

## RESEARCH

# Total reduplication in Japanese ideophones: An exercise in Localized Canonical Typology

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Cross-linguistically, reduplication associated with iconic readings, such as plurality, iteration, and continuation, is prevalent in ideophones. However, not all reduplicative processes in ideophones are clearly iconic. Notably, both less and more iconic uses of reduplication are encountered in ordinary vocabulary resulting in the overlapping semantic functions of reduplication between ideophonic and non-ideophonic (i.e., prosaic) lexical categories. Given this, the aim of this paper is not to establish one clear-cut point to distinguish ideophonic reduplication from prosaic reduplication that may be impossible, but to specify dimensions of possibilities along which several instances of ideophonic and prosaic reduplication can be calibrated, using Canonical Typology (Corbett 2003; 2005; 2006; 2007; 2012; 2015). The current paper adopts the canonical approach of typology in an innovative way – not to compare a reduplicative phenomenon across languages (classic “typology”), but within a language by drawing ideophonic and prosaic data from Japanese, which is rich in reduplication and ideophones. Measuring the canonicity values of the various occurring types of ideophonic and prosaic reduplication against six criteria for canonical ideophonic reduplication, this paper shows how many and what criteria can differentiate the two sets of phenomena. Consequently, it reveals how ideophonic and prosaic reduplication are alike or different from each other. It also demonstrates the utility of Localized Canonical Typology, for the precise description and analysis of complex categories in a single language.

**Keywords:** reduplication; Canonical Typology; ideophones; Japanese; derivational morphology

## 1 Introduction

Reduplication is commonly associated with iconic readings, such as plurality, distribution, iteration, intensification, continuation, et cetera (Moravcsik 1978; Kiyomi 1993; Regier 1998; Fischer 2011, among others) and it is widely attested in the ideophonic lexicon, where the degree of arbitrariness of the sign relation is reduced. Crucially, however, not all reduplication is transparently iconic (Dingemanse 2015). In the aggregate, both less and more iconic uses of reduplication can appear in ordinary vocabulary as well as sound-symbolic constructions. This creates four types (across two orthogonal distinctions) in the semantic functions of reduplication across ideophonic and prosaic lexical categories, as shown in Table 1 below.

The parallels in the semantic functions of reduplication between ideophones and prosaic words are well exhibited in Japanese. Japanese is rich in reduplication and sound-symbolic items, referred to as mimetics (in a language-specific term), and reduplication occurs in both mimetics and the regular lexical categories, such as native nouns and adjectives (Garrigues 1995: 366). Traditionally, Japanese lexicon is divided into three lexical strata of different etymological origins: *Wago* or *Yamato-kotoba* (native Japanese

	Iconic	Less or non-iconic
Ideophones	<i>Japanese</i> (Takehi et al. 1996: 12): <i>batya-batya</i> ‘a repeated, large splashing sound’ < <i>batya</i> - ‘a single, large splashing sound’; <i>Korean</i> (Kwon 2015: 19): <i>pʰoŋtaŋ-pʰoŋtaŋ</i> ‘with splash after splash’ < <i>pʰoŋtaŋ</i> ‘with one splash’	<i>Japanese</i> (Takehi et al. 1996: 1188-1191): <i>toN-toN</i> ¹ ‘even’ < <i>toN</i> ‘tapping once’
Prosaic words	<i>Japanese</i> (Hachiya 1998): <i>eda-eda</i> ‘branches’ < <i>eda</i> ‘branch’; <i>Korean</i> (Kwon 2015: 11): <i>cokak-cokak</i> ‘piece by piece’ < <i>cokak</i> ‘piece’	<i>Japanese</i> (Kimi Akita, p.c.): <i>kodomo-kodomo(-si-ta)</i> ‘childish’ < <i>kodomo</i> ‘child’; <i>Jamaican Creole</i> (Kouwenberg & La Charité 2001: 76): <i>kriep-kriep</i> ‘scrapings’ < <i>kriep</i> ‘to scrape’

**Table 1:** Iconic and less- or non-iconic readings associated with reduplication in ideophones and ordinary vocabulary.<sup>2</sup>

words), *Kango* (Sino-Japanese words borrowed from Chinese), and *Gairaigo* (foreign words, most of which are borrowed from European languages) (Martin 1952; McCawley 1968; Shibatani 1990; Itô & Mester 1995; Nasu 2015, among others).<sup>3,4</sup> The treatment of mimetics in lexical stratification has been controversial. On one hand, mimetic items appear to be distinguished from the other strata in that they express perceptual sensory imageries, unlike other morphemes. On the other hand, they appear to be members of the Yamato lexical class, in that most of them are native morphemes (Nasu 2015: 253). Previously, Itô & Mester (1995) provided phonological accounts for an independent status of sound-symbolic lexical stratum from Yamato (and also Sino-Japanese and foreign) with reference to a set of markedness constraints in (1).

- (1)
- a. No Voiced Geminates (\*DD)  
Voiced obstruent geminates are prohibited.
  - b. No-singleton [p] (\*P)  
[p] is only allowed in a geminated or partially geminated condition.
  - c. No voiceless post-nasal obstruents (\*NT)  
Voiceless post-nasal obstruents in clusters such as *-nt* are prohibited.

Phonological behaviors exhibited by each lexical class (with reference to the markedness constraints) are shown in Table 2.

In terms of \*DD (no voiced geminates) and \*NT (no voiceless post-nasal obstruents), Yamato and mimetic items are patterned together; in both Yamato and mimetic items, only voiced obstruents are allowed immediately after nasals (e.g., *toNbo* ‘dragonfly’, *siNda* ‘died’, *kaNgae* ‘thought, idea’ for Yamato words; *syoNbori* ‘dejectedly’, *uNzari* ‘disappointed’ for mimetic items) and voiced geminates are strictly prohibited. On the other hand, Yamato and mimetics behave differently in terms of \*P; the occurrence of the voiceless bilabial stop [p] in a syllable-initial position is restricted in the Yamato stratum

<sup>1</sup> N represents a moraic nasal.

<sup>2</sup> Judgments about the degree of iconicity are debatable and often differ from person to person. To avoid over-reliance on iconicity judgments of reduplicative patterns by one person, i.e., the author, this paper adopts an implicit experimental method to scale degrees of iconicity in a principled, transparent way. Details of the experiment and empirically-grounded iconicity scaling will appear in section 5.1.

<sup>3</sup> Following Itô & Mester (1995: 820), the native term “Yamato” will be used to refer to the native stratum in this paper. For the other strata, the corresponding English translations will be used.

<sup>4</sup> In a diachronic sense, the Sino-Japanese and foreign strata can be grouped together, since they developed via borrowing from other languages, apart from the Yamato stratum, which contains items that originated in Japanese (Akita 2009: 101; Nasu 2015).

Yamato	*P	*NT	*DD
Sino-Japanese	*P	–	*DD
Mimetic	–	*NT	*DD
Foreign	–	–	–

**Table 2:** Constraints applicable to each stratum, Itô and Mester (1995: 820).

(e.g., \**posi* (cf. *hosi* ‘star’), \**yapari* (cf. *yahari* ‘likewise’)) but it appears freely as a licit surface segment in the mimetic stratum (e.g., *pata-pata* ‘pattering, flapping’, *pika-pika* ‘shining, glittering’). With reference to the \*P constraint, it seems that mimetics can be clearly distinguished from Yamato, but this distinction becomes fuzzy when considering the following mimetic examples in (2a–b) where [b] is favored over [p], also conforming to the \*P constraint.

(2) Nasu (2015: 279)

- |                   |                 |                 |
|-------------------|-----------------|-----------------|
| a. * <i>depu-</i> | b. <i>debu-</i> | ‘fatty, plump’  |
| * <i>dapa-</i>    | <i>daba-</i>    | ‘loose, watery’ |
| * <i>dapo-</i>    | <i>dabo-</i>    | ‘loose, big’    |
| * <i>dapu-</i>    | <i>dabu-</i>    | ‘loose, baggy’  |
| * <i>dopo-</i>    | <i>dobo-</i>    | ‘splashing’     |

A further complicating issue arises when taking into account some mimetic examples that allow voiced geminates (e.g., *zabbuN-to* ‘with a large splash’) and those that allow voiceless obstruents immediately after moraic nasals (e.g., *kaNkaN* ‘be in rage’) (Labrune 2012) – they show that the \*DD and \*NT constraints do not always group Yamato and mimetic words together. In sum, a cursory look at the phonology-based characterization of lexical strata shows that there is no clear-cut border between Yamato and mimetic words. The phonological properties that characterize individual Yamato words and those that characterize individual mimetic words are neither sufficiently disjunct nor sufficiently overlapping.

Returning to reduplicative processes, we have seen the overlapping semantic functions of reduplication between mimetic and non-mimetic items (in particular, Yamato) in the Japanese examples in Table 1 above. Given this, if we assume that phonological and semantic differences coincide, it is expected that reduplication would also possess no clear-cut boundary between the two sets of phenomena. But what if other properties related to reduplication are factored in? With special focus on total reduplication processes, the current paper aims to clarify in a principled manner what the relationship between mimetic and Yamato strata is fundamentally like, without *a priori* assumption that mimetic reduplication is identical with Yamato reduplication. A set of questions that is specifically posed is as follows: “What criteria, if any, can differentiate mimetic reduplication from Yamato reduplication or unite them, or unite mimetic reduplication partly with Yamato reduplication?”

Answers are sought in the framework of Canonical Typology (Corbett 2003; 2005; 2006; 2007; 2012; 2015), which is designed to evaluate multi-dimensional variation with consistent criteria, typically across languages. The current paper adopts the canonical approach of typology in an innovative way – not to compare a reduplicative phenomenon across languages (classic “typology”), but within a language, by drawing mimetic and Yamato data from Japanese. The innovation lies in the realization that the core function of Canonical Typology is to provide a metalanguage to characterize a wide variability

within the phenomena, and that this could work for variations not just across but also within languages. The utility of Canonical Typology for cross-linguistic typological issues has been successfully justified to date (Corbett 2015). The current study addresses the challenge of empirically demonstrating its utility for a language-internal typological complexity.

The paper is organized as follows. Section 2 provides a detailed description of the data used in this study, and specifies the scope of that data for the current canonical analysis. Section 3 describes the characteristics of reduplicative processes occurring in Japanese mimetics and Yamato words, and introduces their empirical nature when measured against previous taxonomic principles. Section 4 explains the method of Canonical Typology and provides an initial comparison between mimetic and Yamato reduplication within canonical derivational morphology. The main canonical analyses of the two sets of phenomena are found in sections 5 and 6. In section 5, the canonicity values of the various occurring types of mimetic reduplication are measured according to six criteria for canonical mimetic reduplication. A companion analysis of Yamato reduplication (with the same criteria) follows in section 6. Section 7 discusses the external validity of the findings and the exportability of the criteria for inter-language analysis. Section 8 concludes.

