The mimetic stratum in Japanese exhibits unique phonological behavior unique within Japanese. Previous studies have examined the sound symbolic correlates as it pertains to relative positional values and phonemic values in the semantic tier within a given mimetic word. I wish to propose a moraic approach to phenomena witnessed in the phonological tier which I believe gives greater insight into the multi-dimensional complexities of the mimetic stratum in Japanese.
dedicated to:

Donna Jo Napoli, whom without this would have been impossible, and whose affection and enthusiasm is unflagging

Tomoko Hanawa, Minako Kobayashi, Yoko Koike, and Kimiko Suzuki, all of the Japanese department at Haverford College, who have nurtured my interest in the Japanese language over the past four years

and

Kohei Momose, a dear friend whose endless patience with my pestering questions has been invaluable
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VI. Conclusions Regarding the Mimetic Stratum in Japanese 52
The Japanese language has drawn particular attention in recent years for its distinctive system of mimetics, a systemic and heavily utilized stratum of lexical items that represent the explicit acoustic characteristics of naturally occurring sounds and manners of action. Mimetics in Japanese are split into three categories, giongo, giseigo, and gitaigo. Giongo and giseigo are typically grouped together and are composed of words that we identify as onomatopoeic; giongo being the sounds created by inanimate objects, and giseigo being sounds produced by animates. Gitaigo, on the other hand, constitute a broader class of sound symbolic words that represent non-auditory sensations, psychological states, and bodily feelings:

(1) Giongo  
   a. Zaazaa – the sound of rain falling strongly  
   b. Tsurutsu – the sound of slurping noodles  

(2) Giseigo  
   a. Wanwan – ‘woof-woof’, the sound of a dog barking  
   b. Nyanya – ‘meow-meow’, the sound of a cat meowing  

(3) Gitaigo  
   a. Pikapika – glitter, be shiny  
   b. Iraira – to be irritated  

Together these three categories form a system with distinct syntactic, morphological and phonological characteristics that are utilized mainly in colloquial speech (Hamano 1994). Sound symbolism reputedly exists in a number of languages - including English, witness *Her shoes went slip slap across the floor; The bells went tinkle tinkle in the breeze* - but the Japanese system has gained fame for being especially extensive and expressive.

I. Theoretical Framework

Throughout the literature on sound symbolism in many languages, various words arise to describe the phenomenon based upon the region. For simplicity, I will stick to the term sound
symbolism to refer to the universal phenomenon and mimetics to refer to the Japanese system in particular. I will only use other terms if I am taking a direct quote from another author and I will indicate that it is equivalent to mimetics.

The discussion of sound symbolism involves identifying lexemes that, by convention of the society that uses them, are taken to have an inherent meaning that is apparent in their acoustic structure. These sounds representing bits of meaning have been termed phonesthemes, and are generally relatable to the human perception and human senses, e.g. hearing, vision, or tactile sensation (Abelin, 1999). These phonesthemes are classified as submorphemes, and fall somewhere in the spectrum between morphemes and phonemes. Sound symbolism is a touchy topic within linguistics because the very existence of sound symbolism questions the long-held principle that semantic items are assigned phonological representations with a high degree of arbitrariness (Nuckolls 1999).

By suggesting that the phonological representations of some words within a lexicon are derived from the acoustics of nature removes this idea of arbitrariness. However, it has been noted that "two different languages may easily use the same phonetic variable (vowel height) to convey the same range of sensations (size), and come up with exactly opposite solutions, both being equally iconic" (Hinton et al., 1995:113). Hinton points out that it is often taken for granted that [i] will universally symbolize smallness while lower vowels, such as [a], will come to represent largeness on the opposite end of the spectrum (1995:107). However, Hinton identifies a language for which the opposite of this paradigm is true: the Southeast Asian language Bahnar, a member of the Mon-Khmer language family. In Bahnar the high vowels [i, u, ii, uu] indicate "enormous", the mid vowels [e, o, ee, oo] indicate "big", and the low vowels [ɛ, ɔ, ɛɛ, ɔɔ] indicate "small" (Hinton et al, 1995:112). This iconicity is achieved by the language.
"focus[ing] upon different parts of the rich sensation package provided by articulatory gestures", such as the volume of the tongue in contrast to the size of the air passage between the tongue and the palate (Hinton et al., 1995:113). In this manner, iconicity can be viewed as "both physiologically motivated and culturally relative at the same time" (Hinton et al., 1995:113).

a. Abelin’s Applied Framework In Swedish

Sound symbolism is evident not just with vowels, but also with consonants. Abelin's work on sound symbolism in Swedish correlates frequently occurring consonant clusters with categorial meanings (Abelin, 1999: 115-141). Abelin presents an intriguing model of sound symbolism that interprets phonesthemes as "bound morphemes which often can be analytically distinguished in a fashion similar to free morphemes" (Abelin 1999: 8), and these phonesthemes and free morphemes combine in varying proportions to form onomatopoeia and other sound symbolism.

\[
\begin{array}{ccc}
\text{sound symbolism or motivated expression} & \checkmark & \backslash \\
\text{onomatopoeia} & \checkmark & \text{other sound symbolism} \\
\checkmark & \backslash & \checkmark & \backslash \\
\text{phonesthemes} & \text{free morphemes} & \text{phonesthemes} & \text{free morphemes}
\end{array}
\]

Abelin discusses in his model the validity of the claim that sound symbolism is in fact present in all languages and thus the importance of a universal model as opposed to a variety of language-specific models; he quotes Saussure (1916) as saying "onomatopoetic words are never organic elements of a linguistic system" and Buhler (1933/1969) as promulgating the concept that onomatopoeia is a linguistic reversion "since language has evolved beyond primitive needs and means of self-expression" (Abelin 1999:9). On the other hand, Abelin summarizes Lakoff
and Johnson (1980) into the opposing view that "in all of language, including syntax, there are many cases of non-arbitrary relations between form and meaning" which "point[s] to a view of non-arbitrariness being integrated in language and not in a separate category" (Abelin 1999:10) Abelin also presents the ideas of Wescott (1975) and his subdivision of a language into the "microlanguage" and the "allolanguage" - essentially the microlanguage is "the core of language which is subject to well-known grammatical rules - i.e. conventional language" while the allolanguage possesses three traits: "'[it] is alienated from conventionally structured speech', [has] 'a closer relation between sound and sense than [the microlanguage]', and [has] 'a retention.. of an older and simpler manner of self expression alongside one that is more recent and complex'" (Abelin 1999:11). This last point is followed by the corollary that "sound changes often do not affect sound symbolic words, so that phonemes that should have disappeared in a language or have become restricted to certain environments are still to be found in sound symbolic vocabulary" (Abelin 199:11). This concept of the distinction between the microlanguage and the alloloanguage can be applied to the mimetic system within Japanese on all three points and will be discussed in greater depth later.

