A Note on Physical Attributive Expressions in Japanese and English[*]

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1. Introduction

This paper investigates the morphosyntactic properties of physical attributive expressions (henceforth, PAEs) in Japanese and English. In Japanese, a PAE consists of an adjective, a body-part noun marked with the accusative case, and the verb *s(i)-* followed by the morpheme *-ta*, as shown in (1). In English PAEs, a body-part noun and its modifier constitute a compound and the morpheme *-ed* attaches directly to the noun, as shown in (2).

(1)   a.   aoi   me-o   si-ta   syoonen
               blue eye-ACC   SI-TA   boy
        b.   nagai   kami-o   si-ta   josee
               long   hair-ACC   SI-TA   woman

(2)   a.   a blue-eyed boy
        b.   a long-haired woman

Japanese and English PAEs share several properties. First, both Japanese and English PAEs include a spurious past tense morpheme: the suffix *-ta* in Japanese and *-ed* in English. Second, a body-part noun requires a modifier. The examples in (1) and (2) become ungrammatical when lacking a modifier of a body-part noun, as shown in (3) and (4).

(3)   a.   *me-o   si-ta   syoonen
               eye-Acc   SI-TA   boy
        b.   *kami-o   si-ta   josee
               hair-Acc   SI-TA   woman

(4)   a.   *an eyed boy
        b.   *a haired woman

Despite these similarities, some differences are observed between English and Japanese PAEs. First, a body-part noun forms a synthetic compound with its modifier in English, while the noun appears separately from a modifier in Japanese. Second, a spurious past tense morpheme attaches to the verb *s(i)-* in Japanese PAEs, while it attaches to a body-part noun in English. Third, the possessor of a body part cannot be inanimate in Japanese PAEs, while it can in English.

(5)   a.   *nagai   asi-o   si-ta   teeburu
               long   leg-Acc   SI-TA   table
        b.   *mizikai   ke-o   si-ta   juutan
               short   hair-Acc   SI-TA   carpet

(6)   a.   a long-legged table
        b.   a short-haired carpet

This paper proposes the internal structures for PAEs and captures the differences between Japanese and English. The

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organization of this paper is as follows. Section 2 claims that both Japanese and English PAEs project Asp$_S$P. Section 3 proposes the internal structure for Japanese PAEs, where a body-part noun and its modifier are in the predication relation. Section 4 argues the differences between Japanese and English PAEs. The last section is a brief summary.

2.   The Spurious Past Tense Markers

In both Japanese and English, a PAE includes a spurious past tense morpheme, *-ta* and *-ed*, respectively. Nevins and Myler (2014) propose that the suffix *-ed* in PAEs is not the past tense morpheme, but it is the derivational morpheme that attaches to a root to form an adjective (i.e., the little *a*). Their claim is based on the following facts. First, PAEs do not necessarily denote the state in the past. Second, PAEs do not have an active verbal form such as **to blue-eye*. In this section, I propose that it is rather the stative participial morpheme than the little *a*.

It has been widely accepted that passive participles are divided into two types, i.e., adjectival passives and verbal passives. The sentence *The door was opened*, for example, has two interpretations, as given in (7a) and (7b).

(7)   The door was opened.
    a.   Someone opened the door.
    b.   The door was in a state of having become opened.   (Embick 2004: 356: (1))

According to Embick (2004), the form associated with the reading in (7a) is a verbal (or eventive) participle and the one with the reading in (7b) is an adjectival participle. He also claims that there is another type of an adjectival participle. Consider the example in (8).

(8)   The door was open.   (Embick 2004: 356: (2))

The form *open* in (8) is also an adjectival participle, which describes a simple state. Embick refers to the form *opened* with the reading in (7b) as 'resultative' and to the form *open* in (8) as 'stative.' The difference between resultative and stative participles is that the former denote the result of an event but the latter do not. One might think that the semantic difference between two sorts of adjectival participles comes from their morphological difference; the resultative participle in (7b) is formed by attachment of the suffix *-ed* to the root, while the stative participle in (8) is derived by attachment of the phonologically null morpheme to the root. Embick shows, however, some cases where the suffix *-ed* attaches to both the resultative and stative forms of the same root, as given in (9).

