BINOMIAL ADJECTIVES IN JAPANESE *

Keiko Murasugi and Kimi Akita
Nanzan University and Nagoya University

1. Introduction

The Japanese language has two types of adjectives, as illustrated in (1).

(1) a. *i*-adjectives (verbal adjectives):
  {uresi/hoso/utukusi/kawai}-i hito
  happy/thin/beautiful/cute-I   person

  'a {happy/thin/beautiful/cute} person'

  b. *na*-adjectives (nominal adjectives):
  {siawase/hyorohyoro/kirei/kyuuto}-na hito
  happy/lanky/beautiful/cute-NA   person

  'a {happy/lanky/beautiful/cute} person'

While most *i*-adjectives are native lexemes, *na*-adjectives are widely distributed across all four lexical strata of Japanese: native (e.g., *siawase-na* 'be happy'), mimetic/ideophonic (e.g., *hyorohyoro-na* 'be lanky'), Sino-Japanese (e.g., *kirei-na* 'be beautiful'), and non-Chinese foreign (e.g., *kyuuto-na* 'be cute').

This paper focuses on binomial adjectives that consist of two elements and are followed by either *i* or *na* in their nonpast adnominal uses. The two elements range over adjectives, mimetics, nouns, verbs, and affixes (Yumoto 1990; Taniwaki 1997; Akita and Murasugi, in press). In the past two decades, the use of binomial adjectives has dramatically increased, especially in teen slang, as illustrated by the new forms in (2).[1]

(2) a. Innovative *i*-adjectives:
  otona-kawai-i kami-gata 'an adult-like cute hairstyle' (*otona* 'adult' [N] + *kawai-i* 'be cute' [A]), *kyasya-kawai-i onna-no-ko* 'a slim cute girl' (*kyasya-na* 'be slim' [A]

[1] The abbreviations used in this paper are as follows: COP = copula; GEN = genitive; Mim = mimetic; NOM = nominative; NPST = nonpast; PST = past; μ = mora.

+ *kawai-i* 'be cute' [A]), *egu-tuyo-i monsutaa* 'an extraordinarily strong monster' (*egu-i* 'be extraordinary' [A] + *tuyo-i* 'be strong' [A]), *daru-omo-i hun'iki* 'a languid and heavy mood' (*daru-i* 'be languid' [A] + *omo-i* 'be heavy' [A])

    b.   Innovative *na*-adjectives:
        yuru-huwa-na hukusoo 'a loose and fluffy dress' (*yuru-i* 'be loose' [A] + *huwahuwa* 'fluffy' [Mim]), *huwa-toro-na omuretu* 'a fluffy and creamy omelet' (*huwahuwa* 'fluffy' [Mim] + *torotoro* 'creamy' [Mim]), *saku-uma-na tonkatu* 'a crunchy and yummy pork cutlet' (*sakusaku* 'crunchy' [Mim] + *uma-i* 'be yummy' [A]), *geki-mazu-na raamen* 'a terrible ramen' (*geki* 'terribly' [Aff] + *mazu-i* 'taste bad' [A])

We collected conventional and innovative binomial adjectives from the internet and from approximately 400 undergraduate students in Nagoya. We showed the students several examples of binomial adjectives, such as (2), and asked them to list as many such forms as possible. As a result, we obtained 30 binomial *i*-adjectives (henceforth, XY-*i*) and 132 binomial *na*-adjectives (henceforth, XY-*na*).[2] The purpose of this paper is to compare the two types of binomial adjectives with monomorphemic adjectives and identify their general and exceptional characteristics.

    The remainder of this paper is organized as follows. Section 2 demonstrates the high productivity of the two types of binomial adjectives. Sections 3 and 4, respectively, present syntactic and semantic comparisons between XY-*i* and XY-*na* and show that XY-*na* exhibits greater flexibility than XY-*i*, as is predicted from the bipartite adjective system of Japanese. Section 5 discusses the irreversibility of the two elements of binomial adjectives in terms of three general constraints. Section 6 concludes this paper.

2.   The "*i/na*-Alternation"

    One interesting fact about binomial adjectives is that many of them have both *i*- and *na*-forms, seemingly exhibiting a morphological alternation, as in (3).

