# Three Types of Direct Modification APs*

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*This paper discusses the internal structure of attributive APs and their syntactic positions within a DP. I demonstrate that there are two types of functional projections to host attributive APs, Attr(ibutive)P(hrase) and D(irect)Mod(ification)P(hrase). I also demonstrate that attributive APs can be divided into three types. One type is relational modifiers, which are not adjectives but nouns. These modifiers always occupy the specifier position of AttrP. Another type is gradable adjectives, which appear in the specifier of DModP. Shape and Color adjectives are classified as the other type of modifiers, which can appear either in the specifier of AttrP or in the specifier of DModP. I also show that AttrP appears lower (i.e., closer to the modified noun) than DModP.*

*Keywords: relational adjective, gradable adjective, Distributed Morphology, Japanese*

## 1. Introduction

The DP-internal positions of adjectives have been a matter of debate. Cinque (2010) claims that there are two sources available for adnominal adjectives. One is a direct modificational source, and the other is a (reduced) relative clause (i.e., indirect modification) source. These two sources have different semantic and syntactic properties. The semantic interpretations related to the two sources, for example, are given in (1).

(1) a. Direct modification source: individual-level, nonrestrictive, modal, nonintersective, absolute, specificity-inducing, evaluative, NP dependent, and generic readings
b. (Reduced) relative clause source: stage-level, restrictive, intersective, relative to a comparison class, comparative reading (for superlative), non-specificity-inducing, epistemic, discourse anaphoric, and deictic readings

Cinque proposes that direct modification APs are lower than (reduced) relative clause APs, as illustrated in (2). Each AP is generated in the specifier position of a functional category FP, which is related to the semantic class of the AP.

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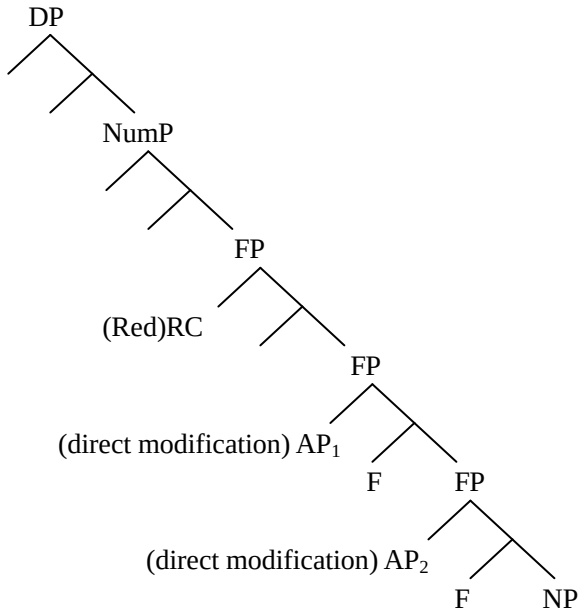
(2)




(cf. Cinque 2010: 34: (24))

It has been observed that many languages have quite similar restrictions on adnominal adjectival orderings. A number of researchers have proposed that there is a universal hierarchy of adnominal adjectives according to their semantic classes. (Sproat and Shih 1990, Scott 2002 and Laenzlinger 2004). Scott (2002), for example, proposes the following hierarchy.

(3) Subjective Comment > ?Evidential > Size > Length > Height > Speed > ?Depth > Width > Weight > Temperature > ?Wetness > Age > Shape > Color > Nationality/Origin > Material > NP[1]

(cf. Scott 2002: 114: (47))

As Cinque himself mentions in his book, however, he does not take into account what the precise order of adjectives is among multiple prenominal adjectives. It remains unclear how many FPs are required for direct modification APs.

In this paper, I focus on modifiers with the direct modification source. Following Cinque's (1994) proposal that a modifier is introduced in the specifier position of a functional projection, I propose that there are at least two types of functional projections for modifiers with the direct modification source, Attr(ibutive)P(hrase) and D(irect)Mod(ification)P. I also demonstrate that direct modifiers can be divided into three types on the basis of the observation of Japanese adjectives. One type is relational modifiers, which occupy the specifier position of AttrP. Another type is gradable adjectives, which cannot appear in the specifier of AttrP but only appear in the specifier of DModP.[2] Shape and Color adjectives are classified as the other type of modifiers, which behave either as relational modifiers or as gradable adjectives; these modifiers appear either in the specifier of AttrP or in the specifier of DModP.

The organization of this paper is as follows. In section 2, I demonstrate that Nationality/Origin and Material modifiers are relational modifiers. I propose that these modifiers occupy the specifier position of AttrP. I also

[1] Scott (2002) includes Determiner, Ordinal and Cardinal Numbers above Subjective Comment in this hierarchy. I put them away since they do not project APs but head the functional projections DP and QPs, respectively. I also do not take into account Compound Element, which, Scott supposes, is right above NP. I also do not deal with Subjective Comment and Evidential adjectives in this paper.

