On the Adjectivalizer *-Si* in the Reduplicated and Deverbal Adjectives in Japanese

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1 Introduction

The morphological process of reduplication is widely attested in many languages, and Japanese is no exception, where it exhibits a high degree of productivity. One example that will concern us in this paper is a case of reduplication that renders adjectives such as (1b).

(1) a. *Taroo-wa waka-i.*
Taro-TOP young-COP.PRES
'Taro is young.'
b. *Taroo-wa waka.waka-si-i.*
Taro-TOP young.young-ADJ-COP.PRES
'Taro looks young.'

In (1a), the adjectival base *waka-* 'young' can be used as an adjective without reduplication, but when reduplicated as in (1b), it must be accompanied by *-si*, and the derived adjective assumes an additional meaning 'look young'. Thus, Taro must be young regarding his actual age in (1a), but in (1b) he can be old to the extent that he looks young.[1]

One issue that we'd like to point out at this juncture is that *-si* is also used for deverbal adjectives. Consider (2).[2]

(2) a. *Hanako-wa Taroo-no seikoo-o urayam-dei-ru.*
Hanako-TOP Taro-GEN success-ACC envy-ASP-PRES
'Hanako envies Taro's success.'
b. *Hanako(-ni)-wa Taroo-no seikoo-ga urayam-a-si-i.*
Hanako-DAT-TOP Taro-GEN success-NOM envy-A-ADJ-COP.PRES
'Hanako is envious of Taro's success.'

In (2b), *-si* is added to the verbal stem *urayam-* 'envy' in order for the deverbal adjective *urayam-a-si-i* 'envious' to be derived. Then, a natural question that will

[1] In some out-of-blue context, we cannot say (1a) if Taro is in his 60s or 70s. Alternatively, old as he may be, we can utter it if there is any objective evidence for Taro's youthfulness, e.g., he runs a marathon regularly.

[2] In (2b) the particle *-a* is inserted between *urayam-* and *-si*. This particle is found in various forms in other derivations of Japanese adjectives, and for the sake of brevity, we assume it to be inserted for phonological reasons.

arise for (1b) is why *-si* is possible with reduplication. Relevantly, we cannot have it with a base adjective, so **waka-si-i* is impossible. At face value, *-si* in (1b) looks like a nonderivational (non-category-changing) suffix that simply adds the "look" meaning to the base adjective. However, this does not go through in (2b) since it changes the category of the base word (i.e. verb) into an adjective. Furthermore, the deverbal adjective in (2b) does not have the "look" meaning as in the reduplicated adjective in (1b).

In this paper, we will present a uniform analysis of *-si* in (1b) and (2b) in the framework of Distributed Morphology (Halle & Marantz 1993). Based on the structure of Japanese adjectives put forth by Nishiyama (1999), we contend that *-si* in the above examples is a morphological realization of an adjectival head a (cf. Arad 2003; Marantz 1997; Marantz 2000). Evidence of our analysis comes from the phonological process called Sequential Voicing (SV), or *Rendaku* (Otsu 1980; Tatsumi 2022), as well as the interpretations of the reduplicated and deverbal adjectives.

This paper is organized as follows. In Section 2, we will go over the analysis of Japanese adjectives proposed by Nishiyama (1999). Then, in Section 3, adopting Nishiyama's copular structure, we will look into the pertinent two cases of adjectival formation: the reduplicated and deverbal adjectives, with a special attention to *-si*. Section 4 provides two pieces of evidence that support our analysis of the reduplicated adjective: the obligatory SV (Section 4.1) and its idiomaticity (Section 4.2). Then, in Section 5, we will consider what category can be a root in rendering a reduplicated adjective, and show that nominal items can also enter into the process. In Section 6, we will discuss why **waka-si-i* is impossible even if our analysis apparently allows it to be derived, arguing with Bobaljik (2017) that constructing the structure of such a nonexistent adjective *per se* is possible but Spelling-Out it is impossible. Finally, Section 7 will conclude.

2 The Structure of Japanese Adjectives: Nishiyama (1999)

Nishiyama (1999) argues that Japanese has two kinds of adjectives: Canonical Adjectives (CA) and Nominal Adjectives (NA).