(9)

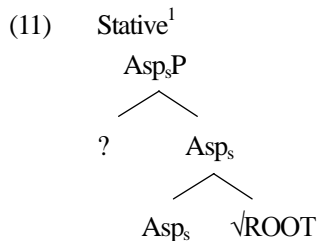| Root	Stative	Resultative	Eventive passive
√BLESS	bless-ed	bless-ed	bless-ed
√AGE	ag-ed	ag-ed	ag-ed
√CLOSE	clos-ed	close-d	clos-ed

It does not seem to be a coincidence that the suffix *-ed* in PAEs is morphologically identical to the stative participial morpheme, since PAEs denote a 'simple state.' I propose that the suffix *-ed* in PAEs is the stative participial morpheme, rather than an adjectivizer.

The suffix *-ta* in Japanese PAEs is also the stative participial morpheme. Like the suffix *-ed* in English, the interpretation of *-ta* is ambiguous; it is either an adjectival reading or a past eventive reading (cf. Kusumoto 2004).

(10)   a.   hirai-ta   doa
        open-TA   door
        'an/the open door' or 'a/the door that opened'

b. kawai-ta　　taoru
dry-TA　　towel
'a/the towel that dried' or 'a/the dry towel'

Embick (2004) proposes the internal structure for stative participles as illustrated in (11).

(11)　　Stative[1]

Asp_sP

?　　　Asp_s

Asp_s　　$\sqrt{ROOT}$

He supposes that the functional head Asp_s is the locus of participial morphology. Following his assumption, I suppose that a PAE projects an Asp_sP, whose head is overtly realized as *-ta* in Japanese and *-ed* in English.

Notice that the stative is derived by attachment of the Asp_s head to a category-neutral root in English.[2] Given that the formation of the compound *blue-eye*, for example, involves incorporation of the modifier *blue* into the root *eye*, the Asp_s head takes RootP as its complement. Since the RootP does not combine with the functional head *v* to form a verb, the active verbal form *to blue-eye* does not exist.

3.　Physical Attributive Expressions in Japanese

3.1. The Verb S(u)-

As mentioned in section 1, there are several differences between Japanese and English PAEs. One is that *si-*, the conjunctive form of the verb *s-*, is obligatory in Japanese, while English does not require a verb.[3] Kageyama (2004) proposes that the verb *s-* in Japanese PAEs is a light verb that does not have semantic content. In this subsection, however, I claim that it is a three-argument transitive verb, meaning 'to equip with.'

It has been observed that the verb *s-* has various functions and interpretations. It is used as a transitive verb which means 'to equip with,' as given in (12).

(12)　　a.　Taroo-ga　　kao-ni　　　　masuku-o　　s-u-ru.
　　　　　　Taro-Nom　face-Dat　　　mask-Acc　　equip.with-Epent-Nonpast
　　　　　　'Taro wears a mask on his face.'
　　　　b.　Hanako-ga　　　hitosasiyubi-ni　　　yubiwa-o　　s-u-ru.
　　　　　　Hanako-Nom　　index.finger-Dat　　ring-Acc　　equip.with-Epent-Nonpast
　　　　　　'Hanako puts a ring on her index finger.'

The verb *s-* with this interpretation takes three arguments; the agent, the goal and the theme. The agent argument is marked with the nominative case particle *-ga*. The goal argument is marked with the dative case particle *-ni*, and the theme argument is marked with the accusative case marker *-o*.

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[1] Embick (2004) distinguishes the aspectual head that appears in statives from the one that appears in resultatives. He refers to the former as Asp_s and the latter as Asp_R. Embick also mentions that the specifier of Asp_sP, indicated with the question mark, is the position which licenses the external argument if it exists.

[2] As will be shown later, I suppose that the Asp_s head combines with a verbal stem in Japanese.