[2] This claim does not mean that APs which appear in the specifier position of AttrP never have the indirect modification interpretations. As Cinque (2010) claims, APs occupy the specifier of another functional projection, which is higher than DModP, when they have the indirect modification interpretations. I propose that relational modifiers, on the other hand, cannot appear in the specifier of FP since they only have the attributive use.

demonstrate that these modifiers appear in the position closer to NP than other adjectives. In section 3, I show that the adjectives related to Size, Length, Height, Speed, Depth, Width, Temperature, Age, Shape and Color constitute a natural class, and propose that they appear in the specifier position of DModP. I also demonstrate that DModP is hierarchically higher than AttrP. In section 4, I show that Shape and Color modifiers are ambiguous between relational modifiers and gradable adjectives. These modifiers occupy the specifier of AttrP when they function as relational modifiers; when they are gradable adjectives, they appear in the specifier of DModP. The last section is a brief summary.

## 2. Nationality/Origin and Material Adjectives

Although Japanese does not obey the restrictions of adjectival orderings,[3] the morphological realizations of adjectives are to some extent based on their semantic classes. In Morita (2010), I observe that Nationality/Origin and Material adjectives are always realized as "*no*-adjectives": the linking morpheme *-no* follows the adjectival root.

(4) a. Nationality/Origin

| | | | |
|---|---|---|---|
| nihon-no | haiyuu, | tyuugoku-no | kabin |
| Japanese | actor | Chinese | vase |
| '(a) Japanese actor' | | '(a) Chinese vase' | |

b. Material

| | | | |
|---|---|---|---|
| tetu-no | tobira, | ki-no | isu |
| iron | door | wooden | chair |
| '(an) iron door' | | '(a) wooden chair' | |

It has been widely assumed that the modifiers with the morpheme *-no* are not adjectives, but nouns (Uehara 1998, Backhouse 2004). In other languages such as English and Spanish, however, the modifiers related to Nationality/Origin and Material are morphologically realized as adjectives. In English, for example, many modifiers of Nationality/Origin such as *Japanese*, *European*, and *Turkish* end with the adjectival suffixes *-ese*, *-an*, and, *-ish*, and Material modifiers such as *wooden* and *ashen* also include the adjectival suffix *-en*. In many Romance languages, the modifiers related to these semantic classes exhibit agreement in gender and number with their modifying nouns, in the same way as other adjectives.

(5) English:[4]

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[3] Baker (2003b) observes that the two possible orders of adjectives in (i) are equivalent.

(i) a. marui akai e *or* akai marui e
round red picture red round picture

b. chiisana sikakui ie *or* sikakui chiisana ie
small square house square small house (Baker 2003b: 2-3: (7))

As seen later, however, Ayano (2010) observes that there are some cases where the orders of prenominal adjectives are rigidly determined. For example, the nonintersective adjectives such as *huruk-* 'long time' and *kanzen-na* 'complete' cannot appear in the non-adjacent position, as in (ii).

(ii) a. monosizuka-na huru(k)-i yuuzin / *?huru(k)-i monosizuka-na yuuzin
quiet long.time friend long.time quiet friend
'quiet long-time friend'

b. monomidaka(k)-i kanzen-na baka / *?kanzen-na monomidaka(k)-i baka
burningly.curious complete fool complete burningly.curious fool
'a burningly curious complete fool'

Watanabe (2010) also observes that Material adjectives must be adjacent to its modifying noun in Japanese.

[4] In this paper, I do not deal with the cases where these examples are interpreted as compounds.

a. Nationality/Origin: *Japanese* actor, *French* silk, *American* airline
b. Material: *wooden* chair, *wheaten* bread

(6) Spanish:

a. Nationality/Origin: incursión aerea *japonesa* impresionate
raid.$_{\text{FEM.SING}}$ air.$_{\text{FEM.SING}}$ Japanese.$_{\text{FEM.SING}}$ impressive.$_{\text{FEM.SING}}$
'impressive Japanese air raid'

b. Material: la importación *sedera* francesa
the import $_{\text{FEM.SING}}$ silk $_{\text{FEM.SING}}$ French $_{\text{FEM.SING}}$
'the French silk import'

The modifiers of Nationality/Origin and Material can be considered as relational adjectives in the sense of Beard (1995). Beard observes that unlike qualitative adjectives, relational adjectives are not subject to (i) comparison, (ii) predication, (iii) modification by delimiters like *very*, (iv) adverbalization, and (v) lexical nominalization. The same observations hold for Nationality/Origin and Material modifiers.

(7) a. *more Japanese actor
b. *The chair is Chinese/wooden.
c. *very French silk
d. *The actor behaved Japanesely/Frenchly.
e. *Japaneseness, *Frenchness, *Americanness

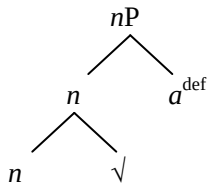
It has been also observed that relational adjectives behave semantically like nouns, although they exhibit the adjectival morphology (Levi 1978, Fábregas 2007). Fábregas (2007) points out that these adjectives are semantically nouns, since they function as arguments that receive one of the theta roles assigned by the theta grid of the head noun.

