

## Some Remarks on Phrasal Prenominal Modifiers\*

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### 1. Introduction

This article examines such expressions as those bracketed in (1).

- (1) a. a very [NP matter-of-fact] man  
 b. that [PP after-breakfast] fog  
 c. an [PP out-of-doors] party  
(Jespersen (1914:319, 343-344))  
 d. an [PP after-(the)-party] mess  
 e. an [PP over-the-shoulder] reading lamp  
(Shimamura (1986:24, 26))  
 f. at the [VP wash-hand] stand  
(Jespersen (1914:347))

In terms of function, the bracketed parts in (1) are prenominal modifiers. In terms of structure, they are phrases composed of heads plus complements. However, if they are phrases, the data presented in (1) contradicts the observation that English does not generally permit phrases of the form [XP [X Head] [Complement]] to occur prenominally. This point is illustrated in (2).

- (2) \* an [PP on a bicycle] bear (Lieber (1992:50))

The ungrammaticality of (2) is due to the fact that the PP *on a bicycle*, which is composed of the prepositional head *on* plus the NP complement *a bicycle*, occurs prenominally. This fact leads us to assume that the bracketed parts in (1) are not phrases.

The purpose of this article is to reveal the wordhood of such phrasal prenominal modifiers as in (1) (henceforth, PPMs). More specifically, we argue that PPMs can be classified into three groups according to their relative degrees of wordhood: a higher, medium, and lower degree. Shimamura (2003, 2005) points out that PPMs have a higher and medium degree of wordhood. However, our investigation will reveal that PPMs have a lower degree of wordhood besides the two degrees.

The organization of this article is as follows. Section 2 points out some similarities between words and PPMs, demonstrating their word status. Section 3

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reviews Shimamura (1986, 2003, 2005), revealing how PPMs acquire word status. Furthermore, it is pointed out that some PPMs have a higher degree of wordhood than others. Section 4 is an attempt to resolve some problems to Shimamura's (1986, 2003, 2005) analysis of PPMs. Section 5 offers concluding remarks.

## 2. The Wordhood of PPMs

In this section, we examine the properties of PPMs to demonstrate their word status. Before the examination, we mention lexical integrity as the most crucial to wordhood. Then, we point out that PPMs are to be regarded as having word status because of their lexical integrity.

### 2.1. *The Lexical Integrity Principle: The Differences between Words and Phrases*

Words can undergo morphological operations, and block their internal constituents from undergoing syntactic operations. The fact that words exhibit this property is referred to as the Lexical Integrity Principle (henceforth, the LIP), which is assumed to differentiate words from phrases in the most essential way. The LIP is defined, for example, as follows:

- (3) No syntactic rule can refer to elements of morphological structure.  
(Lapointe (1980:8))

Tentatively, we adopt (3) as the definition of the LIP, though we will reconsider it in section 4. The point is that the obedience to the LIP is the most essential property for wordhood; words always obey the LIP, whereas phrases do not. If a unit obeys the LIP, it follows that the unit is a word. The LIP states that words are the maximal unit to which morphological operations apply, and the minimal one to which syntactic operations apply. In what follows, we consider in detail how the LIP differentiates words from phrases.

We begin with showing that words can undergo morphological operations, but phrases cannot. The following contrast indicates that words can undergo affixation, whereas phrases cannot. Examples (4a, b) involve the suffixation to words and phrases, respectively.

- (4) a. happiness / sandy (Quirk et al. 1985:1551, 1553)  
b. \* [matter of principle]ness / \* [open woods]y (Allen (1978:239))

In (4a), the suffixes *-ness* and *-y* attach to the adjective *happy* and the noun *sand*, respectively, resulting in legitimate derivatives. On the other hand, in (4b), these

suffixes attach to the NPs *matter of principle* and *open woods*, resulting in ungrammatical forms.

A similar contrast can be found in compounding. Examples (5a, b) involve the compounding of a word and a phrase, respectively.

- (5) a. They're all chasing the *good looking* girls. (BNC APU)  
 b. \* a [confident-of-victory] looking (man) (Shimamura (1986:34))

In (5a), the adjective *good* is compounded, which results in a legitimate compound. On the other hand, in (5b), the AP *confident-of-victory* is compounded, which results in an ungrammatical form. Furthermore, neither suffixation nor compounding can (referential) pronouns undergo, as in (6b, d).

- (6) a. shamanite (Quirk et al. (1985:1552))  
 b. \* himites (Postal (1969:218))  
 c. opium-producing areas (Namiki (1985:96))  
 d. \* it-producing areas (Namiki (1985:99))

In (6b), *-ite(s)* is suffixed to the pronoun *him*, and in (6d) the pronoun *it* is compounded. The resulting forms *\*himites* and *\*it-producing* are ruled out. This is due to the fact that (referential) pronouns are proforms for NPs.