As far as this idea of universality goes, out of all the approaches Abelin discusses, I again find Wescott's (1975) the most applicable. That is, Abelin paraphrases him by stating "what is not in the microlanguage (conventionally structured speech) is to be found in the allolangue (speech which is alienated from conventionally structured speech)" and this universality can be seen "in processes like reduplication and lengthening" (Abelin 1999:21). Indeed, that combined with Abelin's interpretation of Bolinger (1965) as supporting an existence of a "tendency of forms to mold themselves on other forms with like meanings and of meanings to mold themselves on other meanings, conveyed by like words, is universal" (Abelin 1999:20), builds a
framework for universal sound symbolism that is not based upon the individual correlations between sound and meaning. Rather, this framework is built upon processes that are utilized to create interrelated webs of connected and productive words. This is a theoretical approach to morphological concepts in mimetics that I support.

Abelin builds his own framework for the structure and development of sound symbolic systems off of six dimensions:

- universality - language specificity
- innateness
- degree of conventionalization
- productivity
- centrality in language (historically, genetically, frequently)
- types of context determination

These six dimensions can be organized into the following web of relationships, of which the arrows represent different types of relationships:

This thesis will focus on three of these dimensions in Japanese. That is, I will investigate how the language specific conventions of Japanese aid native speakers in navigating the Japanese mimetic system to arrive at actual meaning and the range and extent to which the mimetic system in Japanese is productive.

Abelin approaches Swedish data with a mathematical yet qualitative methodology. He begins by identifying semantic fields by which phonesthemes can be qualitatively divided:
Hearing sound, noise (dull, loud, indistinct, big, small, rushing liquid)

Vision light (small, big, moving, dark)

Touch surface structure or substance (thick, coarse, soft)

Movements (random, twisting, swift, locomotion, up and down, quick, violent; or stop)

Forms (bent, line having breadth, projection or protuberance, round, hollow)

Mind attitude, emotive (indifference, dislike)

Pejorative (old, awkward, heavy, coward, failure, deceiving, deficient, clumsy, disorder, confusion, rubbish, trash)

Size diminutive
augmentative (increase in size, added intensity)

Number collectives (heap or pile, cluster or knot, indefinite number)
intermittent (distribution in space, plurality, repetition, discontinuity)

Various liquid
steady, firmness
destruction (hit, fragments, sharp cutting)
inside
tense (past tense, past participle)
piece of performance
unusual semantic function (Abelin 1999:36)

The goal is to identify a sound or sound cluster that occurs in a series of words whose meanings can all be correlated back to one of these categories. This can be tricky because the meaning of a word shifts over time and etymological roots become distorted. However, Abelin sets up a method to deal with this. He argues that "sound symbolic words can be less static in both a diachronic and microgenetic perspective than more arbitrary words are, since sound symbolic words can be easily created. The phonesthemes [that fuel these words], however, are stable and sound symbolic words are created assistance of phonesthemes" (Abelin 1999:49).

With this in mind, a four-option paradigm can be created:

<table>
<thead>
<tr>
<th></th>
<th>+conventional</th>
<th>-conventional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arbitrary Door</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivated Shriek iiiiiik</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Abelin 1999:50)
This piece of the framework is important to keep in mind as one considers the data from Japanese because when one speaks of motivated words in Japanese, this concept of -conventional forms can be helpful in understanding the organic and highly contextualized linguistic flair of slight variation on standard forms. For example, the following list of Japanese words will be dealt with analytically later:

- zabuzabu
- zabuQio
- zabuNio
- ! zabuNzabuN
- zaNburi
- ! zaburi
- ! zaburizaburi

This is list of productive forms all relate semantically to splashing or stirring water, with varying nuances. The three marked with the exclamation point display more unusual phonological patterns while the unmarked ones are easily fitted into phonological templates governed by defined rules. The degree to which mimetics fit into semantic binaries of conventional versus unconventional and arbitrary versus motivated must continually be evaluated because mimetics have a naturally tendency to toe the line.

Building upon this idea of sound-meaning correlates, the interrelatedness of words and phonoosthemic families, and the degree to which conventionalism is inherent in the system, Abelin begins to build his analysis of the Swedish sound symbolic system. I will extract one example of the correlation he draws between a consonant cluster and its phonosthemic meaning: /sl-/. 

The consonant cluster /sl-/ is the largest cluster in absolute numbers in Swedish. There are 24 tokens associated with the 'perjorative' semantic grouping, 12 tokens associated with the 'wetness' grouping, 12 tokens associated with the 'long thin form' grouping, and 11 tokens
associated with the 'slackness' grouping, as well as a few smaller, minor groupings (Abelin 1999:118-9). Unique to this consonant cluster is the feature "slackness" (Abelin 1999:119). Though /sn-/ has a different overall distribution from the /sl-/ cluster, they both are dominated by the feature 'perjorative' (Abelin 1999:119). The correlations between sound and meaning for onset consonant clusters, vowels, and coda consonant clusters in the Swedish system is analyzed and carefully documented at this level of detail by Abelin.

While there are clear and well-established connections for these correlations in Swedish, the correlations do not match up with those identified in Japanese by Hamano (1996). That invalidates neither Abelin's nor Hamano's research, but it makes it clear that there is no inherent and fundamental system of correlations for phonesthemes within the human mind. This is not surprising considering that complex consonant clusters like /sl-/ and /sn-/- are not permitted within Japanese phonology. Likewise, it would be unreasonable to imagine that Japanese would be unable to voice the range of meanings included in the "perjorative", "wetness", "slackness", and "long thin form" meaning groups that are associated with /sl-/ in Swedish simply because they lack the phonology to do so. If such a reality existed, phonemic inventories would have the ability to limit the range of expressivity available to a speaker of a certain language and that would have a serious ripple effect across the language. However, we see no such effect, which leads one to conclude that it is not the individual correlations or phonesthemes which are important but rather the organization of the system. Toward this end an analytical model tailored to the phonology of Japanese is necessary and that model can adhere to the framework principles presented by Abelin without being strictly obedient to the language-specific, convention-bound details of correlation. This only further solidifies the idea that symbolism within language can be seen as a method of organization and connections that cognitively facilitate lexical storage and
language production for the speaker, but arbitrariness can be seen in sound symbolism in the variables by which a language and its speakers choose to correlate sound with meaning.