(8) a. la producción pesquera china
the production fishing Chinese
'the Chinese fishing production'

b. λyλx [producción' (x, y) ∧ pesquera' (x) ∧ china' (y)] (Fábregas 2007: 4-5: (6a) & (7))

Based on the observations that relational adjectives have syntactic and semantic properties of nouns, Fábregas proposes the internal structure of relational adjectives as illustrated in (9).

(9)



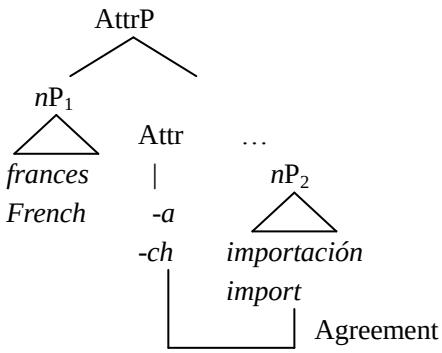

(Fábregas 2007: 14: (29))

Within the framework of Distributed Morphology, Fábregas claims that the internal structure of relational adjectives includes the *a* head, which is spelled out as an adjectival suffix. He supposes that this *a* head does not project since it has a defective matrix of phi-features.

Fábregas's claim that relational adjectives are nouns is also compatible with the observations in Japanese; the fact that Nationality/Origin and Material modifiers in Japanese require the linking morpheme *-no* suggests that they are nouns. It is, however, dubious that the defective *a* head universally exists in the internal structure of relational adjectives, since relational adjectives in Japanese do not exhibit any properties of adjectives; it neither

has an adjectival suffix nor exhibits agreement with the noun. Instead of assuming the defective *a* head, I propose that relational modifiers have the following internal structure.[5]

(10)




I propose that the functional head Attr(ibutive) makes it possible for a noun (i.e., $nP_1$) in its specifier position to be an attributive modifier. It has been observed that a noun requires an additional element to modify another noun (Baker 2003a). I suppose that the overt realization of the Attr head is the same as an adjectival suffix in some languages such as English and Spanish. Also, it is the Attr head that exhibits the same agreement morphology as adjectives in Spanish; it has phi-features to agree in number and gender with the modified noun.

It is not surprising that a linking element exhibits agreement with the modified noun. In some languages such as Modern Persian, Kurdish and Zazaki, a nominal modifier requires a linking element, referred to as "Ezafe." Larson and Yamakido (2008) demonstrate that the Ezafe element in Zazaki inflects according to the number and the gender of the modified noun.[6]

(11) a. ban-e min
house.$_{MASC}$-EZ me.$_{Obl}$
'my house'

b. ling-a min
foot.$_{FEM}$-EZ me.$_{Obl}$
'my foot'

c. ling-a min
foot.$_{PL}$-EZ me.$_{Obl}$
'my feet'

(Larson and Yamakido 2008: 67: (54))

[5] In the case of the example *la importación sedera francesa* 'the French silk import,' I suppose that there is another AttrP under the AttrP in (10); the modifier *sedera* 'silk' occupies the specifier of the lower AttrP. There is another possibility that AttrP in (10) has a multiple specifier; the single head Attr hosts both *sedera* 'silk' and *francesa* 'French.' I leave this matter open here.

[6] Larson and Yamakido (2008) observe that the Ezafe also attaches to a noun when it appears with an adjective.

(i) a. pir'tok-o find
book $_{MASC}$-EZ good
'good book'

b. top-a wer'd-i
ball $_{FEM}$-EZ small $_{FEM}$
'small ball'

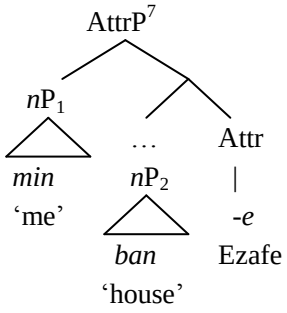
c. pir'tok-o gird-is
book $_{PL}$-EZ big-PL
'big books'

(Larson and Yamakido 2008: 67: (55))

Larson and Yamakido mention that the Ezafe elements in (i) should be distinguished from the ones in (11). They refer to the Ezafe that links a modified noun with an adjective as a *descriptive* Ezafe. On the other hand, the one that links a noun to another noun is called a *genitive* Ezafe. I suppose that a *genitive* Ezafe is the overt realization of the Attr head, while a *descriptive* Ezafe is not.

I suppose that the Ezafe is also the realization of the Attr head, despite Larson and Yamakido's claim that it is a case marker.

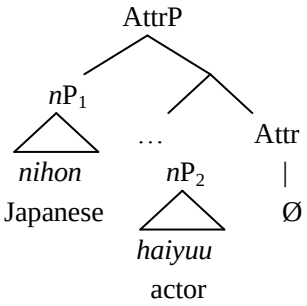
(12)




Given that the only nouns are marked with a case, it is reasonable to suppose that the Ezafe in (11) is the head of the functional category rather than a case marker.