[3] I consider the vowels /i/, /u/ and /e/ following the verbal stem *s-* in Japanese to be epenthetic. I suppose that the vowel /u/ is inserted when the verb stem is followed by the morpheme beginning with the consonant /r/; the vowel /e/ is inserted before the morpheme beginning with /y/; the vowel /i/ is inserted when other consonants follow the stem.
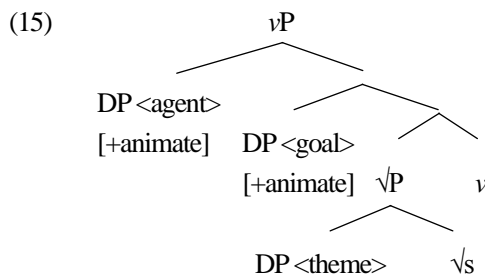
It should be noted that the agent and goal arguments of the verb *s*- with this interpretation establish a whole-part relation; the goal argument must denote a part of the agent argument. The sentences in (13), where the goal DP is not a part of the agent DP, are ungrammatical.

(13) a. ??Hanako-ga   musume-ni   masuku-o   s-u-ru.
          Hanako-Nom   daughter-Dat   mask-Acc   equip.with-Epent-Nonpast
          'Hanako puts a mask on her daughter('s face).'
      b. *Taroo-ga   Hanako-ni   yubiwa-o   s-i-ta.
          Taro-Nom   Hanako-Dat   ring-Acc   equip.with-Epent-Past
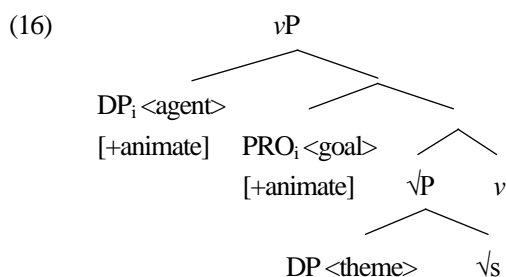   'Taro put a ring on Hanako('s finger).'

Notice also that the agent and/or goal arguments must be animate. The sentences in (14) are ungrammatical, because the agent and/or the goal are inanimate.

(14) a. *Kabe-ga   hyoomen-ni   siiru/posutaa-o   s-u-ru.
          wall-on   surface-Dat   seal/poster-Acc   equip.with-Epent-Nonpast
          '(I/Someone) put(s) a seal/poster on the surface of the wall.'
      b. *Syatu-ni   botan/poketto-o   s-u-ru.
          shirt-Dat   button/pocket-Acc   equip.with-Epent-Nonpast
          '(I) put a button/pocket on a/the shirt.'

Based on the above observations, the structure for the verb *s*- with the interpretation 'to equip with' is illustrated in (15). Given that the verb *s*- requires the agent argument to have the [+animate] feature, I suppose that the goal argument, which expresses a part of the agent DP, also has the [+animate] feature.

(15)

I propose that the verb *s*- in PAEs is also a transitive verb taking three arguments, since PAEs can be paraphrased as 'in the state of equipping with the body part having a certain property.' The structure for the verb *s*- in Japanese PAEs is given in (16). Notice that the goal argument, which is identical to the agent argument, does not have a phonological form.[4]

(16)

I suppose that the possessor of a body-part noun is introduced as the agent argument of the verb *s*-. It should be also noted

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[4] I consider identity as the extended notion of a part-whole relation.

that a part-whole relation must be established between the agent (or the goal) and the theme in PAEs.[5] The agent (or goal) and theme DPs in PAEs might form a constituent at some point in the derivation, but I do not argue this issue in this paper.

Recall that the possessor of a body part must be animate in Japanese PAEs, as repeated below.[6]

(17) a. *nagai asi-o   s-i-ta   teeburu
          long   leg-Acc   equip.with-Epent-Asp table
          '(intended) a/the long-legged table'

      b. *mizikai ke-o   s-i-ta   juutan
          short   hair-Acc equip.with-Epent-Asp carpet
          '(intended) a/the short-haired carpet'

The ungrammaticality of (17) can be explained by assuming that the inanimate possessor is not licensed as the agent (or goal) argument because of lack of the [+animate] feature. In English, on the other hand, the possessor does not have to be animate, since there is no verb that requires the agent (or goal) argument to be animate.