Current analysis of Japanese mimetics paints a complex pattern of reduplication and various phonological processes that combine to create a wide range of "expressives" - Hinton's term for mimetics. Current analysis categorizes Mimetics as their own historical class of words, a lexical stratum unto themselves (McCawley 1968) and defines very narrow unique phonological characteristics that set them apart from the rest of the lexicon. Giongo and giseigo types represent the smallest percentage of Japanese mimetics and tend to be irregularly patterned; this is because they most closely adhere to the physical representations of sound in nature. However, for the gitaigo type, the current analysis as in Hamano (1998) divides the words into CV and CVCV based templates, and identifies regular variations on those templates which can be utilized to add additional emphasis to the root (Hamano 1998). It is necessary to understand the lexical strata of Japanese however, before undertaking detailed investigation of the mimetic templates.

b. Lexical Strata In Japanese

The Japanese lexicon as a whole has been separated into roughly four categories based upon semantic and phonological characteristics that divide upon rather clear lines of nativeness and degree of assimilation. The sublexicons are identified as the Native (Yamato) stratum, the Sino-Japanese stratum, the Foreign stratum, and the Onomatopoetic/Mimetic Stratum (Ito and Mester 1999). To illustrate these broad categories, examples are provided:

(1) Native (Yamato) stratum
   a. Kotoba  “word, language”
   b. Oto  “sound”
   c. Hanashi  “talk”
d. Kuruma   “wheel, car”

(2) Sino-Japanese stratum
   a. Gen-go-gaku   “Linguistics” (speak-word-study)
   b. On-in-ron    “phonology” (sound-rhyme-theory)
   c. Den-wa       “telephone” (electric-speak)
   d. Ji-dou-sha   “automobile” (self-moving-vehicle)

(3) Foreign stratum
   a. Rangeeji-raboratorii   “language laboratory”
   b. San-tora        “sound-track”
   c. Terefom-kaado   “telephone card”
   d. Pato-kaa       “patrol car”

(4) Onomatopoetic/Mimetic stratum
   a. Pera-pera      “(speak) fluently”
   b. Kori-kori     “crisply”
   c. Sui-sui       “lightly and quietly”
   d. Mota-mota     “slowly, inefficiently”

It is important to note that there is a gradual and hierarchical structure to these
delineations and that no boundary is so clear as to be nonnegotiable - the spectrum is continuous,
but large groupings exist so as to make generalizations possible (Ito and Mester 1999: 64-65).
Though mimetics have unique phonological features that differentiate from the other strata, other
categories of the words that share a few of these phonological features to a small degree do not
predicate the co-grouping of any of these classes. For example, many mimetics classified under
the CVCV template show extensive and regular patterns of reduplication, but it does not follow
from this that every instance of reduplication is a mimetic or vice-versa.

Mimetics within Japanese occupy a range of syntactic positions and the expressivity
derived from the verbs they collocate with produces a much greater range of manners of action
than the verbs alone convey. Indeed, these verbs are low in information without the
accompanying mimetic. This idea is often illustrated through an analogy to English: while in
English we have a wide range of mimetic verbs to render different manners of walking, such as
strut, stroll, saunter, stumble, sneak, and stomp, among others, Japanese achieves the same effect by combining various mimetics with the verb aruku, 'walk'.

(5) Wander urouro suru
(6) Stroll burabura (to) aruku
(7) Meander yukkuri (to) aruku
(8) Totter furafura (to) aruku
(9) Trudge tekuteki (to) aruku
(10) Lumber nossinossi (to) aruku

The mimetic narrows the range of the meaning of the verb, and stable, commonly used pairs are well known, but any given mimetic-verb combination is not always fixed (Hamano 1996:12). In order to understand the full range of expressivity that the mimetic stratum contributes to Japanese, each type of mimetic shall be treated individually, and templates or subclasses within each shall be given their due attention as well.

i. The Historical Context and Emergence of the word-initial /p-/ 

Mester and Ito(1999) argue that word-initial /p-/ consonants are a unique feature of the modern mimetic stratum that does not appear in the other strata. In Modern Japanese, the phonemes /p/, /b/, and /h/ are considered a triplet of related but distinct sounds. In Old Japanese, that was not the case. The phoneme /h/ was not present, and /b/ in certain contexts was regarded as an allophone of /p/, because “voicing [was] subject to variation and was assigned by a redundancy rule; it was not a distinctive phonetic feature in OJ [Old Japanese]” (Frellesvig 2010:35). The distinction between these two phonemes was established based upon the fact that when “the mediae /b, d, g, z/ were prenasalized, [m̥b, n̥d, n̥g, n̥z], they were readily distinguishable from the intervocalic phonetically voiced realizations of /-p-, -t-, -k-, -s-/ (Frellesvig 2010:203).

With the emergence of Early Middle Japanese, the /p/ phoneme was lost in many contexts. This change manifested itself in two distinct contexts (Frellesvig 2010:165):
/p/ in medial position after vowels, /-p/-, merged with /-w-/, word initial /p-/ morphed into /f-/

Word final /p/ does not exist as a phonological possibility and the only other context in which /p/ appeared, the /p/ after a moraic oral obstruent /Q/, was preserved (Frellesvig 2010:165). The /p/ phoneme is further distorted with the transition into Late Middle Japanese as the /-w-/ drops from use, essentially becoming /-O-/, and then again in Modern Japanese as the /f-/ (>/p-/) transitions to /h-/ (Frellesvig 2010:201). The /h-/ comes to manifest itself as /ɸ-/ before /u/ and /ç-/ before /i/ (Frellesvig 2010:201, 386-387), and this whole process effectively explains the absence of the /p-/ in the Yamato stratum in Modern Japanese.

c. **Giseigo and Giongo Mimetics**

*Giseigo* and *Giongo* deal forms closest to a real acoustic onomatopoeia in the Japanese language. *Giseigo* and *Giongo* most closely match the traditional concept of onomatopoeia in English, *giongo* being the sounds created by inanimate objects, and *giseigo* being sounds produced by animates. Examination of the following set of animal noises shows no easily identifiable form pattern with respect to sequences of Cs and Vs:

- *kaakaa* crow
- *kokekokko* rooster
- *chuuchuu* mouse
- *nyaanyaa* cat
- *hihiin* horse
- *moomoo* cow
- *wanwan* dog
- *kerokero* frog
- *hoohokekyo* nightingal
Reduplication occurs here, but the CV stems of the reduplicates are just as acceptable to indicate animal sounds as the full reduplicates. That is, one could say *wan* or *wanwan* in somewhat free variation, just as one can say *woof* or *woofwoof* in English. Also, the examples such as *kokekokko*, *hihiin*, and *hoohokekyo* are so irregular in their sequence of Cs and Vs as to be impossible to adjust any rule of reduplication to allow for these exceptions. In the past linguists have been concerned about whether phonesthemes can carry a uniform message across languages or whether mimetics derive their sound symbolism from culturally imposed and conventionally rooted correlation in the human mind (Nuckolls 1999).