In Japanese, on the other hand, the Attr head lacks a phonological content. Since Japanese is a head-final language, relational modifiers in Japanese have the internal structure given in (13).

(13)




As observed in (4), relational modifiers in Japanese follow the linking morpheme *-no*. I suppose that the morpheme *-no* is inserted at PF by the following phonological rule in (14).

(14) Mod-Insertion
$[_{DP} \ldots XP(\text{-tense})\ N^{\alpha}] \rightarrow [_{DP} \ldots XP(\text{-tense})\ Mod\ N^{\alpha}]$,
where the head noun is overtly realized and Mod = *no* (Watanabe 2010: 66: (16))

Let us now consider the position of AttrP. I propose that the functional category AttrP appears in the lowest position among the modifiers. Given in the universal hierarchy of adjectives in (3), Nationality/ Origin and Material modifiers are lower than other classes of adjectives. The same observation applies even to Japanese, in which adjectives do not have to be rigidly ordered in most cases. Watanabe (2010) observes that Material modifiers do not precede another adjective, as in (15).[8]

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[7] Zazaki is a head-final language. I suppose that $n$P$_1$ moves out of AttrP and then the remnant AttrP moves to the position higher than $n$P$_1$.

[8] Although Material modifiers must be adjacent to the noun, Nationality/Origin can appear in the non-adjacent position to the noun.

(i)

| | | | | | | |
|---|---|---|---|---|---|---|
| yuumei-na | nihon-no | haiyuu | / | nihon-no | yuumei-na | haiyuu |
| famous | Japanese | actor | | Japanese | famous | actor |

'(a) famous Japanese actor'

(15) ooki-na ki-no isu / *ki-no ooki-na isu
big wooden chair wooden big chair

In sum, relational modifiers such as Nationality/Origin and Material modifiers are not adjectives, but nouns. In order for the stem of Nationality/Origin and Material to modify another noun, it requires the functional head Attr. AttrP cannot, in principle, appear in the non-adjacent position to the noun. It is a crosslinguistic variation whether the Attr head has phi-features to agree with the modified noun.

## 3. Gradable Adjectives

In this section, I demonstrate that adjectives such as Size, Length, Height, Speed, Depth, Width, Temperature, Age, Shape and Color constitute a natural class, since they exhibit the same patterns in their morphological realizations. I also propose that they occupy the specifier of DModP.

One piece of morphological evidence is found in Japanese. Morita (2010) observes that gradable adjectives in Japanese can be classified into two types in terms of their morphology, *k*-adjectives and *na*-adjectives.

(16) a. *k*-adjective
taka(k)-i yama[9]
high mountain
'(a) high mountain'
b. *na*-adjective
kirei-na hana
beautiful flower
'(a) beautiful flower'

The modifiers related to Size, Length, Height, Speed, Depth, Width, Temperature, Age, Shape and Color are, in principle, realized as *k*-adjectives.[10]

(17) a. Size: *ookik*- 'big,' *tiisak*- 'small'
b. Length: *nagak*- 'long,' *mizikak*- 'short'
c. Height: *takak*- 'tall', *hikuk*- 'short'
d. Speed: *hayak*- 'fast,' *osok*- 'slow'
e. Depth: *hukak*- 'deep,' *asak*- 'shallow'
f. Width: *hirok*- 'wide,' *semak*- 'narrow'
g. Weight: *omok*- 'heavy,' *karuk*- 'light'
h. Temperature: *atuk*- 'hot,' *samuk*- 'cold,' *suzusik*- 'cool'

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The universal hierarchy of adjectives in (3) also suggests that Material is lower than Nationality/Origin. It is necessary to consider Nationality/Origin and Material modifiers separately. I leave this issue open.

[9] Following Nishiyama (1999), I suppose that AP is supported by the functional projection Pred(icate) P(hrase). Although he claims that the final consonant /k/ of the adjectival stem is the overt realization of the Pred head, I propose that the Pred head is overtly realized as the vowel /i/ following the adjectival stem, which is usually assumed to be the non-past tense morpheme. I suppose that the final consonant /k/ of the adjectival stem is the functional head *a* to form an adjective. As Nishiyama claims, I suppose that the consonant /k/ is phonologically dropped when it follows the vowel /i/. For the sake of convenience, I put the phonologically dropped /k/ in parentheses, in order to show that it is a *k*-adjective. Also, I do not gloss on the morpheme *-i*, which I suppose is the Pred head, since it is not relevant to the discussion here.

