Research Article

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Heads and layers in agglutination: A case in deadjectival psych verbs with *-garu* in Japanese[1]

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Abstract: Using deadjectival psych verbs with *-garu* in Japanese, this study shows that agglutinative complex predicate formation is done by recursive application of Merge to roots and functional heads. This process creates a layered syntactic structure, with each layer providing the computational system with (i) specific semantic features, (ii) arguments, and (iii) phonetic form (PF) exponents at conceptual–intentional (CI)/sensory motor (SM) Interfaces. The whole amalgam of the root and the functional heads is interpreted as a "word" at PF. Following the general architecture of Distributed Morphology, I will show that the morpheme that derives deadjectival verbs *-garu* is underlyingly *-k-ar-u* (*k*-Copula-T), where *k* is "little" v that originates in the verbal root *k-o* "come" and *ar-* is a copula. They are now grammaticalized functional heads that extend adjectival roots. Crucially, this *k* is homophonous with "little" a, which makes *-garu* and the adjective-deriving morpheme *-karu* (*k*-Copula-T) parallel. *k* is voiced in *-garu* due to a structurally conditioned assimilation rule (Embick 2013). This analysis reveals the mechanisms of agglutinative predicate formation in a precise and detailed manner. Similarly, it gives natural solutions to some of the long-standing problems including how adjectives modify N such as *utukusii dansaa* "beautiful dancer," which is ambiguous between attributive modification and a relative clause.

Keywords: distributed morphology, deadjectival verbs, layered predicate decomposition

1 Introduction

The question *What are words?* is very critical in the agglutinative languages like Korean and Japanese, where morphologically complex predicates are considered as a "word" as far as the PF component is concerned (Kitagawa 1986, Kageyama 1993). Ultimately, grammar connects the morphological complexity to argument licensing, semantic interpretation, and phonology in the form of a syntactic structure. Despite intensive research that spans for decades in the generative tradition, how agglutination integrates those three areas of linguistic expressions has remained intangible and resisted precise theorizing. The reason for this impasse stems from the difficulties of identifying the morphemes and their precise roles in the

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agglutinated predicates (Aoyagi 2017). A good example of this comes from verbal predicates and their *katsuyo* "conjugation" paradigm in Japanese. Verbal predicates can be divided into two functionally distinctive parts; a root and various functional suffixes that introduce Voice, Aspect, Modal, Tense, etc. See the example in (1) where the root √*sak*- "bloom" is suffixed by the negation *anai*.

(1)	√sak-	ana-i
	bloom-Neg-T^{Impft}	
	"(It does) not bloom."	

The root status of √*sak*- is not disputed. It provides the predicate with a basic event and sets a stage for the event participants to be externalized in a linguistic expression (Grimshaw 1990, Diesing 1992, Chomsky 1995, Krazter 1995, Jelinek 1998, Arad 2003, Travis 2010 *et seq*., Hale and Keyser 2002, Folli and Harley 2007, Marantz 2007, 2013, Ramchand 2008, Alexiadou and Schäfer 2015, and many others). When it comes to the suffixes, the situation becomes increasingly opaque. In the case of the negation above, the root is suffixed by the functional item *anai*. Since the predicate *sak-anai* "(X does) not bloom" has the negation and the aspectual/tense specification, a finer analysis of *anai* is needed. In fact, a part of *anai*, namely, *nai*, is traditionally treated as an adjectival predicate of negation with the root *na*- "not" as in [[*na*]-*i*]. See (2).

(2)	Soko ni wa na-i.
	there at Top Neg-T^{Impft}
	"(It) is not there."

The analysis of *nai* as an adjectival predicate is consistent with the traditional definition of adjectives which dictates that adjectives are words that end with *i* in the Adnominal form, which *na-i* does as in *sippo ga* ***nai*** *neko* "tail Nom Neg cat (the cat that lacks a tail)." If *nai* is a complex predicate, *anai* should be analyzed as having the structure [*a* [√*na*]-*i*]^{Adj}.[2] At this point, a question arises as to what the vowel *a* is. There are three competing views on this issue. The first view holds that it is an "inflectional" vowel that converts a root into a "stem" ([[√*sak*]-*a*]^{Stem}) to which other functional morphemes attach.[3] Although observationally adequate this generalization is, it is not however clear what part of grammar this vowel belongs to. Is it introduced through syntactic derivation because of its function of converting a root to a stem? If so, it is a part of the lexicon and is a head of some kind, so that Merge could concatenate it with the root. Precisely what sort of head it is has not been explored in this analysis, however. The second view has it that *a* is inserted there to break the CC hiatus between the root final consonant /k/ and the initial consonant /n/ of *nai*. If this is the case, it is a simple theme vowel added post syntactically and has no grammatical and semantic import at all. Again, this may be observationally adequate, but it does not reveal much. For instance, there is no principled explanation as to why it should be *a* and not any other vowel that is used as the theme vowel. The last view combines the previous two, so to speak, and treats *a* as a part of the negation as in (*a*)*nai* (e.g., Narrog 2005, Narrog and Ohori 2011). Under this conception, the negation shares the basic morphological composition that is seen in other functional morphemes (*s*)*ase* (the causative morpheme) and (*r*)*are* (the passive morpheme) where the initial *a*, *s*, and *r* are reduplicated when they suffix to certain roots. This approach solves the head problem because it is a part of the negation. Similarly, it solves the vowel selection problem because *a* is simply reduplicated from the negation *nai*. This approach, however, is not free from problems, either. For instance, as we shall see below, *nai* is

2 I will discuss how the vowel *i* works in more details later.

3 There are three different types of roots in Japanese; the consonant final, the vowel final, and the irregular. The root √*sak*- "bloom" belongs to the consonant-final type. The vowel-final roots do not require inflection, and the irregular ones vary. The consonant-final roots are the majority, and the vowel-final roots and irregular ones are much smaller in number.

morphologically more complex and contains hidden *k* as in *na*(*k*)*i*. It appears when *nai* is suffixed by the perfective *-ta* as in *na**k**atta*. If so, (*a*)*nai* cannot simply be treated on par with the morphemes (*s*)*ase* and (*r*)*are*. As a result, the parallelism between (*a*)*nai* on the one hand and (*s*)*ase* and (*r*)*are* on the other breaks down. This makes the reduplication analysis less tenable. Thus, this vowel *a* is at a crossroad of various components of grammar and holds important clues to see how they are organized. Despite the importance, however, inflection has been one of the neglected areas in the linguistic investigations of Japanese. The fact that it seems to lack any semantic import has further justified this trivialization.

In this study, I follow the general design of Distributed Morphology (DM; Hale and Marantz 1993, Marantz 1997, 2007, 2013, Embick 2010, 2013, and many others) and my previous work on transitivity alternation, causative, and passive (Nakajima 2011, 2014a, 2014b, 2015a, 2015b, 2016, 2019, 2020) and propose a theory that breaks the impasse. I will argue that (i) the agglutinating functional morphemes including the inflectional vowels are heads, (ii) together with roots, they create a layered predicate structure that feeds the predicate "word" formation at PF and clausal syntax, and (iii) the relationships among the functional heads and the arguments they license in the layers derive morphosyntax, morphophonology, and semantics of the agglutinative predicates. Under this theory, the inflectional vowel *a* in $\sqrt{sak}$-***a***-*na*-*i* is "little" v in the sense of DM that types the root to V (Nakajima 2011, 2014a, 2015a, 2016, 2019, 2020), and the predicate in (1) should be analyzed as $[[[[[\sqrt{sak}]^{\sqrt{\text{Root}}}\text{-}a]^{\text{Stem}}\text{-}n]^{\text{Neg}}\text{-}a]^{\text{Stem}}\text{-}i]^{\text{TImpft}}$. This amalgam of the root and the suffixal heads form a "word" at PF. In addition, the suffixal heads create their specifier positions for arguments, which result in constructing a syntactic structure that is hierarchically layered. Due to these properties, I call this approach Layered Predicate Decomposition (LPD) approach.[4]

In Section 2, I review how adjectives in Japanese came to conjugate. In Section 3, I introduce a morpheme *-garu* that derives adjectival roots to verbs. I will show that *-garu* is morphologically *-g-ar-u* (*g*-Copula-T) in which *g* is "little" v. Crucially, adjectival predicates also share the same sequence of micro heads *-k-ar-u*. I will argue that g in *-garu* is underlyingly *k*, i.e., *k* is homophonous between "little" v and "little" a. *k*, however, is voiced in V and becomes *-g-ar-u* due to the structurally conditioned assimilation of [+Voice] at PF. In Section 4, I will discuss the origin of *k* and argue that it is the grammaticalized verbal root *k-o* "come." To support the claim, I will give pieces of evidence from Point of View (PoV) (Sugioka and Ito 2016, Narrog 2017) and phonetics. In Section 5, I will give a structural analysis of adjectival modification of nouns in Japanese. Adjectival modification is identical to relative clauses in terms of word order where verbs and adjectives with T directly precedes N as in $[[\text{V-T}]^{\text{S}}\ \text{N}]$ and $[[\text{Adj-T}]^{\text{S}}\ \text{N}]$, respectively. The LPD approach reveals how adjectival noun modification works. A crucial piece of evidence comes from the three-way ambiguity found in simple A-N structure such as *utukusii dansaa* "beautiful dancer." Other long-standing issues on adjectives (Namai 2002, Nishiyama 2005) will also be resolved in a natural way.