## 2 The scope of data

Generally, reduplication is distinguished from repetition in that the former, as a morphological construction, applies within words, whereas the latter, as a syntactic or discourse phenomenon, applies across word boundaries (Gil 2005; see also Dingemanse 2015: 947). The central focus of this paper is a multi-dimensional examination of *reduplicative processes* occurring in mimetic and Yamato items in Japanese. Of the two types of reduplication (partial and total), this paper focuses on total reduplicative processes only, because:

- (i) Total and partial reduplication may display different variability and thus incorporating them into a unitary dataset may cause potential confounds in the interpretation of the canonicity of mimetic and Yamato reduplication.
- (ii) In Japanese, the semantic functions of total reduplication in mimetics and Yamato words overlap to some extent. On the other hand, the function of partial reduplication in mimetics is clearly differentiated from that in Yamato words. Specifically, partial reduplication in Yamato words is highly lexicalized<sup>5</sup> (and thus has nothing to do with the iconicity of reduplicative processes), as shown in *tataku* ‘hit’ and *tatamu* ‘fold’ (Hachiya 1998). However, all partial reduplication in mimetics is iconic, given that they are exclusively associated with enhanced intensity or iterativity, as in *zabuzabuQ*<sup>6</sup> ‘splashing vigorously two or more times’ (< *zabuQ* ‘splashing vigorously’) and *dododoN* ‘b-b-bang’ (< *doN* ‘bang’). This indicates that partial reduplication has little to say for the current research question “How are mimetic and Yamato reduplication alike or different?”.
- (iii) Lastly, the choice of total reduplication is ideal in that it provides a wider range of mimetic data for comparison than partial reduplica-

<sup>5</sup> To support this, an anonymous reviewer notes that productive reduplicative processes do not occur in Yamato partial reduplication, from the perspective of Japanese synchronic grammar (e.g., *\*kekeru* < *keru* ‘kick’).

<sup>6</sup> Q represents the first half of a geminate cluster or a glottal stop.

tion. To specify, the proportions of total and partial reduplication in the mimetic lexicon are 42.13% (696 out of 1652) and 1.94% (32 out of 1652), respectively (Kadooka 2007).

In terms of the sources of mimetic and Yamato data, most of the mimetic reduplication examples are taken from Kakehi et al.'s (1996) comprehensive dictionary of Japanese iconic expressions, which provides 527 fully reduplicated mimetic forms<sup>7</sup> out of 1621 entries. Supplementary sources of mimetic reduplicative data include two previous extensive studies of the Japanese mimetic system (i.e., Martin 2004 [1975]; Akita 2009). As for Yamato reduplication data, all of the examples are taken from Hachiya's (1998) list of 115 total reduplicative forms found in Japanese ordinary vocabulary (note that Hachiya's work is the sole source currently available for a large-scale list of prosaic words displaying reduplication in Japanese). Of 115 items, only 85 serve as data for Yamato reduplication due to inevitable exclusions of the following items: 17 obsolete words (e.g., *asana-asana* 'every morning'), seven Sino-Japanese words (e.g., *tan-tan* 'dispassionate'), four items displaying repetition rather than reduplication (e.g., *kurikaesi kurikaesi* 'over and over'), one displaying echo formation rather than total reduplication (e.g., *yabure-kabure* 'desperation'), and one occurring only in baby talk (e.g., *yosi-yosi* 'there, there').

Intriguingly, the two sets of data, consisting of 527 mimetic items and 85 Yamato items respectively, include the periphery located on a fuzzy edge of the mimetic system, namely "quasi-mimetics" – items which are derived from prosaic words but which give somewhat mimetic-like impressions to the language users, as in (3) below (Akita 2009: 104).

- (3) *dame-dame* 'totally useless' (< *dame* 'useless'), *hiya-hiya* 'thrilled' (< *hiyasu* 'cool (something)'), *kizu-kizu* 'having many scratches' (< *kizu* 'wound'), *kona-gona* 'in pieces' (< *kona* 'powder'), *nade-nade* 'stroking' (< *naderu* 'stroke')

In order to delimit the occurrences to the core members of the sound-symbolic system in Japanese, I remove such unnecessary confounding items, derived from non-mimetic bases, from the mimetic data. With respect to the Yamato data, judgments over whether to take certain examples as quasi-mimetics are not as straightforward as in the mimetic case, because they unavoidably entail subjectivity when determining the presence/absence of "somewhat mimetic tones" (Akita 2009: 104). To minimize subjectivity, I restrict Yamato reduplicatives to those that do not possess any sensory semantics, which is a cross-linguistically recurring characteristic of sound-symbolic words (Doke 1935; Dingemans 2012), and which also do not appear in Kakehi et al.'s dictionary.<sup>8</sup> This results in elimination of four possible quasi-mimetic items, as shown in (4), from the Yamato data.

- (4) *nami-nami* 'to the brim'; *oti-oti* 'quietly'; *tiri-tiri* 'bits and pieces'; *tuya-tuya* 'glossy'

<sup>7</sup> This number excludes reduplicative derivatives such as *bataN-bataN* (< *bata-bata*).

<sup>8</sup> The current semantic criterion has a limitation on its applicability for a fine-grained distinction between quasi-mimetic and Yamato items. For example, *dame-dame* 'totally useless', which was characterized as a quasi-mimetic word in Akita (2009: 104), does not appear to possess clear sensory semantics. Despite the limitation, the semantic criterion together with the criterion of Kakehi et al.'s dictionary entry suffice to serve the purpose of identifying quasi-mimetic reduplicatives in the current data source (i.e., Hachiya's list) on a consistent basis. A satisfactory development of criteria for the distinction between the two types of reduplicatives is beyond the scope of this paper and admittedly, further research is required for a more fine-grained distinction between quasi-mimetic and Yamato reduplicatives in the Japanese lexicon.



### 3 Overview of reduplication in Japanese

Japanese mimetic roots consist of either CVX,<sup>9</sup> where X stands for variables such as a moraic nasal /N/, a coda obstruent /Q/, a vowel, or a CVCV sequence (Mester & Itô 1989: 267; Nasu 2002: 19). They are frequently reduplicated in the mimetic stratum and almost all of the reduplicated mimetic forms are associated with iconic readings such as an increase in quantity, as in (5), or enhancement of some sort by metaphorical extensions, as in (6) and (7).

- (5) *baN* ‘a single loud sound caused by an explosion’ > *baN-baN* ‘a repeated loud sound caused by explosions’; *pai-* ‘snapping once’ > *pai-pai* ‘clapping repeatedly’ (iteration)
- (6) *guN* ‘remarkably’ > *guN-guN* ‘rapidly and steadily’; *gira-* ‘the manner of flashing or shining too brightly once’ > *gira-gira* ‘the manner of shining too brightly and continuously (continuity)
- (7) *boo* ‘the manner in which a flame flares up or begins to burn well’ > *boo-boo* ‘the manner of burning fiercely’; *bosa-* ‘being idle’ > *bosa-bosa* ‘being idle in a greater degree’ (added intensity)

Such iconic uses of reduplication<sup>10</sup> are also found in Yamato nouns, adjectives, verbs, and pronouns, as in (8).<sup>11</sup>

- (8) *yama* ‘mountain’ > *yama-yama* ‘mountains’; *huka-i* ‘be deep’ > *huka-buka* ‘very deeply’; *hanare-ru* ‘be separated’ > *hanare-banare* ‘separated here and there’; *ware* ‘I’ > *ware-ware* ‘we’

In some rare cases, reduplication in both mimetics and Yamato words can receive a less iconic interpretation as well. For instance, reduplication is not transparently iconic in all mimetic reduplicatives that involve a radical degree of metaphorical and metonymical shifts from their root bases, to the extent of showing a denotational contrast with their bases (e.g., *toN-toN* ‘even’ < *toN* ‘tapping once’). Similarly, there are reduplicated Yamato words in which reduplication adds a less iconic semantic effect, to the extent of being pejorative (e.g., *kodomo* ‘child’ > *kodomo-kodomo(-si-ta)* ‘childish’).<sup>12</sup> Perhaps due to the overlapping semantic functions of reduplication between mimetics and Yamato words, Yamato reduplication has been described simply as a consequence of mimetic reduplication “spreading” (Akita 2009: 98) or “crossing over” (Hamano 1998: 6) to regular lexical items. The question of iconicity in reduplication is revisited in detail in section 5.1.

<sup>9</sup> Alternatively, CV instead of CVX can be taken as a mimetic root template. For example, Hamano (1998: 25) considered X as not part of a root by analyzing monosyllabic mimetic forms such as *puN*, *puQ*, *pui*, and *puu* as containing a common CV root, *pu-*, plus different sound-symbolic suffixes X. The semantic relations between monosyllabic forms are not always successfully accounted for within the CV view (e.g., *piQ* ‘bip’ vs. *piN* ‘ping’), however. For a detailed discussion about the two alternative views of mimetic roots in monosyllabic mimetic forms, see Hamano (1998: 25–30).

<sup>10</sup> For the remainder of this paper, reduplication will be used as shorthand for total reduplication.

<sup>11</sup> *huka-buka* and *hanare-banare* are taken as examples of total reduplication, because their simplex bases and reduplicants are *underlyingly* identical. Their surface reduplicant forms, however, appear to diverge from their corresponding bases, due to the obligatory application of sequential voicing (see section 3.1 for more details about this (morpho)phonological rule in Japanese).

<sup>12</sup> Although some Japanese speakers may consider that *kodomo-kodomo(-si-ta)* contains some sensory properties, it is classified as a Yamato reduplicative rather than a quasi-mimetic reduplicative, because it fails to satisfy a formal criterion of quasi-mimetics proposed in this study (i.e., entry in Kakehi et al.’ dictionary).

Despite this, however, there have been several attempts to distinguish mimetic reduplication from Yamato reduplication (Martin 1952: 49; Garrigues 1995: 366; Tamori & Schourup 1999: 6). Most predominantly, Yamato reduplication has been differentiated from mimetic reduplication with its sequential voicing, referred to as *rendaku*. That is, in the Yamato stratum, the initial consonant of the reduplicated morpheme is voiced if the medial obstruent of the morpheme is voiceless (e.g., *toki-doki* ‘sometimes’, *tika-zika* ‘before long’). However, the same voicing process does not occur in the mimetic stratum (e.g., *toko-toko* ‘short and quick steps’, *tika-tika* ‘(eyes) feel irritated’). For an extensive (but not necessarily exhaustive) list of the distinctive characteristics of total reduplication in mimetics, see Tamori & Schourup (1999: 210–211) cited in Akita (2009: 99–100) in Table 3 below.<sup>13</sup>

A brief look at the taxonomic principles in Table 3 provides an impression that the distinction between mimetic and Yamato reduplication would be straightforward, but if we vary the representative data for each set of phenomena (i.e., if we consider various possibly occurring types, including both typical and atypical examples, of the two sets of phenomena), the picture becomes more complicated than expected. In order to examine whether the traditional taxonomic approach successfully defines the characteristics unique to mimetic reduplication, I evaluate each trait in Table 3 with various empirical instances of mimetic reduplication. For comparison, I also conduct parallel observations about typical and atypical instances of Yamato reduplication where possible.