Indeed, a frog croaks unaware of the native language of its listener, and how that sound is fixed within the language for the referential ease of its speakers will reflect the phonological and cultural ideology of that language. Contrast the syllable structure of *kerokero* and its English partner *croak*, or the *kokekokko* of the Japanese rooster and the *cockledoodledo* of the Western rooster. The *kaakaa* of the crow is not so difficult for the human ear to receive and translate into an acoustic form acceptable and reproducible by the human mouth, and thus it surfaces in a similar form in both Japanese and English. Ultimately the source of the true onomatopoeic words is a natural sound, so there should be links, not precise, but definitely constrained, present to this same source across all languages.

d. *Gitaigo* Mimetics

*Gitaigo* have been much written about because they form a highly noticeable class of mimetics that possess several unique phonological features. One of these is the word-initial /p-/, a feature visible in over one-sixth of mimetic words (Hamano 1998), but not present in any other of the Japanese lexical strata excepting recently acquired loanwords (such as *pai* ‘pie’, *pabu* ‘pub’).
II. An Introduction to Hamano’s Work

Hamano proposes a structure of mimetics that relies on breaking down each word into its constituent part of consonants and vowels (1986, 1996). The following two sections (II and III) summarize her findings, referencing both her 1986 work and her 1998 work. I wish to demonstrate to the reader the detailed manner in which Hamano has deconstructed mimetics and found correlations between their phonological representations and their semantic interpretations. As a non-native speaker of Japanese, I cannot lay claim to a native speaker’s intuition, yet I disagree with some of the nuanced translations of examples sentences given as evidence in Hamano, and I comment upon those as they appear. I was unable to consult native speakers because I did not submit an IRB application, but one of my faculty readers is a native speaker and she largely agreed with my intuitions. However, this thesis is my own and I claim complete responsibility for my representation of Hamano’s work. Mimetics are inherently full of semantic variation, and rather than debate that, I attempt to focus on resolving issues on the phonological tier.

III. Hamano’s CV Roots

Hamano identifies six templates for CV root mimetics and their respective reduplicates (Hamano, 1996: 64):

- C(y)VV
- C(y)V(V)N
- C(y)V(V)Q
- C(y)VV C(y)VV
- C(y)VN C(y)VN
- C(y)VQ C(y)VQ
The (y) represents the optional palatalization of the initial consonant while /N/ represents a syllable-final nasal, /Q/ stands for the initial consonant of a geminate cluster. C can be represented by /p, h, t, d, k, g, s, n, m, y, w, {0}/, while V can be represented by /i, e, a, o, u/ and VV by their respective long counterparts, /ii, ee, aa, oo, uu/ or the diphthongs /ai, oi, ui/ (Hamano 1986:77). Both the /N/ and the /Q/ constitute an individual mora that results in accentuation or exaggeration of the meaning of the CV root.

a. Repetition

Hamano states, “in very expressive contexts, word-size mimetic forms are repeated. In such repetition, the number of forms closely parallels the actual number of acoustic signals or actions, as in the following” (Hamano 1998:65).  

1. Teeburukurosu-o piN-to hiQpaQ-te hosita.  
   table cloth-Acc pull-and dried  
   'I carefully pulled the table cloth into shape and hung it on a line.'

2. Teeburukurosu-o piN piN-to hiQpaQ-te hosita.  
   table cloth-Acc pull-and dried  
   'I carefully pulled the table cloth into shape a couple of times and hung it on a line.'

b. Final Elements /N, Q/ and Ø

“/N indicates that the direction of the motion or the quality of the sound changes toward then end… [or] there is a reaction to or reverberation after the initial movement” (Hamano 1998:67).  

“/Q/ indicates that the object is inflexible and that the action is carried out vigorously in one direction or without a marked change in its physical condition” (Hamano 1998:68). Contrast the elasticity of /N/ versus the abrupt termination of /Q/ below:

3. Gitaa-no ito-o piN-to haziita.  
   guitar-Gen string-Acc plucked  
   'I plucked the string of the guitar.'  
   *Gitaa-no ito-o piQ-to haziita.
4. Nuno-o piQ-to hikisaita.
cloth-Acc ripped
‘He quickly ripped the cloth *into narrow strips.*’
*Nuno-o piN-to hikisaita.

c. **Vowel Length**

“The short vowels, /i, e, a, o, u/ indicate that the event is completed instantaneously or that the distance involved is short. The long vowels, /ii, ee, aa, oo, uu/ indicate that the action takes longer spatially or temporally and is more strenuously carried out” (Hamano 1998:72):

5. PiQ-to momen-no nuno-o hikisaita.
cotton-Gen cloth-Acc tore
‘She tore a *short strip* of cotton cloth.’
6. PiiQ-to momen-no nuno-o hikisaita.
cotton-Gen cloth-Acc tore
‘She tore a *long strip* of cotton cloth.’

d. **Diphthongs**

According to Hamano, “three types of complex nuclei appear in mimetic adverbs. They are /ai, oi, ui/ and are limited to CV-based adverbs. No CVCV-based mimetic adverbs employ a diphthong either in the first or in the second syllable” (Hamano 1998:74). According to her, the presence of a diphthong indicates a “circular movement with a short radius” or “involvement of the circular movement of joints such as the neck, the wrist, the arm, and the leg” (Hamano 1998:74). This is exemplified below:

7. Pui-to yoko-o muk-are-tyaQta.
side-Acc face-Pass-ended up
‘She *turned* her head away from me.’
8. *Poi-to* kago-ni gomi-o hooQta.

basket-to trash-Acc threw

'I tossed the trash into the basket (*using the wrist*).'

e. **Vowels**

Vowels have the following sound symbolic correlates (Hamano 1998:100):

<table>
<thead>
<tr>
<th>Vowel</th>
<th>Correlates</th>
</tr>
</thead>
<tbody>
<tr>
<td>/i/</td>
<td>Straightness; high-pitched sound</td>
</tr>
<tr>
<td>/u/</td>
<td>Small protruded opening</td>
</tr>
<tr>
<td>/o/</td>
<td>Smaller area; inconspicuousness; modestness</td>
</tr>
<tr>
<td>/a/</td>
<td>Large area; totality of the object; conspicuousness</td>
</tr>
<tr>
<td>/e/</td>
<td>Vulgarity</td>
</tr>
</tbody>
</table>

These correlates are exemplified for /i, u, o, a/ in the following words (Hamano 1998:76-78):

