Even though the two constructions reveal different syntactic behaviors, it will be desirable to have one account for them. I propose the derivations for (22.a) and (22.b) as (23) and (24), respectively. By putting forth the structures, I claim the following three points: (a) The demoted structure

at Lexical Relational Structure (henceforth, l-syntax) and the shadow argument at s-syntax are in a structural copying relation. (b) The conflation involved with denominal verbs is a type of incorporation that conforms to the general syntactic principles. (c) Shadow arguments are s-syntactic objects.

The syntactic configurations in (23) and (24) show us how shadow arguments are correlated with the nominal source. Even though I do not make an inherent distinction of shadow arguments, there seem to be two different types of structures with reference to denominal verbs: HK (1993, 1998) illustrate monadic structures that are illustrated in (23) and dyadic configurations that express bi-relational predication as in (24).

- (22) a. He slept the sleep of the just.
 b. He bagged his potatoes in a gunnysack.



First, I would like to suggest that the shadow argument is a structural reflection (back-copy) of the maximal projection of the complement C that properly includes the conflated element at l-syntax. In other words, shadow arguments are overt manifestation of the conflated structures that come to be invisible at the syntactic level. This syntactic relation essentially restricts the occurrences of shadow arguments as shown in (25). If the verbs are derived by the monadic structure as in (23), the possible shadow arguments are limited to DPs. In contrast, denominal verbs with dyadic structures at Lexical Relational Structure as in (24) only allow PPs as their shadow arguments.

- (25) a. She slept the sleep of the just / *at the sleep of the just.
 b. He bagged the potatoes in a gunnysack / *a gunnysack.

The structural copying does not accompany a lexical copying but requires a lexical sub-typing. The reason why the structural reflection precludes lexical identity will be attributed to the fact that shadow arguments are fundamentally motivated by their specificity effect. After being substituted by a more

specific alternative, the resulting sentence gets stronger. This explanation somehow addresses the constrained behavior of shadow arguments. Only denominal verbs whose referential property are weak tend to allow shadow arguments.

Secondly, I support the incorporation approach of HK (1993; 1998), refuting the Merge approach. The analysis proposed here retains the original motivation why the derivation of denominal verbs is syntactic in nature by constraining the behavior of denominal verbs through the established principles of syntax.

- (26) a. They are dancing a Sligo jig.
 b. He shelved the books on the windowsill.
 c. Leecil saddled old Gotch with his new Showalter.

The reasoning why HK shift their view from Incorporation to Merge is not convincing. HK (2002) regard the examples in (26) to be problematic since *a Sligo jig*, *on the windowsill*, and *with his new Showalter* co-occur with the presumably conflated N or P. They argue that the co-occurrence of the denominal verbs and the cognate arguments is impossible under the incorporation approach, since, under the standard assumption, lexical items cannot be inserted into a position occupied by a syntactic object regardless of the form of the syntactic object. However, shadow arguments are not necessarily problems to HK's original proposal. In fact, they are significant empirical evidence for the Lexical Relational Structure they propose. Those data show that the derivational structures of denominal verbs are cognitively real.

Thirdly, I argue that shadow arguments are not l-syntactic objects but s-syntactic objects, contrary to HK (1997, 2002). In the incorporation approach taken by HK (1993, 1998), once the predicates are achieved by conflation, the derived positions of the conflated elements are invisible at syntax. For dyadic structures, the head-complement relation of the projection P is demoted at the end of the process of conflation while only the N is demoted in case of monadic structures. However, the lexically-filled argument positions at the l-syntax have to be saturated in s-syntax. That is, the specifier of the projection P must be realized as the internal argument of the derived predicate. If shadow arguments are part of the argument structure at l-syntax, as HK (2002) claim, just like the l-syntactic argument that must be realized at s-syntax, it is hard to explain the optional occurrences of the shadow arguments. The shadow arguments of denominal verbs are optional as in (27) whereas their analytic counterparts obligatorily require the corresponding arguments as in (28).

- (27) a. He is dancing (a Sligo jig).
 b. He shelved the books (on the top shelf).
 (28) a. He is playing (*a jig).
 b. He put the glasses (*on the windowsill).