### 3.1 Free from *rendaku* in reduplication

All reduplication in mimetics is free from *rendaku* (Martin 1952: 49; Nasu 2015: 261). In contrast, *rendaku* appears in representative instances of Yamato reduplication, as shown in Table 3 above. Notwithstanding this, some reduplicated Yamato words, such as *kaku-kaku* ‘thus and thus’, *hitori-hitori* ‘one by one (person)’,<sup>14</sup> *hini-hini* ‘day by day’,

Characteristics of mimetic reduplication	Mimetics	Prosaic words
Free from “ <i>rendaku</i> ” (sequential voicing) in reduplication	* <i>koro-goro</i> ‘rolling’	<i>hito-bito</i> ‘people’
Q inserted into CVCV-reduplicative resultative adverbs	<i>heQto-heto</i> ‘exhausted’	* <i>aQka-aka</i> ‘brightly red’
Repetition of reduplicatives	<i>koro-koro koro-koro</i> ‘rolling’	* <i>huka-buka huka-buka</i> ‘(bowing) deeply’
Optionality of the quotative particle <i>-to</i> for CVCV-reduplicative manner adverbs	<i>koro-koro(-to)</i> ‘rolling’	<i>koN-koN*(-to)</i> ‘(sleeping) deeply’ (Sino-Japanese)
Initial accent of CVCV-reduplicative manner adverbs	<i>ko/ro-koro</i> ‘rolling’	<i>huka/-buka</i> or <i>huka-bu/ka</i> ‘(bowing) deeply’

**Table 3:** Distinctive characteristics of mimetic reduplication.

<sup>13</sup> I excluded a property “free from nasalization of C1 /g/ of a reduplicant (e.g., \**gaya-ŋaya* ‘hum (of a crowd)’; cf. *kami-ŋami* ‘gods’)” from the original list because its application is at a phonetic level. The current study only attends to the phonemic representations of mimetic and Yamato instances. Properties such as “abundant in [p]-initial words (e.g., *pariN(-to)*, *piku-piku*, *poQkuri*)” and “suffixation of *ri*, *-Q*, and *-N* (e.g., *korori(-to)*, *koroQ(-to)*, *koroN(-to)* ‘rolling’)” do not give any insights into our consideration on total reduplicative forms; thus they were also excluded.

<sup>14</sup> Reduplicated Yamato words with distributive meanings show variation in the application of *rendaku*. For example, *sore-zore* ‘each’ shows the presence of *rendaku*, whereas *hitori-hitori* or *hitori-bitori* ‘each person’ shows the optional presence of *rendaku* (Labruno 2012). In mimetic reduplication, however, the non-application of *rendaku* is not dependent on such a semantic factor.

*tama-tama* ‘sometimes’ (Hachiya 1998),<sup>15</sup> are not subject to rendaku (just like mimetics) although they appear in the correct phonological environment to trigger it – rendaku in Yamato reduplication is under a phonological constraint called Lyman’s Law, which states that sequential voicing is blocked when the target morpheme has a voiced obstruent in non-initial positions (Vance 2015: 402). This indicates that the presence of rendaku is common in Yamato reduplication, but it is not found in all Yamato reduplication. Thus, this principle creates a “penumbra”, where datasets are not clearly disjunct (Corbett 2012: 153), and accordingly unites mimetic reduplication with at least some instances of Yamato reduplication.

### 3.2 Q inserted into CVCV-reduplicative resultative adverbs

CVCV-based mimetic reduplicative forms, which are associated with resultative meanings, allow the insertion of the “intensifying infix” /Q/ (Hamano 1998: 35) for a certain semantically emphatic effect, as in *heQto-heto* ‘very exhausted’ < *heto-heto* ‘exhausted’. The infixal Q is, however, not confined to mimetic reduplication as it can also be found in some reduplicated Yamato words (e.g., *naQka-naka* < *naka-naka* ‘(not) readily’).

### 3.3 Repetition of reduplicatives

No Yamato reduplicative forms can undergo repetitive reduplication (e.g., \**huka-buka huka-buka* < *huka-buka* ‘(bowing) deeply’). In contrast, the repetition of mimetic reduplicative forms is generally acceptable, as in *koro-koro koro-koro* < *koro-koro* ‘rolling’. The acceptability of some repetitive forms of reduplicated mimetics may decrease in their verbal uses, because high expressiveness correlates with low integration into the general linguistic structure of a language (Dingemans & Akita 2016; Dingemans to appear). Nevertheless, there are no strong counter-examples against the use of repetition in mimetic reduplication.

### 3.4 Optionality of the quotative particle -to for CVCV-reduplicative manner adverbs

Reduplicated mimetic adverbs with CVCV root bases, such as *paku-paku(-to)* ‘flapping open and closed (e.g., mouth)’ and *tiku-tiku(-to)* ‘prickling’, are optionally accompanied by a quotative particle *-to* (Hamano 1998: 13). However, this is not exclusive to mimetic reduplication because some Yamato CVCV root-based reduplicative adverbs can also appear with optional *-to*, as in *karu-garu(-to)*, *haru-baru(-to)*, *huka-buka(-to)*, and *miru-miru(-to)*.<sup>16</sup>

### 3.5 Initial accent of CVCV-based reduplicative manner adverbs

CVCV root-based mimetic reduplicative forms are characterized as having their accent on the first mora, unless there is a heavy syllable containing syllable-final moraic nasals /N/ or obstruents /Q/ (Hamano 1998: 32). For example, compare *po|ka-poka* and *pi|ku-piku* with *poka-pokaQ|* and *piku-pikuQ|*.<sup>17</sup> In contrast, the accentual patterns of prosaic counterparts are various; they can have an accent on the second mora (e.g., *ie|-ie* ‘houses’; *mura|-mura* ‘villages’), or on either the second or third mora (e.g., *huka(|)-bu(|)ka* ‘(bowing) deeply’) or third mora (e.g., *ari-a|ri* ‘vividly’) and so forth. Notwithstanding such an apparent

<sup>15</sup> Note that although the given Yamato examples do not possess perceptual sensory meanings and also do not appear in Kakehi et al.’s dictionary, they may still give mimetic-like impressions to some native speakers of Japanese, due to the non-application of rendaku. This issue will be dealt with more thoroughly in section 6.4.

<sup>16</sup> Due to this shared property with mimetic reduplication, the given Yamato examples may possibly be considered as quasi-mimetics. In particular, *miru-miru* may give a mimetic-like impression, because it shares multiple properties with mimetic reduplication, that is, a typical accentuation pattern of mimetics (i.e., initial accent) and the optional accompaniment of *-to*.

<sup>17</sup> The straight line ‘|’, which indicates an accent nucleus, is placed after an accented syllable in this paper.



difference in the accentual patterns of representative instances in each set of phenomena, CVCV root-based mimetic reduplicative forms with no accent (i.e., flat accent) certainly exist, as shown in *nuru-nuru* ‘slimy’ and *kaN-kaN* ‘very angry’. Interestingly, there are also some CVCV root-based Yamato reduplicative forms that have a flat accent, as in *hini-hini* and *hisa-bisa*, or an initial accent, as in *ka|zu-kazu*, *mi|ru-miru*, *si|zu-sizu*. In sum, instances of both mimetic and Yamato reduplication can have either an initial or flat accent, indicating that this principle cannot clearly distinguish mimetic reduplication from Yamato reduplication.

### 3.6 A taxonomic comparison between mimetic and Yamato reduplication

In sections 3.1–3.5, we have seen that most traits ascribed to mimetic reduplication could also characterize at least some individual instances of Yamato reduplication. They include the absence of *rendaku*, emphatic Q-insertion, attachment of optional *-to*, and the initial accent of CVCV-based reduplicative forms. Given this, if we ask “Is mimetic reduplication distinguishable from Yamato reduplication?”, the answer can point in either direction, depending on one’s choice of representative instances for the two sets of phenomena. For example, one could claim that mimetic reduplication *is* different from Yamato reduplication by comparing only typical instances of mimetic reduplication with typical instances of Yamato reduplication. Conversely, one can argue that mimetic reduplication *is not* distinguishable from Yamato reduplication by comparing certain instances of mimetic reduplication, regarded as typical representatives of the phenomenon, with certain instances of non-mimetic reduplication, regarded as atypical representatives of the phenomenon. One’s opinion also could vary, depending on whether one privileges or discounts a particular property, which seems to apply only to mimetic reduplication, such as the repetition of reduplicatives in section 3.3. Problematic for that debate is the fact that, although each researcher’s choices may be logical and principled, so too are the choices that underlie opposing interpretations, and so the debate is liable to shift from one side to another, without truly progressing.

In this paper, I do not aim to fuel the debate of whether mimetic reduplication distinguishes itself from Yamato reduplication through putting more weight on some observations than others, or by making arbitrary exclusions of relevant data. Instead, I aim to clarify the relationship between mimetic and Yamato reduplication (i.e., how mimetic and prosaic reduplication are alike or different from each other). In order to serve the aim, I use a canonical approach, which provides explicit mechanisms to conduct comparisons between several possibly occurring instances of a given linguistic phenomenon in multiple dimensions across and within languages.

## 4 Canonical approach to mimetic reduplication

In the following, section 4.1 provides an overview of the Canonical Typology framework and section 4.2 describes my innovative adaptation of the method for a within-language comparison. Section 4.3 sets a canonical base for mimetic reduplication and section 4.4 compares mimetic reduplication with Yamato reduplication against canonical derivational morphology prior to the main canonical analysis. Section 4.5 constructs three dimensions to characterize a canonical core for mimetic reduplication.