As is clear from the facts in (4-6), affixation and compounding are applicable to words but not to phrases.

Now, let us turn to showing that words block their internal constituents from undergoing syntactic operations, but phrases do not. One of such examples is so-called anaphoric island constraint (henceforth, AIC) (cf. Postal 1969): word-internal constituents are prohibited from participating in anaphoric relations to word-external (syntactic) ones. The contrast between (7a) and (7b) illustrates this point.

- (7) a. Balls made of steel are more expensive than rods made of it.  
 b. \* Steel balls are more expensive than rods made of it.  
 (Postal (1969:230))

In (7a), the pronoun *it* in the AP *made of it* refers to the noun *steel* inside the AP *made of steel*. On the other hand, in (7b) the pronoun *it* in the AP *made of it* refers to the noun *steel* inside the compound *steel ball*, resulting in an ungrammatical structure. From another point of view, the ungrammaticality of (7b) indicates that

word-internal constituents cannot undergo the syntactic operation of pronominalization. In connection with word-internal reference, word-internal nouns are interpretable only as generic in that they cannot refer to a particular individual, but to the class of entities in general. For example, regarding the compound *woman-hating* in (8), Levi (1978:137) states that "...a *woman-hating editor* could only describe an editor who hated women in general, not one who hated (atypically) one particular woman while liking many (or most) others."

- (8) a woman-hating editor (Levi (1978:137))

Furthermore, AIC and word-internal nouns' generic interpretation may be closely involved in the non-occurrence of referential pronouns inside words illustrated in (6b, d). The occurrence of such pronouns inside words would result in their coreference with word-external specific referents. This situation is inconsistent with AIC and word-internal nouns' generic interpretation. The point is that severe anaphoric (referential) restrictions are imposed on word-internal constituents unlike phrase-internal ones.

Further example of the impossibility of word-internal constituents undergoing syntactic operations is that they permit neither addition nor insertion of extra elements. Let us consider the following to see this point:

- (9) a. ...when he went [fox] hunting.... (BNC ECM)  
 b. \* Tom went [{an old red fox / that fox]-hunting.  
 (Shimamura (1986:23))

- (10) a. a new green-house  
 b. \* a green new house  
 (Allen (1978:58))

We have the legitimate compounds *fox hunting* in (9a), and *green-house* in (10a). In (9b) and (10b), these compounds involve addition or insertion of extra elements, which results in ungrammatical forms. In (9b), the extra elements *a(n)*, *old*, *red*, and *that* are added to the compound-internal noun *fox*. In (10b), the extra adjective *new* is inserted into the compound *green-house*. In contrast with (10b), we can insert extra adjectives into phrases, as in (11).

- (11) a. a fat young turkey  
 b. a young fat turkey  
 (Allen (1978:58))

In (11), the extra adjectives *young* and *fat* are inserted into the NPs *a fat turkey* and *a young turkey*, respectively.

As is clear from the facts in (7-11), words block their internal constituents from undergoing syntactic operations, but phrases do not.

To sum up, words can undergo two morphological operations: affixation and compounding. In addition, word-internal constituents are blocked from undergoing syntactic operations: they are subject to severe anaphoric (referential) restrictions, and permit neither addition nor insertion of extra elements. These facts illustrate the nature of the LIP, and serve as diagnostics for distinguishing words from phrases.

## 2.2. *The Lexical Behavior of PPMs*

The facts about words observed in the last subsection are all true of PPMs: they have word status in accordance with the LIP, as observed by Shimamura (1986, 2003, 2005). In what follows, let us offer some illustrations of this point. The PPMs given in (1) are repeated in (12).

- (12)
- a. a very [<sub>NP</sub> matter-of-fact] man
  - b. that [<sub>PP</sub> after-breakfast] fog
  - c. an [<sub>PP</sub> out-of-doors] party
  - d. an [<sub>PP</sub> after-(the)-party] mess
  - e. an [<sub>PP</sub> over-the-shoulder] reading lamp
  - f. at the [<sub>VP</sub> wash-hand] stand

The first evidence for PPMs' obedience to the LIP is that they can undergo two morphological operations illustrated in the last subsection: affixation and compounding. This point is illustrated in (13).