2 Adjectives and conjugation

To begin our discussion, I would like to have a quick review on how adjectives in Japanese changed their grammatical functions in the history of the language for I believe that incorporating diachronic perspectives is crucial to see how synchronic morphosyntax works (Haspelmath 1992, Kuteva 2001, Narrog 2005,

4 This idea is not new. There are numerous predecessors that include Kawabata (1976), Larson (1988), Krazter (1995), Grimshaw (1990), Diesing (1992), Cinque (1999), Hale and Keyser (2002), Arad (2003), Pylkkänen (2008), Travis (2010), Jelinek (1998), Chomsky (1995, 2013, 2015), Borer (2005), Marantz (2007, 2013), Ramchand (2008), Harley (2008), Folli and Harley (2007), Alexiadou et al. (2015), Boeckx (2011, 2014) to just name a few. What is common in these approaches is that verbs ($\sqrt{}$Roots) name a certain kind of event and delimit possible number and type of event participants. Roots, however, do not license arguments themselves, rather, arguments must be introduced to syntactic computation by heads that are selected from the pool of universally available functional items. What is novel in the current approach is that it applies critical analyses to the synchronic agglutinating morphemes by utilizing diachronic processes of grammaticalization. This panchronic approach explains how the agglutinative morphosyntax has come to be.

Kiparsky 2011). It is well-known that adjectives were grammatically impoverished and were used either adnominally or adverbially without morphological changes in Old Japanese (OJ). For instance, *taka* "high" was used as *taka-yama* "high-mountain" or *taka-tobu* "high-fly, flying high." Furthermore, they could not inflect with respect to tense and were not capable of making predicates of their own (Sakakura 1966, Kawabata 1976, Ohno 1978). In fact, even today their uninflected forms are used exclamatorily in casual speech as in *Taka!* "expensive," *Yasu!* "cheap," or *Kata!* "hard" as an immediate reaction to an encountering situation.[5] To overcome the grammatical limitations, adjectives began conjugating like verbs do over time by suffixing various functional morphemes. (3) shows the earliest attested conjugational paradigm of the adjective *taka* "high" (Matsumura 1994).

(3) Conjugational Paradigm of Adjectives in Nara Period (8 C AD)[6]

a.	Stem	taka "high"	
b.	Conclusive	taka-**s**-i	(<taka-**k**-i < taka-i)
c.	Irrealis	taka-**kara**-[7]	
d.	Adverbial	taka-**k**-u	
e.	Adnominal	taka-**k**-i	
f.	Conditional	taka-**k**-e-re	

As you can see, there were two basic patterns; one used *k* and the other, *s*. The former appeared in Irrealis (*ku*), Adverbial (*ku*), Adnominal (*ki*), and Conditional (*kere*), and the latter in Conclusive (*si*). The Adnominal form of *taka* "high," for example, was *taka-ki*. Later, the so-called "*i-onbin*" (velar deletion) occurred, and as a result, *k* dropped and *taka-ki* changed to *taka-i*. Following the velar deletion, the Adnominal and the Conclusive forms merged, which resulted in replacing *taka-si* with *taka-i* as the Conclusive form.

(4) Conjugational Paradigm of Adjectives in Modern Japanese (MJ)

a.	Stem	taka "high"
b.	Conclusive	taka-**i**
c.	Irrealis	taka-**k**-u
d.	Adverbial	taka-**k**-u
e.	Adnominal	taka-**i**
f.	Conditional	taka-**k**-e-re

Importantly, the deleted *k* in the Adnominal and the Conclusive forms is underlyingly present. This can be verified by the fact that it resurfaces when the perfective morpheme *-ta* attaches to the predicate as in

5 I will come back to this use of the uninflected form of adjectives in Section 5.

6 I follow the conventional classification and treat *taka* as a stem in (3) and (4). In the later analysis, I treat adjectives in deadjectival verbs as roots since they need to be typed by "little" a. In other words, they are considered as bound morphemes.

7 As noted above, adjectives were not well-developed in conjugation in OJ, and in the case of the Irrealis form, it needed *kara*-(*zu*).

(i) Taka-k-(u)-ar-a-z-u.
high-*k*-T^{Impf}-be-*a*-Neg-T^{Impf}.
((It) is not high/tall.)

In (i) *taka* "high" is followed by series of suffixal functional heads including the covert T*u*. In other words, there was inflectional phrase (IP) in the conjugational paradigm. This becomes critical later when we discuss voicing on *k*.

*taka-**k**-ar-ta*. Thus, the adjectival conjugation is done uniformly under the scheme √Root-*k*-α, where α could be *-i*, *-u*, *-e*, or *ar-*.[8]

(5)	a.	taka-(k)-**i**
	b.	taka-k-**u**
	c.	taka-k-**e**-reba
	d.	taka-k-**ar**-ta

Today, adjectives are verbalized by two sets of morphemes, *-maru/-meru* and *-garu* that are shown in (6) and (7), respectively.

(6)	a.	√kata-maru (hard-*maru*)	harden$^{intr.}$
	b.	√kata-meru (hard-*meru*)	harden$^{tr.}$
(7)	a.	√kanasi-garu (sad-*garu*)	seem sad, appear to be sad
	b.	√omosiro-garu (fun-*garu*)	enjoy, have fun

These deadjectival verbs are widely in use. There is a semantic distinction between the two in that the *-maru* and *-meru* predominantly take adjectives of attributive quality, while the *-garu* takes adjectives of perception, sensation, or emotion (PSE adjectives). The latter lacks the **-geru* form.[9] In this study, I limit my discussion largely to the *-garu* verbalization. See how the root √*kanasi* "sad" in (8b) is verbalized from the adjective in (8a).

(8)	a.	Hanako ga neko no si ga kanasi-**kar**-ta. Nom cat Gen death Nom sad-*kar*-Pft (Hanako was sad from the death of the cat.)	Adjective
	b.	Hanako ga neko no si o kanasi-**gar**-ta. Nom cat Gen death Acc sad-*gar*-Pft (Hanako seems/appears to be sad about the death of the cat.)	Verb

Excluding the case particles on *neko no si* "death of the cat," they differ only at one point: the adjectival suffix has *kar-* but the verbal suffix has *gar-*. In what follows, I will show that these two suffixes are intimately related, and their internal complexity leads us to new discoveries on how agglutinative predicate formation works. Let us begin with the properties of *-gar*.

8 These vowels are not chosen randomly, and they are categorized into two groups. One consists of (*w*)*i* and *ar-* which are the allomorphs of the copula, and the other *u* and *e* (or *ë*) which are the allomorphs of *u* "get." I do not go into the analysis of these vowels including phonetic *kō/otsu* distinctions in this work, since it takes us too far from the current concerns. See, among others, Ohno (1978), Frellesvig (2006), and Whitman (2008) on the phonetic values of the orthography in OJ.

9 *m* is presumably related to *-meru/-maru* just like *g* is to *-garu*. In other words, *m* and *g* are "little" v heads that derive deadjectival verbs. Interestingly, *m* could deadjectivize some of the PSE adjectives as in √*kanasi-m-t*(*d*)*a* "sad-*m*-T^{Pft}." We will briefly compare the *g*-derived and the *m*-derived deadjectival verbs below.