### 4.1 Overview of the Canonical Typology framework

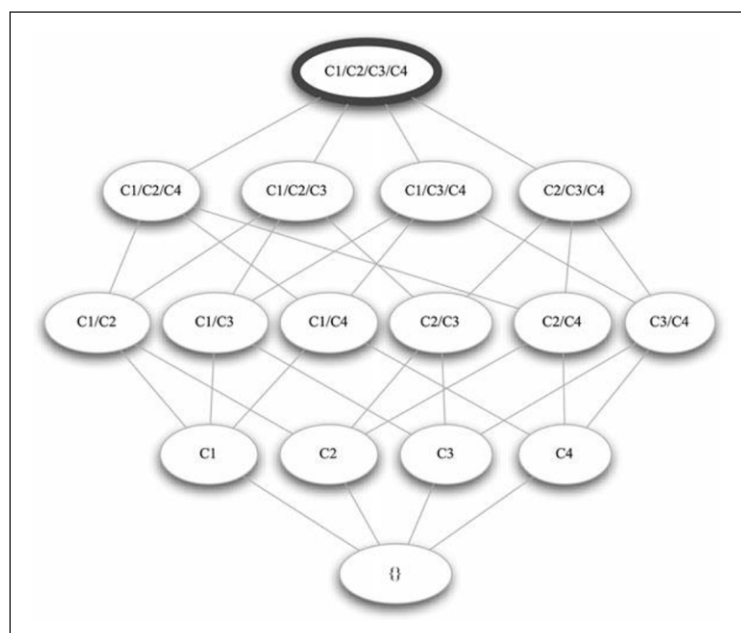
Canonical Typology is a method that enables us to handle gradient phenomena in a principled way across and within languages (Corbett 2007). In Canonical Typology, there are three major concepts: the base, the criteria, and the canonical core (Brown & Chumakina 2013). The base is a minimal definition or description of a linguistic phenomenon, which deline-

ates the theoretical space broadly enough to accommodate various occurring instances of the phenomenon under investigation (Bond 2013). Criteria are the scales along which variability is systematically characterized. Each criterion has an independent dimension in the broad theoretical space, with a more-canonical and a less-canonical end, and against which a particular set of data can be measured as canonical or non-canonical. For example, in Figure 1, four criteria define 16 possible types of instances whose canonical values are represented by the labels for the criteria as C1, C2, .... The canonical ideal appears at the convergence of all of the criteria at the top of the lattice. Canonicity decreases as distance from the ideal increases and thus the canonicity values of constructions located in different levels in the lattice (e.g., C1/C2/C4 vs. C1/C2) can be compared.

The canonical ideal at which the “indisputable”, “best” or “clearest” instances of the phenomenon are found is not to be confused with the prototype, which may be the most visible and frequent instance of the given domain (Corbett 2005). An analogy for canonicity is the system of cardinal vowels, which display the maximum possible in their degrees of frontness and closeness, within the space where specific vowels can be populated (Baerman & Corbett 2012). On the other hand, an analogy for prototype is Venus, which is the most visible planet, but which does not hold special logical status among other planets (Corbett 2010). In reality, the canonical ideal, which is a maximal logical standard, may often be rare or even non-existent. Nevertheless, its role is essential in canonical methodology because it unambiguously sets a logically maximal endpoint from which examples of the phenomenon can be calibrated within the base. For a more detailed summary of Canonical Typology, see Brown et al. (2013).

**4.2 Localized Canonical Typology**

Although Canonical Typology has been extensively used for cross-linguistic comparisons in the areas of syntax (Comrie 2003; Corbett 2003), inflectional morphology (Corbett 2007; Spencer 2007; Stump 2007; 2013), derivational morphology (Corbett 2010), phonaesthemes (Kwon & Round 2015), and phonology (Hyman 2009; 2012), the core conceptual machinery of canonical typology is about multi-dimensional variation, not only cross-linguistic variation. In other words, canonical typology inherently character-



**Figure 1:** Lattice of four criteria (adapted from Brown et al. 2012: 236).

izes variability along multiple dimensions, constructed by a set of criteria in a defined theoretical space for a phenomenon, but variability here does not necessarily entail variation across languages. Therefore, in this paper, I use a canonical method to evaluate variations within a language-specific category (i.e., a lexical stratum)<sup>18</sup> and term my adaptation of Canonical Typology “Localized Canonical Typology”.<sup>19</sup>

Localized Canonical Typology involves the canonical core, criteria, and base, just as the “usual” Canonical Typology does. Within the Localized Canonical Typology framework, I first set the boundary for the theoretical space (i.e., the canonical base) of possibilities using the least straightforward (and thus logically minimal) instances (see section 4.3). I then establish a canonical core for mimetic reduplication to characterize the most straightforward reduplicated mimetics. This fixes a theoretical endpoint from which various real instances of mimetic reduplication can be calibrated. The space is then given a potentially uncorrelated multi-dimensional structure by applying various scales (i.e., canonical criteria). Each scale has a logical endpoint and all possible ranges of data for the phenomenon we find in the base receive multi-dimensional evaluation (see section 5 for details). The relationship between mimetic and Yamato reduplication is clarified when a wide range of Yamato reduplications are measured against the same criteria.

One question raised by a reviewer about the conceptual methodology is how Canonical Typology handles the old structuralist conundrum that lexical classes can receive infinitely finer grained analysis. For example, a lexical class of mimetic words can be separated into distinct types of mimetics, such as phonomimes vs. phenomimes. Likewise, a lexical class of Yamato words can be subdivided into distinct grammatical classes, such as Yamato nouns vs. Yamato verbs. Notwithstanding such possible “finer graining” of clusters of words, this paper is framed to concern two major strata, i.e., mimetic and Yamato strata, because the canonical approach encourages us to start from the extremes. Within the framework, there are two options for looking at the lexicon: all lexemes are the same, or all are different. Starting from the first position is not tenable. The next logical choice is thus to suggest that there are two large classes for the phenomenon under investigation. If there are data that do not fit, then the classes need to be split into further sub-classes. If the other extreme (i.e., all lexemes are different) had been the starting point, which would also have been a possibility, it would have been revealed that generalisations were missing, and therefore items would have been grouped. This idea parallels the lexicon in Network Morphology terms, with defaults at the “top” and a lot of overrides (Greville G. Corbett, personal communication). To quote Brown & Hippisley (2012: 46), for a relationship between lists of lexemes and morphological rules in Network Morphology, “It’s rules all the way down, and lists all the way up”.

### **4.3 A canonical base for mimetic reduplication**

The canonical base is a definition or description of a phenomenon, broad enough to accommodate both its canonical and non-canonical instances. In order to be considered an instance of mimetic reduplication, it must satisfy the minimal condition that it always constitutes reduplication, which adds a semantic effect, within a word boundary. Thus, I propose a base for canonical mimetic reduplication as follows:

<sup>18</sup> Other theories (e.g., Optimality Theory) have also been applied for cross-stratal comparisons. For example, Itô & Mester (1995) used a core-periphery model in the framework of OT to account for inter-stratum and stratum-specific phonological properties of the Japanese lexicon.

<sup>19</sup> My thanks to Erich R. Round for bringing the relationship of this approach to cross-linguistic canonical research to my attention.

Mimetic root reduplication, which constitutes reduplication and adds a semantic effect, occurs within a word boundary.

This base has much in common with that of derivational morphology: those aspects of morphology in word formation that accompany the addition of semantic predicates. Based on this, in the next section, as a preliminary attempt for canonical analysis of mimetic reduplication, I evaluate the canonicity values of a representative instance of mimetic reduplication, from the perspective of canonical derivational morphology. A representative instance of Yamato reduplication is evaluated in parallel for comparison.

**4.4 Mimetic reduplication in canonical derivational morphology**

To provide an initial sense of where reduplicated mimetics and Yamato words sit with respect to canonical derivational morphology, I assess them against the following five canonical criteria of derivational morphology, as proposed by Corbett (2010).

The assessments of reduplication in Table 4 are taken from the standpoint of Morphological Doubling Theory (Inkelas 2005; Inkelas & Zoll 2005). In that approach, semantic generalizations of the output of reduplication are determined by the morphology of a reduplicative construction. For example, in the reduplicated forms A-A, B-B, C-C, and D-D, it is reduplication that has the meaning, not the morphs themselves -A, -B, -C, and -D. Reduplicants possess inputs and outputs that are phonologically independent from bases, however. This viewpoint is different from that of Base-Reduplication Correspondence Theory (McCarthy & Prince 1995), in which a semantically independent but phonologically empty RED morpheme is fleshed out by copying the phonological form of a base at the surface level – note that RED is in fact shorthand for ‘copy of whatever it attaches to’, i.e., the result of process. Thus, it cannot still be considered meaningful as a specific morph.

With regard to criteria 3 and 5, typical mimetic reduplication adheres to canonical derivational morphology. For example, a typical derived word *paint-er* is segmentable (criterion 3) and the attachment of the suffix *-er* adds a semantic predicate to the base *paint* (criterion 5). Likewise, a representative example of total reduplication in mimetics *pika-pika* ‘shining repeatedly’ shows a phonologically transparent construction (criterion 3)

Criteria	Derivational morphology	Mimetic reduplication	Yamato reduplication
1. Canonical derived words consist of a base and at least one derivational marker, each of which can be substituted to yield another derived word	Y	N	N
2. The meaning of a canonical derived word can be computed regularly from the meaning of the base and the additional meaning of the derivation	Y	N	N
3. The form of a canonical derived word is transparent: its structure, consisting of base and derivational marker(s), is evident	Y	Y	Somewhat N
4. A derived word has a separate lexical index	Y	N/A	Y
5. A derived word includes an additional semantic predicate in comparison with its base	Y	Y	Y

**Table 4:** Initial comparisons between reduplicated mimetics and Yamato words, relative to derivational morphology.

and the reduplicative form possesses an additional semantic meaning (i.e., repetition) when compared to the unreduplicated base form (criterion 5).

In contrast, with respect to criteria 1 and 2, typical mimetic reduplication differs from the derivational morphological canon. In mimetic reduplication, the base *pika-* cannot be attached with the reduplicant of *pati-pati* ‘clapping repeatedly’ to yield *\*pika-pati* ‘shining repeatedly’ and neither the reduplicant of *pika-pika* can be attached to the base *pati-* to yield *\*pati-pika* ‘clapping repeatedly’ (criterion 1). Furthermore, the reduplicant *-pika*, as a specific morph, does not necessarily have a meaning (cf. if the reduplicant is used to indicate the outcome of a copying process, criterion 2 is satisfied). In contrast, in *paint-er*, the meaning of *-er* is independent from the meaning of *paint* (criterion 2). Criterion 4 is not applicable because the mimetic base *pika-* does not possess a separate lexical index, from which the index of *pika-pika* may differ. This is trivially so, because the Japanese CVCV-based mimetic root *pika-* cannot stand on its own as an independent word; it always needs to be reduplicated, or must occur with a mimetic ending *-ri*, *-N* or *-Q*, plus an optional quotative particle *-to* as in *pika-ri(-to)*, *pika-N(-to)*, or *pika-Q(-to)* (Mester & Itô 1989: 267; Nasu 2002; Kubozono 2003). This is contrary to a possible expectation that *pika-pika* as a reduplicated form implies the independent lexical existence of *pika-*.

Moving to Yamato reduplication, it behaves identically with mimetic reduplication, measured against criteria 1, 2, and 5. For example, the reduplicative form *hito-bito* ‘people’ involves an additional semantic predicate, when compared to the base *hito* ‘person’ (criterion 5). The meaning of *hito-bito* is derived from the reduplicative process itself (criterion 2). Also, substitution of neither the base nor the reduplicant produces another derived word (criterion 1). In contrast, with regard to criteria 3 and 4, typical Yamato reduplication displays somewhat different characteristics from its mimetic counterpart. The base *hito* possesses a lexical index distinct from *hito-bito* (criterion 4). In addition, recall that *rendaku* (sequential voicing) occurs in Yamato reduplication, but not in mimetic reduplication (Nishimura 2013: 105; Nasu 2015: 261). Due to the application of *rendaku*, the reduplicative output of *hito* becomes *hito-bito*, not *\*hito-hito*.<sup>20</sup> Consequently, the voiced allomorph causes phonological similarity, rather than identity, between the base and reduplicant, making the morphophonological juncture of its structure less clear at the surface level, compared to the total identity found in mimetic reduplication, as in *pika-pika* (criterion 3).