- (13)
- a. matter-of-factness / out-of-doorsy (Allen (1978:237))
  - b. ...in connection with such an ugly *matter-of-fact* looking thing as the United States Constitution....
- (<http://teachingamericanhistory.org/library/index.asp?document=1106>)

In (13a), *-ness* and *-y* are suffixed to the PPMs *matter-of-fact* and *out-of-doors*, respectively. In (13b), *matter-of-fact* is compounded. Incidentally, the non-occurrence of pronouns illustrated in the last subsection is also true of PPMs. Pronouns cannot occur inside PPMs, as in (14b).

- (14) a. that *after-breakfast* fog (= (1b))  
 b. \* that *after-it* fog (Shimamura (1986:27))

In (14b), the occurrence of the pronoun *it* results in an ungrammatical form. This also shows the wordhood of PPMs in that, as with the case of affixation and compounding in (6), pronouns cannot participate in forming PPMs.

The second evidence for PPMs' obedience to the LIP is that their internal constituents cannot undergo three syntactic operations illustrated in the last subsection: anaphora, addition, and insertion. This point is illustrated in (15-17).

- (15) a. an *over-the-shoulder* reading lamp (= (1e))  
 b. \* an *over-your-shoulder* reading lamp (Shimamura (1986:26))  
 (16) a. an *after-(the)-party* mess (= (1d))  
 b. \* an *after-the-party-given-by-Bill* mess (Shimamura (1986:26))  
 (17) a. at the *wash-hand* stand (= (1f))  
 b. \* the *wash-this-hand* stand (Shimamura (1986:32))

\**Over-your-shoulder (reading lamp)* in (15b) is ruled out, because the referential possessive *your* violates AIC. \**After-the-party-given-by-Bill (mess)* in (16b) is ruled out, because the extra participle *given-by-Bill* is added to the noun *party* inside the PPM *after-(the)-party*. \**Wash-this-hand (stand)* in (17b) is ruled out, because the extra demonstrator *this* is inserted into the PPM *wash-hand*.

These observations lead to the conclusion that PPMs have word status in accordance with the LIP. Now that PPMs' word status is confirmed, let us turn to Shimamura's (1986, 2003, 2005) more detailed analysis of PPMs in the following section.

### 3. Shimamura (1986, 2003, 2005)

In this section, we review Shimamura (1986, 2003, 2005). Her analysis covers three issues concerning PPMs.<sup>1</sup> The first is to explain why PPMs acquire word status. The second is to explain what differentiates possible PPMs from impossible ones. The third is to reveal that some PPMs have reached a higher degree of wordhood.

#### 3.1. Three Features of Shimamura's (1986, 2003, 2005) Analysis

Shimamura (1986, 2003, 2005) offers answers to three questions about PPMs

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<sup>1</sup> Shimamura (1986, 2003, 2005) refers to what we call PPMs in this article as "lexicalized phrases."

in a principled way: why do PPMs have word status? what differentiates possible PPMs from impossible ones? and why some PPMs involve “deategorization”?<sup>2</sup> Though some grammarians have mentioned PPMs, none of them have considered these questions and offered any answers to them.

Her explanation for PPMs’ word status is that they are reanalyzed as words, which results in their word status. In order to explain the reanalysis process, she posits the reanalysis rules to convert phrases into words and the input condition for the reanalysis. Possible PPMs fulfill this input condition. Furthermore, she points out that some PPMs involve “deategorization.” She explains this fact by assuming that such PPMs have reached a higher degree of wordhood than the non-decategorized ones due to the absence of phrasal structure. In what follows, let us consider her analysis of PPMs in more detail.

### 3.1.1. *Reanalysis*

Shimamura (1986, 2003, 2005) analyzes PPMs as words converted from phrases by the application of the reanalysis rules. For example, the rules to reanalyze PPs as words are shown in (18), and the outputs are illustrated in (19).

- (18) a. Adj → [P-the-N]<sub>PP</sub>  
 b. Adj → [P-a-N]<sub>PP</sub>  
 c. Adj → [P-N]<sub>PP</sub>
- (Shimamura (2003:643))

- (19) a. *off the rack* dress  
 b. *in a row* nests
- (Lieber (1992:11))
- c. that *after-breakfast* fog (= (1b))

As schema (18) indicates, PPMs are reanalyzed as adjectives; PPMs can be modified by a degree adverb (20a), and can be comparative (20b):

- (20) a. a *very off the wall* remark (Shimamura (2003:637))  
 b. a *much more matter-of-fact* demeanour (Jespersen (1914:320))

Shimamura (2003:643) explains the process of the reanalysis, stating that “... phrases of fixed forms, after being generated above the X<sup>0</sup>-level in syntax, enter the lexicon and are listed as such in the lexicon, and they undergo reanalysis.” This

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<sup>2</sup> Hopper and Traugott (2003:106) define “deategorization” as a process in which a form “lose[s] the morphological and syntactic properties that would identify it as a full member of a major grammatical category such as noun or verb.”

means that PPMs undergo the reanalysis in the lexicon and not in syntax, and that they are stored in the lexicon. According to her, *off the rack (dress)* is stored in the lexicon as an adjective with the structure shown in (21).