The *v* head licenses the sister DP of the root, which is marked with the accusative case particle *-o*, as the theme argument. Notice, however, that the *v* head does not involve agentivity or eventivity; it assigns only the morphological accusative case, but not the abstract Case, to the theme DP. As Kageyama (2004) observes, the theme argument cannot be passivized, as given in (18). Notice that the copular verb *i-* is required when a PAE functions as a predicate. In this case, the Asp$_s$ head is overtly realized as *-te*, the allomorph of *-ta*.

(18) a. John-ga   aoi   me-o   s-i-te   i-ru.
          John-Nom   blue   eye-Acc equip.with-Epent-Asp$_s$ be-Nonpast
          'John has blue eyes.'

      b. *Aoi   me-ga   John-ni   s-are-te   i-ru.
          blue   eye-Nom   John-by   equip.with-Pass-Asp$_s$ be-Nonpast
          '(lit.) Blue eyes are had by John.'

3.2. The Modifier of the Body-Part Noun

This subsection shows that PAEs in Japanese involve the structure where the predication relation is established between a body-part noun and its modifier. Recall that the modifier of a body-part noun is obligatory in PAEs. A PAE becomes ungrammatical when a body-part noun is not modified by an adjective, as repeated in (19).

(19) a. *me-o   s-i-ta   syoonen
          eye-Acc equip.with-Epent-Asp boy

      b. *kami-o   s-i-ta   josee
          hair-Acc equip.with-Epent-Asp woman

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[5] The theme argument in PAEs is not merely the possessee but the inalienable body-part of the agent argument. Although it remains unclear why the possessee cannot be alienable in PAEs, I leave this issue open for future research.

[6] There are several seeming counterexamples. The following examples are grammatical, although the goal argument is not a part of the agentive argument.

(i) a. Hanako-ga   bin-ni   huta-o   s-i-ta.
         Hanako-Nom   bottle-on   lid-Acc S-Epent-Past
         'Hanako put a lid on a/the bottle.'

     b. Taroo-ga   mado-ni   kaaten-o   s-u-ru.
         Taro-Nom   window-on curtain-Acc S-Epent-Nonpast
         'Taro puts a curtain on a/the window.'

In these examples, the verb *s(u)-* does not merely mean 'to equip with'; it has the interpretation such as 'to close something with' or 'to cover something with.' The verb *s-* with this interpretation allows the inanimate goal argument.
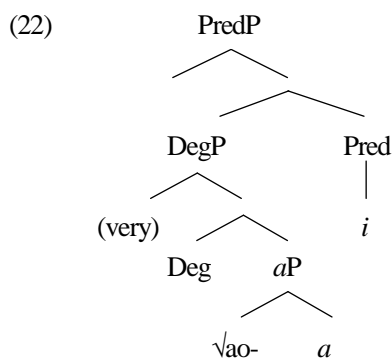
I propose that the obligatoriness of the modifier comes from the fact that it predicates a body-part noun syntactically and semantically.

One piece of evidence is that the modifier functions semantically as the predicate of a body-part noun. In (20) and (21), the (a)-example is semantically equivalent to the (b)-example.

(20) a. aoi   me-o   s-i-ta   syoonen
          blue   eye-Acc   equip.with-Epent-Asp boy
          'a/the blue-eyed boy'
      b. me-ga   aoi   syoonen
          eye-Nom   blue   boy
          'a/the boy whose eyes are blue'

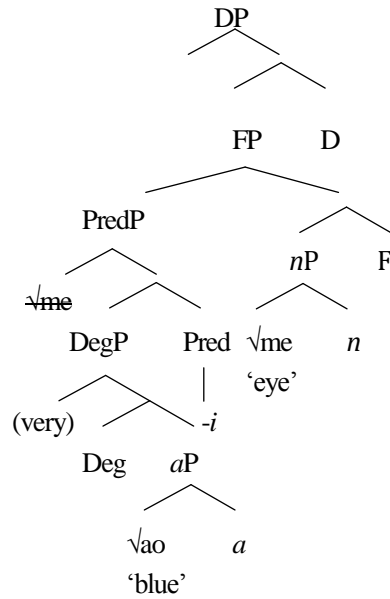(21) a. nagai   kami-o   s-i-ta   josee
          long   hair-Acc equip.with-Epent-Asp woman
          'a/the long-haired woman'
      b. kami-ga   nagai   josee
          hair-Nom long   woman
          'a/the woman whose hair is long'