Furthermore, when shadow arguments of denominal verbs are extended projections as in (29), the

optionality of shadow arguments limits us to have a non-uniform analysis for the derivation of denominal verbs. If shadow arguments are l-syntactic objects as HK (2002) claim, the N category in (20) and (21) must be extended to DP in some cases while the empty D and P in (20) are difficult to be licensed if overt shadow arguments are not present.

- (29) a. He laughed [_{DP} the first laugh].
 b. He shelved the books [on [_{DP} the top shelf]].

4.2. Extension

4.2.1. More types of English denominal verbs

HK only deal with *Location* and *Locatum* denominal verbs. In this section, I will show, with examples of other types of denominal verbs in English, i.e., how the shadow arguments can systematically be licensed when they have a proper relation with the morphological constant that had undergone noun incorporation. Clark and Clark (1979) classify denominal verbs into 8 categories. Joh (2001:32) reclassify denominal verb data collected from a dictionary (*Longman Dictionary of English Language and Culture*) and finds that the five most productive denominal verbs are *Locatum*, *Location*, *Agent*, *Goal* and *Instrument* denominal verbs as shown in (30).

(30)

V category	N category	Examples	Feature	Num
Locatum	Placeables	<i>blanket, spice</i>	Go (e,x)	223
Lcation	Places	<i>kennel, bench</i>	Go (x,e)	119
Duration	Time intervals	<i>summer, weekend</i>	During (x,e)	7
Agent	Agents	<i>butcher, usher</i>	Do (e,x)	116
Experiencer	Receivers	<i>boycott, witness</i>	Happen-to (x,e)	3
Goal	Results	<i>group, powder</i>	Become (x,e)	166
Source	Antecedents	<i>piece together</i>	Become (e,x)	3
Instrument	Instruments	<i>handcuff, autoclave</i>	With (Do(x,y),e)	284
Patient	Patient	<i>lunch, waltz</i>	Do (x,e)	25

('e' denotes the entity in the category and 'x' denotes the class of things with respect to which it can be located, Clark and Clark (1979))

In the following, I will extend the current analysis based on *Location* and *Locatum* denominal verbs to more types of denominal verbs: *Instrument*, *Goal* and *Agent* denominal verbs whose denotations are roughly paraphrased as follows:¹

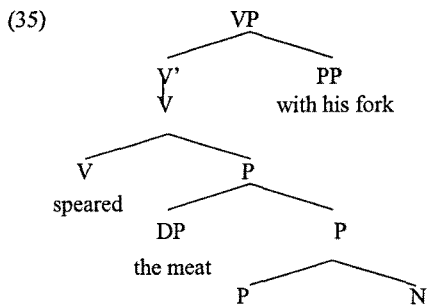
- (31) a. Billy helicoptered to New York. (*Instrument* denominal verb)
 b. Billy caused it to come about that he was in New York by doing the act one would normally expect [one to do with a helicopter].

¹ The paraphrases in (33-35) are originally made in Clark and Clark (1979) for each class of denominal verbs.

- (32) a. Billy accorded the curtain. (*Goal* denominal verb)
 b. Billy did something to cause it to come about that [the curtain was (in the shape of) accordion].
- (33) a. Billy piloted the plane. (*Agent* denominal verb)
 b. Billy did to the plane the act that one would normally expect [a pilot to do a plane].

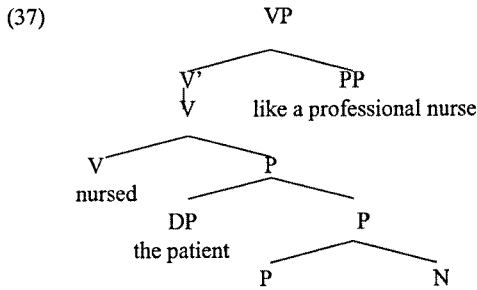
Instrument denominal verbs are distinguished from locative (location and locatum) verbs in that the latter potentially implies resultant states in which the source noun plays an intrinsic role, whereas instrument verb do not, as discussed in Clark and Clark (1979). For example, *bottle the beer* implicates the state 'the beer is in a bottle' while *elbow his cousin* is rather instantaneous. The shadow arguments of *Instrument* denominal verbs typically take the preposition *with* as in (34). As illustrated in (35), the shadow argument of the *Instrument* denominal verb *spear* is also the s-syntactic copy of the maximal projection of the conflated and thus invisible structure at l-syntax.