[10] As given in (15), Size adjectives are realized not only as *k*-adjectives but also as *na*-adjectives (e.g., *ookik*- 'big' and *ooki-na* 'big'). It is also necessary to consider why there is an alternation in the overt realization of Size adjectives. However, I leave this matter for my future research.

i. Age: *huruk-* 'old,' *wakak-* 'young,' *atarasik-* 'new'
j. Shape: *maruk-* 'round,' *sikakuk-* 'square'
k. Color: *akak-* 'red,' *aok-* 'blue,' *sirok-* 'white,' *kurok-* 'black'

The above observation in Japanese suggests that Size, Length, Height, Speed, Depth, Width, Temperature, Age, Shape and Color modifiers constitute a morphologically natural class.

Another piece of evidence comes from nominal modifiers in English. Partee (1987) and Wilkinson (1995) observe that the NPs such as *that color*, *that length*, and *that weight* can modify another noun.

(18) a. a dress (of) that size / that size (of) dress
b. a dress (of) that length / that length (of) dress
c. this age fossil
d. that style coat
e. a dress (of) that color / that color (of) dress

The NP modifiers in (18) are related to Size, Length, Age, Shape and Color.[11] The NPs related to Origin and Material cannot function as attributive modifiers, as in (19).

(19) a. *a dress (of ) that origin
b. *a dress (of) that material

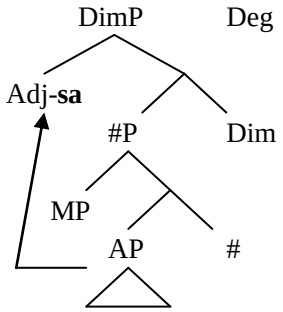
Notice that the modifiers such as *length* and *width* are usually taken to be the nominalized forms of the adjectives *long* and *wide*. I propose, however, that they are syntactically adjectives. This claim is based on Watanabe's (to appear) proposal that that some adjectives in Japanese are not nominalized by attachment of the suffix *-sa*, which is generally considered to be a nominalizer. Watanabe observes that the two sentences in (20) have different interpretations.

(20) a. Kono biru-wa takasa 10-meetoru dearu. –/–> (20c)
this building-Top height 10-meter is
b. Kono biru-wa takasa 10-meetoru aru. → (20c)
this building-Top height 10-meter is
c. Kono biru-wa takai.
this building-Top tall.

In (20a) and (20b), the expression *takasa* looks like the nominalization of the adjective *takak-* 'high, tall.' Watanabe proposes that *takasa* in (20a) is a noun, while the one in (20b) is an adjective. The sentence in (20a) has the neutral interpretation, since it does not entail the situation "this building is tall." The sentence in (20b), on the other hand, has the non-neutral interpretation, because it entails the sentence in (20c). Based on this observation, Watanabe proposes that attachment of the suffix *-sa* in (20b) is not the nominalization of adjectives, but a result of agreement with the Dim head, which encodes information about dimension of measurement; *sa*-attachment takes place when AP moves to Spec of DimP, as illustrated in (21).

(21) DegP

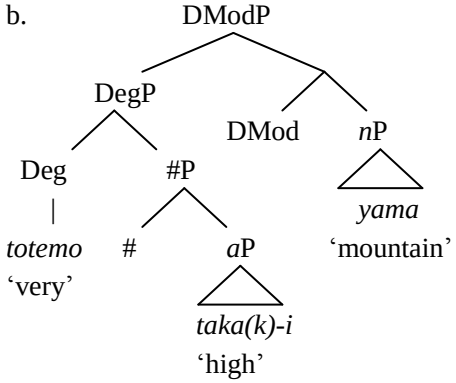
[11] Neither Partee (1987) nor Wilkinson (1995) mentions that the nouns *height*, *speed*, *depth*, and *temperature* can be attributive modifiers. If my analysis is correct, however, these nouns should have the attributive use. They mention that the noun *width* can modify another noun, although they did not give any example.




Following Watanabe's analysis of Japanese, I propose that attributive modifiers such as *size*, *color*, *length*, *price*, *age* and *weight* in English are syntactically adjectives; they are overtly "nominalized" by agreement with the Dim head. The nouns such as *material*, *design* and *origin* cannot be attributive modifiers, since they are nouns and do not project DimP, as illustrated in (19); these expressions are syntactically nominalized forms.

As illustrated in (21), gradable adjectives project the functional projection DegP. Given that a functional category is required to host a nominal modifier, I suppose that the category to host gradable adjectives should be different from the one for relational modifiers (i.e., *n*P). Let me suppose that it is the functional category DModP that hosts DegP, as given in (22b).

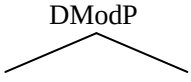
(22) a. (totemo) taka(k)-i yama
(very) high mountain
'(a) (very) high mountain'

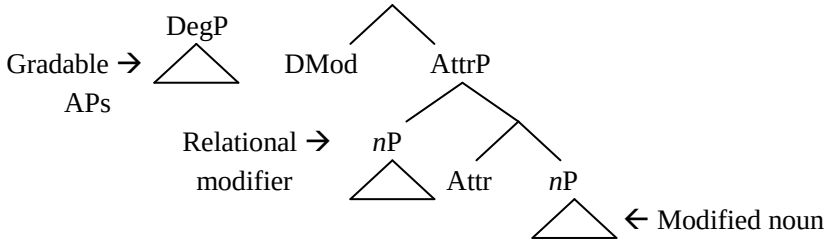
b.