- (21) [ [ [off]<sub>P</sub> [the rack]<sub>DP</sub> ]<sub>PP</sub> ]<sub>Adj</sub> (Shimamura (2003:643))

PPMs result from the application of the reanalysis rules to phrases. However we should note that such reanalysis rules as in (18) do not apply to all phrases. Shimamura suggests that only the phrases which fulfill an input condition can undergo the reanalysis. In what follows, we turn to the input condition.

### 3.1.2. Input Condition

Shimamura (1986, 2003, 2005) observes that PPMs are strictly restricted in form. The formal restriction is that the nouns inside PPMs occur only with *a*, *the*, or a zero-determiner, and not with other elements:

- (22) a. an *after-the-party* mess (= (1d))  
 b. in *a row* nests (= (19b))  
 c. that *after-breakfast* fog (= (1b))

Examples (23) indicate that the phrases containing any other element than *a*, *the*, and a zero-determiner cannot become PPMs.

- (23) a. \* an *after-that-party* mess  
 b. \* an *after-the-lavish-party* mess  
 (Shimamura (1986:26))

The phrases in question contain the demonstrator *that* in (23a), and the adjective *lavish* in (23b).

In order to explain this fact, Shimamura posits the input condition for the reanalysis, which specifies that the inputs to the reanalysis have the following fixed forms:

- (24) The Formal Input Condition  
 a. Lexicalized PPs: [P-the-N], [P-a-N], [P-N]  
 b. Lexicalized VPs: [V-the-N], [V-a-N], [V-N], [V-P-the-N]  
 c. Lexicalized NPs: [N-P-the-N], [V-P-a-N], [N-P-N]  
 (Shimamura (2005:57, with slight modifications))

Only the phrases of the forms specified in (24) can be inputs to the reanalysis rules, and candidates for PPMs.<sup>3</sup> The strict formal restriction found in PPMs can be attributed to this input condition.

### 3.1.3. Higher Degree of Wordhood: Decategorization

Shimamura (2003, 2005) points out that once PPMs are listed as words in the lexicon, they can get closer to normal words in structure. The decategorization of PPMs is a sign of their getting closer to normal words: *the*, *a*, and plural *-s* can be dropped from the nouns inside PPMs. Compare (25) with (26). We have normal PPMs in (25), and their decategorized counterparts in (26).

- (25) a. *off the rack* dress (= (19a))  
 b. *in a row* nests (= (19b))  
 c. a *connect the dots* puzzle (Lieber (1992:11))
- (26) a. *off-rack* clothes  
 b. the *in-row* weeding devices  
 c. a *connect dot* puzzle
- (Shimamura (2003:640))

In (25), *the* and *a* occur inside PPMs. In (26), these articles are dropped. In (26c), not only *the* but also plural *-s* is dropped. The decategorized PPM *between-meal* in (27a) exhibits more interesting behavior.

- (27) a. *between-meal* snacks (Shimamura (1986:25))  
 b. \* *between-meals* snacks (Shimamura (2005:63))  
 c. \* snacks *between meal* (Shimamura (1986:25))

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<sup>3</sup> Shimamura (2005:64) points out that not all the phrases which fulfill (24) are licensed as PPMs, taking the following examples:

- (i) a. *over the fence* gossip  
 b. \* *over the hedge* gossip
- (ii) a. *after the war* peace  
 b. \* *after the quarrel* peace

(Shimamura (2005:64))

The nouns *hedge* in (ib) and *quarrel* in (iib) occur with the definite article *the*. In this respect, the phrases *over the hedge* in (ib) and *after the quarrel* in (iib) fulfill (24). However, they are not licensed as PPMs, whereas the phrases *over the fence* and *after the war* with similar meanings are licensed as PPMs, as in (ia) and (iia). The contrast between (ia, iia) and (ib, iib) suggests that (24) is a necessary rather than sufficient condition. See Nakazawa (1997) for the notion of necessary condition in linguistic description.

In (27a), the singular noun *meal* follows the preposition *between*, which inherently requires plural objects. The plural noun *meals* cannot follow *between*, as in (27b). Furthermore, PPs inherently postmodify nouns, but *between-meal* cannot, as in (27c). These facts suggest that *between-meal* nearly lacks its phrasal status. Decategorized PPMs provide clearer confirmation of their word status, because articles or plurals generally cannot occur inside words, as in (28).