- (34) a. He probed the mud with a stick.
 b. He speared the meat with his fork.



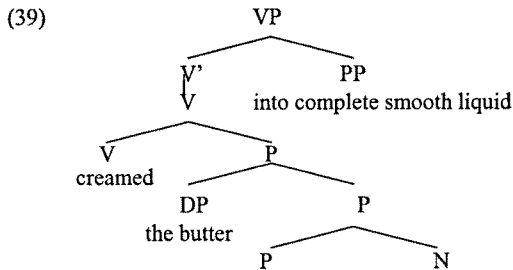
As to *Agent* denominal verbs, complications arise since the shadow arguments related to them are not accompanied with a typical preposition. Even though the prepositional property of the lexical item *like* is not typical, it certainly has the function of the preposition. Shadow arguments of *Agent* denominal verbs conform to the generalization that we have made in the main section: The shadow argument *like a professional nurse* is a structural reflection of the conflated structure at l-syntax.

- (36) a. Mary nursed the patient like a professional nurse.
 b. John butchered the animal like the butcher in the story.



Goal denominal verbs also take shadow arguments that are commonly headed by the preposition *into*. All the properties for conflation and structural relation between the shadow argument and the incorporated source noun are the same as the above.

- (38) a. Mary creamed the butter into complete smooth liquid.
 b. John powdered the aspirin into fine-grained powder.



4.2.2. Application to Korean counterparts

Grimshaw and Mester (1988) investigate light verb constructions primarily on the Japanese verb *suru*. When *suru* is used with a noun without the accusative marking as in (40.a), they analyze the cases as noun incorporation, distinguishing them from their counterpart complex predicates as in (40.b). This analysis has received lots of criticism because Japanese does not allow double accusative constructions and it is conceivable to view it as a simple accusative case dropping.

- (40) a.
 John-wa Bill-to AISEKI-shita.
 John-Top Bill-with table-sharing suru-Pst
 'John shared a table with Bill.'
- b.
 John-wa Bill-to AISEKI-o Shita.
 John-Top Bill-with table-sharing-Acc suru-Pst
 'John shared a table with Bill.'

For similar data of Korean light verb constructions involved with *hata*, previous studies have argued against the noun incorporation analysis of such construction without the accusative marking even though

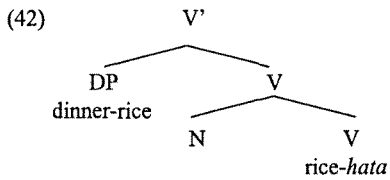
Korean rather freely allows multiple accusative constructions. Yoon (1991) and Park (1992) refute the noun incorporation analysis for Korean sino-light verb constructions especially focusing on their property of argument transfer or argument sharing. Han and Rambow (2000) make a similar analysis, claiming that the lexical items are inherently neither a noun nor a verb. However, the previous studies on Korean light verb construction mentioned above are limited since they only deal with such constructions that are composed of the light verb *hata* and an activity-denoting noun of Chinese origin that is essentially theta-transparent.

However, I believe that denominal verbs in Korean are found in the Korean palpable, concrete nouns incorporated into the light verb *hata*. The overt light verb *hata* does not block HK(1993; 1998)-style conflation since it is light and semantically null. HK (1998: 92) states that the empty matrix notation using square brackets with or without an accompanying affix is to be taken as an informal notation for zero derivation and bound morphology. Conflation is impossible when an overt full lexical item takes the place of the verb. However, affixes or light verbs can be placed in the verb position to license the conflation.