(3) a.   Conventional binomial adjectives:
        ama-kara-{i/na} 'be sweet and salty', *usup-pera-{i/na}* 'be thin', *hara-guro-{i/na}* 'be sly', *haba-hiro-{i/na}* 'be wide-ranging', *asi-baya-{i/na}* 'be quick, walking'

    b.   Innovative binomial adjectives:
        azato-{kawai-i/kawa-na} 'be shrewd and cute', *ero-{kawai-i/kawa-na}* 'be erotic and cute', *kimo-{kawai-i/kawa-na}* 'be weird but cute', *uza-{kawai-i/kawa-na}* 'be annoying but cute', *daru-omo-{i/na}* 'be languid and heavy', *oni-mazu-{i/na}* 'taste

---

[2]   X-*kawai-i* forms are particularly productive (e.g., *azato-kawai-i* 'be shrewd and cute', *emo-kawai-i* 'be emotional and cute', *ero-kawai-i* 'be erotic and cute', *kyasya-kawai-i* 'be slim and cute', *kimo-kawai-i* 'be weird but cute', *uza-kawai-i* 'be annoying but cute', *dasa-kawai-i* 'be unfashionable but cute', *otona-kawai-i* 'be adult-like and cute', *ozi-kawai-i* 'be like a middle-aged man and cute', *oni-kawai-i* 'be terribly cute'), and they appear to have triggered the emergence of many other XY-*i* forms.

terribly bad', *oni-uma-{i/na}* 'be terribly yummy', *huk-karu-{i/na}* 'be light-footed'

The "*i/na*-alternation" is quite limited in monomorphemic adjectives. Rare examples are given in (4).[3]

(4) a. Conventional monomorphemic adjectives:
ooki-{i/na} 'be large', *tiisa-{i/na}* 'be small', *hebo-{i/na}* 'be unskillful'

b. Innovative monomorphemic adjectives:
mendo-i/mendoo-na 'be troublesome', *yooti-{i/na}* 'be childish', *nau-{i/na}* 'be fashionable', *bimyo-i/bimyoo-na* 'be not very good', *zaru-{i/na}* 'trash', *rea-{i/na}* 'be rare'

The "*i/na*-alternation" in binomial adjectives is attributed to the growing productivity of both XY-*i* and XY-*na*. Despite their superficial similarity, XY-*i* and XY-*na* have different internal structures (for their syntactic difference, see Section 3). In XY-*i*, two stems compound with each other, sometimes with the clipping of the first element, as in (5).

(5) *daru-i* 'be languid' [A] + *omo-i* 'be heavy' [A] → *daru-omo-i* 'be languid and heavy'
azato-i 'be shrewd' [A] + *kawai-i* 'be cute' [A] → *aza-kawai-i* 'be shrewd and cute'
otona 'adult' [N] + *kawai-i* 'be cute' [A] → *otona-kawai-i* 'be adult-like and cute'

On the other hand, XY-*na* has a fixed template that can be skeletally represented as $[[\mu_1\mu_2\text{-}\mu_3\mu_4$ (unaccented)$]_A$-COP] (Akita and Murasugi, in press). Similar to reduplicated mimetic adjectives (e.g., *huwahuwa-na* 'be fluffy', *torotoro-na* 'be creamy'), all XY-*na* forms are unaccented and consist of two bimoraic elements both of which are often clipped stems, as in (6).

(6) *daru-i* 'be languid' [A] + *omo-i* 'be heavy' [A] → *daru-omo-na* 'be languid and heavy'
azato-i 'be shrewd' [A] + *kawai-i* 'be cute' [A] → *aza-kawa-na* 'be shrewd and cute'
hutto 'foot' [N] + *karu-i* 'be light' [A] → *huk-karu-na* 'be light-footed'

Thus, XY-*i* and XY-*na* are not free variations (or "alternants") and require separate morphological treatments. Nevertheless, the availability of these near-minimal pairs provides a rare testing ground for theoretical investigations into the two adjectival categories in Japanese. In the next two sections, we systematically compare the syntax and semantics of XY-*i* and XY-*na* and explicate what they do and do not have in common.

---

[3] Some *i*-adjectives alternate with so-called *no*-adjectives (Martin 1975). These adjectives include descriptions of shapes (e.g., *maru-{i/no}* 'round', *sikaku-{i/na}* 'square') and colors (e.g., *kuro-{i/no}* 'black', *tyairo-{i/no}* 'brown') (Mita 2020). *No* (a genitive marker or copula) is typically attached to a noun.