(3) Canonical Adjectives (CA)

a. *Yama-ga* {*taka-i/takak-at-ta*}.
mountatin-NOM high-COP.PRES/high-COP-PAST
'The mountain {is/was} high.'

b. *Miti-ga* {*hiro-i/hirok-at-ta*}.
road-NOM wide-COP.PRES/wide-COP-PAST
'The road {is/was} wide.'

(4) Nominal Adjectives (NA)

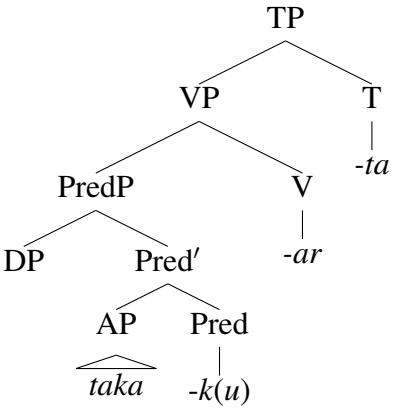
a. *Yoru-ga* {*sizuka-da/sizuka-dat-ta*}.
night-NOM quiet-COP.PRES/quiet-COP-PAST
'The night {is/was} quiet.'

b. *Hon-ga* {*kirei-da/kirei-dat-ta*}.
book-NOM pretty-COP.PRES/pretty-COP-PAST
'The book {is/was} pretty.'

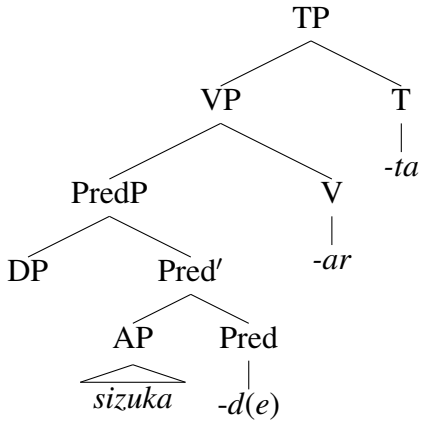
(based on Nishiyama 1999: 183)

Nishiyama proposes that CA and NA both involve Predicate Phrase (PredP) in the sense of Bowers (1993), which we assume is the source of the theme argument of these adjectives (cf. Baker 2003). Thus, the structures for the adjectives in (3a) and (4a) (as used in the past forms) are as follows:

(5) a. The Structure of CA



b. The Structure of NA



In (5), *-ar*, which Nishiyama argues is a dummy copula to support the tense, undergoes a phonological change of gemination, becoming *-at*, and the Pred heads *-ku* and *-de* become *-k* and *-d*, respectively, when they are used in the past form. Then, the CA *taka-ku-ar-ta* and the NA *sizuka-de-ar-ta* are pronounced in reality as *taka-k-at-ta* and *sizuka-d-at-ta*, respectively.

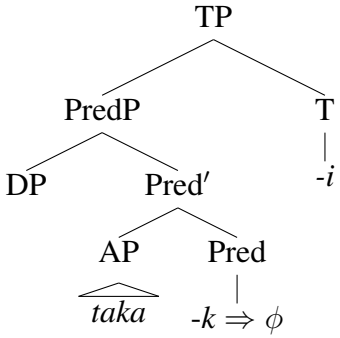
In the present form, this dummy copula is not used for CA, but once we have a focus particle like *-mo* 'also' between Pred and V, it surfaces:

(6) a. *taka-ku-mo-ar-u*
high-PRED-also-DUM.COP-PRES
'be also high'

b. *sizuka-de-mo-ar-u*
qietness-PRED-also-DUM.COP-PRES
'be also quiet'

Then, Nishiyama argues that CA in the present form does not require a dummy copula, and that Pred must be morphologically null. Therefore, the structure of CA in the present tense can be described as in the following:

(7) The Structure of CA (Present Tense)



According to Nishiyama, CA like *taka-i* is underlyingly *taka-k-i* due to the fact that Old Japanese used to have *-k* overtly. In what follows, we assume that Nishiyama is on the right track regarding the copula structure in Japanese adjectives, and will be exclusively concerned with the stem formation of CA.

3 *-Si* in Japanese Adjectives

With Nishiyama's (1999) analysis at hand, let us consider the pertinent adjectival formation given in (1), repeated here as (8).

(8) a. *Taroo-wa waka-i.*
Taro-TOP young-COP.PRES
'Taro is young.'

b. *Taroo-wa waka.waka-si-i.*
Taro-TOP young.young-ADJ-COP.PRES
'Taro looks young.'