Moreover, the morphology of adjectives suggests that the modifier of the body-part noun projects the functional projection PredP (cf. Bowers 1993, Nishiyama 1999). In Morita (2013), I propose that the morpheme *-i* following the adjectival stem is the overt realization of the functional head Pred. The adjective *aoi* 'blue,' for example has the following internal structure. The specifier position of the functional category PredP is the locus of the modified body-part noun.

(22)   PredP
                 /   \
            DegP   Pred
           /   \ |
      (very)   \   i
              Deg   aP
                   / \
               √ao-   a

On the surface structure, however, an adjective appears as the modifier of a body-part noun in PAEs. I propose that the modification structure is involved in the extended projection of the body-part noun, as illustrated in (23). PredP, which serves as the modifier of a body-part noun, is introduced in the specifier of the functional projection FP, following Cinque (2010). I suppose that it is the copy of the body-part noun that occupies the specifier of PredP.

(23)

```
                    DP
                   /\
                  /  \
                 FP    D
                /\
               /  \
            PredP    \
            /\        \
           /  \       nP    F
        √me    \     /\
              DegP  Pred  √me   n
             /\     |    'eye'
          (very) \  -i
               /\ Deg  aP
             Deg  a  /\
                   √ao    a
                   'blue'
```

Notice that a body-part noun does not constitute a compound with its modifier. In Japanese, an adjective-noun compound consists of the adjectival root and the head noun.[7] When an adjective-noun compound functions as a prenominal modifier, the morpheme *-no* attaches to it, as given in (24).

(24) a. tan-soku-no   dansee
          short-leg-Gen   man
          'a/the short-legged man'

      b. kuro-kami-no   josee
          black-hair-Gen   woman
          'a/the black-haired woman'

The following examples show that adjective-noun compounds cannot appear as the theme argument in PAEs.[8]

(25) a. *tan-soku-o   s-i-ta   dansee
          short-leg-Acc   put.on-Epent-Asp   man

      b. ??kuro-kami-o   s-i-ta   josee
          black-hair-Acc   put.on-Epent-Asp   woman

3.3. The Internal Structure for Japanese PAEs

Given the assumptions made so far, I propose the internal structure for Japanese PAEs, as illustrated in (26).
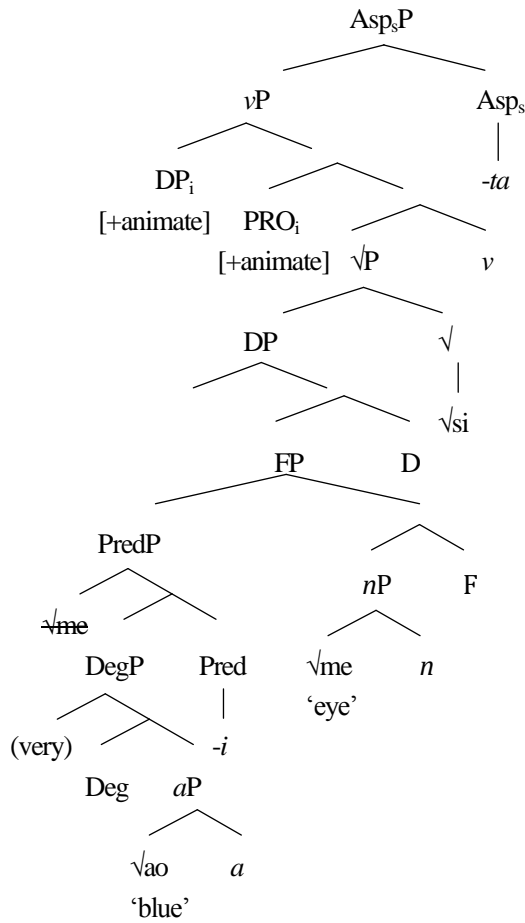
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[7] Japanese vocabulary consists of several strata, two of which are the native Japanese vocabulary and the Sino-Japanese vocabulary. There are few adjectival roots/stems of the native Japanese vocabulary that can form a compound with a noun. Adjectival roots/stems of the Sino-Japanese vocabulary, on the other hand, can usually constitute a compound with a noun.