3. Syntax

The contrast between XY-*i* and XY-*na* mirrors that between *i*- and *na*-adjectives in conventional Japanese. Here, we outline the similarities and differences between *i*- and *na*-adjectives in terms of syntax. The two types of adjectives behave in parallel in most respects, but they also have distinct properties.

Murasugi (1990) argues that *i*- and *na*-adjectives are both associated with the feature [+V] and that the syntactic distribution of the two types of adjectives is parallel with that of prenominal sentential modifiers. Similar to verbs, both *i*- and *na*-adjectives conjugate with tense in adnominal constructions, as in (7a-c), and the same applies to binomial adjectives, as in (7d-e).

(7) a. tabe-{ru/ta}   hito   (V)
          eat-NPST/PST person

          'a person who {eats/ate}'

      b. {kawai-i/kawaik-atta} hito   (monomorphemic *i*-A)
           cute-NPST/cute-PST person

          'a person who {is/was} cute'

      c. kirei-{na/datta}   hito   (monomorphemic *na*-A)
          beautiful-COP.NPST/COP.PST person

          'a person who {is/was} beautiful'

      d. azato-{kawai-i/kawaik-atta} hito   (XY-*i*)
          shrewd-cute-NPST/cute-PST person

          'a person who {is/was} shrewd and cute'

      e. aza-kawa-{na/datta}   hito   (XY-*na*)
          shrewd-cute-COP.NPST/COP.PST person

          'a person who {is/was} shrewd and cute'

In this respect, Japanese adjectives are very different from English adjectives, which never bear tense inflection in their adnominal uses (e.g., **a cuted person*).

Another piece of evidence for the hypothesis that adjectives in Japanese are associated with [+V] is found in the distribution of the genitive Case marker *no*. In Japanese noun phrases, the genitive Case marker is inserted between a postpositional or nominal phrase (which is associated with the feature [-V]) and a nominal head, as illustrated in (8a) and (8b). In contrast, the genitive Case marker *no* is never inserted between a relative clause and a head nominal, as shown in (8c) (Murasugi 1990).

(8) a. [[Yamada]-*(no) hon]   (N + N)
Y.-GEN   book

'Yamada's book'

b. [[koko-kara]-*(no) miti]   (PP + N)
here-from-GEN   road

'a road from here'

c. [[Yamada-ga kai-ta]-(*no)   hon]   (relative clause + N)
Y.-NOM   write-PST-GEN book

'the book that Yamada wrote'

As with relative clauses exemplified in (8c), *no* is never inserted between a monomorphemic adjective and a nominal head, as in (9a) and (9b). The same is true for binomial adjectives, as in (9c) and (9d).

(9) a. [[utukusi-i]-(*no) hito]   (monomorphemic *i*-A)
beautiful-I-GEN person

'a beautiful person'

b. [[kirei-na]-(*no)   hana]   (monomorphemic *na*-A)
beautiful-NA-GEN flower

'a beautiful flower'

c. [[azato-kawai-i]-(*no) hito]   (XY-*i*)
shrewd-cute-I-GEN   person

'a shrewd and cute person'

d. [[aza-kawa-na]-(*no)   hito]   (XY-*na*)
shrewd-cute-NA-GEN person

'a shrewd and cute person'

The parallelism between prenominal sentential modifiers and adjectives, both monomorphemic and binomial, can also be found in the fact that they all allow the nominative-genitive alternation (aka *ga/no* conversion) in prenominal clauses (Harada 1971; Saito 1983; Ochi 2001; among others). In Japanese complex NPs, the subject of prenominal sentential modifiers can be marked by either the nominative Case marker *ga* or the genitive Case marker *no*, as shown in (10).

(10)   Taroo-{ga/no}   nai-ta   riyuu   (prenominal modifier headed by V)
       T.-NOM/GEN   cry-PST   reason

       'the reason that Taro cried'

Both monomorphemic and binomial adjectives in both *i*- and *na*-forms also allow for this alternation, as illustrated in (11).

(11) a.   Taroo-{ga/no} samisi-i riyuu   (monomorphemic *i*-A)
           T.-NOM/GEN lonely-I   reason

           'the reason that Taro feels lonely'

      b.   Taroo-{ga/no} kenkoo-na   riyuu   (monomorphemic *na*-A)
           T.-NOM/GEN healthy-NA   reason

           'the reason that Taro is healthy'

      c.   Siho-{ga/no}   azato-kawai-i riyuu   (XY-*i*)
           S.-NOM/GEN   shrewd-cute-I reason

           'the reason that Shiho is shrewd and cute'

      d.   Siho-{ga/no}   aza-kawa-na   riyuu   (XY-*na*)
           S.-NOM/GEN   shrewd-cute-NA   reason

           'the reason that Shiho is shrewd and cute'

Thus, both *i*- and *na*-adjectives in Japanese, regardless of their morphological complexity, behave like sentential prenominal modifiers with respect to tense and Case marking.