With respect to the morphosyntactic properties of the reduplicated adjectives, it is obvious that we now have an additional suffix, *-si*. The conjugational patterns of this (bound) morpheme follow those typical to the CA *waka-i* in that *-k*(*u*) appears in the past and negative forms as well as where *-mo* 'also' is inserted:

(9) a. *waka.waka-si-k-at-ta*
young.young-ADJ-PRED-DUM.COP-PAST
'looked young'

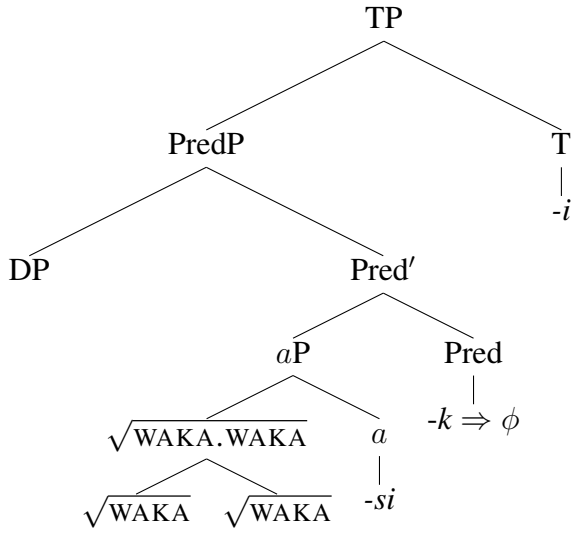
b. *waka.waka-si-ku-nai*
young.young-ADJ-PRED-NEG.PRES
'not look young'

c. *waka.waka-si-ku-mo-ar-u*
young.young-ADJ-PRED-also-DUM.COP-PRES
'also look young'

Then, considering the adjectival structure proposed by Nishiyama (1999), the morpheme order in (9) tells us that the reduplicated adjective plus *-si* is in the place of

AP. More specifically, we argue with the spirit of Distributed Morphology that the stem of the reduplicated adjective is composed of a root ($\sqrt{\ }$) and an adjectivalizer a. Thus, the structure of the reduplicated adjective in Japanese is:

(10) The Structure of Reduplicated Adjectives



Here, we propose that *-si* is a category-determining head which takes a root and categorize it as adjectival. For reduplicated adjectives, therefore, what is reduplicated is a root, not an AP. This root complex is then merged with *-si*, an adjectivalizer, forming an aP. Finally, an aP is merged with a Pred, which is morphologically null but appears as *-k*(*u*) in the past tense with the dummy copula *ar-*, according to Nishiyama (1999). As already alluded to above, we assume that the theme argument is merged to Spec-PredP so that aP does not require an argument (cf. Baker 2003).

The same analysis is carried over to deverbal adjectives in (2), repeated here as (11).

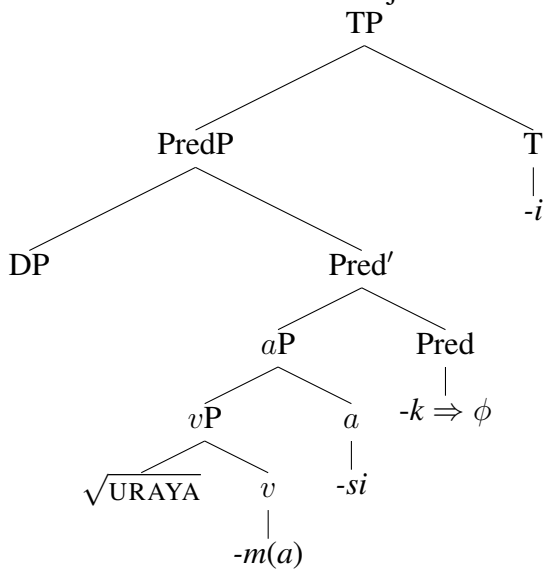
(11) a. *Hanako-wa Taroo-no seikoo-o urayam-dei-ru.*
Hanako-TOP Taro-GEN success-ACC envy-ASP-PRES
'Hanako envies Taro's success.'

b. *Hanako*(*-ni*)*-wa Taroo-no seikoo-ga urayam-a-si-i.*
Hanako-DAT-TOP Taro-GEN success-NOM envy-A-ADJ-COP.PRES
'Hanako is envious of Taro's success.'