- (28) a. \* Bob went [the berry]-picking. (Shimamura (1986: 23))  
 b. \* flies-paper (Allen (1978:112))

These observations lead Shimamura (2005:62-63) to conclude that the decategorized PPMs are closer to normal words in structure than the non-decategorized ones. For example, according to her, the decategorized PPM *after-party* lacks even a structure of a PP unlike the normal one *after-the-party*. Therefore, the former should be analyzed as [*after party*]<sub>Adj</sub> but not as [ [*after party*]<sub>PP</sub> ]<sub>Adj</sub>. Decategorized PPMs have reached a higher degree of wordhood than non-decategorized ones in that the former lack their phrasal structures.

### 3.2. Counterexamples

So far, we have seen that Shimamura offers convincing answers to three questions about PPMs: why PPMs have word status? what differentiates the possible PPMs from the impossible ones? and why some PPMs involve decategorization? Nevertheless, there are counterexamples to her analysis:

- (29) a. ...what Nicholson, as the Joker, expressed is a playfully demonic, *bats-in-his-belfry* joy that linked him....  
 (http://movie-critics.ew.com/category/johnny-depp/)
- b. And further exposure...can only harm Gates and his professional *chip-on-his-shoulder* attitude....  
 (http://www.americanthinker.com/2009/08/a\_toast\_to\_the\_white\_house\_bee.html)
- c. This summer, my friend Libby (typical *chip-on-her-shoulder*, decent-looking, single and miserable associate) decided to pick on Amy....  
 (http://www.bitterlawyer.com/index.php/site/columns\_detail\_comment/girl\_on\_girl\_crime/?cat\_id=18)

The italicized PPMs in (29) pose two problems for Shimamura's analysis.

First, the PPMs in question violate AIC in that their internal possessives *his*

and *her* participate in anaphoric relations to their external NPs. As a consequence of the LIP, AIC prohibits word-internal nouns from participating in anaphoric relations to word-external NPs. Shimamura (2003:638, 2005:61) states that no referential possessives occur inside PPMs because the occurrence of such possessives leads to the violation of AIC. However, in (29), the possessives *his* and *her* are coreferential with NPs. The possessive *his* is coreferential with *Nicholson* in (29a), and with *Gates* in (29b). The possessive *her* is coreferential with *my friend Libby* in (29c). This leads to the incorrect prediction that AIC rules out (29) as it rules out (30), in which the occurrence of the referential possessive *your* leads to the violation of AIC.

(30) \* an *over-your-shoulder* reading lamp (= (15b))

Second, the PPMs in question do not fulfill the formal input condition for the reanalysis, which specifies that the nouns inside PPMs occur only with *a*, *the*, or a zero-determiner, and not with other elements. The nouns inside the italicized PPMs in (29) occur with *his* and *her*, and not with *a*, *the*, or a zero-determiner. This leads to the incorrect prediction that the formal condition rules out (29) as it rules out (31), in which the nouns inside PPMs occur with the demonstrator *that* and the adjective *lavish*.

(31) a. \* an *after-that-party* mess (= (23a))  
 b. \* an *after-the-lavish-party* mess (= (23b))

These problems suggest that the input condition for the reanalysis and the version of LIP which we have adopted are so strong as to incorrectly rule out possible PPMs. What is required to resolve these problems is to revise the definition of the LIP so that syntax can refer to word-internal constituents in some respects. In the following section, we consider in what respects the definition of the LIP should be revised.

#### 4. Syntactic Indeformability and Analyzability

In this section, we revise the definition of the LIP on the view of Kageyama (2009), who points out that syntax can refer to word-internal constituents in some respects. Revising the LIP given in (3), we argue that the PPMs considered in section 3.2 still have word status in accordance with the LIP.

4.1. LIP and Word<sup>+</sup> Compound

According to the LIP (3), which is repeated in (32), we have defined words as obeying the LIP, and phrases as not obeying this principle:

- (32) No syntactic rule can refer to elements of morphological structure.

However, Kageyama (2009) points out that such definition of the LIP as in (32) poses a problem to a certain type of Japanese compounds, which he calls “W<sup>+</sup> compounds.” They behave as words in one respect, and as phrases in another respect. In what follows, let us observe the behavior of W<sup>+</sup> compounds to consider the problem.

Compare (33) with (34). The former indicates that W<sup>+</sup> compounds obey the LIP (32), whereas the latter indicates that W<sup>+</sup> compounds violate it. (In the following, ‘|’ denotes a slight pause on pronunciation.)