Assuming that denominal verbs in Korean are generated by the same process as English, the occurrences of shadow arguments associated with Korean denominal verbs pattern together with those of English. Denominal verbs whose source nouns refer to concrete entities are typically generated as intransitive verbs in Korean. However, it can take additional objects when the conditions for shadow arguments discussed above are all met as illustrated in (41).

- (41) a.
- | | | |
|--------------|-----------------|-------------------|
| Younghee-nun | cenyek-bap-ul | bap-ha-ess-ta. |
| Younghee-Top | dinner-rice-Acc | rice-hata-Pst-Dec |
- ‘Younghee cooked dinner rice’
- b.
- | | | | |
|--------------|----------|----------|-------------------|
| Younghee-nun | naetapal | namu-lul | namu-ha-ess-ta. |
| Younghee-Top | for-sale | tree-Acc | tree-hata-Pst-Dec |
- ‘Younghee went to gather firewood for sale.’
- c.
- | | | | |
|--------------|----------|---------------|-------------------|
| Younghee-nun | orunccek | sontop-man-ul | sontop-ha-ess-ta. |
| Younghee-Top | right | nail-only-Acc | nail-hata-Pst-Dec |
- ‘Younghee nailed only the right nail.’



The shadow argument is licensed since the information provided by it is more specific than the incorporated noun, and, structurally, it is the maximal projection of the complement of the derived verb at l-syntax as illustrated in (42).



Furthermore, the syntactic generalization made above with reference to shadow arguments sheds light on the derivation of *Agent* denominal verbs. The examples of *Agent* denominal verbs are as follows:

- (43) *agent a book, broker insurance, chairman the company, companion the child, housewife for a living, waitress for a living, emcee the conference, parent the orphans, shepherd the sheep, tailor the suit, tutor the children, usher the customers, etc.*

There are plausibly two possible ways to derive the *Agent* denominal verbs. In (45), the source noun undergoes downward movement whereas, in (46), the source noun within the prepositional phrase moves upward. If the right semantic representation of the *Agent* denominal verb *nurse* in (44) is like (45), it constitutes a counter-example to HK's whole framework. According to HK (2002), conflation abides by the following principle of *Strict Complementation*: A head X is the strict complement of a head Y iff Y is in a mutual c-command (sister) relation with the maximal categorical projection of X. HK describe that all cases of conflation that we know of conform to this requirement that the specifiers do not conflate.

- (44) Mary nursed the patient.
 (45) nurse [(took care of)] the patient.

 (46) [(took care of) the patient [(like)] nurse


Furthermore, if the right semantics of *Agent* denominal verbs are represented as in (45), it also reveals an interesting fact with regard to the generalization made in Talmy (1985), as pointed out by Joh (2001:32-33). Tamly (1985) observes that English verbs are typically *Manner* verbs. That is, among the semantic elements, Figure, Ground, Path and Manner, English (motion) verbs characteristically conflate Manner. However, if we conclude that the analytic counterpart of the *Agent* denominal verb in (44) is (45), it seems to show us that Figure is also conflated into English verbs.

However, a strong evidence in favor of the representation described in (46) comes from the fact that the *Agent* denominal verbs allow shadow arguments. Considering both the fact that *Agent* denominal verbs allow shadow arguments as in (47) and the syntactic generalization that the shadow argument is a structural reflection (back-copy) of the maximal projection of the complement C that properly includes the conflated element at I-syntax, as illustrated in (37), we can arrive at the conclusion that the derivational process for agent-type denominal verbs are (46), rather than (45).

- (47) Mary nursed the patient like a professional nurse.

5. Conclusion

I have shown that Hale and Keyser's Lexical Relational Structure for denominal verbs allows us to explain not only the constrained nature of denominal verbs but that of shadow arguments associated with denominal verbs. In addition to the semantic condition of specificity on shadow arguments, the syntactic derivation based on the Lexical Argument Structure provides us an advantage of explaining the syntactic distribution of shadow arguments as it is defined as a back-copy of the maximal projection of the complement C that properly includes the conflated element at l-syntax. Based on this, I have suggested that agent-type denominal verbs are also generated by Head Movement conforming to the Empty Category Principle.

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