     Another peculiar property of prenominal modifiers in Japanese is that they can be scrambled, unlike those in European languages. As Baker (2003) notes, when more than one adjective modifies a noun in English, their order is relatively fixed. On the other hand, the word order of Japanese adnominal modifiers is relatively free-form. Observe the sharp contrast between (12) and (13).

(12) a.   the small square house
      b. *the square small house

                                                                (Baker 2003: 2)

(13) a.   maru-i aka-i e   vs. aka-i maru-i e   (monomorphemic *i*-A)
           round-I red-I   picture

           'a round red picture'

                                                                (Baker 2003: 2)

b. kenkoo-na   sizuka-na hito   vs. sizuka-na kenkoo-na hito (monomorphemic *na*-A)
    healthy-NA quiet-NA person

    'a healthy quiet person'

c. azato-kawai-i yaba-i   hito   vs. yaba-i azato-kawai-i hito   (XY-*i*)
    shrewd-cute-I dangerous-I person

    'a shrewd and cute, dangerous person'

d. aza-kawa-na   yabame-na   hito   vs. yabame-na aza-kawa-na hito
    shrewd-cute-NA rather.dangerous-NA person   (XY-*na*)

    'a shrewd and cute, rather dangerous person'

Note here that, as Baker (2003) states, relative clauses, even in English, can be stacked on nominal phrases in a somewhat free order, as illustrated in (14).

(14) a. the house that's small that's square
     b. the house that's square that's small

(Baker 2003: 3)

These facts not only indicate that *i*- and *na*-adjectives, including XY-*i* and XY-*na*, syntactically behave in the same way but also provide another piece of evidence for the hypothesis that Japanese prenominal adjectives have a phrasal structure containing tense, similar to relative clauses.

Then, what is the difference between *i*- and *na*-adjectives? According to Murasugi (1990), the difference between the two types of adjectives resides in the nature of the stem. The stems of both types of adjectives are bound morphemes. In Japanese, subject nominal phrases, even if they are abstract, must be Case-marked, as in (15a). In contrast, adjective stems essentially cannot function as full nominal phrases to be Case-marked, as shown in (15b) through (15e).

(15) a. Bitoku-ga   taisetu-da.   (N)
         virtue-NOM   important-COP.NPST

         'Virtue is important.'

b. *Kawai-ga   taisetu-da.   (monomorphemic *i*-A stem)
     cute-NOM   important-COP.NPST

     'Cuteness is important.'

c. *Sinsetu-ga taisetu-da.   (monomorphemic *na*-A stem)
   kind-NOM important-COP.NPST

   'Kindness is important.'

d. *Azato-kawai-ga   taisetu-da.   (XY-*i* stem)
   shrewd-cute-NOM important-COP.NPST

   'Shrewd-cuteness is important.'

e. ?Aza-kawa-ga   taisetu-da.   (XY-*na* stem)
   shrewd-cute-NOM important-COP.NPST

   'Shrewd-cuteness is important.'

Despite this parallelism, the stems of *na*-adjectives, but not of *i*-adjectives, are bound morphemes that are associated with [-V] (Murasugi 1990). Genitive insertion reveals this syntactic contrast between the two types of adjectives. The genitive Case marker can follow both nouns and many *na*-adjective stems, but not *i*-adjective stems, as illustrated in (16).

(16) a.   bitoku-no   hito   (N)
           virtue-GEN   person

           'a person of virtue'

      b. *kawai-no   hito   (monomorphemic *i*-A stem)
           cute-GEN person

           'a person of cuteness'

      c.   sinsetu-no   hito   (monomorphemic *na*-A stem)
           kindness-GEN person

           'a person of kindness (i.e., a person who believes that being kind is important)'

      d. *azato-kawai-no   hito   (XY-*i* stem)
           shrewd-cute-GEN person

           'a person of shrewd-cuteness'

      e.   aza-kawa-no   hito   (XY-*na* stem)
           shrewd-cute-GEN person

           'a person of shrewd-cuteness (i.e., a person who believes that being shrewd and cute is important)'

Note here that, as with the contrast between *a woman of iron* and *an iron woman*, the nominal phrases in (16c) in (16e) are not semantically equal to *sinsetu-na hito* 'a kind person' and *aza-*

kawa-na hito 'a shrewd and cute person', respectively.