3 Dangling Morpheme *g* in *-garu*

I would like to begin our investigation with Tokieda's (1950) analysis of adjectival predicate formation. He argued that when *i* appears at the end of adjectives as in *kanasi-kar-i* "sad-*kar*-T^{Pft}," it should be considered as a word, rather than suffix, that has its own conjugational paradigm.[10] His claim is based upon several properties of adjectival stems and the conjugation patterns. First, while verbal stems are bound, adjectival stems are much more autonomous and show almost noun-like functions.[11] In addition, the adjectival conjugations uniformly end with *ku*, *i*, or *kere* as shown in (4), and they do not resemble anything of the verbal conjugation patterns. This strongly suggests that although adjectives conjugate and make predicates like verbs do, their conjugating parts originate from some other sources. Finally, adjectival stems utilize the grammaticalized copula *ar-* in conjugation as in the Imperative form *tadasi-ku-**ar**-e*, "right-be-Imp. Be right!," or the perfective form as in *utukusi-ku-**ar**-ta* "beautiful-be-T^{pft}, was beautiful." That is, the conjugating part is internally complex with grammaticalized lexical items (Kawabata 1997).

Tokieda's view has important consequences for us. First, we have seen in (3b) that *i* was diachronically derived from *ki* (*taka-**s**-i* < *taka-**k**-i* < *taka-i*) where *s* was replaced by *k* along the way. That is, *s* and *k* are separable and were arguably etymologically distinct (Kawabata 1976, 1997). Second, *i* has continuously been T^{Impft} and should be treated as an independent morpheme. Together with the view that the grammaticalized copula *ar-* is present as a part of the adjectival conjugation, we explicate and separate *k*, *ar-*, and T (*-i*^{Impft}/*-ta*^{Pft}) from the adjectival predicates *kanasikatta* (*kanasi-k*(*u*)*-ar-ta* "sad-*k*(*u*)-Copula-T^{Pft}, was sad"). Let us call this Tokieda's Conjecture (TC). Following TC, I hypothesize that *-garu* should be decomposed into *-g-ar-u* in this work.

The diachronically motivated decomposition *-g-ar-u*, however, has a synchronic problem (see below).

(9) There is no *g* in the inventory of Japanese functional morphemes.[12]

Thus, the diachronic complexity is ignored, so to speak, for the sake of simplicity under a tacit assumption that the micro morphemes *g* and *ar-*, regardless of their origins, became vestigial over time and no longer affect synchronic morphosyntax. Let us call this assumption Diachronic Vestigial Assumption (DVA).

10 Tokieda's analysis *kanasi-kar-i* "sad-*kar*-T^{Pft}" is based upon what is called *kari-katuyou* (*kari*-conjugation) in which *kar-* is seen as one unit. Due to this, he did not analyze *kar-*.

11 For instance, *taka* "high" could be compounded as in *taka-daka* just like the noun *ki* "tree" is compounded as *ki-gi*. Note that the word initial plosive /t/ and /k/ in the second member of the compound are voiced due to *Rendaku* "sequential voicing." This further strengthens the parallelism.

12 An anonymous reviewer pointed out to me that there are cases of denominalized verbs that seem to use *g* (cf. de Chen 2016).

(i)	a.	tuna-g-u rope-*g*-T$^{Impf.}$ (connect)	b.	to-g-u whetstone-*g*-T$^{Impf.}$ (sharpen (a knife))	c.	mata-g-u crotch-*g*-T$^{Impf.}$ (crossover)

In these cases, the nouns *tuna* "rope," *to* "whetstone," and *mata* "crotch" seem to be verbalized by *g*. In fact, they could alternatively be derived by adding functionals head such as *ar-* or *e-* as in *tuna-**g**-ar-u* "get connected" and *tuna-**g**-e-ru* "link" where *g* remains as a nonalternating part of the derivation. This further supports the idea that *g* is "little" v that verbalizes nominals as well as adjectives. These denominalized verbs are lexicalized today, and the denominalization by *g* is no longer productive in Modern Japanese. Assuming that *g* is "little" v, whether it is underlyingly *k* or not is an extremely interesting question. To the best of my knowledge, there is no grammaticalized verb that has the single consonantal root $\sqrt{g}$- as stated in (9). The voicing of obstruents in intervocalic positions in OJ needs to be examined with care [see, for instance, Hamano (2000) and works cited there.], and I leave *g* in denominalized verbs open for future research.

(10) **Diachronic Vestigial Assumption**
The diachronically conditioned complexity of a morpheme does not affect synchronic morphosyntax.

An immediate result of DVA is that the predicate in (8b) is assumed to have the form in (11).

(11) [[[√kanasi]-gar]-ta]
sad *gar*-T^{Pft}.

Because *-gar* is taken to be inseparable and is a part of the predicate "word" at PF, it is natural that it is treated as a morpheme, the smallest inseparable unit in word formation. This has effectively excluded the possibility for *g* to be discussed in isolation in the literature.

The same situation holds for adjectival predicates as well. Under TC, we explicate *k* from the predicate *kanasikatta* (*kanasi-k*(*u*)*-ar-ta* "sad-*k*-Copula-T^{Pft}") "was sad" in (8a), but there is no way of analyzing it in isolation.

(12) There is no *k* in the inventory of Japanese functional morphemes.

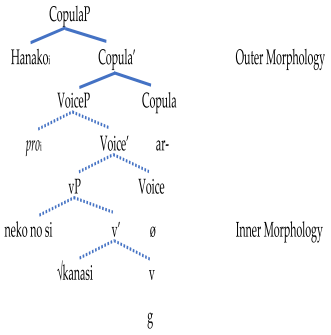
However, it is *k*, not *i*, that is *the* morpheme that characterizes what is being an adjective as we have seen in (3) and (4). We have seen in Section 2 that the adjectival predicates in general have the scheme √Root-*k*-α. Despite its importance, *k* has largely been left out of the linguistic investigation.

3.1 Heads and layers in *-garu*

Is DVA correct? I argue that it is not, and *g*, and *ar-* in *-garu* are not vestigial but very active and relevant well into this day. I propose that *g* and *ar-* are heads in the sense of DM (Hale and Marantz 1993, Marantz 1997, 2007, 2013). The core insights are the diachronic (de)compositionality (cf. TC) and layered syntactic structures that result from it. I propose that *g* is "little" v (Arad 2003, Marantz 2007, Ramchand 2008, Embick 2010) that types roots as V. I take *g* to be "little" v because, first, it merges with the root, second, it does not alternate with roots, and third, it is obligatory as the unacceptable *√*kanasi-ar-u* shows. The unacceptability is not simply due to the violation of *VV hiatus /ia/ in Japanese phonology because other possible forms that lack *k* such as *√*kanasi-ru* or *√*kanasi-rar-u* are also unacceptable even though they do not violate the (C)V mora structure. A typed root extends its projection with Voice (Diesing 1992, Hale and Keyser 2002, Borer 2005, Ramchand 2008, Harley 2008, and others) that licenses an argument that plays a broad role in bringing about an event. The vP and the VoiceP make up the "inner morphology." The grammaticalized copula *ar-* takes the VoiceP as complement and licenses its own argument in the "outer morphology." The argument the copula licenses and *pro* are coindexed. Under this scheme, (13) (=8b) is analyzed as (14) below.

(13) Hanako ga neko no si o kanasi-**gar**-ta.
Nom cat Gen death Acc sad-*gar*-Pft
(Hanako seems/appears to be sad about the death of the cat.)

(14)



Note that in (14), the agglutinative predicate formation is isomorphic to syntactic structure building. In the following subsections, I will present pieces of evidence that support this analysis. The first piece of evidence comes from the unique dual and conflicting characteristics of the subjects in the *-garu*-derived deadjectival predicates where the subject *Hanako* in (14) is both the Experiencer and the Agent of the predicate simultaneously.

3.2 *-garu* as *Psych Verb*

Since *-garu* verbalizes the PSE adjectives, I assume that they are psych verbs that resemble Type I psych verbs, or Subject Experiencer (SE) verbs, such as *temere* and *fear* in Italian and English, respectively (Belletti and Rizzi 1988, Pesetsky 1995). In these psych verbs, the subject is Experiencer and the object (Theme) is the target of emotion.

(15)	a.	Gianni teme questo. fear this (Gianni fears this.)	Italian	(Belletti and Rizzi 1988: 291)
	b.	John fears this.	English	

In the Japanese example (13), *Hanako* is the Experiencer of the psychological state of sadness. Importantly, however, this is not the end of the story. She is also the Agent in the sense that she "acts" in accordance with her inner experience. This is the characteristic interpretation of the *-garu* psych verbs that Sugioka (2009) calls the [+Externalization] feature of *-garu*.