In sum, when we view full reduplication in mimetics and Yamato words through the lens of canonical derivational morphology, they appear either congruent or incongruent in their characteristics as canonical, non-canonical or undefined, depending on the criterion in question. For example, based on criterion 5 (“additional semantic predicate”), canonical derivation, mimetic reduplication, and Yamato reduplication are grouped together, but on criteria 1 (“many-to-many substitutability”) and 2 (“regular semantics”), canonical derivation is set apart from mimetic and Yamato reduplication. Measured against criterion 4 (“separate lexical index”), canonical derivation and Yamato reduplication pattern together, separated from mimetic reduplication. Criterion 3 (“transparent form”) is problematic in grouping canonical derivation and mimetic reduplication together, apart from Yamato reduplication, because their differences in formal transparency are rather subtle. Notwithstanding the ambiguous differentiation of the derivational processes with respect to criterion 3, even at this cursory level, we can see that the canonical approach naturally shows the pivots of ambiguity in the boundary between mimetic and Yamato

<sup>20</sup> The underlying form of [h] is /p/ in the Yamato and Sino-Japanese strata. Thus, the initial voiceless obstruent [h] in the Yamato reduplicant *-hito* alternates with a voiced counterpart of /p/, resulting in *hito-bito* (Nasu 2015: 267; Vance 2015: 397).



reduplication. Evidently, they were much more vaguely defined within traditional, descriptive arguments, as seen in Table 3 in section 3. The criteria above, however, were not designed with the intention of evaluating mimetic reduplication, and hence they do not cover all points that are of interest. To fill those gaps, I proceed to canonical criteria designed specifically for investigating mimetic reduplication. A comparison of Yamato reduplication will follow.

## 5 Canonical criteria for mimetic reduplication

A core includes instances which are highly canonical along many dimensions and which thus represent the best cases of the phenomenon. It takes definitions of mimetic root reduplication to a maximally logical point. A survey of the existing literature on mimetic root reduplication indicates that a canonical core for mimetic reduplication would contain the following:

- a. The most canonical mimetic reduplication involves diagrammatic iconicity, through the association of the copying of a base form with an increase or enhancement of the dominant semantic feature of the base – Iconicity.
- b. The semantic and formal relations between the base and reduplicant are transparent (Hamano 1998: 67). The most canonical mimetic reduplicative forms are bipartite, comprising the base and identical reduplicant, which creates a clear semantic contrast with the base – Transparency.
- c. The most canonical mimetic reduplication involves a root base that is productive in reduplication – Productivity.

Based on the canonical core above, I formulate six empirically evaluable canonical criteria in Table 5 for reduplicated mimetics and consider instances, either more canonical or less so, with respect to each criterion. Following Corbett (2007: 11), criteria are characterized in relative terms:  $a > b$  “a is more canonical than b”. To avoid confusion between the “canonical base” in section 4.2 and (unreduplicated) simplex root base, I term the simplex base as “root” here.

As mentioned in section 2, the majority of the mimetic instances used for the current analysis were extracted from Kakehi et al.’s (1996) comprehensive list of Japanese mimetics. Sources other than Kakehi et al.’s dictionary are specified alongside the relevant examples.

### 5.1 Iconicity

Criterion 1: Strongly iconic > weakly iconic > non-iconic

General principles	Criteria
Diagrammatic iconicity	1. Strongly iconic > weakly iconic > non-iconic
Productivity	2. Reduplicative form covers many parts of speech > few
	3. Root appears in many phonologically distinct reduplicative variants > few
Formal transparency	4. Full phonological resemblance of reduplicant to root > partial > no resemblance
	5. Accent present in lexeme > partially present > absent
	6. No syntactic difference between root and lexeme > syntactic difference

**Table 5:** Criteria for the canonicity of full reduplication in the mimetic lexicon.

Several researchers (Moravcsik 1978; Fischer 2011; Dingemanse 2011; 2015; Dingemanse et al. 2015, among others) claim that reduplicated sound-symbolic words exhibit diagrammatic iconicity by virtue of an association of a repetition or copy of the base with enhancement or increase of some sort. In this respect, criterion 1 states that if mimetic reduplication reveals strong diagrammatic iconicity, it is more canonical than if it is less or non-iconic. One concern raised for this criterion would be that iconicity judgments inevitably involve subjectivity and thus often give rise to disagreements among different researchers. For example, some researchers (Moravcsik 1978; Ishikawa 1991; Fischer 2011) consider that the concept of enhanced intensity (i.e., an increase in quality) is iconic to the same degree as the concept of repetition or iteration (i.e., an increase in quantity), in the sense that both resemble constructional increase in the doubled form. On the other hand, some others (Regier 1998; Bybee et al. 1994) argue that senses such as increased intensity are motivated from iteration, in which increased *quantity of meaning* directly corresponds to increased *quantity of form* and are thus maximally iconic.

In order to minimize subjectivity in the iconicity judgments applied here, I adopt an implicit experimental method that enables the measurement against criterion 1 to be empirically grounded. Under the assumption that highly iconic linguistic form may benefit the production of language (Perniss et al. 2010; Fischer 2011), I examined the productivity of total reduplication on 18 nonsense Japanese CVCV-based unreduplicated mimetics in the two different semantic contexts (i.e., iteration and enhanced intensity) by 40 native Japanese speakers using a Wug Test (Berko 1958). The stimulus items across the two semantic sets were randomized in three versions and presented randomly to the participants. The task involved reading a provided definition of each nonsense mimetic word (e.g., *ganaQ* describes a short and abrupt motion of sweeping; *kateQ* describes a short and abrupt motion of nodding) and filling in a blank of the immediately following paragraph using the provided nonsense word (e.g., Hanako swept the floor in a *ganaQ* manner. If she swept the floor repeatedly, you would say “Hanako swept the floor in a \_\_\_\_\_ manner” for the iteration context; Hanako nodded in a *kateQ* manner. If she nodded more heavily, you would say “Hanako nodded in a \_\_\_\_\_ manner” for the intensity context). For statistical analysis, participants’ answers were changed to two categorical variables (i.e., 0 = without total reduplication, 1 = with total reduplication). The Wilcoxon signed-rank test (non-parametric paired t-test) indicated that the mean scores of the two sets of items (Mean = .37, SD = .32 for iteration; Mean = .04, SD = .07 for intensity) were significantly different from each other ( $p < 0.001$ ), implying that iteration is more iconically associated with reduplication than enhanced intensity. As additional statistical support, one can also refer to Bybee et al.’s (1994) work which showed that, in their 16 sample languages, iteration is the concept most commonly associated with reduplication.

Given the experimental result, Japanese mimetics which reduplicate a mimetic root to capture the perceptions of an event’s iteration, as in (9) below, are canonical with respect to criterion 1. Mimetics which express added intensity in (10) are less canonical.

- (9) Mimetics associated with strong iconicity: *batya-batya* ‘a repeated, large splashing sound’ < *batya*- ‘a single splashing sound’; *baN-baN* ‘a repeated loud sound caused by explosions, or when two relatively hard objects come forcefully into contact’ < *baN* ‘a single loud sound caused by explosion, or when two relatively hard objects come forcefully into contact’ (iteration)
- (10) Mimetics associated with weak iconicity: *boo-boo* ‘the manner of burning fiercely’ < *boo* ‘the manner in which a flame flares up or begins to burn well’ (added intensity)

Further reduced canonicity is seen in *toN-toN* ‘even’ that involves a radical degree of metaphorical shift, to the extent of showing a denotational contrast with its simplex base (< *toN* ‘tapping once’).

### 5.2 Productivity of reduplicative forms

Criterion 2: Reduplicative form covers many parts of speech > few

Cross-linguistically, sound-symbolic lexicon is less syntactically constrained than prosaic lexicon (Newman 1968; Samarin 1971; Bartens 2000) and Japanese mimetics are not an exception: they can appear across four regular grammatical categories of adverb, (complex) verb, adjective (or nominal-adjective), and noun stems (Akita 2009: 48). To reflect this fact, criterion 2 states that, if an individual reduplicative form covers many parts of speech in the mimetic lexicon, this is more canonical than if it covers few. With respect to criterion 2, a relatively canonical example is *hira-hira* ‘fluttering or flapping state’ in (11a–d) which covers different parts of speech, such as a noun, adjective, adverb and verb, with the aid of appropriate grammatical markers. Less canonical examples would include the mimetics in (12), which restrict their coverage to adverbs or nominal adjectives only.

(11) Mimetic covering multiple parts of speech (Akita & Tsujimura 2016: 134):

- a. *Hira-hira ga kininaru.* (Noun)  
MIM NOM be conscious  
‘(He) is conscious of the flapping object.’
- b. *hira-hira no/na sukaato* (Adjectival)  
MIM GEN/COP skirt  
‘fluttering (flared) skirt’
- c. *Sakura no hanabira ga hira-hira to tiru.* (Adverbial)  
cherry GEN petal NOM MIM QUOT fall  
‘Cherry petals fall in a fluttering manner.’
- d. *Hata ga hira-hira-suru.* (Verb)  
flag NOM MIM - do  
‘A flag flutters.’

(12) Mimetics covering a single syntactic category: *teku-teku* ‘walking lightly’, *suta-suta* ‘walking briskly’, *tobo-tobo* ‘plodding’, *suya-suya* ‘sleeping soundly’ (Adverbs only); *uha-uha* ‘very happy (for some worldly reason)’, *mero-mero* ‘too fond of’ (nominal adjectives only)

### 5.3 Productivity of root in reduplication

Criterion 3: Root appears in many phonologically distinct reduplicative variants > few

Criterion 3 states that a canonical mimetic root is productive in reduplication and thus it appears in many distinct reduplicative variants.<sup>21</sup> Canonical instances include the CVCV root *bata* that can be reduplicated in the forms of CVCV-CVCV or CVCVN-CVCVN with the suffix *-N* attached to the root, as in *bata-bata* ‘falling down in succession’ and *bataN-bataN*. (The mimetic suffix *-N* adds some semantic effect, such as reverberation or/and intensity.) Non-canonical instances are like those in (13), whose roots do not allow their manifestations in the variant of total reduplication, CVCVN-CVCVN. All CVX mimetic roots are non-

<sup>21</sup> In general, mimetic roots seem to appear in the variant of total reduplication when they are associated with an aspectual sense but this requires a more sophisticated semantic analysis in future research (cf. Toratani 1999; 2005).

canonical when measured against criterion 3, because they only allow CVX-CVX shape in their reduplicative construction, as in *gaN-gaN* ‘energetically’, *sui-sui* ‘swimming with repeated strokes’, and *guu-guu* ‘zzz’.