<table>
<thead>
<tr>
<th>Vowel</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>/i/</td>
<td>striking a string (and producing a high pitched sound); stretching a cloth/string/rope/fishing line; stiff peaks of foam, a stiff mustache, or stiff ears; a tense atmosphere or sharpness of sensation/intuition; jumping movement of a thin object such as a fish or a tail; the way glasses/cups/china crack with one or a few lines</td>
</tr>
<tr>
<td>/u/</td>
<td>a shrill high pitched sound of a whistle or a sharp cry of a small bird; tearing cloth or tearing off adhesive tape; throwing something small such as a small amount of water or a pebble over a long distance</td>
</tr>
<tr>
<td>/o/</td>
<td>striking a board with a flat object such as a hand or a book; clapping hands flatly with fingers stretched out; beating a quilt like object with a board; the manner in which a rubber balloon blows up with a loud noise; the manner in which large fireworks explode in the sky; the sound of a toy gun</td>
</tr>
<tr>
<td>/a/</td>
<td>sudden event such as catching on fire; doing things abruptly and conspicuously</td>
</tr>
<tr>
<td>/e/</td>
<td>tapping the shoulder or a hand drum; the manner in which a heated chestnut cracks; clapping hands lightly without tensely stretching the fingers; throwing a ball casually</td>
</tr>
<tr>
<td>/e/</td>
<td>sudden appearance of a small object from an opening; appearance of a small flame or a light; blushing</td>
</tr>
<tr>
<td>/e/</td>
<td>a strong smell; pouting the lips to express anger</td>
</tr>
<tr>
<td>/e/</td>
<td>pushing air or a small object through a small opening such as the nose or the protruded lips; puffing out one's cheeks to express anger</td>
</tr>
</tbody>
</table>

/e/ is exemplified in the following sentences (Hamano 1998:79):
9. Ke-keQ-to waraQta
   laughed
   ‘She laughed in a vulgar manner.’
10. Toire-de gee-gee hai-tyaQta.
    bathroom-in throw up-ended up
    ‘I ended up throwing up in the bathroom (repeatedly and noisily)’

f. Palatalization

“Palatalization is tied to the semantic continuum of 'childishness' and 'excessive energy’”

11. Hyoozyuu-ga i-naku naru-to GoN-wa pyoi-to kusa-no
    Hyojii-Nom stay-Neg becom-when Gon-Top grass-Gen
    naka-kara tobidasi-te .
    inside-from jump out-and
    (Nankichi Niimi, Gon-gitsune)
    ‘When Hyoki was gone, Gon hopped out of the grass and .

    wind-Nom blow
    ‘The wind whistles through.’

g. Initial Consonants & Voicing of Initial Obstruents

The phono-semantic associations can be made both in terms of place of articulation and
voicing. Initial consonants “mainly denote the nature of movements and the preconditions for
such movements in terms of the tactile nature of the objects, the volume of the objects, and the
organs involved in the articulation of the sound in the case of human vocalization” (Hamano
1998:99). Meanwhile, voicing contrast in initial consonants indicates a semantic contrast
between “light/small/fine/thin” and “heavy/harge/coarse/thick” (Hamano 1998:83).

<table>
<thead>
<tr>
<th>Phoneme</th>
<th>Semantic Association with Place of Articulation</th>
<th>Semantic Association with Voicing</th>
</tr>
</thead>
<tbody>
<tr>
<td>/p/</td>
<td>Taut surface; explosive movement</td>
<td>Light; small; fine</td>
</tr>
<tr>
<td>/b/</td>
<td>Taut surface; explosive movement</td>
<td>Heavy; large; coarse</td>
</tr>
<tr>
<td>Symbol</td>
<td>Description</td>
<td>Attributes</td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>/t/</td>
<td>Lax surface; tapping</td>
<td>Light; small; fine</td>
</tr>
<tr>
<td>/d/</td>
<td>Lax surface; tapping</td>
<td>Heavy; large; coarse</td>
</tr>
<tr>
<td>/k/</td>
<td>Hard surface; depth; backness; pharyngeal sound</td>
<td>Light; small; fine</td>
</tr>
<tr>
<td>/g/</td>
<td>Hard surface; depth; backness; pharyngeal sound</td>
<td>Heavy; large; coarse</td>
</tr>
<tr>
<td>/s/</td>
<td>Smooth movement</td>
<td>Light; small; fine</td>
</tr>
<tr>
<td>/z/</td>
<td>Smooth movement</td>
<td>Heavy; large; coarse</td>
</tr>
<tr>
<td>/h/</td>
<td>Breath</td>
<td></td>
</tr>
<tr>
<td>/m, n/</td>
<td>Suppression, vagueness</td>
<td></td>
</tr>
<tr>
<td>/w, Ø/</td>
<td>Loud human voice; animal noise</td>
<td></td>
</tr>
</tbody>
</table>

### IV. Hamano’s CVCV Roots

Hamano sets forth a number of templates for bisyllabic mimetics, root templates as follow:

- \( C(y)_1V_1C_2V_2(V_2)Q \)
- \( C(y)_1V_1(Q)C_2V_2(V_2)N \)
- \( C(y)_1V_1C_2V_2^{-}C(y)_1V_1C_2V_2 \)
- \( C(y)_1V_1C_2V_2N^{-}C(y)_1V_1C_2V_2N \)
- \( C(y)_1V_1QC_2V_2\)i
- \( C(y)_1V_1NC_2V_2\)i

And reduplicate templates:

- \( C(y)_1V_1C_2V_2^{-}C(y)_1V_1C_2V_2 \)
- \( C(y)_1V_1C_2V_2^{-}C(y)_1V_1C_2V_2Q \)
- \( C(y)_1V_1C_2V_2^{-}C(y)_1V_1C_2V_2N \)

In these templates, \( C_1 \) can be represented by /p, b, t, d, k, g, h, s, z, m, n, w, \{Ø\}, y/ (Hamano 1986: 132). Possibilities for \( C_2 \) are limited to /p, b, t, d, k, g, h, s, z, m, n, w, /y, r/, while \( V_1 \) and \( V_2 \) can be represented by /i, e, a, o, u/ and the corresponding long vowels /ii, ee, aa, oo, uu/ (Hamano 1986:132). One distinct difference between monosyllabic CV mimetic templates and bisyllabic CVCV mimetic templates is the restriction on diphthongs - specifically /ai, oï, ui/ - in CVCV templates that is not present within the phonology of CV templates (Hamano 1986:132).
Apart from the pure phonological makeup of these templates, Hamano breaks down the CVCV templates into the following phonemic constituent parts with corresponding semantic representations:

- **C₁**: Tactile nature of the object
- **Voicing of C₁**: Massiveness, heaviness
- **Palatalization**: Uncontrolled energy and childishness
- **V₁**: Initial shape of the movement/object
- **Medial /C/:** Intensification
- **C₂**: Type of movement
- **V₂**: Resultant shape and size of the movement/object
- **Vowel length**: Length
- **Final elements**: Final aspect
- **Repetition**: Phase (Hamano 1996:104)

A number of these constituent parts are fairly straightforward in their significance and require little discussion, but others have curious peculiarities. Regardless, each of these phonemic constituents will be explored briefly in turn and exemplified.