The Italian and English examples (15a) and (15b), respectively, do not show the externalization effect and simply state the fact about *Gianni* and *John*. In Japanese as well, the adjectival predicate (16) lacks the externalization effect entirely and is equivalent to the Italian and English cases.

(16)	Taro wa Top (Taro fears dogs.)	inu dogs	ga kowa-i. Nom fear-T$^{Imprt.}$	Japanese (Adjective)

Furthermore, there is a discourse ambiguity in the behavior of *Hanako* in (13) in that it is not ultimately clear whether she was sad or not. I will show that these unique characteristics of the *-garu* subject arise as consequences of the layered morphosyntax in (14).

3.2.1 Conflicting feature specifications in *-garu* psych predicates

Let us take up the conflicting interpretation of the subject *Hanako* first. To shed clearer light on the matter, I adopt Reinhart's (2016) theory of θ-roles. According to her, arguments could be classified with respect to features [±c(ause)] and [±m(ental)], which are designed to derive essential properties of θ-roles. See below (Reinhart ibid.: 29, slightly modified).

(17) Argument Types in Reinhart (2016)

	Agent	Cause/Instrument	Theme (Patient)	Experiencer
[±c(ause)]	+	+	−	−
[±m(ental)]	+	−	−	+

According to this classification, *Hanako* in (14) is both [−c, +m] (Experiencer) and [+c, +m] (Agent). That is, *Hanako* has both [+c] and [−c] specifications. How does this argument acquire those two conflicting roles in the *-garu* predicate, and more importantly how are these conflicting feature specifications resolved?

The most natural candidate for the Agent role under (14) is the *pro* subject in spec, VoiceP. The root is derived to a verb by *g* with the transitive structure that provides the NP *neko no si* "the death of the cat" and the *pro* subjects with the respective syntactic positions. Their interpretations (and the morphological case) are read off from the structure (Marantz 1981, Filmore et al. 1988, Borer, 2005, 2013). Here I adopt the exo-skeletal and Neo-Constructivists view of morphosyntax (Clark and Clark 1979, Borer 2005, 2013, 2017, Bobaljik 2002, Boeckx 2014, Bruening 2013, 2018, Wood 2015, Myler 2016 and others) and assume that syntactic structure compositionally externalizes semantic features that a root and other functional categories fabricate in the forms of morphology. It is ultimately the syntax that holds the morphology together and enables it to be interpreted phonologically and semantically at the Interface. The root √*kanasi* "sad" in (14) appears in a structure that has two layers of [Specifier-[Complement-Head]] that is typically used by transitive verbs. Because of this, the NP *neko no si* (death of the cat) is licensed in spec, vP as Theme, and the *pro* in the upper spec, VoiceP, as Agent [Bruzio's Generalization, Bruzio (1988)].

This derivation of the Inner Morphology, however, is incompatible with the SE construction in that the *pro* subject is Agent, not Experiencer, even though the predicate √*kanasi-g* "sad^{V}" requires a subject who holds the psychological state of sadness. The literal interpretation of the Inner Morphology in (14) would be that the *pro* subject acts on sadness, which is not feasible. This is the reason why the secondary predication by the copula *ar-* is necessary: it introduces a subject, the holder of the psychological state, and bridges it to the event of the Inner Morphology, whereby making the copula subject the Experiencer of the whole event.[13] An anonymous reviewer asks why the verbalization of the root by *g* is not sufficient enough for deriving the SE psych predicate. The answer is that the grammaticalized copula *ar-* compensates for the lack of the Experiencer argument in the Inner Morphology that is required for the SE psycho predicate √*kanasi* "sad."[14]

Interestingly, there is another "little" v, *m*, in addition to *g* that derives deadjectival verbs, and it does not require the presence of the grammaticalized copula (see below).

13 According to Dik (1987: 80), this type of secondary "[*c*]*opular constructions are especially suited for the expressions of* (*Phrasal*) *Aspect distinctions, because such distinctions ascribe a property to some entity* x *at some reference point* r *in relation to the occurrence of some State of Affairs involving* x." Baker (2003: 81) echoes Dik's view and states that grammaticalized copula "*takes two arguments: an entity-denoting first argument and a property-denoting second argument.* BE *maps these two arguments onto the state of the entity having the property* (*at a particular time*)." The entity-denoting first argument in (14) is *Hanako*, and the property-denoting second argument (or Dik's State of Affairs) is the VoiceP.

14 Note that the analysis presented here in (14) differs from the approaches for the SE psych predicates in other languages such as the FEEL-LIKE construction in Slovenian (Marušič and Žaucer 2006), or the ones in English and Mandarin (Baker 2003, Larson et al. 2018, Cheung and Larson 2014) in one crucial point in that the complemented deadjectival verb in the Japanese *-garu* construction is always overt, while the SE psych verb constructions in these languages may not be. I will elaborate further on this point below.

(18)	Hanako ga neko	no	si	o kanasi-**m**-t(d)a.	
	Nom cat Gen death Acc sad-m-$T^{Pft.}$				
	(Hanako felt sad from the death of the cat.)				

The perfective marker *-t(d)a* appears immediately right adjacent to *m* without the intervening auxiliary *ar-*. The simpler morphosyntax of the predicate in (18) predicts that the sentence does not have the complications we have seen in the *-garu* predicates, and indeed this is correct. (18) simply states how she was from an omniscient PoV and lacks [+Externalization] interpretation. Etymologically speaking, *m* probably originated from the auxiliary verb *m-u* in OJ that expressed various forms of mood including potential, inferential, and optative as well as indicative. I assume that the syntactic and semantic differences between (18) and (13)–(14) stem from the properties of the "little" head *m* in the former and *g* in the latter.[15]

We have seen that the unique characteristics of the *-garu* subject arise because grammar tries to solve the mismatch between the form and meaning. That is, the properties of the "little" head *g* and the transitive syntax derive the Agent–Theme argument pair with the root √*kanasi* "sad," but the root needs Experiencer, which cannot be found in the Inner Morphology. As a result, the grammaticalized copula *ar-* is introduced to provide the predicate with the mandatory Experiencer argument. An important question remains as to how the incompatible [+c] and [−c] features under Reinhart's classifications are reconciled. This is a challenging question since syntax is believed to be monotone increasing (Monotonicity Hypothesis, Koontz Garboden 2009), and the Agent and the Experiencer roles as well as their featural specifications cannot be canceled out once they are introduced. To complicate the matter further, *g* introduces with it some person restrictions on subject. I take up the incompatibility problem of the θ-roles immediately below and then discuss the person restriction on subject in Section 4.

3.2.2 Actor

We have seen that the *-garu* derivation creates subjects that are both Agent and Experiencer. I will show that the reconciliation is done interpretively by positing a role "Actor;" a sentient participant of an event who is "prompted" to act by the event in Theme, but it is crucially noncommittant to bringing about it.

An actor is a special kind of role. If an actor performs the role of Brutus and kills Caesar on stage, for instance, he does not really kill him in the true sense of the word "kill." He does not terminate the life of Caesar but just stages the event. Essentially, this is how a play works. Thus, it would not be contradictory to say that you talked to Caesar after he was murdered by Brutus on stage. Similarly, *Hanako* could pretend to be sad.

(19)	Hanako ga neko no	si	o	***wazato/oogesa ni***	kanasi-*gar*-ta.
	Nom cat Gen death Acc intentionally/exaggeratedly sad-*gar*-$T^{Pft.}$				
	(Hanako pretended/exaggerated to be sad about the death of the cat.)				

The semantic congruency of the adverbs of intention *wazato* "on purpose" or *oogesa ni* "exaggeratedly" reveals that *Hanako* did not have or had very little of the emotion even though she acted like she did. This is the "performance" side of the Actor role. Here we are drawing a fine line between reality and perception, which is often very difficult to do and is basically discourse ambiguous.[16] A crucial point, however, is that

15 What is critical here is that they share the same transitive syntax as the presence of the ACC marker *o* in both indicates. This supports the exoskeletal view of morphosyntax (Borer 2005, 2013, 2017) where syntactic structure provides positions for heads and arguments, and they in turn "ornament" the structure to derive the differences. For *m* and other morphemes that extend adjectival roots, see Sugioka (2009).