- (13) Mimetics with no reduplicative variants: *sara-sara*/*\*saraN-saraN* ‘smooth and dry’, *suta-suta*/*\*sutaN-sutaN* ‘walking briskly’, *suya-suya*/*\*suyaN-suyaN* ‘sleeping peacefully’ (CVCV-CVCV only)

#### 5.4 Phonological resemblance to root

Criterion 4: Full phonological resemblance of reduplicant to root > partial > no resemblance

Criterion 4 states that if a reduplicative form comprises phonologically identical root and reduplicant at the surface level, as in (14), it is canonical because it shows a clear phonological boundary between the root and reduplicant. To recall, the present paper is concerned only with total reduplication, in which the forms of the root and reduplicant are underlyingly identical. The best case is where their surface forms are also identical. The majority of mimetic reduplicative forms will be canonical in this regard, and an intermediate case does not exist, because they are not under the influence of *rendaku* (Nasu 2015: 261). The canonicity of inherently reduplicated mimetics in (15) is undefined against criterion 4 because the phonological resemblance between the root and its copy is not measurable.

- (14) *niko* ‘the manner of smiling once briefly’ > *niko-niko* ‘the manner of smiling cheerfully’, *nita* ‘the manner of grinning briefly in selfish delight or triumph’ > *nita-nita* ‘the manner of grinning continuously in selfish delight or triumph’
- (15) Martin (2004 [1975]: 798)  
*seka-seka* ‘fidgety, restless’, *uzya-uzya* ‘in swarms’, *doN-doN* ‘boom-boom; rapidly, steadily’

#### 5.5 Prosodic resemblance to root

Criterion 5: Accent present > partially present > absent<sup>22</sup>

Accent appears maximally once in a prosodic word and its location depends on the syllable weight and foot structure of a prosodic word in Japanese (Hamano 1998: 32). As a rule, in mimetics, an accent falls on the leftmost heavy syllable (e.g., *piN|-piN*) but if there is no heavy syllable, the leftmost strongest foot that contains two light syllables attracts an accent (e.g., *po|ka-poka*, *pita|ri*).<sup>23</sup> This indicates that the position of the lexical

<sup>22</sup> Previously, several studies on Japanese accentuation (Sato 1989; Tanaka 2005; Zamma 2005; Labrune 2012) have suggested that there are correlations between *rendaku* and accentedness. That is, accented compound words resist *rendaku* (e.g., *tume-ki|ri* ‘nail + cutting; nail clipper’) whereas unaccented counterparts do not (e.g., *usu-giri* ‘thin + cutting; thinly sliced’) (Yamaguchi 2011: 119–120). This naturally points to a possibility for criterion 4 to be correlated with criterion 5. However, in practice, the correlations do not strictly hold; for example, when the second element of a compound consists of more than two morae (e.g., *tukuri* ‘making’), it undergoes *rendaku* even if the accent is present, as shown in *yasai-zu|kuri* ‘vegetable + making; vegetable growing’ and *niwaka-zu|kuri* ‘sudden + making; hastily made’ (Yamaguchi 2011: 120). (One strength of the canonical approach is that it deals well with such incomplete correlations.) In addition, Itô & Mester (2003: 224) found that “there are no constraints linking accent and *rendaku* directly to each other” in their analysis of Japanese compounds within the framework of OT, leading to a conclusion that “there is no direct and exact correspondence of any kind between *rendaku* and accent”. In sum, there is no strong logical necessity that criteria 4 and 5 are correlated with each other, indicating that they conform sufficiently to the ideal principle of canonical typology that each criterion holds an independent status (Brown & Chumakina 2013: 10; Corbett 2015: 147).

<sup>23</sup> As an exception, the rule does not apply to forms with the intensifying infixes *-N-* or *-Q-*, such as *piQta|ri*, *baQtaN|*, and *niNma|ri* (Hamano 1998: 34).

accent in a reduplicative cannot be analyzed as the simple projection of the root accent. For example, the lexical accent on the second mora in  $piN|-piN$  can be attributed to the mimetic accentuation rule, i.e. that the leftmost heavy syllable attracts an accent, rather than the projection of the root accent (i.e.,  $piN|$ ). Setting aside the issue of accent location, which is determined by a surface prosodic structure, criterion 5 concerns the presence/absence of root accent in reduplicative form, reflecting the fact that the reduplicant cannot independently possess its own accent pattern (e.g.,  $piN|-piN < piN| + piN|$ ). Comparing the presence/absence of an accent between the root and reduplicative might appear impossible in the reduplication of a CVCV mimetic root, because CVCV mimetic roots cannot occur independently. However, Japanese *dvandva* compounding processes resemble CVCV root-based total reduplication in mimetics in that they are not subject to *rendaku*, unlike normal compounding and prosaic reduplications (Nasu 2002: 22–23). Therefore, the lexical accent of the CVCV mimetic root can be positioned through the investigation of a phonological structure in *dvandva* compounding. For example, given that the accent of a *dvandva* compound  $si|ro-kuro$  ‘black and white’ retains the accent of the first component  $si|ro$  ‘white’ but discards the accent of the second component  $ku|ro$  ‘black’ (Nishimura 2013: 80–81), one can speculate that the accent of the mimetic word  $ki|ra-kira$  ‘twinkling’ is derived from the root  $ki|ra$ , where the accent falls on the initial mora.

Consequently, measured against criterion 5, canonical instances include reduplicatives where their root accents are always present, as in (16). Less canonical instances include reduplicatives in (17a–b), where a root accent can be either present or absent (i.e., pseudo-flat accent). Non-canonical instances, where an accented mimetic root derives an accentless reduplicative form (i.e., flat accent), do not exist. Note that although accentless mimetic reduplicatives certainly exist (e.g., *hero-hero* ‘tired and weak’, *mero-mero* ‘having a soft spot in one’s heart’, *rero-rero* ‘completely drunk’), all of these are inherently reduplicated and thus the existence of their original accents cannot be confirmed. Interestingly, mimetic accent totally depends on syntax (Kageyama 2007) and thus canonical instances in (16) typically include mimetics that can be classified as adverbs and verbs; instances in (17a–b) include mimetics that can be realized as both adverbs/verbs and adjectives/nouns.

(16)  $pa|ti-pati$  ‘clapping repeatedly’ (Adv, V),  $zi|wa-ziwa$  ‘permeating slowly’ (Adv, V)

- (17) a. Akita (2009: 42)  
 $nu|ru-nuru$  ‘slimily’ (Adv),  $nuru-nuru$  ‘slimy’ (Adj)
- b.  $ka|N-kaN$  ‘with a clang, blazingly’ (Adv),  $kaN-kaN$  ‘hot, angry’ (Adj)  
 (<  $kaN|$  ‘clang’);  $ru|N-ruN$  ‘happily’ (Adv),  $ruN-ruN$  ‘happy’ (Adj) (<  $ruN|$  ‘happy’)

### 5.6 Syntactic resemblance to root

Criterion 6: No syntactic difference between root and lexeme > difference

As part of the principle related to structural transparency, criterion 6 refers to a syntactic identity between the root and reduplicative form, and states that it is canonical for reduplicative forms to yield no categorical change from their roots. This criterion cannot be evaluated for CVCV root-based reduplication because the root cannot appear independently. Notwithstanding this limitation, CVX root-based mimetic reduplications show different canonicity values from each other on criterion 6. Canonical instances include  $koN-koN$



‘knocking repeatedly’ and *waN-waN* ‘bow wow’ in (18), which do not change the syntactic categories of their roots. Less canonical instances are *paN* ‘popping once’ > *paN-paN* ‘popping repeatedly’: *paN-paN* can be realized as an adverb (with the attachment of the optional quotative marker *-to* or a copula *-ni* for a resultative adverbial use), a verb (with a semantically skeletal verb *iu* ‘say’),<sup>24</sup> and a nominal adjective (with a copula *-da* or *-no*, which functions as a predicate and noun modifier, respectively). On the other hand, its root *paN* is never realized as an adjective.

- (18) *koN(-to)* (Adv) > *koN-koN(-to)* (Adv), *koN(-to-iu)* (V) > *koN-koN(-iu)* (V);  
*waN(-to)* (Adv) > *waN-waN(-to)* (Adv), *waN(-to-iu)* (V) > *waN-waN(-iu)* (V)

### 5.7 A redundant criterion

The core principle of transparency in section 4.3 states that canonical mimetic reduplication shows clear formal and semantic contrasts with roots. Reflecting this, I initially proposed a criterion concerning semantic additivity, separated from the current criteria 4 (phonological identity), 5 (presence of accent), and 6 (syntactic identity), which are related to the phonological, prosodic, and syntactic contrasts between the reduplicants and roots. My proposed criterion stated that canonical reduplicated mimetics establish connotational contrasts with their roots, from the observation that the copying of a morphological form is iconically related to the concept of more of the same thing in a canonical case. Thus, canonical reduplication triggers a change in the connotation of the root rather than its denotation (Fischer 2011: 55). With respect to the criterion on semantic additivity, non-canonical cases would include reduplicated forms that show denotational contrasts with their roots. Canonical cases would include forms that show connotational contrasts with their roots by adding meanings, such as iteration, plurality, continuity, or enhanced intensity, to the semantic core of the roots. This reveals that the canonical and non-canonical instances measured against criterion 1 (iconicity) in section 5.1 totally overlap with the canonical and non-canonical instances of the criterion on semantic additivity. The point of distinction between the two criteria is possibly found in the intermediately canonical instances of criterion 1 – measured against criterion 1, reduplicative forms that are associated with enhanced intensity show intermediate canonicity. On the other hand, the same instances display high canonicity with respect to the criterion on semantic additivity. Despite this, all canonical and non-canonical mimetic reduplication with regard to criterion 1 are also canonical and non-canonical, respectively, with regard to the criterion on semantic additivity, and thus the two criteria are not clearly independent. Accordingly, the seemingly secondary criterion on semantic additivity, motivated from the concept of semantic iconicity, was removed from the current list of canonical criteria for mimetic reduplication.