### a. Repetition

Iconic repetition in CVCV-based mimetic adverbs “closely parallels the number of physical events” (Hamano 1998:104). “Reduplication and multiplication in the forms of /para-paraQ/, /para-para-paraQ/ and so on indicate that an action consists of short, brisk movements” (Hamano 1996:104). Examples are:

13. Sio o *para-para to* huQ-ta.
   salt Obj sprinkle-Past
   'I *sprinkled* salt *all over.*'
14. Sio o *para-paraQ to* huQ-ta.
   salt Obj sprinkle-past.
   'I gave a *quick sprinkle* of salt *(all over).*'
Likewise, contrast between singularity and multiplicity of a CVCV sequence “correlates with the semantic contrast of ‘momentary or single movement’ vs. ‘continuous, stative, distributive, or repetitive movement’” (Hamano 1998: 105) as evidenced below:

16. Masae wa patiN to te o tatai-te me o kagayak-ase-masi-ta.
   Masae Sbj  hand Obj hit -and eye Obj shine-Casu-Pol-Past
   'Masae's eyes sparkled as she clapped her hands (once).'
17. Tugi ni kai o biniru no hukuro ni ire-te mekata o hakaQ-te hotikisu de patiN patiN to tome-masi-ta.
   next Adv clam Obj plastic Gen bag in put-and weight Obj weigh-and stapler with snap on-Pol-Past
   'Next, she put clams in a plastic bag, weighed it, and stapled [the top] in two places."' (Hamano 1986:133)
18. kusuQ to waraQ-ta
   laugh-Past
   'She laughed (once) under her breath'
   'She laughed (continuously) under her breath.' (Hamano 1998: 106)

b. **Final Elements /N, Q, -ri/**

As with CV mimetic roots, /N/ indicates elasticity or reverberation (Hamano 1998:106). /Q/ indicates that "the movement is carried out forcefully or vigorously in a single direction", (Hamano 1998:106). According to Hamano, /-ri/ indicates 'quiet ending of the movement' (Hamano 1998:106). Examples follow.

20. Namida no tubu ga potaN to hiza no ue ni oti-masi-ta
   tear Gen drop Sbj  lap Gen top to fall-Pol-Past
   'A large tear drop fell on my knee.'
21. Namida no tubu ga potaQ to tukue no ue ni oti-masi-ta.
   tear Gen drop Sbj  desk Gen top to fall-Pol-Past
   'A large tear drop fell (from a high position) on the desk top and splashed.'
22. Namida no tubu ga potari to tukue no ue ni oti-masi-ta
   tear Gen drop Sjb desk Gen top to fall-Pol-Past
   'A large tear drop fell (from a short distance) and sat on the desk top.' (Hamano 1998: 106-107)

Hamano also specifically contrasts the /N/ and /Q/ differentiation.

23. Hako no huta ga pakaN to ai -ta.
    box Gen lid Sbj open-Past
    'The lid of the box popped open and sprang back a little.'

24. Hako no huta ga pakaQ to ai -ta.
    box Gen lid Sbj open-Past
    'The lid of the box popped open.' (Hamano 186:137)

I generally agree with her translations here, except for (23). I would prefer a reading closer to
"The lid of the box popped open and hit something behind it in doing so", with an implication of
an accompanying collision somehow intrinsically linked to the popping open of the box.
Likewise, when Hamano states "it is difficult to identify such a straightforward icon relation
between the meaning of /-ri/ and its phonological characteristics. In other words, /-ri/ is better
interpreted as a morpheme in the traditional sense than a sound-symbolic unit. Nevertheless, it is
limited to the mimetic system" (Hamano 1986:137), I take issue with that statement. Yes, /-ri/ is
qualitative distinct from /N/ and /Q/, and its distribution is quite specific. If it is "better
interpreted as a morpheme in the traditional sense than a sound-symbolic unit", then it has no
place in the mimetic system, whose very definition and distinction from other lexical strata lies
in its unique system of sound-meaning correlations.

c. Medial /C/ (Intensifier)

The intensifier /C/, which appears as a medial /Q, N/, adds a “sense of distinctiveness,
emphasis, liveliness, or physical impact” (Hamano 1998: 107). Mimetics with and without
intensifiers are contrasted below:
25. piQtari hamaQ-te hanare-nai.
   fit-and become free-Neg
   ‘It’s stuck very tight and won’t move.’

26. pitari hamaQ-te hanare-nai.
   fit-and become free-Neg

d. Vowel Length

Lengthening of the vowels basically relates to the distance or duration of the action (Hamano 1998: 108). As exemplified below:

27. supoN-to kuroku-ga nuketa.
    cork-Nom came off.
    ‘The cork came off with a (light) pop.’

28. SupooN-to koruku-ga nuketa.
    cork-Nom came off
    ‘The cork came off with a (forceful and long) pop.’

Lengthening of the vowel occurs in the second syllable. It is important to note that “there is no iconic connection between this meaning and the meaning of vowel length. They operate independently of each other” (Hamano 1998: 110). Hamano suggests that the second vowel is the site of the lengthening in order to more saliently contrast with the final element (Hamano 1998: 110).

e. Vowels

The role of vowels in CVCV template mimetics are similar to those in CV templates. That is, /i, a, o, u/ indicate size while /e/ indicates a sense of vulgarity or inappropriateness (Hamano 1998: 116). Every combination of these vowels as V₁ and V₂ is attested except for /-a-e/ (Hamano 1998: 110). The following examples roughly sketch the size differentiation.

29. Namida no tubu ga potaQ to oti-masi-ta.
    tear Gen drop Sbj fall-Pol-Past
    'A (large) tear drop fell and spread in a large patch.'
30. Zyaguti kara *potoQ to mizu ga oti-ta.*
   faucet from water Sbj fall-Past
   'A drop of water fell from the faucet.'

31. Ame ga atama ni *potuQ to oti-te ki-ta to omoQ-ta N da kedo*
   rain Sbj head to fall-Ger come-past Quot think-Past Comp Cop but
   'I thought I felt a (small) rain *drop* on my head.'
   (Hamano 1998: 111)

Hamano further expands this idea by creating semantically impossible sentences in which the
interpretive meaning of the mimetic is in direct conflict to the semantic meaning of another
lexical item.

32. *Ame ga atama ni *potaQ to oti-te ki-ta to omoQ-ta N da kedo.*
   rain Sbj head to fell-Ger come-past Quot think-Past Comp Cop but
   'I thought I felt a (large) rain *drop* on my head(?)' (Hamano 1998: 111)

The idea here is that if the rain drop was large, the speaker would probably not have confusion
about whether the large rain drop fell on their head or not. Instead, *potuQ* would be more
appropriate here because such a confusion about the event of a falling rain drop would be much
more plausible with a small rain drop. Likewise, semantic collision occurs when *potuQ* occurs in
an inappropriate context.