Before concluding this section, let us consider the position of gradable adjectives. Unlike relational modifiers, gradable adjectives do not have to be adjacent to their modifying noun.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (23) | a. | tiisa(k)-i | ki-no | ie | / | ?*ki-no | tiisa(k)-i | ie |
| | | small | wooden | house | | wooden | small | house |
| | b. | naga(k)-i | tetu-no | hasi | / | ?*tetu-no | naga(k)-i | hasi |
| | | long | iron | bridge | | iron | long | bridge |
| | c. | maru(k)-i | ki-no | teeburu | / | ?*ki-no | maru(k)-i | teeburu |
| | | round | wooden | table | | wooden | round | table |
| | d. | ao(k)-i | garasu-no | koppu | / | ?*garasu-no | ao(k)-i | koppu |
| | | blue | glass | glass | | glass | blue | glass |

The same observations hold in other languages. It follows that DModP appears higher than AttrP, as given in (24).

(24)





I propose that only DegP can occupy the specifier position of DModP. Given that AttrP appears lower than DModP, relational modifiers appear closer to the modified noun than gradable adjectives.

## 4. Shape and Color Adjectives

In this section, I demonstrate that Shape and Color adjectives, which are adjacent to each other in the universal hierarchy in (3), constitute a natural class; they behave either as relational modifiers or as gradable adjectives.

As seen in the previous section, gradable adjectives in Japanese must be, in principle, realized as *k*-adjectives. As observed in Morita (2010), however, some of the Shape and Color adjectives can be realized as either *k*-adjectives or *no*-adjectives. The root *aka*- 'red,' for example, can attach to the morpheme *-k* or to the morpheme *-no*, as in (26).

(25) Shape adjective
  a. *k*-adjective
  *maruk*- 'round,' *sikakuk*- 'quadrangular'
  b. *no*-adjective
  *maru-no* 'round,' *sikaku-no* 'quadrangular,' *sankaku-no* 'triangle,' *hisigata-no* 'diamond'

(26) Color adjective
  a. *k*-adjective
  *akak*- 'red,' *aok*- 'blue,' *sirok*- 'white,' *kurok*- 'black'
  b. *no*-adjective
  *aka-no* 'red,' *ao-no* 'blue,' *siro-no* 'white,' *kuro-no* 'black,' *midori(iro)-no* 'green,'
  *momoiro-no* 'pink,' *pinku-no* 'pink,' *buruu-no* 'blue,' *orenji-no* 'orange'

Kennedy and McNally (2010) argue that Color adjectives are in fact ambiguous between gradable and nongradable interpretations. They claim that Color adjectives can have either gradable quality/quantity meanings or a nongradable, classifactory meaning. In other words, Color adjectives are interpreted either as gradable adjectives or as relational modifiers. The same observation applies to Shape and Color adjectives in Japanese. The following examples show that the adjectives realized as *k*-adjectives are gradable, while the ones with the linking morpheme *-no* have the classifactory interpretation.

(27) Shape adjective
  a. sikaku(k)-i moyoo
  quadrangular design
  'quadrangular designs'
  b. sikaku-no moyoo
  quadrangular design
  'designs of quadrangle'

(28) Color adjective
  a. aka(k)-i wain

red wine
'wine, which is red (but it does not have to be "red wine")'

b. aka-no wain[12]
red wine
'red wine (but it is not necessarily red)'

From the fact that Shape and Color modifiers are interpreted ambiguously (i.e., either as gradable adjectives or as relational modifiers), I propose that there are two possible positions for these modifiers. They appear in the specifier position of AttrP when they have the nongradable interpretations. In this case, they are overtly realized as *no*-adjectives. With the gradable interpretation, on the other hand, these modifiers are generated in the specifier of the DModP and realized as *k*-adjectives.

It should be also noted that there is a difference between *k*- and *no*-adjectives in terms of gradability: adjectives realized as *no*-adjectives have the nongradable interpretation, while adjectives realized as *k*-adjectives have the gradable interpretation. This claim is confirmed by the fact that only *k*-adjectives can accept modification by degree adverbs, such as *totemo* 'very.'

(29) a. Shape adjective:
totemo {maru(k)-i/*maru-no} teeburu / totemo{sikaku(k)-i/*sikaku-no} teeburu
very round / round table / very quadrangular/quadrangular table

b. Color adjective:
totemo {siro(k)-i/*siro-no}hane / totemo {kuro(k)-i /*kuro-no} hane
very white / white feather / very white / black feather

Recall that the modifiers related to Size, Length, Height, Speed, Depth, Width, Temperature and Age are gradable, while relational modifiers are not. The above observations also suggest that Shape and Color are realized as *k*-adjectives when they have the gradable interpretations; they have the morphological forms of *no*-adjectives when they function as relational modifiers.