- (33) a. [*siritu*-(*\*no*) *daigaku*] | [*kyoozyu*]  
 private-(*\*GEN*) university | professor  
 ‘professor at a private university’
- b. \* *A-wa* [*siritu-daigaku* | ~~*kyoozyu*~~-*de*, *B-wa*  
 A-TOP [private-university | professor] and B-TOP  
 [*kokuritu-daigaku* | *kyoozyu*] *desu*.  
 [state-university | professor] is.  
 ‘A is a professor at a private university, and B a professor at a state university.’
- (34) *Daitooryoo-wa asu* *yuukoo-zyooyaku<sub>i</sub>-ni* *tyoo'in-suru*  
 president-TOP tomorrow amity-treaty-DAT sign  
*yotei-da*.  
 schedule-is  
 [<sub>W+</sub> *Doo zyooyaku<sub>i</sub>* | *saisyuu-an*] *niyoruto*...  
 [<sub>W+</sub> same treaty | final-version] according. to  
 ‘The President is going to sign the amity treaty. According to the final version of that treaty...’

(Kageyama (2009:519-520))

In (33a), a genitive marker *-no* is inserted between the compound-internal nouns *siritu* and *daigaku*. In (33b), the compound-internal noun *kyoozyu* is deleted from the compound *siritu daigaku kyoozyu*. As the ungrammaticality of (33) indicates, W<sup>+</sup> compounds permit neither insertion of extra elements nor deletion of their

internal constituents. In this sense,  $W^+$  compounds are regarded as words in accordance with the LIP (32). On the other hand, in (34), the determiner-like prefix *doo* ‘the same’ enables compound-internal *doo zyooyaku* to participate in an anaphoric relation to the compound-external NP *yuukoo-zyooyaku*. This participation in an anaphoric relation leads to the violation of AIC, which results from the LIP (32). In this sense,  $W^+$  compounds should be regarded as phrases because of the violation of the LIP (32). However, Kageyama (2009) regards  $W^+$  compounds illustrated in (34) as words.

According to Kageyama (2009), the operations involved in (33) and (34) are identical in that they refer to word-internal constituents, but differ with respect to whether they retain word-internal structure. On the one hand, the operations involved in (33) syntactically deform word-internal structure. This type of operation may include inserting extra elements, deleting or replacing word-internal constituents, and so on. Kageyama (2009) points out that this syntactic deformation of word-internal structure has to do with lexical integrity. Word-internal structure cannot be syntactically deformed. He calls this property “syntactic indeformability.” Kageyama (2009:520) explains that “[t]he fact that  $W^+$  compounds are endowed with syntactic indeformability is sufficient evidence to establish their word status.”

On the other hand, the operation involved in (34) only refers to word-internal information without deforming word-internal structure. This type of operation may include anaphoric reference to word-internal constituents, modification of word-internal constituents, and so on. Word-internal information may be syntactically referred to. Kageyama (2009) calls this property “syntactic analyzability.” Kageyama (2009: 520) explains that “[p]articipation in anaphoric relations does not impair the morphological integrity of  $W^+$  compounds but only makes reference to information contained in them.” According to this view, the violation of AIC does not in a true sense cause an impairment of lexical integrity.

These observations lead Kageyama (2009) to conclude that  $W^+$  compounds are full-fledged words because of their syntactic indeformability, whereas they are phrase-like because of their syntactic analyzability.<sup>4</sup>

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<sup>4</sup> The coreferential prefix *doo* ‘the same’ can be compounded as in *doo zyooyaku saisyuu-an*, whereas the referential pronoun *it* cannot be compounded as in (ib).

- |     |    |                       |          |
|-----|----|-----------------------|----------|
| (i) | a. | opium-producing areas | (= (6c)) |
|     | b. | *it-producing areas   | (= (6d)) |

The difference in grammaticality between *doo zyooyaku saisyuu-an* and *\*it-producing (areas)* may be reduced to that between a prefix and a phrase. *Doo* is a prefix, whereas *it* is a proform for NPs, i.e. a phrase. Prefixes involve word formation as morphological units, whereas phrases cannot involve word formation as syntactic units, as we observed in section 2.1.

What the behavior of  $W^+$  compounds means is that syntactic indeformability is the most crucial property to wordhood. Lexical integrity is in a strict sense restricted to this syntactic indeformability. Therefore, the definition of the LIP should be revised on the basis of syntactic indeformability as follows:

- (35) No syntactic rule can deform word-internal structure.