[8] An anonymous reviewer points out that the following example is grammatical.

(i)   tuke-matuge-o   s-i-ta   josee
        attach-eyelash-Acc   put.on-Epent-Asp   woman
        'a/the woman with false eyelashes'

The modifier *tuke* is not an adjective but the conjunctive form of the verb *tuke-* 'attach.' But *tuke* forms a compound with the body-part noun *matuge* 'eyelashes.' Since the compound noun *tuke-matuge* is not modified by an adjective, the example in (i) seems to be a counterexample to the fact that a modifier of a body-part noun is obligatory in PAEs. Notice, however, that *tuke-matuge* 'false eyelashes' is alienable. As mentioned in footnote 6, the theme argument of the verb *s-* must be an inalienable body-part in PAEs. I consider that the example in (i) is not a PAE and treat it separately.
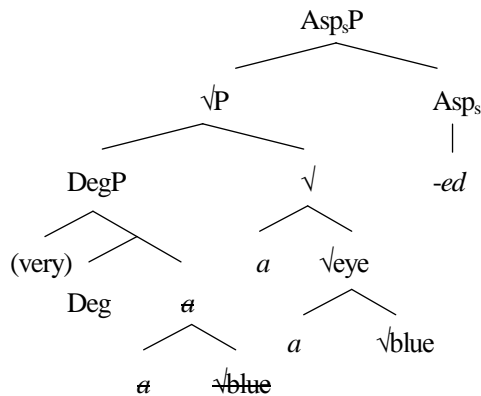
(26)