There is another piece of evidence to show that Shape and Color adjectives behave differently from other gradable adjectives. The prefix *ma*- attaches only to Shape and Color adjectives, but never to other gradable adjectives.[13] According to Poser (1990), the prefix *ma*- picks out the center of an interval denoted by the base

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[12] With the interpretation of 'red wine,' the compound form *aka-wain* 'red wine' is more common than *aka-no*. It is, however, natural to use the form with the linking morpheme *-no* in the following context. Notice that *k*-adjective form of *aka*- 'red' cannot be used in this context.

(i) Aka-to siro-no wain-wa dotira-ga sukidesu-ka?
red-and white wine-Top which-Nom prefer-Q
'Which do you prefer, red wine or white wine?'
a. Aka-no wain des-u.
red wine Cop.Polite-Nonpast
'I prefer red wine.'
b. *?Aka(k)-i wain des-u.
red wine Cop.Polite-Nonpast

[13] It should be noted that Color adjectives must be realized as *na*-adjectives when the prefix *ma*- attaches to them. As seen above, Shape and Color adjectives are realized either as *k*-adjectives or *no*-adjectives. They cannot be realized as *na*-adjectives without the prefix *ma*-, as in (i).

(i) a. Shape adjective:
*maru-na, *sikaku-na
b. Color adjective
*aka-na, *ao-na, *siro-na, *kuro-na

Although these modifiers are in principle realized as *na*-adjectives by the *ma*-prefixation, only Shape adjectives are also allowed to be realized as *no*- or *k*-adjectives.

form (cf. Poser 1990: 450). For example, 'red' denotes an interval on the color spectrum and its boundaries cannot be defined definitely. Poser mentions that the center of 'red' is denoted by the derivative *makka*.

(30) Shape adjectives with the prefix *ma-*
*man-maru-na* 'completely round,' *ma-sikaku-na* 'completely square'

(31) Color adjectives with the prefix *ma-*
*makka-na* 'completely red,' *massao-na* 'completely blue,' *massiro-na* 'completely white,' *makkuro-na* 'completely black'

Other gradable adjectives, on the other hand, cannot have the *ma*-prefixation as in (32), since the base forms of these adjectives do not denote an interval.

(32) a. Size

| | | |
|---|---|---|
| (*ma)-ookik- | (*ma)-ooki-na | *(ma)-ooki-no |
| MA-big | MA-big | MA-big |

b. Length

| | | |
|---|---|---|
| (*ma)-nagak- | *(ma)-naga-na | *(ma)-naga-no |
| MA-long | MA-long | MA-long |

c. Height

| | | |
|---|---|---|
| (*ma)-takak- | *(ma)-taka-na | *(ma)-taka-no |
| MA-high | MA-high | MA-high |

d. Speed

| | | |
|---|---|---|
| (*ma)-hayak- | *(ma)-haya-na | *(ma)-haya-no |
| MA-fast | MA-fast | MA-fast |

e. Depth

| | | |
|---|---|---|
| (*ma)-hukak- | *(ma)-huka-na | *(ma)-huka-no |
| MA-deep | MA-deep | MA-deep |

f. Width

| | | |
|---|---|---|
| (*ma)-hirok- | *(ma)-hiro-na | *(ma)-hiro-no |
| MA-wide | MA-wide | MA-wide |

g. Temperature

| | | |
|---|---|---|
| (*ma)-atuk- | *(ma)-atu-na | *(ma)-atu-no |
| MA-hot | MA-hot | MA-hot |

h. Age[14]

| | | |
|---|---|---|
| (*ma)-huruk- | *(ma)-huru-na | *(ma)-huru-no |
| MA-old | MA-old | MA-old |

These observations also suggest that Shape and Color adjectives constitute a natural class. As mentioned in the footnote 13, however, many issues remain to be considered as to the *ma*-prefixation.

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(ii) Shape adjective:
a. manmaru-no, ?masikaku-no
b. manmaruk-, ?masikakuk-

(iii) Color adjective:
a. *?makka-no, *?massao-no, ?massiro-no, makkuro-no
b. *makkak-, *massaok-, ?massirok-, ?*makkurok-

At this point, I do not have any answer to these problems.

[14] Although most of the Age adjectives cannot have the *ma*-prefixation, it can attach to the adjective *atarasik-* 'new.' In this case, however, *atarasik-* with the prefix *ma-* is realized as a *k*-adjective, but not as a *na-* or *no*-adjective (*ma-atarasik-*, **ma-atarasi-na*, **ma-atarasi-no*).

## 5. Summary

In this paper, I demonstrated that there are two types of functional projections for direct modification APs—AttrP and DModP. I proposed that DModP appears higher than AttrP. I also demonstrated that direct modification APs can be classified into at least three types. One is relational modifiers, which is base-generated in the specifier of AttrP. Another is gradable adjectives, which appears in the specifier of DModP. Shape and Color modifiers are another type; they behave either as relational modifiers or as gradable adjectives.