Actor is noncommittant to the occurrence of the Theme event in (19) but is influenced by it. Because of these unique characteristics, Actor is not specified for [c]. Reinhart (ibid.: 59) states that "*If* [+*c*] *is unspecified with respect to the* [*m*] *feature, it is left open whether the relation* ***motivate*** *holds* [bold original, T.N.]." Here the phrase "[+*c*] *is unspecified*" means that there is no argument that is conceived sufficiently as a causer of an event. The *pro* subject is thus "motivated" or "influenced" to act by the event in Theme, and the motivation gives the combined subject *Hanako* the Actor role.[17]

3.3 The source of causation [+c]

We have seen that the role Actor is not specified for [c] feature and is not a sufficient causer of the event. This leaves us with the question where the cause interpretation comes from. After all, the event of *Hanako*'s acting sad occurred. I believe that the answer to this question lies in the general properties of Type I psych verbs. Recall that Theme is the target of emotion with these verbs. I repeat the relevant examples in Italian and English here.

(20)	a.	Gianni teme questo. fear this (Gianni fears this.)	Italian	(Belletti and Rizzi 1988: 291)
	b.	John fears this.	English	

In these cases, the Theme *questo* "this" or *this* is understood to be the source or the "trigger" of the psychological reaction of the subject. Under this interpretation, I propose that the same "trigger" comes from the Theme in the *-garu* psych verbs as well. Let us see how this becomes possible.

Causation is a broad concept, and there could be multiple reasons for an event to take place. For instance, suppose that a violent storm hit the area, and *John* forgot to lock the window before the storm came. Upon landfall, the wind violently pushed open the window and subsequently shattered the glass. In this case, either *John* or *the storm* can be the causer of the window being broken. *John* could be the causer by being negligent, and *the storm* could also be the causer by affecting the window with its brute force. Importantly, the causer is up to the interpretation and perception of the speaker. This is what Neelman

16 The existence of professional mourners in many parts of the world is a point in case. Ultimately, whether the subject is an Actor or an Agent-Experiencer is determined by discourse.

17 Interestingly, this is very similar to some of the subject raising verbs such as *seem*, *look like*, and *appear* in English. See the following.

(i) John$_i$ seemed [t_i (to be) sad from the death of the cat]

Under GB Theory (Chomsky 1981), the embedded subject receives θ-role from the adjective *sad*, but it moves to spec, IP of the matrix clause to receive case. (i) is very similar syntactically and semantically to (13) in that the verb *seem* functions like *-garu* does. The parallelism is strengthened if we take the fact that the verb *seem* was derived from the meaning of "have specific appearance" (Historical Thesaurus of OED). In other words, it is evidential. An important difference is, as an anonymous reviewer points out, that the matrix spec, IP of the raising verbs in English is assumed to be completely devoid of any θ-role, which makes idiom chunks with subject such as *The cat seems to be out of the bag* to be licensed. In the case of *-garu* psych verbs such as (14), however, both spec, VoiceP and spec, CopulaP, have specific θ-roles. The similarities between the two, however, suggest that the subject raising verbs in English may have a more active role to play. For instance, one may argue that *seem* assigns θ-role to the subject, but it is discourse linked (Pesetsky 1987) and is not always available. In (i), the default interpretation is that *John* is sad, but there is always an alternative interpretation available because the reality allows the ambiguity of interpretation. Idioms are discourse independent, and if the subject is not linked to discourse, the licensing of the Experiencer θ-role does not occur. I leave this interesting topic open for the future research.

and van de Koot (2012) argue. They claim that causation cannot be fully specified by a verb alone. More realistically, there are many forces that could potentially cause an event to occur in the speaker's perception and the mental model of the event, and the most prominent force that a speaker recognizes is considered as the causer, or the Crucial Contributing Factor (CCF) for the occurrence of the event. Following their proposal and the general nature of Type I psych verbs, I assume that in (14) the Theme *neko no si* "the death of the cat" is understood to be the CCF that motivates the Agent to behave (or to act) in certain ways.

To recapitulate, I developed an LPD approach that explains how some of the characteristic properties of the *-garu* psych predicates are derived. Adjectival roots are typed to V by the "little" head *g* and appears in the transitive verb construction. The Voice in the inner morphology licenses subject (*pro*) which has Agent θ-role, and it is this subject that is responsible for the [+Externalization] effect. The grammaticalized copula *ar-* takes the VoiceP as complement and licenses its own Experiencer subject. These two subjects are coindexed within the same but dichotomous predicate. The feature incongruency between the two subjects is dissolved by the ambiguity that the Actor interpretation brings in, who is motivated to act in certain ways by the event in Theme but is noncommittant to the occurrence of it. What we witness here is the complex dependencies among the constituents in the layers. Without decomposing *-garu*, the morphosyntax and morphosemantics of the *-garu* predicates would have remained intangible.

One may question, as one anonymous reviewer does, whether the decomposition of *-garu* is necessary. Under this single morpheme approach, *-garu* derives the SE psych verbs and assigns a special θ-role to the subject that is somehow compatible with Agent and Experiencer simultaneously and allow [+Externalization] phenomenon. This is, however, exactly what has gone wrong in the previous analyses. To see this, take a closer look at *-garu* again. It has the aspectual marker *u*. That is, *-garu* is either *-gar-u* or *-ga-ru* depending upon how one analyzes the consonant /r/ to be, a critical and very important matter in Japanese morphophonemics that has profound ramifications to syntax and semantics (Kuginuki 1996, Labrune 2014, de Chene 2016, Nakajima 2017). To the best of my knowledge, no serious attempts have been made to postulate *-ga* as a morpheme in the verbal domain in the literature. Furthermore, one of the most important sources for the extension of Japanese morphosyntax has continuously been the suffixation of various functional items that are grammaticalized lexical entries (Frellesvig 2006, Narrog 2017), but neither *-gar* nor *-ga* seems to be independently verifiable as a part of the Japanese lexicon at any given time in the history of the language. Thus, postulating *-gar* or *ga-* without diachronic support is *ad hoc* and could only be pursued at the expense of losing significant intra- and crosslinguistic generalizations (Kuteva 2001).

In Section 3.4, I would like to turn our attention to the adjectival predicate (8a) for the comparison between adjectival and deadjectival predicates that leads us to an interesting discovery.

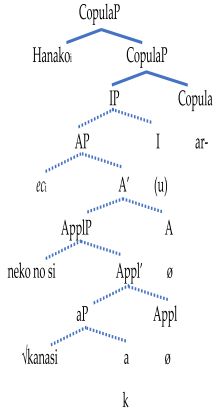
3.4 Adjectival derivation

The adjectival and deadjectival predicates in (8a) and (8b), which are repeated below, differ minimally at one point; the former has ***k***-*ar*-*u* but the latter ***g***-*ar*-*u*.

(21)	a.	Hanako ga neko no si ga kanasi-**kar**-ta.		Adjective
		Nom cat Gen death Nom sad-kar-Pft		
		(Hanako was sad from the death of the cat.)		
	b.	Hanako ga neko no si o kanasi-**gar**-ta.		Verb
		Nom cat Gen death Acc sad-gar-Pft		
		(Hanako acted sad about the death of the cat.)		

The surface similarities need to be treated with care. Recall that we explicated *g* and *ar-* from √*kana-sigatta*, "seemed sad" by TC in Section 3. The same argument would motivate the decomposition of the adjectival predicate (21a) as √*kanasi-k-ar-ta*. I would like to argue, however, that the predicate should be analyzed as √*kanasi-k-**u**-ar-ta* where the imperfective aspectual marker *u* is present (Kuno 1973, Shibatani 1990, Nishiyama 1999). In other words, there is an additional inflectional phrase (IP) layer. See the structure below.

(22)



In (22), *k* is "little" *a*, since it merges first with the root and is obligatory like *g* is. The aP lacks spec position due to the adjectival nature. A is the adjectival equivalent to the verbal Voice and licenses the subject. In other words, adjectives share the syntactic structure with unergative verbs where it only has the external argument but lacks the internal one. As a consequence, the NP *neko no si* "the death of the cat" is licensed by Low Applicative head (Pylkkänen 2002).[18] The imperfective marker *u* makes the Irrealis and the

18 An anonymous reviewer questions the legitimacy of applying verbal structures to the syntax of adjectives following Baker's (2003) analysis of adjectives where adjectives lack a θ-marked specifier position, and subject is predicated by the functional category Pred (Bowers 1993). Baker (2003) adopts a decompositional approach that is very much similar to what is assumed here and draws parallelism between verbal and adjectival predicates. His intuition is that "*VPs are really APs plus something. More specifically, they are APs plus two operators, one that adds theme arguments and one that adds agent arguments*" (Baker, ibid: 79). What he tries to achieve here is to unify verbal and adjectival derivations under UTAH. Under this conception, (21a) would look like the following, abstracting away from the exact morphological composition of the predicate.