## 6 The canonical criteria of mimetic reduplication applied to Yamato reduplication

In section 5, various instances of mimetic reduplication were given different canonicity values along six dimensions as canonical, intermediately canonical, and non-canonical. All canonical and non-canonical instances with respect to each criterion are accordingly situated in the theoretical space of possibilities (i.e., the base), which consists of a multi-dimensional structure with a set of criteria. Importantly, the base encompasses

<sup>24</sup> The lexical integrity (i.e., morphosyntactic cohesion) of mimetics with *iu* is not as strong as that with *suru*. Perhaps for this reason, a reviewer stated that mimetics preceding *iu* can be syntactically realized as adverbs (cf. Toratani 2015 argued in favour of the verbal status of mimetics in the syntactic construction in question.).

not only typical and atypical instances of mimetic reduplication but also those of Yamato reduplication – recall that it was defined as constituting reduplication which adds a semantic effect in section 4.3. This enables the measurement of instances of Yamato reduplication against the same canonical criteria for mimetic reduplication, since they share the same base of the internal structure. Thus, in this section, I observe whether instances of Yamato reduplication show the same canonicity patterns with regard to each criterion as instances of mimetic reduplication. Although *a priori* it is not obvious that the two sets of phenomena behave differently in their evaluation along the criteria, the comparison will highlight the relationship between mimetic and Yamato reduplication by identifying how they are alike or, if there is any criterion that differentiates them, how they are different.

### 6.1 Iconicity

Criterion 1: Strongly iconic > weakly iconic > not iconic

Total reduplication in Yamato words can be strongly iconic or less so. Iconic examples include the reduplication of Yamato verbs that is associated with iteration, as in *kasane-gasane* ‘repeatedly’ < *kasane-ru* ‘to pile up’, *kawaru-gawaru* ‘by turns’ < *kawaru* ‘to change’, et cetera. Yamato reduplicative forms that express an intensive meaning, as in (19), are less iconic.

- (19) *yasu-yasu* ‘quite easily’ < *yasu-i* ‘easy’, *taka-daka* ‘very high’ < *taka-i* ‘high’,  
*huka-buka* ‘very deeply’ < *huka-i* ‘deep’, *naga-naga* ‘very long’ < *naga-i* ‘long’

Further reduced iconicity may be found in *kodomo-kodomo (-si-ta)* ‘childish’ < *kodomo* ‘child’, which carries a pejorative meaning.

### 6.2 Productivity of reduplicative forms

Criterion 2: Reduplicative form covers many parts of speech > few

Yamato reduplication shows differing degrees of canonicity with respect to criterion 2, just as with mimetic reduplication. For example, *sore-zore* ‘each’ in (20) can cover many parts of speech, such as a noun, no-adjective, and adverb, with the accompaniment of appropriate grammatical markers, and hence it is highly canonical.

- (20) Yamato form covering multiple parts of speech:
- a. *Sore-zore ga kuruma o mot-te i-ru.*  
each NOM car ACC have-CONJ be-NPST  
‘Each (person) has a car.’ (Noun)
  - b. *sore-zore no seikaku*  
each COP personality  
‘each personality’ (no-adjective)<sup>25</sup>
  - c. *Hanako to Taroo ga sore-zore purezento o morat-ta.*  
Hanako and Taro NOM respectively present ACC receive-PST  
‘Hanako and Taro received presents respectively.’ (Adverb)

Less canonical examples include Yamato forms that cover only one syntactic category, such as nouns (e.g., *eda-eda* ‘branches’, *hana-bana* ‘flowers’), adverbs (e.g., *ari-ari* ‘vividly’),

<sup>25</sup> It is an adjective in a semantic sense, but is not syntactically distinguished from a regular noun (Kaiser et al. 2013).

*huka-buka* ‘(bowing) deeply’), nominal adjectives with the attachment of a copula (e.g., *hisa-bisa* ‘(in a) long time’, *hodo-hodo* ‘be moderate’), verbs with the attachment of *-suru* (e.g., *hono-bono* ‘heartwarming’, *hore-bore* ‘with adoration’), and pronouns (e.g., *ware-ware* ‘we’, *dare-dare* ‘so and so’).

### 6.3 Productivity of root in reduplication

Criterion 3: Root appears in many phonologically distinct reduplicative variants > few

Unlike mimetic roots, Yamato roots do not take any suffixes before reduplicative processes, so they do not appear in many distinct variants of reduplication. Therefore, none of the Yamato roots are canonical measured against criterion 3, indicating that *no* Yamato reduplication looks like canonical mimetic reduplication with respect to this criterion. Consequently, criterion 3 provides a strong point of differentiation between mimetic reduplication, where roots can appear in either many or few reduplicative variants, and Yamato reduplication, where roots can only appear in a single reduplicative form.

### 6.4 Phonological resemblance to root

Criterion 4: Full phonological resemblance of reduplicant to root > partial > no resemblance

In section 5.4, the majority of instances for mimetic reduplication appeared to be canonical, without any instances of intermediate canonicity with respect to criterion 4. There were a few instances that were not definable measured against this criterion. For example, the mimetic reduplicatives which do not have independently existing unreduplicated roots were undefined. This canonicity pattern is quite different from that observed in Yamato reduplication. Most Yamato reduplicative forms show intermediate canonicity by showing partial phonological resemblance to their roots through the application of *rendaku* (within the appropriate phonological environment), and only a minority, including (21), constitute canonical instances.<sup>26</sup> (Some of them are influenced by their distributive semantic value, unlike mimetic instances.) Non-canonical instances with respect to criterion 4 are not found in Yamato reduplication. Consequently, criterion 4 provides a strong point to set mimetic reduplication apart from Yamato reduplication.

- (21) *hini-hini* ‘day by day’, *hitori-hitori* ‘each person’, *kaku-kaku* ‘thus and thus’,  
*tama-tama* ‘sometimes’

### 6.5 Prosodic resemblance to root

Criterion 5: Accent present > partially present > absent<sup>27</sup>

Unlike mimetic reduplication (section 5.5), Yamato reduplication can display different canonicity values, measured against criterion 5. For example, canonical Yamato reduplicatives in (22) retain root accent – note that accent location may be different from their roots because it is determined by a surface moraic structure. Canonical cases also include *hodo-hodo* ‘moderately’ (< *hodo* ‘degree’) in which both the root and reduplicative do not have

<sup>26</sup> As mentioned in fn. 15, some may argue that they could be considered as examples of quasi-mimetic reduplication, although they do not possess sensory semantics which is the core defining characteristic of ideophones across languages (Doke 1935; Vigliocco & Kita 2006; Dingemanse 2012). The strength of the canonical approach lies in the fact that it shows *exactly* which properties create such confusion over the categorical membership of the data; all mimetic reduplicatives are canonical with respect to criterion 4 (as seen in section 5.4), and this gives rise to a mimetic-like impression of the prosaic examples in (21) which resist *rendaku*.

<sup>27</sup> Compared to mimetic reduplication, syntactic categories affect the realization of accent far less systematically in Yamato reduplication, but this difference in syntax-accent correspondences is not the main concern of this criterion.

a lexical accent. Non-canonical instances are found in (23), in which the accent of roots is totally removed. An instance such as *eda|eda* (< *eda*) is also non-canonical, because there is no clear derivational relationship between the accentless root and the accented reduplicative. Irrespective of the absence of the root accent, the reduplicative *eda|eda* attracts an accent because it follows the default compounding accent rule, i.e., that when a base root is bimoraic or trimoraic, an accent falls on the antepenultimate mora of a compound (e.g., *kami|gami* ‘gods’ < *ka|mi* ‘god’; *kokoro-go|koro* ‘in each mind’ < *kokoro* ‘mind’; Nishimura 2013: 96). Intermediately canonical instances are found in (24a–b), in which Yamato reduplicatives show pseudo-flat accentual patterns. Consequently, criterion 5 clearly differentiates mimetic reduplication from prosaic reduplication.

(22) *ari-a|ri* (< *a|ri*), *dar|e-dare* (< *d|are*), *han|a-bana* (< *han|a*), *hanare-b|anare*  
(< *han|are(-te)*)

(23) *kire-gire* (< *k|ire(-te)*), *iro-iro* (< *ir|o*), *naka-naka* (< *n|aka*)

(24) a. *nami-nami* < *nami* ‘wave, ordinary’:  
*nami-n|ami-to sosogu* ‘pour sth to the brim’  
*nami-nami sosogu* ‘pour sth to the brim’  
*nami-nami-nar-ana-i* [RED-RED-become-NEG-NPST] ‘extraordinary’

b. *yasu-yasu* < *yas|u-i* ‘easy’:  
*yasu-y|asu-to koto-ga hakobu* ‘things go easily’  
*yasu-yasu koto-ga hakobu* ‘things go easily’

## 6.6 Syntactic resemblance to root

Criterion 6: No syntactic difference between root and lexeme > difference

In mimetic reduplication, CVX root-based reduplicatives show different canonicity values from one another with respect to criterion 6. Likewise, instances of Yamato reduplication show a range of canonicity values. For example, while *eda-eda* ‘branches’ derived from *eda* ‘branch’ retains the syntactic category of the root (i.e., a noun), *osoru-osoru* ‘timidly’ or *yuku-yuku* ‘someday’ (adverbs) do not preserve the syntactic category of their roots – *osoru* ‘fear’, *yuku* ‘go’ (verbs). Generally, a syntactic change between root and reduplicative is more readily apparent in Yamato reduplication compared to mimetic reduplication. Also, the syntax of mimetic reduplication is somewhat different from that of Yamato reduplication in that it involves morphology (addition of *-suru*, *-to*, copulas, etc.) in a systematic way. However, these detailed differences in their syntactic behaviors do not impinge upon the fundamental fact that both mimetic and Yamato possess canonical and non-canonical instances measured against criterion 6, and thus they can be grouped together.

## 6.7 Summary

To summarize the comparisons between mimetic and Yamato reduplication, criteria 1, 2, and 6 group mimetic reduplication together with Yamato reduplication. On the other hand, criteria 3, 4, and 5, which are related to the productivity of roots in reduplication and, the phonological and prosodic resemblance of reduplicants to their roots, strongly differentiate the two sets of phenomena. For a bird’s eye view of the different gradations of reduplication in mimetics and Yamato words with respect to the six canonical dimensions, see Table 6 below. Relevant canonical and non-canonical examples are given (if any) for each dimension.

Criterion	Mimetic reduplication		Yamato reduplication	
	Canonical	Non-canonical	Canonical	Non-canonical
1	✓ <i>batya-batya</i>	✓ <i>toN-toN</i>	✓ <i>kasane-gasane</i>	✓ <i>kodomo-kodomo</i> (-si-ta)
2	✓ <i>hira-hira</i>	✓ <i>teku-teku</i>	✓ <i>sore-zore</i>	✓ <i>eda-eda</i>
3	✓ <i>bata-bata</i>	✓ <i>sara-sara</i>	*	Majority
4	✓ Majority	*	Minority (Majority show intermediate canonicity)	*
5	✓ <i>pa ti-pati</i>	*	✓ <i>hodo-hodo</i>	✓ <i>kire-gire; eda eda</i>
6	✓ <i>koN-koN</i>	✓ <i>paN-paN</i>	✓ <i>eda-eda</i>	✓ <i>osoru-osoru</i>

**Table 6:** Canonicity values of mimetic and Yamato reduplication relative to the six criteria for mimetic reduplication.