#### 4.2. Revised LIP and PPMs

Let us consider the problem posed in section 3.2 in terms of the LIP (35). The problem is that the LIP (3) and the input condition for the reanalysis proposed by Shimamura (2003, 2005) incorrectly rule out possible cases. The LIP (3) and the input condition are repeated in (36) and (37), respectively.

- (36) No syntactic rule can refer to elements of morphological structure.

- (37) The Formal Input Condition

- a. Lexicalized PPs: [P-the-N], [P-a-N], [P-N]
- b. Lexicalized VPs: [V-the-N], [V-a-N], [V-N], [V-P-the-N]
- c. Lexicalized NPs: [N-P-the-N], [V-P-a-N], [N-P-N]

(= (24))

The above condition specifies that the nouns inside PPMs occur only with *a*, *the*, or a zero-determiner, and not with other elements. With (36) and (37) in mind, compare the impossible PPMs in (38b) with the possible ones in (39).

- (38) a. an *over-the-shoulder* reading lamp (= (1e))  
 b. \*an *over-your-shoulder* reading lamp (= (15b))
- (39) a. ...what Nicholson, as the Joker, expressed is a playfully demonic, *bats-in-his-belfry* joy that linked him.... (= (29a))  
 b. And further exposure...can only harm Gates and his professional *chip-on-his-shoulder* attitude.... (= (29b))  
 c. This summer, my friend Libby (typical *chip-on-her-shoulder*, decent-looking, single and miserable associate) decided to pick on Amy.... (= (29c))

The occurrence of the referential possessive *your* in (38b) leads to the violation of AIC, which results from the LIP (36). In addition, \**over-your-shoulder (reading lamp)* in (38b) does not fulfill the formal input condition in (37) because of the occurrence of *your*. These factors rule out (38b). If the same explanation applies

to the italicized PPMs in (39), they should be ruled out because of the occurrence of the coreferential possessives *his* and *her*. However, in fact, they are possible. What differentiates (38b) from (39)?

The difference between (38b) and (39) can be explained by the LIP (35) and the notion of syntactic (in)deformability and (in)analyzability. According to (35), \**over-your-shoulder (reading lamp)* in (38b) does not obey the LIP, whereas the italicized PPMs in (39) do. In (38b), the definite article *the* in the PPM *over-the-shoulder* is replaced by the possessive *your*. In this respect, the internal structure of *over-the-shoulder* in (38a) is syntactically deformed, which leads to the violation of the LIP (35).

In contrast with (38b), the italicized PPMs in (39) involve no syntactic deformation. In the case of (39), the idioms *bats-in-one's-belfry* and *chip-on-one's-shoulder* underlie the PPMs *bats-in-his-belfry (joy)* and *chip-on-{his/her}-shoulder (attitude)*, respectively. *One's* exists in the idioms *bats-in-one's-belfry* and *chip-on-one's-shoulder*, which are stored in the lexicon as such, and is realized as *his* and *her* by participating in anaphoric relations to *Nicholson*, *Gates*, and *my friend Libby*. The realization does not involve insertion into the idioms, and deletion or replacement of their internal constituents. In this respect, *bats-in-his-belfry* and *chip-on-{his/her}-shoulder* involve no syntactic deformation in accordance with the LIP (35). The PPMs in (39) exhibit syntactic analyzability in that their internal possessives *his* and *her* participate in anaphoric relations to their external NPs. Given (39), the input condition proposed by Shimamura should be modified to the extent that PPMs may contain referential possessives.

As a consequence, our conclusion is that the PPMs in (39) have word status in accordance with the LIP (35), though their internal structures are syntactically analyzed.

#### 4.3. *Three Degrees of Wordhood of PPMs*

Now, we can assess the relative degrees of wordhood of PPMs by three criteria, which are syntactic (in)deformability, syntactic (in)analyzability, and decategorization. According to these three criteria, PPMs have three different degrees of wordhood, as represented in (40): a higher, medium, and lower degree. The more criteria PPMs meet, the higher degree of wordhood they have (in the following, the notation 'A > B' means that A has a higher degree of wordhood than B).

## (40) Three Degrees of Wordhood of PPMs

|                   | Higher           | > | Medium                                     | > | Lower                       |
|-------------------|------------------|---|--|---|-----------------------------|
|                   | More word-like   |   | [ [XP] <sub>Phrase</sub> ] <sub>Word</sub> |   | More phrase-like            |
| Examples:         | <i>wash-hand</i> |   | <i>under-the-stars</i>                     |   | <i>chip-on-his-shoulder</i> |
| Indeformability:  | +                |   | +  |   | +                           |
| Inanalyzability:  | +                |   | +  |   | -                           |
| Decategorization: | +                |   | -  |   | -                           |

What all the PPMs exhibit in common is syntactic indeformability, which establishes their word status. The PPMs of a higher degree of wordhood meet all the criteria of syntactic indeformability, syntactic inanalyzability, and decategorization. The PPMs of a medium degree of wordhood meet two criteria of syntactic indeformability and inanalyzability. The PPMs of a lower degree of wordhood meet one criterion of syntactic indeformability.