The present syntactic analysis provides additional evidence that XY-*i* and XY-*na* do not "alternate" with each other (see Section 2). Rather, they are derived independently based on the syntactic nature of *i*- and *na*-adjective stems. The suffix *i* selects for non-nominal stems, whereas the suffix *na* selects for nominal stems.

These distinct properties are also reflected in the fact that mimetic elements are always truncated in *i*-adjectives (e.g., *hyoro-i* 'be lanky' (< *hyorohyoro-na* 'be lanky'), while they retain their stem morphology in *na*-adjectives (e.g., *hyorohyoro-na* 'be lanky'). The mimetic stems selected by the suffix *na* are typically unaccented reduplicated ones (e.g., *hyorohyoro-na*), which are iconic of the aspectual feature [+durative] and are associated with the syntactic feature [+N] (Usuki and Akita 2015; Sells 2017). In contrast, the suffix *i* selects for clipped mimetics (e.g., *hyoro-i*), which arguably do not retain their original iconic properties and nominal status.

To summarize this section, although both *i*- and *na*-adjectives behave like sentential modifiers in adnominal constructions, their stems are associated with different syntactic properties. The adnominal copula *na* selects for nominal stems, while *i* does not. It is arguably this nominal status, which is crucially shared by the majority of loanwords (e.g., *enzyoi su-ru* 'enjoy (enjoyment do)', *ieroo-no kasa* 'a yellow umbrella (yellow-GEN umbrella)'), that allows for the wide distribution of *na*-adjectives in the Japanese lexicon (see Sections 1 and 4).

4. Semantics

In this section, we identify six semantic/syntactic types of binomial adjectives: Synonymy, Antonymy, Sequence, Causation, Degree, and Incorporation (Akita and Murasugi, in press). While XY-*na* covers all six meanings, XY-*i* appears to lack Sequence and Causation.

In the Synonymy type, the two elements X and Y are semantically connected by AND, as in *aza-{kawai-i/kawa-na}* 'be shrewd and cute' and *yuru-daru-{i/na}* 'be loose and languid'. This type of binomial adjective is semantically double-headed.

In the Antonymy type, on the other hand, X and Y are coordinated by BUT, as in *kimo-{kawai-i/kawa-na}* 'be weird but cute' and *uza-{kawai-i/kawa-na}* 'be annoying but cute'. Antonymy-type binomials are right-headed in the sense that, for example, *kimo-kawai-i* 'be weird but cute' is a kind of *kawai-i* 'be cute', rather than *kimo-i* 'be weird', and expresses a positive evaluation.

In the Sequence type, X and Y represent two properties that are perceived sequentially, as in *huwa-toro-na* 'be first fluffy, then creamy (of an omelet)' and *kari-mohu-na* 'be first crisp, then soft (of a melon-shaped sweet bun)'. We have not found any single XY-*i* form for sequence, and constructed examples such as **huwa-toro-i* and **kari-mohu-i* clearly sound

unnatural.

In the Causation type, X represents the cause of the perception expressed by Y, as in *saku-uma-na* 'be crunchy and therefore yummy (of a pork cutlet)' and *toro-uma-na* 'be tender and therefore yummy (of stewed pork)'. XY-*i* is unlikely to cover this meaning, either (e.g., **saku-uma-i*, **toro-uma-i*).

In the Degree type, X functions as a prefix that modifies Y. Most prefixes are intensifiers (e.g., *geki-mazu-{i/na}* 'taste terribly bad', *metya-{kawai-i/kawa-na}* 'be incredibly cute', *yaba-uma-na* 'be awfully yummy'), whereas some prefixes deemphasize Y (e.g., *hono-gura-i* 'be a little dark', *tyoi-waru-na* 'be a little bit like a playboy'). Nominal elements that appear in the X slot are considered "affixoids" (Booij 2010: 57), which serve as affixes in these particular word-formations (e.g., *oni-mazu-{i/na}* 'taste terribly bad (ogre-bad.tasting-I/NA)').