(i) $[\text{Hanako}_i\ [t_i\ [\text{kanasi}\ \text{ø}^{(\text{Pred})}]]^{\text{PredP}}\ \text{katta}]^{\text{TP}}$

Hanako is first licensed as the subject of the null Pred head with its θ-role, then it moves to spec, TP for case. Pred in (i) is the operator (or a pure predicative function) for subject. Note that verbs do not need Pred because they already contain that function, namely, VoiceP. In comparison to Baker (2003), (22) takes a more direct approach by fully adopting the verbal projection of unergative verbs. The motivation for this integration comes from the strong parallelism between adjectives and unergative verbs. First, syntactically speaking, adjectives and unergative verbs lack Theme and, putting aside ApplP for now, their only argument is the external subject. Second, in semantics, they share the same quantificational function over states and are atelic: adjectives are about the state or the attributive quality of a subject that does not change over time, and unergative verbs are about types of activities sustained continuously without a specific endpoint. If so, it would be more natural to assume that they share the same structure. Putting it differently, *the unergative syntax is the generic syntactic structure for this type of predication*. One immediate advantage of this approach is that it dispenses with PredP because the externalized predicational function of Pred is inherent in the structure. Furthermore, sharing the same structure enables ApplP which introduces the NP *neko no shi* "the death of the cat" to be adopted as a generalized peripheral argument introducer. Pylkkänen (2002) proposes two types of Applicative head depending on the position; one that appears above a root (High Applicative) and the other below it (Low Applicative). In (22), the root is at the bottom and nothing appears below it, so Pylkkänen's classification needs to be relativized in a different way. I assume it to be Low Applicative because the NP *neko no shi* "the death of the cat" has relations with *Hanako* as the target of emotion, not with the event itself.

Adverbial forms of the conjugational patterns but lacks active grammatical and semantic roles. Thus, it lacks spec position. Phonologically speaking, *u* drops in (22) due to the general ban on VV hiatus. In Section 5, I will present a piece of evidence for the presence the IP layer in the adjectival predicates but not in deadjectival *-garu* predicates.

3.5 On *g* and voicing assimilation

In the previous sections, I treated *g* and *k* as "little" v and "little" a, respectively. Because *k* and *g* appear in the same position as "little" heads but differ minimally with [±voice], it is natural to ask if they are related. In the literature, they have not been considered as related. Kuroda (1965: 200, fn. 6), for instance, takes a position that "[k]at *in* kowakat – ta ['was afraid' T.N.] *is an infix attached to the past form of the adjective and has nothing to do with the suffix* gar, *which happens to appear in phonetically similar form,* gat, *before the past marker* ta." He does not elaborate, however, what sort of infix *gar* and *gat* are even though infixes are extremely rare, if there are any, in Japanese. In this study, I take an opposite view and propose that they are related: *k* is homophonous between "little" v and "little" a and is voiced in verbal predicate due to a structural locality condition on voicing assimilation.

(23) Intervocalic Voicing Condition
$*k \rightarrow g / V\_\_]^{IP}\ V$

What (23) says is that the voicing occurs only when there is no IP boundary. On structural effects on PF exponents, Embick (2013) proposes a general locality condition on how morphemes are to be realized at PF.

(24) Morpheme Interaction Conjecture (MIC)
PF interactions in which two morphemes are referred to *as morphemes* occur only under linear adjacency. [Italics original. T.N.] (Embick 2013: 156)

There are two types of linear adjacency. One type is that two morphemes align next to each other [Morpheme/Morpheme (M/M) Rules], and the other type is that two morphemes are phonologically adjacent [Morphophonological (M/P) Rules, e.g., autosegmental adjacency]. The allomorphy in verbs in past tense in English such as *go–went* is a good example of the former, since the verb and T must be linearly adjacent (V⌢T) to have the effect on the exponent. Importantly, T cannot apply to another morpheme by skipping the verb. An exemplar case of the latter M/P Rule is seen in metaphony observed in Ischia, a dialect in Italian (Calabrese 1999, cited in Embick 2013: 158). In this dialect, second person singular agreement morpheme *ə* triggers metaphony in verbal root.

(25) Metaphony in *cant/kand* "sing" in Ischia

	Standard Italian		*Ischia, Campania*	
	pr. ind.	*impf. ind.*	*pr. ind.*	*impf. ind.*
1 SG	canto	Cantavo	kendə	kandavə
2 SG	canti	cantavi	**kɛndə**	**kandɛvə**
3 SG	canta	cantava	kandə	kandavə

Note that the AGR morpheme *ə* changes the vowel *a* to schwa/epsilon that is autosegmentally adjacent to it. In this case, the rule can skip intervening morphemes. I take the intervocalic voicing *k* → *g* in the deadjectival predicates is a case of M/P rule that skips the intervening heads. Crucially, however, the rule application is blocked when there is IP as in (22). The reason is cyclic Spell Out.

The IP in (22) is what is traditionally called the Irrealis (*Mizen*) or the Adverbial (*Renyo*) form to which functional morphemes suffix. In Japanese morphosyntax, when a constituent becomes a separable unit, it is a strong indication that it is syntactically and semantically discrete. From these considerations, I assume that the IP in (22) is a phase (Richards 2007, Collins and Stabler 2016) and is subject to cyclic Spell Out (Nunes and Uriagereka 2000). The derivations take the following steps. First, the CopulaP and the IP in (20) are built separately in the workspace and are merged. Second, crucially, the IP is Spelled Out first for CI/SM interfaces after the relevant relations such as binding of the empty category in spec, AP, are established. Once the IP is Spelled Out, it becomes inaccessible to the copula *ar-* that is Spelled Out later. In other words, *k* in the IP is not autosegmentally adjacent to any other phonological features at PF, and this prevents the M/P rule for voicing from applying. The VoiceP in the deadjectival *-garu* predicate in (14), on the contrary, is Spelled Out together with the CopulaP by one scoop. This is because the VoiceP is still a stem as far as the conjugation is concerned. Thus, it is not a discrete entity and therefore is not a phase. At PF, *k* is autosegmentally adjacent to *ar-*, thus the voicing occurs as expected.[19,20]

A piece of supporting evidence for the structural differences comes from the asymmetry on extraction. When the DP *neko no si* "death of the cat" is extracted out of the adjectival predicate (22), the sentence becomes unacceptable.

(26) *[Neko no si ga]$_i$ Hanako ga t_i kanasi-k(u)-ar-ta.

On the contrary, the extraction of the same DP from the deadjectival *-garu* predicate (14) does not result in unacceptability.

(27) [Neko no si o]$_i$ Hanako ga t_i kanasi-gar-ta.

The contrast on extraction stems from the ways the IP and the VoiceP are concatenated with the copula *ar-*. Recall that the IP in (22) has the *Renyo* (adverbial) conjugation. This suggests that the IP is concatenated with *ar-* as an adjunct for modification, and this explains why the extraction of the DP is impossible: Extraction out of an adjunct is banned universally. In (27), the DP *neko no si* "death of the cat" now functions as Major Subject and receives exhaustive listing interpretation (Kuno 1973), which is absurd.[21]

19 The PF exponent of the I head is *u* in (21), but it does not surface for preventing a VV hiatus from being formed. According to the theory explained in the text, this should not happen because once a phase is Spelled Out and the PF interpretation is done on it, no tampering of its parts is possible. I assume that the moraic (C)V constraint is projected in a tier that is higher than the tier for place and manner features, and the moraic structure is determined after the place and manner features are computed. This is a natural assumption since the M/P rule under discussion applies only to terminal nodes, but the moraic interpretation is an extrametrical constraint that does not affect place or manner features.