## References


Ayano, Seiki (2010) "Revisiting Beautiful Dancers and Complete Fools in Japanese," *Proceedings of the 6th Workshops on Altaic Formal Linguistics*, ed. by Hiroki Maezawa and Azusa Yokogoshi, 97-111.

Backhouse, Anthony E. (2004) "Inflected and Uninflected Adjectives in Japanese," *Adjective Classes: A Cross-Linguistic Typology*, ed. by Robert M.W. Dixon and Alexandra Y. Aikhenvald, 50-73, Oxford University Press, Oxford and New York.

Baker, Mark C. (2003a) *Lexical Categories: Verbs, Nouns, and Adjectives*, Cambridge University Press, Cambridge.

Baker, Mark C. (2003b) "'Verbal Adjectives' as Adjectives without Phi-Features," *Proceedings of the 4th Tokyo Conference on Psycholinguistics*, ed. by Yukio Otsu, 1-22, Keio University, Tokyo.

Beard, Robert (1995) *Lexeme-Morpheme Base Morphology: A General Theory of Inflection and Word Formation*, SUNY Press, New York.

Cinque, Guglielmo (1994) "On the Evidence for Partial N Movement in the Romance DP," *Paths Towards Universal Grammar: Studies in Honor of Richard S. Kayne*, ed. by Guglielmo Cinque, Jan Koster, Jean-Yves Pollock, Luigi Rizzi and Raffaella Zanuttini, 85-110, Georgetown University Press, Washington DC.

Cinque, Guglielmo (2010) *The Syntax of Adjectives*, MIT Press, Cambridge, MA.

Fábregas, Antonio (2007) "The Internal Syntactic Structure of Relational Adjectives," *Probus* 19, 1-36.

Kennedy, Christopher and Louise McNally (2010) "Color, Context, and Compositionality," *Synthese* 174:1, 79-98.

Laenzlinger, Christopher (2004) "French Adjective Ordering: Perspectives on DP-Internal Movement Types," *Lingua* 115, 645-689.

Larson, Richard and Hiroko Yamakido (2008) "Ezafe and the Deep Position of Nominal Modifiers," *Adjectives and Adverbs*, ed. by Louise McNally and Christopher Kennedy, 43-70, Oxford University Press, Oxford.

Levi, Judith N. (1978) *The Syntax and Semantics of Complex Nominals*, Academic Press, New York and Oxford.

Morita, Chigusa (2010) "The Internal Structures of Adjectives in Japanese," *Linguistic Research* 26, 105-118, The University of Tokyo English Linguistic Association.

Nishiyama, Kunio (1999) "Adjectives and the Copulas in Japanese," *Journal of East Asian Linguistics* 8, 183-222.

Partee, Barbara H. (1987) "Noun Phrase Interpretation and Type-shifting Principles," *Studies in Discourse Representation Theory and the Theory of Generalized Quantifiers*, ed. by Jeroen Groenendijk, Dick de Jong, and Martin Stokhof, 115-143, Foris, Dordrecht. (Reprinted in Barbara H. Partee (2004) *Compositionality in Formal Semantics*, 203-230, Blackwell Publishing.)

Poser, William J. (1990) "MA," *Interdisciplinary Approaches to Language: Essays in Honor of S.-Y. Kuroda*, ed. by Carol Georgopoulos and Roberta Ishihara, 449-458, Kluwer Academic Publishers, Dordrecht, Boston and London.

Scott, Gary-John (2002) "Stacked Adjectival Modification and the Structure of Nominal Phrases," *Functional Structure in DP and IP*, ed. by Guglielmo Cinque, 91-120, Oxford University Press, Oxford.

Sproat, Richard and Chilin Shih (1990) "The Cross-linguistic Distribution of Adjective Ordering Restrictions," *Interdisciplinary Approaches to Language: Essays in Honor of S.-Y. Kuroda*, ed. by Carol Georgopoulos

and Roberta Ishihara, 565-593, Kluwer Academic Publishers, Dordrecht, Boston and London.

Uehara, Satoshi (1998) *Syntactic Categories in Japanese: A Cognitive and Typological Introduction*, Kurosio, Tokyo.

Watanabe, Akira (2010) "Eigonokotowa Eigodake Miteitemo Wakaranai," Handout of Talk Presented at Meiji Gakuin University, Octorber 28, 2010.

Watanabe, Akira (to appear) "Measure Phrase Modification in the Extended Projection of Adjectives," *Japanese/Korean Linguistics 20*, ed. by Bjarke Frellesvig and Peter Sells, CSLI Publications, San Francisco.

Wilkinson, Karina (1995) "The Semantics of the Common Noun Kind," *The Generic Book*, ed. by Gregory N. Carlson and Francis Jeffry Pelletier, 383-397, The University of Chicago Press, Chicago and London.