The Incorporation type is a syntactically defined category in which the predicate Y incorporates X that is either an argument or adjunct. In *huk-karu-{i/na}* 'be light-footed' and *ata-oka-na* 'be crazy', *huk* (< *hutto*) 'foot' and *atama* 'head' are internal arguments of *karu-i* 'be light' and *okasi-i* 'be crazy', respectively. In *otona-kawai-i* 'be adult-like and cute (or be cute like an adult)', *otona* 'adult' is arguably an adjunct of *kawai-i* 'be cute'. Incorporation-type adjectives are subject to the First Sister Principle, which states that verbs can only incorporate words in their first sister position (Roeper and Siegel 1978). Therefore, X cannot be an external argument of Y, as shown by the ill-formedness of **ozi-karu-{i/na}* 'be man-light' and **zyosi-kawai-i* 'be girl-cute'.

The observed semantic gaps in XY-*i* (i.e., Sequence and Causation) shed new light on the difference between *i*- and *na*-adjectives. It appears that two major factors prevent XY-*i* from expressing sequence and causation. The first factor is the relatively fixed nature of *i*-adjectives in the Japanese lexicon. As we mentioned in Section 1, the majority of *i*-adjectives are native lexemes (e.g., *utukusi-i* 'be beautiful', *kawai-i* 'be cute'), whereas numerous *na*-adjectives are Sino-Japanese (e.g., *kirei-na* 'be beautiful') and foreign lexemes (e.g., *kyuuto-na* 'be cute'). Moreover, neologism creation is much more limited in *i*-adjectives (e.g., *emo-i* 'be emotional' (< *emoosyonaru-na* 'be emotional')) than in *na*-adjectives (e.g., *oko-na* 'be angry' (< *okor-u* 'get angry')). It appears that this relative conservativism of *i*-adjectives restricts the semantic range of XY-*i*. Conversely, the relatively high productivity of *na*-adjectives presumably resides in the broader semantic range of XY-*na* (see also Section 3).

The second factor is *i*-adjectives' incompatibility with iconic representation. While numerous reduplicated mimetics, both conventional and innovative, form *na*-adjectives (e.g., *hyorohyoro-na* 'be lanky', *gutyagutya-na* 'be squashed', *meromero-na* 'be too fond', *mohumohu-na* 'be very soft'), mimetic elements can be found in only a limited number of innovative *i*-adjectives (e.g., *boro-i* 'be ragged' (< *boroboro-na* 'be ragged'), *tyara-i* 'be flashy' (< *tyaratyara-si-ta* 'be flashy'), *babu-i* 'be baby-like' (< *babuu* 'goo goo ga ga')). As we discussed in Section 3, all these mimetic *i*-adjectives involve clipping, which apparently

reduces the iconicity of the mimetic stems.[4] Likewise, while numerous XY-*na* forms contain mimetic roots (e.g., *huwa-toro-na* 'be fluffy and creamy' [Mim + Mim], *saku-uma-na* 'be crunchy and therefore yummy' [Mim + A], *sugo-huwa-na* 'be terribly fluffy' [A + Mim]), only a handful of XY-*i* forms do so (e.g., *hyoro-naga-i* 'be lanky' [Mim + A]). As we discuss in Section 5, the Sequence and Causation types involve iconicity of linearity (i.e., morpheme order mirrors event order). Assuming this semiotic property, the observed semantic gaps in XY-*i* might be another manifestation of *i*-adjectives' resistance to iconicity. In fact, as noted in Section 2, while XY-*na* involves an output-oriented word-formation that yields a mimetic-like shape (i.e., two feet long and unaccented), XY-*i* is a typical compound (see Akita and Murasugi 2019). Thus, XY-*na*, like mimetics, retains the individual meanings of X and Y, but XY-*i* integrates them as one and, therefore, fails to represent two non-integratable perceptions.

In summary, it is likely that the semantic difference between XY-*i* and XY-*na* stems primarily from the different lexical properties of *i*- and *na*-adjectives. Overall, *i*-adjectives are more conservative and more resistant to iconicity than *na*-adjectives, which are more open to new entries and iconic representation. These lexical traits are inherited by the two types of binomial adjectives.

5. Irreversibility

The elements X and Y in both XY-*i* and XY-*na* are unlikely to be reversed (e.g., **kawai-aza-i* 'be cute and shrewd', **kawa-aza-na* 'be cute and shrewd'). This phenomenon is attributed to three different constraints that are applied to different semantic types of binomial adjectives: the obstruency constraint, the iconicity of linearity principle, and the Right-hand Head Rule (Akita and Murasugi, in press).