20 An anonymous reviewer asks why the voicing rule (23) holds when *k* stays unvoiced in compounds such as *iki-ki* (lit. going-coming) "traffic," "going and coming," or *de-ki* (lit. completing-coming) "completion," "result." Although I do not have a definitive answer to this question, I would like to suggest that it may be related to *Rendaku* "sequential voicing" in Japanese compounds where when the members of compounds share fricatives that contrast in [±voice], the unvoiced fricatives in the second member become voiced (e.g., *gomi-hako* "trash-box" → *gomi-**b**ako* "trashbin"). Precise conditions that trigger *Rendaku* are not well understood; however, semantic, syntactic as well as phonological factors are said to be involved (see, among others, Otsu 1980, Ito and Mester 2003, Kubozono 2005). If this is correct, *k-* is unvoiced in these compounds probably because the conditions of *Rendaku* are not met, and it may not be related to the clausal syntax and its derivational processes that are discussed in the text.

21 I will come back to the adjunction of the IP in Section 5, because it gives us an important clue to reveal how adjectival modification is done.

The VoiceP in (14) is not a strong phase and is concatenated with *ar-* as a complement. The extraction of the DP is possible because it is a type of scrambling which is commonly seen even in complex predicates in Japanese. Observe the sentences below where the Theme DP *ninjin o* "carrots Acc" is scrambled out.

(28)	a.	Hanako ga musuko ni ninjin o tabe-sase-ta. Nom son to carrot Acc eat-Caus-$T^{Pft.}$ (Hanako made her son eat carrots.)
	b.	[Ninjin o]$_i$ Hanako ga musuko ni t_i tabe-sase-ta.

The differences in the morphological integrity of the predicates also support this view. In Subject-Verb-Object (SOV) languages, functional heads line up on the right of a root, because the functional heads are suffixes. If something can intervene between functional heads that are lined up, that is a strong indication that these heads are divided into separable units as we have seen above where the IP in (22) is either the Irrealis (*Mizen*) or the Adverbial (*Renyo*) form. This predicts that the IP and *ar-* can be separated but the line of heads in *-garu* cannot be. This prediction is borne out; while a variety of morphemes such as the particles *sae* "even" or *mo* "also" could appear after the IP as in (29a), nothing intervenes the verbal predicate *-garu* as in (29b).

(29)	a.	Hanako ga neko no	si	ga kanasi-ku **sae/mo** ar-ta.
		Nom cat Gen death Nom sad-gar-even/also-Pft		
		(Hanako was also/even sad from the death of the cat.)		
		b. *Hanako ga neko no	si	o kanasi-gV-**sae/mo**-ar-ta.
		Nom cat Gen death Acc sad-gar-even/also Pft		
		(Hanako even/also acted sad from the death of the cat.)		

In (29b), V that is right adjacent to *g* is a hypothetical vowel position that would be necessary since CC hiatus /gs/ or /gm/ is not admissible in Japanese phonology. However, the CC hiatus is not the reason for the unacceptability. This is so because no matter what inflectional or a theme vowel (e.g., *a*, *i*, or *u*) is inserted in the position to save the predicate, the grammatical status of the sentence does not change. *sae* "even" and *mo* "also" can follow *-garu* only when the whole *-garu* is made to N in the light verb construction with *suru* "do."[22]

(30)	Hanako$_i$ ga [[*pro*$_i$ neko no	si	o kanasi-gar]-i]^N sae/mo	**si**-ta.
	Nom	cat Gen death Acc sad-	gar-N even/also do-Pft	
	(Hanako even/also acted sad.)			

In other words, the "little" head *k* does not conjugate in [[$\sqrt{}$Root-*k*]$^{A/V}$ -α] but α does (cf. TC). Similarly, according to our LPD analysis, *-garu* is inseparable not because it is a single morpheme, but because the VoiceP does not constitute a strong phase and cannot be Spelled Out alone.

In this section, I explored how deadjectival *-garu* and adjectival predicates are derived under LPD approach. In Section 4, I would like to discuss the etymology of *k*.

22 The particles *sae* "even" and *mo* "also" select N. This suggests that the adjectival predicate is nominalized by an abstract n head.

4 On the identity of *k* and its effects

So far in this study, I have argued that *k* is homophonous between "little" v and "little" a without giving much thoughts to its origin. Although the question is very difficult to give a definitive answer to, we can speculate some possibilities. From the analyses above and the diachronic process of grammaticalization, I would like to take a position that *k* originates in the verbal root *k-o* "come." The reasons are the following. First, *k* has desired [+V] feature because it is a verb.[23] Second, it fixes the PoV of the *-garu*-derived predicates that is consistent with *k-o* "come." Third, it was already grammaticalized in OJ and carried the aspectual meaning of "the continuation of a state," which is analogous to adjectival semantics of attributive quality. In this section, I would like to present arguments for this proposal.

4.1 Point of view

A piece of supporting evidence for the verbal property of *k* comes from PoV. The *-garu*-derived deadjectival verbs puts a curious restriction on subject in that they are most felicitous with second- or third-person subjects (Hasebe 2014, Sugioka and Ito 2016). Observe the contrast below.

(31) a. *Watasi ga kanasi-gar-te i-ru.
I Nom sad-*g*(*k*)-*ar*-Ger be-Pres
(*I seem to be sad.)
b. Kare ga kanasi-gar-te i-ru.
he Nom sad-*g*(*k*)-*ar*-Ger
be-Pres
(He seems to be sad.) (Hasebe, 2014, slightly modified)

I propose that this condition on subjects stems from the grammatical function of *k* as an auxiliary verb. Note that adjectives of perception, sensation, and emotion describe the inner state of subjects that are by nature externally caused. That is, metaphorically speaking the stimuli "come" to one's senses. This explains why in Japanese (32) is unacceptable.

(32) *? Watasi ga ku-ru.
I Nom come-T^{Impft}
(I come.)

In (32), the speaker reports that he/she physically moves closer to the place where he/she is at that time of utterance, an apparent absurdity. This means that the spatial and directional orientation of PoV is

23 I assume that grammaticalized lexical items enter computation with their grammatical categories already specified.

embodied in the verb. The grammaticalized *k* inherits this property and delimits subject in such a way that it can only describe psychological reactions to the incoming stimuli.[24] This type of semantic orientation is not unusual crosslinguistically and could be seen, for instance, in the contrasts among the verbs of perception as in *mi-ru* "look," *mi-y-u* "see," and *mi-s-u*, "show," or *kik-u* "listen," *kik-o-y-u* "hear" and *kik-a-s-u* "make listen," "control" in Japanese as well as in English.

An anonymous reviewer pointed out that the following is acceptable.

(33) [[Watasi ga kanasi-gar-te i-ru] no] ga wakar-anai-no?
I Nom sad-*g*(*k*)-*ar*-Ger be-T^{impf} C Nom understand-Neg-Q
(*Don't you see that I am sad?*)

Here (31a) is embedded, but the sentence is acceptable. This is a very interesting case. I argue that (33) is not a counterexample but strengthens the analysis. The reason is that the PoV is shifted in (33) in such a way that the speaker objectifies himself/herself and reports the situation from the third-person PoV. Thus, the postulation of the grammaticalized *k-* "come" uniformly explains how both the adjectival and the *-garu* verbal predicates receive relevant interpretations. Next, let us turn our attention to the aspectual interpretation that *k* has, which supports the view that it is also "little" a.

4.2 Aspectual interpretation

Another piece of evidence for the origin of *k* comes from its aspectual use. It is known that *k-o* "come" was already grammaticalized in OJ and used to mean "bringing about a state" or "the continuation of a state" (*Kogo Taikan II*). Observe the following examples where *k-i* is the adverbial form of *k-o*.

(34) a. Yononaka no tune no kotowari kaku sama ni nari **ki** ni kerasi suyesi tane kara.
society Gen way Gen reason this situation Res become come because of place seed from
(Because of how the society works, I fell into this misery probably from the seed I planted.)
(Manyoshyu 15: 3761)

b. Kusamakura, tabi yuku hito wo ifaisima ikuyo huru made ifai **ki** ni kemu.
grass pillow travel go people Acc Ifai island generations pass till embrace come may
(I wonder how many generations of travelers has Ifai Island embraced to this day.)
(Manyoshyu 15: 3637)

24 The subject restriction on the *-garu* predicates is a complex phenomenon, and other factors such as Topicalization and tense interfere the grammaticality. For instance, (32) becomes acceptable if the subject is topicalized and T is perfective.

(i) Watasi wa$^{*?}$ (kyoo) kita.
I Top (today) come-T$^{Pft.}$
((As for me) I came (today).)