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                            AspₛP
                   ┌──────────┴──────────┐
                  vP                     Aspₛ
            ┌──────┴──────┐               │
           DPᵢ            ┌───┴────┐      -ta
        [+animate]      PROᵢ       ┌───┴───┐
                     [+animate]   √P       v
                              ┌────┴────┐
                             DP         √
                        ┌────┴────┐     │
                        ┌────┴───┐ √si
                       FP        D
                 ┌──────┴───┐    ┌──┴──┐
                PredP        nP      F
            ┌────┴────┐   ┌──┴──┐
           √me        DegP Pred  √me    n
                  ┌────┴──┐ │   'eye'
               (very)     -i
                  ┌───┴───┐
                 Deg      aP
                      ┌───┴───┐
                     √ao      a
                    'blue'
```

4. Some Differences in Physical Attributive Expressions between Japanese and English

This section argues the differences between Japanese and English PAEs. With a slight modification of Nevins and Myler's (2014) analysis, the internal structure for English PAEs is illustrated in (27).[9]

(27)

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                       AspₛP
                ┌────────┴────────┐
               √P                 Aspₛ
          ┌─────┴─────┐            │
        DegP          √           -ed
      ┌───┴───┐    ┌──┴──┐
   (very)     a    √eye
        ┌──┴──┐ ┌──┴──┐
       Deg    a a     √blue
          ┌──┴──┐ a   √blue
          a   √blue
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[9] Here I make three modifications of Nevins and Myler's (2004) analysis on English PAEs. First, as mentioned in section 2, Nevisn and Myler suppose that the morpheme *-ed* is the overt realization of the functional head *a* to form an adjective. I propose, on the other hand, that it is the functional head Aspₛ. Second, Nevins and Myler propose that the modifier of the body-part noun projects *a*P. I suppose that it is DegP, since the adjective can be modified by the degree modifier *very* (e.g., *a very blue-eyed boy*), which I assume is introduced in the specifier position of DegP. Third, Nevins and Myler suppose that a PAE is derived by incorporation of the root into the functional head Aspₛ (the *a* head on their analysis). I propose, however, that the Aspₛ head attaches directly to √P; the suffix is realized on the root *eye* by morphological merger.

On the basis of the observation that a body-part noun forms a compound with its modifier in English, Nevins and Myler propose that PAEs are derived by incorporation of a categorized element into a root, following Harley's (2009) analysis on compounds. The root of a body-part noun does not combine with the functional head *n* to form a noun, since the body-part noun does not have nominal properties such as pluralization (*blue-eyes-ed*, *long-legs-ed*).

Recall that in Japanese the root of the body-part noun is categorized as a noun by merging with the *n* head. Consider the following examples.

(28)   a.   marui   me-o   s-i-ta   onnanoko
               round   eye-Acc   equip.with -Epent-Asp   girl
               'a/the round-eyed girl'

          b.   marui   o-meme-o   s-i-ta   onnanoko[10]
               round   Hon-eyes-Acc   equip.with-Epent-Asp   girl
               'a/the round-eyed girl'

(29)   a.   ookina mimi-o   s-i-ta   inu
               big   ear-Acc   equip.with-Epent-Asp   dog
               'a/the big-eared dog'

          b.   ookina o-mimi-o   s-i-ta   inu
               big   Hon-ear-Acc   equip.with-Epent-Asp   dog
               'a/the big-eared dog'

In (b)-examples, the body-part noun is honorified by attachment of the honorific prefix *o-* to it. Given that the prefix *o-* can attach only to the categorized element (i.e., a noun or a verb), the root of a body-part noun is categorized as a noun in Japanese.

According to Nevins and Myler, the root of a body-part noun and the modifying element are in the sisterhood relation in English. Their claim is based on Harley's analysis on compounds that a modifying element is introduced as a sister of the head noun. I have demonstrated that in Japanese the predication relation is established between a body-part noun and its modifier; the functional projection PredP is included in Asp$_s$P. It seems that an adjective also functions semantically as the predicate of the body-part noun in English. (30a), for example, can be paraphrased as (30b).

(30)   a.   a blue-eyed boy
          b.   a boy whose eyes are blue

There is, however, a piece of evidence to show that PredP is not included in the internal structure for English PAEs. Consider the following examples.

(31)   a.   *The woman's leg is one.
          b.   *The snowflake's corners are six.

The examples in (31) suggest that the Pred head only takes either DegP (i.e., the extended projection of *a*P) or *n*P as its complement, but not NumP. In English PAEs, a body-part noun can be modified by a numeral as well as by an adjective, as shown in (32).

(32)   a.   a one-legged woman
          b.   the six-cornered snowflake

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[10] When the honorific morpheme *o-* attaches to the noun *me* 'eye,' the noun must be reduplicated as *me-me* (eye-eye).

In Japanese PAEs, on the other hand, a numeral cannot appear as the modifier of a body-part noun in Japanese PAEs, as given in (33).

(33)   a.   *hitotu-no   me-o   s-i-ta   oni

                 one.Cl-Gen   eye-Acc   put.on-Epent-Asp   ogre

                 'a/the one-eyed ogre'

        b.   *nihon-no   tuno-o   s-i-ta   sika

                 two.Cl-Gen   antler-Acc put.on-Epent-Asp   deer

                 'a/the two-altered deer'

The difference observed in (32) and (33) can be explained by assuming that PredP is involved in Japanese PAEs but not in English PAEs.

5.   Concluding Remarks

I have investigated morphosyntactic properties of PAEs in Japanese. I have argued that PAEs are the projection of the functional head Asp_s, which is realized as the suffix *-ta* in Japanese and as *-ed* as in English. I have proposed that Japanese PAEs have the internal structure where the predication relation is established between a body-part noun and its modifier. I have also proposed that the verb *s-* requires the possessor of a body part to be animate in Japanese. In English, on the other hand, the possessor can be inanimate because of lack of such a verb. Then I have demonstrated a different internal structure for English PAEs, which can explain their different morphosyntactic properties from Japanese PAEs.

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