Notably, the result of the canonical analysis resembles a classic diametric approach, in which a proposition P must entail its diametric opposite, non-P, and vice versa.<sup>28</sup> However, unlike a diametrical analysis, nothing in the canonical approach makes this kind of result inevitable: it reflects the nature of the data, not any inherent restrictions in the method (Erich Round, personal communication). Indeed, the canonical approach makes the nature of *variation* apparent. For example, Table 6 shows that Yamato reduplicative form *eda-eda* is non-canonical with respect to criteria 2 and 5, because it does not cover multiple syntactic categories and its accentual pattern does not show a clear derivational relationship with its root accent. However, it is highly canonical with respect to criterion 6, because it belongs to the same syntactic category as its root base. This conflict does not imply that there is a problem of the criteria *per se* but reflects the fact that individual reduplicative forms possess multi-dimensional variability.<sup>29</sup>

## 7 Discussion

The contribution of the current canonical analysis of variations in reduplicative processes in Japanese is threefold: (i) it has clarified the relationship between mimetic and Yamato reduplication by identifying in which specific dimension mimetic and prosaic reduplication can be united or disunited. Their relationship had been more ambiguously covered in the previous descriptive literature on mimetics; (ii) it has provided objective and concrete grounds to empirically discuss the multi-dimensional variation in the two sets of phenomena, as a way of defining the theoretical space of possibilities and logically consistent scales of the phenomenon; and (iii) it has represented an innovative application of Canonical Typology to a language-internal comparison.

Section 7.1 finds external validity of the first point of the contribution and section 7.2 deals with the remaining points of the contribution by considering wider cross-linguistic implications of the proposed criteria for Japanese mimetic reduplication.

### 7.1 External validity for the current findings

In section 6, it was shown that the number of reduplicative derivatives (types) of a root, and the presence/absence of *rendaku* and accent differentiate mimetic reduplication from Yamato reduplication. The points of differentiation emerged out of the empirical proper-

<sup>28</sup> “diametric” is a description, not a named theory.

<sup>29</sup> A similar multi-dimensional variability is also observed among individual phonaestemes (Kwon & Round 2015).



ties of variation among reduplicated mimetic and Yamato items that also have statistical or experimental validity.

First, total-reduplicative mimetics comprise more than 40% of the mimetic stratum (Nasu 2002; 2003; Kadooka 2007). Taking Bybee's (1985: 133) view of productivity (that "productivity of morphological rules must be connected to high type frequency"), we see that there is strong statistical evidence for the salience of productivity in mimetic reduplication. This is directly relevant to criterion 3 (productivity of root in reduplication). With respect to experimental evidence, no previous research has examined the difference in productivity of reduplication between mimetic and Yamato words. This is currently under investigation (Kwon in prep.).

Second, there is some experimental evidence suggestive of the importance of deviant morphophonological characteristics of ideophones in distinguishing them from ordinary vocabulary, as exemplified in Akita (2008; 2009: Chapter 4; 2011). This is relevant to criterion 4 (phonological resemblance to root). In Japanese compounding, the presence of *rendaku* is considered the default as a dependency link between two morphemes (Labruno 2012). Accordingly, mimetic reduplication (in which *rendaku* never occurs) possesses an apparent morphophonological deviance, in contrast to Yamato reduplication. Akita (2008; 2009; 2011), in his perception experiments, showed that native speakers of Japanese were more sensitive to magnitude symbolism (i.e., the phenomenon by which certain sounds, particularly vowels, are associated with referents' size) in novel words that share the distinctive morphophonological and lexical-semantic characteristics of existing Japanese ideophones, compared to non-ideophone-like novel words. The result suggests that both referential specificity and aberrant morphophonology are important to differentiate ideophones from non-ideophones. This can partially serve as evidence that the absence of *rendaku*, which is not the default in Japanese compounding, provides a psychologically salient point of differentiation between mimetic reduplication and Yamato reduplication.

Lastly, the role of criterion 5 (prosodic resemblance to root) as a differentiator gains external validity from the experimental results of Dingemanse et al. (2016), which stressed the importance of supra-segmental features in distinguishing sound-symbolic words from ordinary vocabulary. Using a binary-choice task, Dingemanse et al. (2016) examined the correct guessing rates of Dutch listeners when guessing the meanings of ideophones from five languages that were not familiar to them. They created four different versions of auditory stimuli for each ideophone with speech resynthesis (i.e., the original recording, a full resynthesis, a phone-only resynthesis that retained original segmental properties, and a prosody-only resynthesis that retained original prosodic properties). They then presented only one version of each ideophone to each listener and asked them to choose the correct translation from two options. The results showed that the listeners' correct guessing rates were not significantly above chance in the prosody-only and phone-only conditions for cross-modal ideophones, indicating that both supra-segmental and segmental properties are necessary to detect the iconic effect of sound symbolism which is not attested in ordinary vocabulary.

This could also serve as indirect evidence for criterion 4, if we consider that *rendaku* involves a prosodic alternation rather than a morphophonological one. In Japanese, *rendaku* plays a role as a compounding marker, by placing a voiced feature on the initial obstruent of the second morpheme in a compound. Such a voicing process (that occurs at morpheme juncture) has only a small impact on language comprehension, just like a pitch accent difference does. To exemplify, many compound words that have both forms (with and without *rendaku*) show no meaning difference between the two (e.g., *waru-kuti* / *waru-guti* 'calumny', *kenkyuu-sho* / *kenkyuu-jo* 'research center', *kaki-tome* / *kaki-dome* 'registered

mail') (Labrune 2012). Given the possibility of considering the absence of rendaku in mimetic reduplication as a prosodic peculiarity, one can posit that this experimental result, which revealed that the 'presence' of some prosodic features characterizes ideophones, may not be straightforwardly germane to criterion 4, which points to the 'absence' of a *possibly* prosodic feature in mimetics. Nevertheless, it does indirectly validate criterion 4 as more important than others when characterizing mimetic reduplication, by confirming the salience of a prosodic deviance that underlies the absence of rendaku in mimetic reduplication.

## **7.2 Cross-linguistic implications of the proposed canonical criteria for Japanese mimetic reduplication**

Are the dimensions specifically designed for Japanese mimetic reduplication within the framework of Localized Canonical Typology exportable, to allow examination of sound-symbolic reduplication across languages? Conversely, are they highly localized and therefore not applicable for the wider cross-linguistic typology of reduplication?

Answers to these questions are not clear-cut, as the current criteria have differing degrees of cross-linguistic applicability; some could be considered language-general (either to a strong or weak degree) while others could be considered restrictively language-specific.

Language-general criteria that enable cross-linguistic typology of sound-symbolic reduplication include criteria 1 (iconicity), 3 (productivity of root in reduplication), and 4 (phonological identity). To recall, reduplication is iconic in nature, insofar as morphological repetition of form and its semantic association with a cognitive increase of some sort are concerned (Moravcsik 1978; Dressler 2005; Inkleas & Zoll 2005; Fischer 2011). Reflecting this fact, criterion 1 states that, if mimetic reduplication is semantically iconic, it is more canonical than if it is less or non-iconic. Maintaining logical consistency, criterion 4 states that phonological identity between base and reduplicant entails higher iconicity than phonological similarity in mimetic reduplication. Apparently, the two criteria concerning semantic and phonological contrasts between base and reduplicant can apply to any language, so long as their ideophones display reduplicative processes in which the relation between base and reduplicant is observable. Together with criteria 1 and 4, criterion 3 also exhibits a strong degree of cross-linguistic applicability, since it places its ground on a cross-linguistic observation that reduplication, which is a syntagmatically iconic device, is prevalent in the ideophonic lexicon (Nuckolls 1999; Tedlock 1999; Dingemans 2015).

Some criteria, such as criteria 2 and 6, concerning syntactic categories of the outcome of reduplication, and syntactic contrast between base and reduplicative form, respectively, are language-general only to a limited degree. In Japanese, mimetics cover multiple parts of speech and thus, there was a need to measure the grammatical variability of mimetic reduplication with logically consistent criteria. Perhaps, criteria 2 and 6 could be exported to evaluate reduplication in languages where the syntactic membership of ideophones is not restricted to a single part of speech, as with Japanese. Such languages may include Hausa (Afro-Asiatic), in which ideophones can be grammatically classified as adverbs, adjectives, and verbs (Newman 1968). For languages such as Somali (Afro-Asiatic), in which all ideophones are classified as nouns (Dhoorre & Tosco 1998), criteria 2 and 6 would be considered superfluous.

Lastly, criterion 5, pertaining to a prosodic contrast between base and reduplicative form, is highly language-specific because it specifically refers to pitch accent, which is a distinctive prosodic feature of Japanese. Thus, in its current version, for example, it cannot evaluate reduplication in ideophone-rich tonal languages, such as Hausa

(Newman 2001), Emai (New Benue Congo; Egbokhare 2001), and Kisi (Southern Atlantic; Childs 1988). In order to stand as a dimension that enables comparison of reduplication in a wide range of languages, across the spectrum from stress languages to tone languages, criterion 5 requires a generalization of the prosodic feature it specifies.

## 8 Conclusion

A wide range of instances in mimetic and Yamato reduplication was evaluated with respect to a set of consistent criteria. Since there was no set of properties that are both unique to mimetic reduplication and totally exclude Yamato reduplication, the number and nature of the criteria were defined through empirical observations that the most straightforward reduplicated mimetics (which approximate the canonical ideal of mimetic reduplication) possess the maximal diagrammatic iconicity, formal transparency, and productivity of roots in reduplication. As a result, although it was not evident ahead of time that there would be any criterion to distinguish the two sets of phenomena, the current canonical methodology showed that mimetic and prosaic reduplication possess both overlapping and non-overlapping characteristics. In detail, within the framework of Localized Canonical Typology, it was revealed that they are alike in terms of the iconicity of lexemes (criterion 1), the frequent occurrence of lexemes in many parts of speech (criterion 2), and syntactic resemblance of the reduplicant to the root (criterion 6). However, they are different in terms of the productivity of roots in reduplication (criterion 3), and phonological and prosodic resemblance of the reduplicant to the root (criteria 4 and 5). The strength of this paper is that it has unambiguously defined the relationship between the two sets of phenomena, through comparisons of variation among instances of mimetic and Yamato reduplication against multiple and uncorrelated criteria, not through the predetermined assumptions that they are similar or even identical within the language. It has also demonstrated the utility of Localized Canonical Typology, for the precise description and analysis of complex categories in a single language. As a final remark, the approach of Localized Canonical Typology has the potential to expand its scope to embrace a diversity of languages. In this regard, the relationship between the localized version of Canonical Typology and its cross-linguistic cousin could be a promising target of investigation for future studies.

## Abbreviations

ACC = accusative, CONJ = conjunctive, COP = copula, GEN = genitive, MIM = mimetic, NA = nominal adjective, NEG = negation, NOM = nominative, NPST = nonpast, QUOT = quotative, RED = reduplication

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## Competing Interests

The author has no competing interests to declare.

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