(i) is most felicitous when, for instance, the participants of a conference ask each other when they arrived. Without the time reference, however, the sentence is much less felicitous. I believe that the changes in grammaticality are the results of interferences from other factors and PoV that *k* brings, but they do not disqualify *k* as a grammatical formative. In fact, *m*, another deadjectival verbalizer mentioned above, has no person restriction on its subjects. I do not discuss the person restriction in this work; however, because it takes us too far away from the current concerns.

In (34a), the writer laments and resigns how miserable his circumstances have become due to his exaltation. As the content suggests, the causal process or the path to the current state is at issue. (34b) describes the long period of time that the island has embraced the generations of travelers. In this use, the island works as a stative background in front of which generations of travelers have passed. What is of special interest to us is (34b), because the continuation of a state could be interpreted as a type of quantification. According to Parsons (1991: 194), "*adjectives furnish predicates of individuals that, even in attributive position, are analyzable in terms of underlying quantification over states*." Following Parsons, I propose that *k* as "little" head evidences an abstract and underlying path on how an object comes to possess particular properties and quantifies them as a general state of it.[25]

The complex feature makeup of verb *k-o* "come" makes it extremely useful and suited for grammaticalization in extending roots. It functions as "little" v due to its categorical specification as V. It also brings PoV into semantics. The aspectual and quantificational specifications allow it to function as "little" a. Even though verbs and adjectives are usually treated as separate both grammatically and semantically, the grammaticalized *k-o* "come" unifies them in a coherent manner that are described above. These uses of *k-o* have not changed in Modern Japanese.

5 Other related issues

As we have seen above, our LPD analysis that takes *k* as "little" head explains how deadjectival verbs as well as adjectives are derived in a natural and principled manner. In this section, I will further provide evidence that supports the analysis.

5.1 The grammar of *k*

One of the important advantages of this view is that it could resolve the two conflicting views on *k*.

For instance, while Nishiyama (2005) argues *k* is an independent formative, Namai (2002) counterargues that it is an integral part of adjectival roots and inseparable.

(35)	*[taka sosite utukusi]-k(u)	
	high and beautiful-*k*(*u*)	
(36)	*taka-**ku** sosite utukusi-ku*	(Namai 2002: 345)

(35) shows that bare adjectives cannot be coordinated. To do so, *-ku* needs to be attached to both adjectives as in (36). While Namai (2002) takes this to be a piece of evidence for *-k*(*u*) being an integral part of the adjective, Nishiyama (2005) counterargues that it is ungrammatical simply because *taka* is bound and cannot appear alone. Under our LPD approach, it is both: it is independent because it is "little" a, and it is a part of the root because roots need to be typed with a "little" head. Once typing is done, a root and its "little" head form an inseparable unit. (35) is ungrammatical because *taka* is a bare root and is not typed as A to be usable in syntax.[26]

25 Note that the grammaticalization of the verb *come* is widely attested crosslinguistically with a diverse range of semantic effects including the ones in the text. See Heine and Kuteva (2002) for more detail.

Similarly, Namai (2002: 345) points out the inability of the pro-form *sou* "so" to appear with (canonical) adjectives in (37a) and argues that it supports his view that such adjectives and *-k(u)* are inseparable. The problem does not appear with nominal adjectives as in (37b).

(37)	a.	taka-ku	→ *sou-k(u)
		high-k(u)	so-*k(u)*
	b.	sizuka-de	→ sou-de
		quiet de	so *de*

Nishiyama (2005: 141) argues that this is due to the idiosyncratic property of *sou* in that it has some restrictions as to what it could appear with. Under our analysis, in which *k* is "little" a, the ungrammaticality of (37a) is straightforwardly explained: *k* simply does not derive *sou* to A. (37b) is acceptable because *de* is a type of copula that takes N.[27] As shown, our approach provides a natural solution to the disputed lexical status on *k*.

5.2 Adjectival modification and ambiguity

Another important issue discussed in Nishiyama (1999) and Namai (2002) is how adjectives modify nouns. Consider (38) where the adjective *utukusi-i* "beautiful" modifies the noun *dansaa* "dancer."

(38)	utukusi-i dansaa
	beautiful dancer
	(a beautiful dancer)

The point is that (38) involves the tense marker *-i*, (i.e., our IP) that makes it indistinguishable between the attributive modification reading "a beautiful person who happens to be a dancer" and the relative clause reading "a dancer who happens to be beautiful." Furthermore, it is said that there is an event reading "a dancer who dances beautifully." How could this multiple ambiguity arise? Recall that in Section 3.4, we saw that the IP in adjectival predicates adjoins to CopulaP for modification. From this observation, I argue that (38) has the following structure.

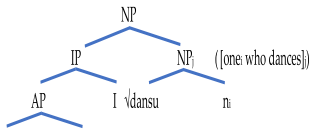
26 In Section 2, it is shown that the uninflected form of adjectives could be used as an immediate reaction to an encountering situation as in *Taka!* "expensive," *Yasu!* "cheap," or *Kata!* "hard." These forms are, however, not bare root but are inflected covertly. The evidence is the word final gemination; they are always heavily stressed at word final position as the exclamation marks indicate. I would like to suggest that they are accompanied by the word final abstract mora /Q/ that has the same length of a mora (C)V, and it is this covert mora that geminates.

27 Yamada (1936: 271) shows the following contrast with respect to the properties of *de*.

(i)	a.	Koko ni ume no ki ga aru.
		here DAT plum GEN tree NOM exist
		(There is (exists) a plum tree.)
	b.	Kore wa ume no ki *(de) aru.
		this TOP plum GEN tree de be.
		(This is a plum tree.)

He argues that *ar-u* "be" in (ia) is the existential copula, but that of in (ib) is pure predicational copula. Note that *-de* in (ib) is obligatory. He calls it the "explanatory copula" (ibid. 437). In fact, *de* takes any noun; simple, derived, or loaned. If correct, *-ku* and *-de* are two very different grammatical items and cannot be compared.

(39)



The multiple interpretations arise in the following way. When the AP subject (*ec*) is coindexed with *one*, it is interpreted attributively as "a beautiful dancer" (a beautiful person who happens to be a dancer), but when it is coindexed with the whole N, it is interpreted as a relative clause "a dancer who is beautiful" (a dancer who happens to be beautiful). The event reading may arise because the root √*dansu* "dance" is homophonous between N and V. This is true even in the Japanese √*odor-i*^{N} and √*odor-u*^{V}. The noun √*odor-i* "dance" could be suffixed by *te* "hand" that works exactly like the English suffix *-er* does.

(40) utukusi-i odori-te
beautiful dance-hand
(a beautiful dancer)

Predictably, the event reading does not arise with concrete and inanimate nouns such as *isi* "stone" as in *utukusi-i isi* "a beautiful stone." As shown here, the multiple ambiguities that (38) exhibits are accounted for structurally in a very simple and natural manner. I argue that this is a strong piece of evidence that supports the general LPD approach that we undertake here.

6 Concluding remarks

In this study, I proposed the LPD analysis of deadjectival verbal predicates. What becomes clear is the simplicity of the mechanism of agglutination despite the surface appearance to the contrary: it is a result of recursive application of Merge, and syntactic structure building results from it. No other apparatuses besides Binding are assumed. This simplicity and the wide coverage of empirical data give the analysis a much higher level of theoretical adequacy. This is a welcome result under the Strong Minimalist Thesis (Chomsky 2013, 2015) where the role of Faculté Linguistique (FL) is reduced to a bare minimum, presumably the biological endowment that enables Merge to occur, and a large portion of interpretations and idiosyncrasies of expressions are explained as results of the interactions between FL and the Third-Factor principles (Benítez-Bracco and Boeckx 2014). From the acquisition PoV, the agglutinative system appears to be effective and efficient. Since all the arguments precede roots in SOV languages, children can accurately anticipate where the licenser of an argument to be located in the complex predicate word. In fact, the only part that is left unpredictable is a root (Borer 2005).

I did not discuss crosslinguistic variations among deadjectival verbs. Interestingly, Korean uses light verb *ha-ta* "do" (H. Aoyagi p.c.).

(41) Hanako-nun koyangi-uy cwuk-um-ul sulph-e ha-ess-ta.
NOM cat-GEN die-NM-ACC sad-TH do-PAST-DECL
(Hanako looked sad from the death of the cat.)

Mandarin Chinese also uses a similar construction to Korean. The Light Verb Construction is robustly attested in Japanese as well (Grimshaw and Mester 1988); however, Japanese took a different path for

forming deadjectival verbs. I attribute the difference to the grammatical amenability of *k*. I leave this and other important issues for future research.

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