The obstruency constraint says that X should start with a less obstruent (or more sonorant) sound than Y. This ordering constraint is based on the following obstruency hierarchy: stops > fricatives > nasals > liquids > glides (> vowels) (adapted from Cooper and Ross 1975: 72). This hierarchy is applied across languages, as illustrated by English rhyming reduplication, such as ***w**alkie-**t**alkie* (glide + stop), ***r**oly-**p**oly* (liquid + stop), ***w**illy-**n**illy* (glide + nasal), and ***ea**sy-**p**easy* (vowel + stop). Binomial adjectives that follow the obstruency constraint include those in (17).

---

[4] Clipping is common in innovative *i*-adjectives in general (e.g., *guro-i* 'be grotesque' (< *gurotesuku-na* 'be grotesque', *hazu-i* 'be ashamed' (< *hazukasi-i* 'be ashamed'), *muzu-i* 'be difficult' (< *muzukasi-i* 'be difficult')). It appears that clipping is an index of nativization and *i*-adjectives as core lexemes make full use of it. The relative shortness of *i*-adjectives might limit the productivity of XY-*i*, which tends to be longer than simplex adjectives. However, the existence of long XY-*i* forms, such as *azato-kawai-i* 'be shrewd and cute', *otona-kawai-i* 'be adult-like and cute', and *sue-osorosi-i* 'be terrible in the future', suggests that phonological length itself does not play a critical role in XY-*i* formation.

(17)   *aza-{**k**awai-i/**k**awa-na}* 'be shrewd and cute' (vowel + stop), *yuru-**d**aru-{i/na}* 'be loose and languid' (glide + stop), *yuru-**h**uwa-na* 'be loose and fluffy' (glide + fricative), *m**ote-{**k**awai-i/**k**awa-na}* 'be popular and cute' (nasal + stop)

This phonological constraint is unique to Synonymy-type adjectives, as they are the only double-headed binomials whose semantics does not determine the order of X and Y. Moreover, this constraint is weaker than the other ordering constraints, and we can find some counterexamples, such as *d**aru-**o**mo-{i/na}* 'be languid and heavy' (stop + vowel) and *g**ati-**m**uti-na* 'be sturdy and plump' (stop + nasal).[5]

The iconicity of linearity principle states that the order of elements should reflect that of events and objects they represent (Tai 1985). English phrases such as *sooner or later*, *Q&A*, *morning, noon, and night*, and *cause and effect* illustrate this semiotic principle. Iconicity of linearity accounts for the element order of Sequence- and Causation-type adjectives, such as *huwa-toro-na* 'be first fluffy, then creamy' and *saku-uma-na* 'be crunchy and therefore yummy'. Reversed expressions would either mean the opposite sequence (e.g., *toro-huwa-na* 'be first creamy, then fluffy') or sound nonsensical (e.g., **uma-saku-na* 'be yummy and therefore crunchy'). As XY-*i* does not cover these semantic types, this iconicity principle is unique to XY-*na*.

The Right-hand Head Rule strictly designates the right-hand element of a compound as the head (Williams 1981). This rule captures the semantic contrast between *banana tyoko* 'banana-shaped (or banana-flavored) chocolate' and *tyoko banana* 'chocolate-coated banana' in Japanese. All right-headed binomial adjectives (i.e., non-Synonymy-type binomials) are subject to this general rule. For example, Antonymy-type binomials would mean the opposite when reversed, as illustrated by *kimo-{kawai-i/kawa-na}* 'be weird but cute' vs. *?kawa-kimo-{i/na}* 'be cute but weird'. Degree-type binomials cannot be reversed, as their X is a prefixal element, as in *metya-kawa-na* 'be incredibly cute' vs. **kawa-metya-na*. Incorporation-type binomials are also irreversible, as their Y is a predicate that should be the head, as in *ata-oka-na* 'be crazy (head-crazy-NA)' vs. **oka-ata-na*.

In summary, both XY-*i* and XY-*na* forms are restricted by general ordering constraints. The semiotic and syntactic constraints (i.e., iconicity and headedness) have particularly strong effects, and the phonological constraint (i.e., obstruency) is applied only when these strong constraints do not apply (i.e., the Synonymy type). It is also noteworthy that the iconicity principle is not applied to XY-*i* which does not express sequence and causation.