For deverbal adjectives, what is combined with *-si* is a verb, not a root. Then, the structure of the deverbal adjective *urayam-a-si-i* 'envious' is given in (12).[3]

[3]In (12) we assume that *-m* is an verbalizer in Japanese, since Japanese has many examples of deverbal adjectives whose verbal stem ends with *-m*: *isam-* 'cheer up', *itam-* 'hurt', *urayam-* 'envy', *utom-* 'distance oneself', *konom-* 'prefer', *nayam-* 'bother', *yam-* 'get sick', etc. Etymologically, however, *urayam-* 'envy' can be decomposed into *ura* 'mind' and *yam-* 'get sick'.

(12) The Structure of Deverbal Adjectives



Here we propose that *-si* is also a category-changing head which takes a vP unit and turns it into an adjective. Also, we assume that the theme argument for the deverbal adjective is still selected by a Pred, not by a v, just as in the case of the reduplicated adjective in (10). A piece of evidence for this structure comes from the fact that the theme argument (e.g. *Taroo-no seikoo* in (11b)) cannot bear an accusative case, irrespective of the case of the subject.

(13) * *Hanako*(*-ni*)*-wa Taroo-no seikoo-o urayam-a-si-i.*
Hanako-DAT-TOP Taro-GEN success-ACC envy-A-ADJ-COP.PRES
Intended 'Hanako is envious of Taro's success.'

According to Ura (2000), the experiencer argument can be a dative subject in the potential construction as in (14).

(14) a. * *Taroo-ni-wa doitugo-o hanas-e-ru.*
Taro-DAT-TOP German-ACC speak-can-PRES
Intended: 'Taro can speak German.'

b. *Taroo*(*-ni*)*-wa doitugo-ga hanas-e-ru.*
Taro-DAT-TOP German-NOM speak-can-PRES
'Taro can speak German.'

c. *Taroo-wa doitugo-o hanas-e-ru.*
Taro-TOP German-ACC speak-can-PRES
'Taro can speak German.'

What is of importance here is that when the dative subject appears, the theme argument must bear a nominative case, whereas the accusative theme can be used if the subject does not bear a dative case. Then, the ungrammaticality of the accusative theme in (13) is different from that in (14a) by nature, since it is ungrammatical

anyway whether the experiencer bears a dative case or not. We suggest that the ungrammaticality of the accusative case for the theme argument in (13) comes from the fact that the theme argument of the deverbal adjectives is independent of any verbal projection, as the structure in (12) shows.

4 Evidence for Root Compounding

4.1 Sequential Voicing

As we have just proposed, reduplicated adjectives such as (8b) are structured as in (10), where *-si* is a category-determining head, and we argue that it constitutes a phase (Marantz 1997). A piece of evidence for this claim comes from a phonological process called Sequential Voicing (SV), or *Rendaku*, where the first consonant of the latter of the two words combined becomes voiced (Otsu 1980). For instance, combining the nominal *kara* 'dryness' and the verbal *huk-* 'wipe' creates a compound noun, *kara-buki* 'dry-wiping', where the bilabial voiceless fricative [h] ([ɸ], more precisely) turns into the bilabial voiced stop [b].

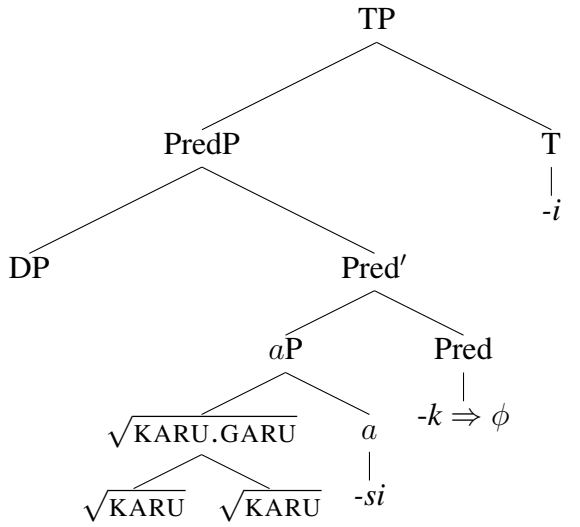
Tatsumi (2022) recently proposes that in Japanese root-level compounds must undergo SV when it is possible.[4] Details aside, since our analysis in (10) employs the root-level compound structure, it is predicted that SV must be applied for reduplicated adjectives. This prediction is indeed borne out:

(15) a. *karu-i* ⇒ *karu.garu-si-i* (**karu.karu-si-i*)
light-COP.PRES light.light-ADJ-COP.PRES
'light → {careless/thoughtless}'

b. *samu-i* ⇒ *samu.zamu-si-i* (**samu.samu-si-i*)
cold-COP.PRES cold.cold-ADJ-COP.PRES
'cold → {looks cold/desolate}'

We argue that the reduplicated adjective in (15a) should be analyzed as in (16).

(16)



[4] Nishiyama (2017) also discusses the correlation between root-level compounds and SV.

If *karu-* is reduplicated after it becomes an adjective via merging the phasal head a to the root, a should block SV as Tatsumi (2022) proposes. Thus, to the extent that Tatsumi's analysis of SV is correct, the obligatory SV in (15) supports our analysis.

4.2 Idiomaticity

Turning to the meaning of reduplicated adjectives, we see that they can create special meanings that are unavailable to their base forms. For example, *karu.garu-si-i* in (15a) and *samu-zamu-si-i* in (15b) yield the idiomatic interpretations of 'careless' and 'desolate', respectively.

Adopting the phase-based Distributed Morphology approach toward these sorts of interpretational facts (Marantz 1997; Marantz 2000), we take this rather unpredictable nature of the meanings of reduplicated adjectives as indicating that their special/idiomatic meanings are determined when the first category-determining node a is merged:

(17) The Domain of the Idiomatic Interpretation
$[_{PreP}\ \boxed{[_{aP}\ \sqrt{\dots}\ a\ ]}$ Pred]

Our structure in (16) fits the idea put forth by Marantz (1997). The meaning of the relevant adjective is determined when a is merged to the root: reduplication is applied to $\sqrt{\text{KARU}}$, not after but before it becomes an adjective.

5 What Can Be the Root?

What we have seen concerning the reduplicated adjectives has the adjectival base form. However, nominal bases can also enter into the pertinent reduplication. Consider (18).

(18) a. *baka.baka-si-i*
fool.fool-ADJ-COP.PRES
'look/sound foolish'

b. *me.me-si-i*
woman.woman-ADJ-COP.PRES
'sissy/coward'

The base *baka* 'fool' in (18a) can be used as a noun, and *me* 'woman' in (18b) is a bound morpheme which cannot be used by itself. Also, witness the examples in (19), which exhibit the reduplication of nominal stems:

(19) a. *sora* ⇒ *sora.zora-si-i*
sky sky.sky-ADJ-PRES
'sky → {untrue/nonrealistic}'

b. *kai* ⇒ *kai.gai-si-i*
worthiness worthiness.worthiness-ADJ-PRES
'worthiness → {efficient/brisk/devoted}'

c. *hana* ⇒ *hana.bana-si-i*
flower flower.flower-ADJ-PRES
'flower → {glorious/splendid/spectacular}'

Note that all the examples in (19) involve SV, so that we can make sure that they are root-level compounds. Also notable is that the resulting adjectives in (19) do not retain the original meanings of their base nouns. They rather obtain special/idiomatic readings (albeit not completely unrelated to the meanings of the bases). These facts can be explained by assuming that what is reduplicated here is not a word but a root yet to be merged with a category-determining head.

6 On the Non-existence of **Waka-si-i*: *-Si* or ϕ

So far, we have been concerned with the morphological makeup of *-si* adjectives. However, merging *-si* to the root or vP does not always come for free, and there are distributional asymmetries: that is, almost all the reduplicated adjectives do not have their non-reduplicated/base adjectival counterparts, as shown in (20).