33. *Ootubu no namida ga *potoQ to oti-masi-ta.*
   large-drop Gen tear Sbj fall-Pol-Past
   'A large *small* drop of tear fell (?)' (Hamano 1998: 112)

Though I agree with the idea of semantic collision, for (30) in particular, I don’t necessarily
find the sentence semantically ill-formed and that the degree of ‘largeness’ associated with
*potaQto* necessarily as large as she suggests. Because her data comes from “a wide variety of
sources such as ordinary conversation, TV and radio broadcasting, personal letters,
advertisements, literary sources, magazines, cookbooks, and children’s books” (Hamano 1996:
10), I don’t doubt the existence of her sentences, but once must consider the effect which
preceding utterances or statements might have upon each sentence in constructing the image. Perhaps mimetics have a wider range of meaning which is narrowed by the context and other cues within individual sentences or paragraphs, but I believe that would require a dive into discourse theory and is certainly beyond the scope of this paper.

Besides the size factor, which holds true over both $V_1$ and $V_2$ positions, vowels in $V_1$ and $V_2$ positions have a general tendency to represent the following secondary meanings, respectively:

\[ V_1: /i/: \text{line} \]
\[ /a/: \text{flat plane} \]
\[ /o/: \text{roundish object} \]
\[ /u/: \text{protrusion (Hamano 1986: 156)} \]

\[ V_2: /i/: +\text{tense, +small, -large, -protrusion} \]
\[ /a/: -\text{tense, -small, +large, -protrusion} \]
\[ /o/: -\text{tense, -small, -large, -protrusion} \]
\[ /u/: -\text{tense, +small, -large, +protrusion (Hamano 1998: 116)} \]

This tendency is exemplified immediately below. The initial vowel varies while the final vowel /i/ indicates tenseness.

- \textit{piri-piri} - nerves; electricity; acute sensation
- \textit{pari-pari} - crisp flat Japanese rice crackers; crisp sliced pieces of turnip pickles; stiffly starched cotton summer kimono; crisp cooled lettuce
- \textit{pori-pori} - crisp whole cucumbers; roasted peanuts
- \textit{puri-puri} - being angry with pouted lips (Hamano 1986:153)

That is how the symbolic meanings of $V_1$ and $V_2$ are constructed in CVCV templates, and I find this system adequate to deal with that range, but the /i/ in -ri adverbs is completely disregarded with this current analysis. For $V_1$ and $V_2$ of the -ri adverbs, I find Hamano's analysis applicable. That is because a majority of -ri adverbs seem to have a derivational link to certain CVCV forms. Take the following for example:

- \textit{Parari} c.f. \textit{para-para}
- \textit{burari} c.f. \textit{bura-bura}
- \textit{Hirari} c.f. \textit{hira-hira}
How does one account for the presence of the /i/ in all of these words? No other vowels are realized in this context that would provide it with a contrastive meaning in opposition with said vowel, and the idea that all of the -ri adverbs adopt a diminutive or linear nuance in accordance with the typical /i/ associations seems unreasonable.

f. Voicing of Consonants

i. Voicing of C₁

Almost all of the unvoiced obstruents possible for C₁ produce "parallel combinations" with their voiced partners when C₂ is held constant (Hamano 1986: 164). See a few selected examples below.

- /p-w-/ puwa-puwa light floating object
- /b-w-/ buwa-buwa large floating object
- /t-r-/ tara-tara thick clear liquid
- /d-r-/ dara-dara thick murky liquid
- /k-t-/ koto-koto cluttering noise
- /g-t-/ goto-goto cluttering noise of a heavy object (Hamano 1998: 125)

This contrast in voicing produces a neat system of minimal pairs with contrastive meanings.

ii. Voicing of C₂

There exists no system of minimal pairs comparable to that regarding the voicing of C₁ in the immediately preceding section. Hamano states the existence of five minimal pairs based upon the contrast in voicing of C₂, but the distinct "light/heavy" pairing of semantically similar items is not uniformly present in these pairs, and thus Hamano largely dismisses it as a relevant factor in
inferring the meaning of mimetic words. However, she does notice that the voiced obstruents /d, z, g/ are "significantly less frequent in C2" than their voiceless counterparts /t, s, k/ (Hamano 1998: 133). See below:

34. a. gusu-gusu suru  ‘(the nose) is runny’
   b. guzu-guzu suru  ‘to be slow’
35. a. moku-moku  ‘spewing out a large amount of smoke’
   b. mogu-mogu  ‘talking indistinctly; munching away’

**g. Points and Manners of Consonants**

Like the correlations made between vowels and their symbolic significance, correlations can be drawn for each of the consonants as follows:

- C₁: /p, b/ breakable tense surfaces
- /t, d/ lack of surface tension, subduedness
- /k, g/ hard surface
- /h/ weakness, softness, unreliability, indeterminateness
- /s, z/ non-viscous body, quietness
- /m/ murkiness
- /n/ viscosity, stickiness, sliminess, sluggishness
- /w/ human noise, emotional upheaval
- /y/ leisurely motion, swinging motion, unreliable motion
- C₂: /p, b/ explosion, breaking, decisiveness
- /t/ hitting of a surface, coming into close contact, complete agreement
- /k/ opening, breaking up, swelling, expanding, puffing out, emission from inside, surfacing=inward/outward movement
- /s/ soft contact, friction
- /m/ ?
- /n/ bending, elasticity, unreliability, lack of force, weakness
- /w/ softness, faintness, haziness
- /y/ sound from many sources, haziness, childishness
- /r/ rolling, fluid movement (Hamano 1986:225-6)
I find Hamano’s presentation of this chart visually easier from her 1986 work, but it is largely the same as the consonant chart in her 1998 work as well (Hamano 1998: 172-173). This is a reasonable account of semantic correlations for sound symbolic consonants in Japanese mimetics.

V. A Moraic Based Approach to Templates

Hamano sheds light onto the semantic correlations between the phonemes in mimetic words and arranges the phonemes into templates. Her templates rely on the recognition of consonants and vowels as the vehicles of meaningful semantic information, which is certainly true. However, putting the semantic construction of mimetics aside, it seems that a moraic approach to the formation of templates more accurately reflects the phonological patterns that regulate how a well-formed mimetic word is created.