The PPMs of a higher degree of wordhood, e.g. *wash-hand* (*stand*), exhibit both syntactic indeformability and inanalyzability, as in (41b, c).

- (41) a. at the *wash-hand* stand (= (1f))  
 b. \* the *wash-this-hand* stand (= (17b))  
 c. \* the *wash-hand-carefully* stand (Shimamura (1986:32))

Example (41b) indicates that the extra demonstrator *this* cannot be inserted into the PPM *wash-hand*, which confirms its syntactic indeformability. Example (41c) indicates that the verb *wash* inside the PPM cannot be modified by its external adverb *carefully*, which does not syntactically deform the internal structure of the PPM. This confirms its syntactic inanalyzability. In addition, the PPMs of a higher degree of wordhood lack even their phrasal structures, involving decategorization, i.e. the non-occurrence of articles and plural *-s*. As for *wash-hand*, its internal noun *hand* occurs without articles in singular. Therefore, the decategorized PPM *wash-hand* has the internal structure [*wash-hand*]<sub>Adj</sub> due to the absence of its phrasal structure. The PPMs of a higher degree of wordhood are more word-like in losing their phrasal structures than those of the other degrees of wordhood, which do not involve decategorization.

The PPMs of a medium degree of wordhood, e.g. *under-the-stars* (*concert*), exhibit both syntactic indeformability and inanalyzability like those of a higher degree of wordhood, as in (42b, c).

- (42) a. an *under-the-stars* concert

- b. \* an *under-the-evening-stars* concert  
 c. \* an *under-the-stars-sparkling-last-night* concert

(Shimamura (1986:26))

Example (42b) indicates that the extra noun *evening* cannot be inserted into the PPM *under-the-stars*, which confirms its syntactic indeformability. Example (42c) indicates that the noun *star(s)* inside the PPM cannot be modified by its external participle *sparkling-last-night*, which does not syntactically deform the internal structure of the PPM. This confirms its syntactic inanalyzability.

Unlike those of a higher degree of wordhood, the PPMs of a medium degree of wordhood do not involve decategorization. As a result, their internal nouns occur with articles and plural *-s*, as in *under-the-stars* (*concert*). The PPMs of a medium degree of wordhood still retain their phrasal structures. Therefore, the non-decategorized PPMs *under-the-stars* has the internal structure [ [ [*under*]<sub>P</sub>-[*the-stars*]<sub>DP</sub> ]<sub>PP</sub> ]<sub>Adj</sub>.

The PPMs of a lower degree of wordhood, e.g. *chip-on-his-shoulder* (*attitude*), exhibit syntactic indeformability, involving no decategorization. They permit their internal constituents to participate in anaphoric relations to their external ones, as in (43).

- (43) And further exposure...can only harm Gates and *his* professional *chip-on-his-shoulder* attitude.... (= (29b))

In (43), the possessive *his* inside the PPM *chip-on-his-shoulder* is coreferential with its external NP *Gates*. In this respect, the PPMs of a lower degree of wordhood exhibit syntactic analyzability. They are more phrase-like in exhibiting syntactic analyzability than the PPMs of the other degrees of wordhood, which do not.

## 5. Concluding Remarks

In this article, we have concerned ourselves with the wordhood of PPMs. Shimamura (1986, 2003, 2005) observes that they obey the LIP, which confirms their word status. She argues that PPMs are reanalyzed as words, positing the reanalysis rules to convert phrases into words and the input condition. Furthermore, she points out that some PPMs have reached a higher degree of wordhood, involving decategorization. However, her analysis incorrectly predicts that some possible PPMs are impossible. In order to solve this problem, we adopted Kageyama's (2009) view that lexical integrity is in a strict sense restricted to syntactic indeformability. On the basis of this syntactic indeformability, we demonstrated

that problematic PPMs have word status in accordance with the LIP, exhibiting syntactic analyzability. We have come to the conclusion that PPMs have three different degrees of wordhood in terms of syntactic (in)deformability, syntactic (in)analyzability, and decategorization.

### CORPUS

British National Corpus. (BNC) (online: <http://scn02.corpora.jp/~sakura04/index.html>)

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