(20) a. *waka.waka-si-i/*waka-si-i*
young.young-ADJ-PRES/young-ADJ-PRES
'look young/(Intended) young'
b. *ui.ui-si-i/*ui-si-i*
first.firrst-ADJ-PRES/first-ADJ-PRES
'innocent/(Intended) first'
c. *im-a.im-a.si-i/*im-a-si-i*
hate-A.hate-A-ADJ-PRES/hate-A-ADJ-PRES
'irritating/(Intended) hateful'

We assume in line with the framework of Distributed Morphology that making such adjectives itself is possible as far as syntax is concerned, but there are no corresponding words to realize them morphologically (Bobaljik 2017). In principle, the DM framework does not block the formation of the underlying structure for making the non-reduplicated adjectives in (20), so that the sole structure-building engine, i.e. syntax, does compose the non-reduplicated *waka-* 'young' with *-si*. However, it is simply not a word in Japanese, just like we do not have a causative version of the verb *arrive* or a verbal use of the noun *cat* in English. In short, Distributed Morphology predicts that the non-reduplicated adjectives in (20) should be possible, but they are not, at least for many Japanese.[5]

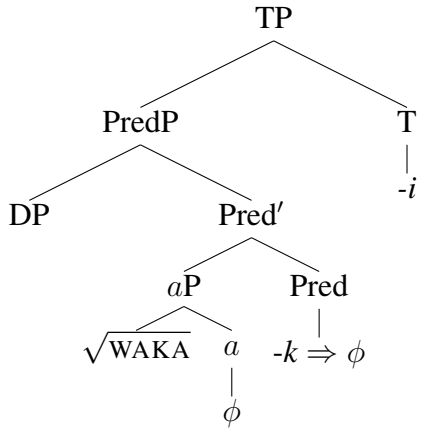
[5]Interestingly, a quick Google search takes us to a few examples of *waka-si-i*. For instance:

(i) mineraru-yutaka-na waka-si-i kyube
mineral-abundant-COP.ADN young-SI-PRES cuvée
'cuvée (wine) that is rich in minerals and not aged '

We are not sure whether (i) is just made due to a mistake, but if it is created as it is intended, it gives a case where *waka-si-i* is possible (at least for a small set of Japanese speakers).

In this connection, we argue that *waka-i* 'young' is also derived via the a head, which is however morphologically null, so the structure is as follows:

(21)



Thus, we suggest that all Japanese adjectival heads appear in either *-si* or ϕ. It is difficult to completely predict which adjectives will appear in which form, but the tendency seems to be such that they often appear in ϕ when they describe states based on objective judgments, such as *aka-i* 'red', *taka-i* 'high' and *waka-i* 'young', and in *-si* when they describe states based on subjective judgments, such as *ure-si-i* 'happy', *kana-si-i* 'sad' and *tano-si-i* 'fun'.[6]

Our analysis is supported by the fact that if there is a phase boundary between the two adjectives, SV does not apply:

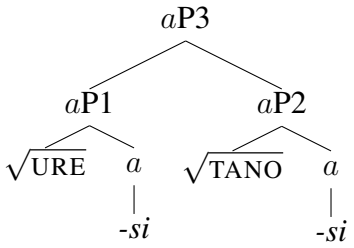
(22) a. *ure-si-i* + *tano-si-i* ⇒
happy-ADJ-PRES delightful-ADJ-PRES
ure-si.tano-si-i (**ure-si.**d**ano-si-i*)
happy-ADJ.delightful-ADJ-PRES
'happy and delightful'

b. *ito-si-i* + *koi-si-i* ⇒
beloved-ADJ-PRES longed.for-ADJ-PRES
ito-si.koi-si-i (**ito-si.**g**oi-si*-i)
beloved-ADJ.longed.for-ADJ-PRES
'beloved and longed for'

Albeit this type of compound formation is not so productive, the resulting amalgams do nothing semantically but just a coordination of two adjectives. If the stems of these adjectives such as *uresi-* 'happy' and *tanosi-* 'delight' are a root, then we would predict that (22a) and (22b) undergo SV, contrary to fact. We thus suggest that this is a case of aP-aP compounding as in (23).

[6]The only exception of the complementary distribution of *-si* and ϕ in Japanese adjectives is the pair of *chika-i* 'close' and *chika-si-i* 'close'. Historically, *chika-si-i* was derived from *chika-i*, and *chika-i* is now used to describe the physical closeness of distance or time while *chika-si-i* expresses the psychological closeness of relationship.