---

[5]   The element ordering in binomials is also known to depend on vowel quality (Cooper and Ross 1975). English expressions such as *th**i**s and th**a**t* ([ɪ] + [æ]) and *c**a**ts and d**o**gs* ([æ] + [ɑ]) indicate that the first element should include a vowel with a higher F_2 than the second element. However, Japanese binomial adjectives do not show this tendency clearly (for numerical data, see Akita and Murasugi, in press).

6. Conclusion

In this paper, we sketched the syntactic and semantic properties of the two types of binomial adjectives in Japanese. Although they largely follow the conventional bipartite adjective system of Japanese and the general ordering constraints, they can express nuanced meanings that monomorphemic adjectives cannot express. It is hoped that future research will paint a fuller picture of the often subtle difference between XY-*i* and XY-*na* and, more generally, explore the theoretical implications of neologism creation.

References

Akita, K. and K. Murasugi (2019) "Innovative Bipartite Adjectives in Japanese: A Preliminary Semantic Description," *Nanzan Linguistics* 14, 1-7.

Akita, K. and K. Murasugi (In press) "Innovative Binomial Adjectives in Japanese Food Descriptions and Beyond."

Baker, M. (2003) "Verbal Adjectives as Adjectives without Phi-features," *Proceedings of the Fourth Tokyo Conference on Psycholinguistics*, 1-22.

Booij, G. (2010) *Construction Morphology*, Oxford University Press, Oxford.

Cooper, W. E. and J. R. Ross (1975) "World Order," *CLS* 11 (Papers from the Parasession on Functionalism), 63-111.

Harada, S.-I. (1971) "Ga-No Conversion and Ideolectal Variations in Japanese," *Gengo Kenkyuu* 60, 25-38.

Martin, S. (1975) *A Reference Grammar of Japanese*, Yale University Press, New Haven.

Mita, H. (2020) "Constructional and Functional Bases of Figurative Meanings of Japanese Color Expressions," *Proceedings of the 20th Annual Meeting of the Japanese Cognitive Linguistics Association*, 546-551.

Murasugi, K. (1990) "Adjectives, Nominal Adjectives and Adjectival Verbs in Japanese: Their Lexical and Syntactic Status," *UConn Working Papers in Linguistics* 3, 55-86.

Ochi, M. (2001) "Move F and Ga/No Conversion in Japanese," *Journal of East Asian Linguistics* 10, 247-286.

Roeper, T. and M. E. A. Siegel (1978) "A Lexical Transformation for Verbal Compounds," *Linguistic Inquiry* 9, 199-260.

Saito, M. (1983) "Case and Government in Japanese," *Proceedings of the Second West Coast Conference on Formal Linguistics*, 247-259.

Sells, P. (2017) "The Significance of the Grammatical Study of Japanese Mimetics." In N. Iwasaki, P. Sells & K. Akita, eds., *The Grammar of Japanese Mimetics: Perspectives from Structure, Acquisition, and Translation*, Routledge, London, 7-19.

Tai, J. H-Y. (1985) "Temporal Sequence and Chinese Word Order." In J. Haiman, ed., *Iconicity in Syntax: Proceedings of a Symposium on Iconicity in Syntax, Stanford, June 24-6, 1983*, John Benjamins, Amsterdam, 49-72.

Taniwaki, Y. (1997) "Nihongo no Fukugō Keiyōshi ni okeru Rendaku Genshō" [Rendaku in Compound Adjectives in Japanese], *Jimbun Ronkyū* 47, 225-246.

Usuki, T. and K. Akita (2015) "What's in a Mimetic?: On the Dynamicity of Its Iconic Stem." In M. K. Hiraga, W. J. Herlofsky, K. Shinohara & K. Akita, eds., *Iconicity: East Meets West*, John Benjamins, Amsterdam, 109-123.

Williams, E. (1981) "On the Notions 'Lexically Related' and 'Head of a Word,'" *Linguistic Inquiry* 12, 245-274.

Yumoto, Y. (1990) "Nichi/Ei Taishō Fukugō Keiyōshi no Kōzō: "Meishi + Keiyōshi/Keiyōdōshi" no Kata ni tsuite" [The Structure of Compound Adjectives in Japanese and English: The Case of "Noun + Verbal/Nominal Adjectives"], *Gengo Bunka Kenkyū* 16, 353-372.