(23)



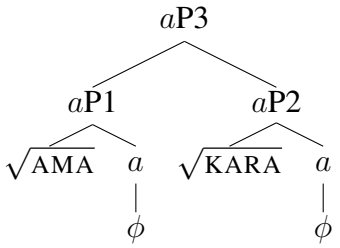
This is also true to the coordination of adjectives which does not have *-si*. Witness:

(24) a. *ama-i* + *kara-i* ⇒ *ama.kara-i* (**ama.**g**ara-i*)
sweet-PRES spicy-PRES sweet.spicy-PRES
'sweet and spicy'

b. *kimo-i* + *kawai-i* ⇒ *kimo.kawai-i* (**kimo.**g**awai-i*)
weird-PRES cute-PRES weird.cute-PRES
'weird but cute'

Again, SV cannot be applied in (24) and the compound adjectives are semantically a simple concatenation of two adjectives in the sense that they don't have any peculiar/unpredicted meanings from the combined items. Thus, we can carry over the analysis in (23) to (24), but in this case, the a head is null as in (25).

(25)



Since the phasal head a demarcates the two combined adjectives for their meanings and SV domains, the semantic and phonological properties of (22) and (24) are explained in the same fashion.

7 Conclusion

In Japanese, *-si* appears in both reduplicated and deverbal adjectives; the former is seemingly a case of non-category-changing affixation, and the latter, that of category changing (i.e. derivational) affixation. We have proposed a uniform analysis of *-si* in these adjectives, contending that *-si* is an adjectival head a as postulated in Distributed Morphology, and given a couple of consequences of our analysis in terms of SV (*Rendaku*) and idiomaticity of derived adjectives. To be specific, we have argued that *-si* is a category-determining head a that can select a root or a vP. Insofar as our analysis of *-si* is on the right track, the pertinent morpheme categorizes root items as, or category-changes verbs into, adjectives. We have also discussed how adjectives without *-si* is formed, and propose that such adjectives

also have a category-determining head a but it is morphologically null. Supporting evidence, as we have seen, concerns a certain case of adjectival coordination, which does not undergo SV. Then, it follows from our analysis that Japanese has two instances of the adjective-making head a, *-si* or ϕ, the choice of which depends on the semantic subjectivity/objectivity of the resulting adjectives.

References

Arad, M. 2003. Locality constraints on the interpretation of roots: The case of Hebrew denominal verbs. *Natural Language and Linguistic Theory* 21. 737–778.

Baker, M. C. 2003. *Lexical Categories: Verbs, nouns and adjectives*. Cambridge: Cambridge University Press.

Bobaljik, J. D. 2017. Distributed morphology. In *Oxford Research Encyclopedia of Linguistics*. Oxford University Press.

Bowers, J. 1993. The syntax of predication. *Linguistic Inquiry* 24. 591–656.

Halle, M., & A. Marantz. 1993. Distributed morphology and the pieces of inflection. In *The View from Building 20*, ed. by K. Hale & S. J. Keyser, 111–176. Cambridge, MA: MIT Press.

Marantz, A. 1997. No escape from syntax: Don't try morphological analysis in the privacy of your own lexicon. In *Proceedings of the 21st Annual Penn Linguistics Colloquium*, ed. by A. Alexiadou, L. Siegel, C. Surek-Clark, & A. Williams, volume 4, 201–225.

Marantz, A. 2000. Roots: The universality of root and pattern morphology. paper presented at the conference on Afro-Asiatic languages, University of Paris VII.

Nishiyama, K. 1999. Adjectives and the copulas in Japanese. *Journal of East Asian Linguistics* 8. 183–222.

Nishiyama, K. 2017. Phrasal compounds in Japanese. In *Further investigations into the nature of phrasal compounding*, ed. by C. Trips & J. Kornfilt, 149–183. Berlin: Language Science Press.

Otsu, Y. 1980. Some aspects of rendaku in Japanese and related problems. In *MIT Working Papers in Linguistics: Theoretical Issues in Japanese Linguistics*, ed. by Y. Otsu & A. Farmer, 207–228. Cambridge, MA: MIT, Department of Linguistics and Philosophy, MITWPL.

Tatsumi, Y. 2022. Structural restrictions on sequential voicing in Japanese N-V compounds. In *Proceedings of Japanese/Korean Linguistics 29*, ed. by K. Horie, K. Akita, Y. Kubota, D. Y. Oshima, & A. Utsugi., 99–112. Stanford, CA: CSLI Publications.

Ura, H. 2000. *Checking theory and grammatical functions in universal grammar*. Oxford: Oxford University Press.