Hamano (1996: 13) explicitly lists the various templates she has identified for mimetics and whether they obligatorily or optionally take a word final particle, /to/ or /te/:

- /to/ or /te/ is obligatory
  - CV-CV(V)N-to/te pi-piN-to/te
  - CV-CV(V)Q-to/te pi-piQ-to/te
  - CV(V)N-to/te piiN-to/te
  - CV(V)Q-to/te piiQ-to/te
  - CVCV-CVCVQ-to/te paka-pakaQ-to/te
  - CVCV-CVCVN-to/te paka-pakaN-to/te
  - CVCVQ-CVCVQ-to/te pataQ pataQ-to/te
  - Onomatopoetic forms kokekoQkooQ-to/te
- /to/ is obligatory
  - CVQ-CV-to paQ-pa-to
- /to/ is optional
  - CVN-CVN(-to) piN-piN(-to)
  - CVV-CVV(-to) pii-pii(-to)
  - CVCV-CVCV(-to) paku-paku(-to)
  - CVCCVri(-to) piQtari(-to), uNZari(-to)
The striking feature of this organization is that the templates which do not necessarily require the addition of the grammatical particle -to are all constructions of four moras. Those templates which require a grammatical particle, counting up all their CVs, Qs, and Ns, do not add up to four moras. They are mostly three, a few five, and one even has six moras. Indeed, the few templates with a five or six mora foundation are incredibly rare and the lexical items represented by those templates few. Thus, I would like to propose a four mora ideal for mimetic forms in Japanese. The three-mora forms which do not meet this four mora ideal with their semantic constituents commandeer the grammatical particle -to as a phonological placeholder to add a fourth mora and, thus, fulfill phonological requirements for mimetic words.

If one chooses to analyze mimetic templates as foundationally based upon the mora, i.e. $\mu_1\mu_2$ and $\mu$, the multiplicity of outputs is the result of two phonological processes aimed at producing a four-mora word. Overall then, a moraic approach considerably reduces the complexity of the templates and accounts for similarities between outputs in a very straightforward way.

**a. The $\mu_1\mu_2$-based Templates**

The $\mu$ and $\mu_1\mu_2$ base encode the basic semantic meaning of the mimetic word. However, onto those two templates, various techniques such as vowel lengthening, emphatic infixing, and suffixing can add nuance and gradation to the semantic quality of the word. Below is a simple paradigm for the reinterpretation of these words under my template.

The ways in which $\mu_1\mu_2$ achieves 4 moras:

1) $(\mu_1\mu_2)^2$
2) $\mu_1\mu_2Xto$
3) $\mu_1X\mu_2iri$

In the template, X is realized either as /N/, a homorganic nasal to the following consonant, or /Q/, which is realized as a geminate of the following consonant. Likewise, because /N, Q/ are
contained within the X variable, neither value of X is favored as a value for either \( \mu_1 \) or \( \mu_2 \). This is better visualized as a product of the associations between the semantic tier and the phonological tier, to borrow the tier terminology from geometric phonology.

In the semantic tier, the relative positions of \( C_1, C_2, V_1, V_2 \) and X are important, as are their phonemic values, but in the phonologic tier, their importance is only their weight, i.e., the fact that C and V group together as a mora and that X is a mora. For this reason, a word such as *panpan* will be analyzed as \((\mu X)^2\) not as \((\mu_1 \mu_2)^2\), allowing the phonological tier to maintain this particular information about the semantic tier. That small degree of transparency between the two tiers turns out to be crucial in accounting for the data in a simple way, as we will see in section # below, where we deal with the analysis of templates based on a single \( \mu \) in contrast to those based on two, handled here. Below are examples of how these bimoraic templates may be applied to mimetic words.

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
<th>Interpretation under Hamano’s template</th>
<th>Interpretation under my template</th>
</tr>
</thead>
<tbody>
<tr>
<td>/pokaQto/</td>
<td>1. 'the sound made when striking a relatively hard object... suddenly and</td>
<td>( C(y)_1 V_1 C_2 V_2(V_2)Q )</td>
<td>( \mu_1 \mu_2 Xto )</td>
</tr>
<tr>
<td>[pokatto]</td>
<td>forcefully'</td>
<td>( C_1 = /p/ )</td>
<td>( \mu_1 = /po/ )</td>
</tr>
<tr>
<td></td>
<td>2. 'the state of having a large conspicuous hole or gap'</td>
<td>( V_1 = /o/ )</td>
<td>( \mu_2 = /ka/ )</td>
</tr>
<tr>
<td></td>
<td>3. 'the manner of suddenly floating to the surface of'</td>
<td>( C_2 = /k/ )</td>
<td>X = /Q/</td>
</tr>
</tbody>
</table>
| /pokaNto/ [pokanto] | 1. 'a dull, resonant sound made by a cylindrical or hollow object striking something'  
2. 'the state of having a large, conspicuous hole or gap'  
3. 'the state of being so surprised or shocked that one's mind becomes blank' (977-978) | C⁽⁰⁾(y)₁V⁽¹⁾₁(Q)C₂V₂(V₂)N  
C₁ = /p/  
V₁ = /o/  
C₂ = /k/  
V₂ = /a/ | μ₁μ₂Xto  
μ₁ = /po/  
μ₂ = /ka/  
X = /N/ |
| /pokapoka/ [pokapoka] | 1. 'a dull, hollow dsound made when striking something repeatedly with a fist or hard object'  
2. the state of containing many noticeable holes or depressions'  
3. ' the manner of a number of objects rising in succession to the surface of a liquid'  
4. 'the state of being or feeling pleasantly warm, often after having been cold' (981-983) | C⁽⁰⁾(y)₁C₂V₂⁻  
C⁽¹⁾(y)₁V₁C₂V₂  
C₁ = /p/  
V₁ = /o/  
C₂ = /k/  
V₂ = /a/ | (μ₁μ₂)²  
μ₁ = /po/  
μ₂ = /ka/ |
| /poQkari/ [pokkari] | 1. 'the manner of appearing of floating into view'  
2. 'the manner of an idea suddenly occurring to someone'  
3. 'the state of having a large, conspicuous hole' (985-986) | C⁽⁰⁾(y)₁V₁QC₂V₂ri  
C₁ = /p/  
V₁ = /o/  
C₂ = /k/  
V₂ = /a/ | μ₁Xμ₂ri  
μ₁ = /po/  
μ₂ = /ka/  
X = /Q/ |

### i. Issues with Palatalization

My templates are adaptable to Hamano's explanation of palatalization of consonants within the mimetic stratum. Palatalization, though semantically related to “childishness or unrestrained energy” (Hamano 1998: 83) does not appear exclusively in any particular syllable or mora. Rather, it is placed strategically according to the phonetic composition of the moras. I believe this is because the “childishness” and “energy” relayed by the presence of palatalization is
applicable to the action as a whole and not either of its constituent parts. Semantically, the quality of any given consonant is relative to both the value of the consonant - /s, z, t, d, k, g,/ all have particular nuances - and the position of the consonant within the word – C₁ is related to the “tactile nature of the object” as opposed to the “type of movement” relayed by C₂. Thus, I believe it is fundamentally incorrect to say that the semantic contributions of either C₁ or C₂ are affected by the phonologically-driven placement of palatalization. Hamano’s rules on the placement can be summed up as follows:

- “Palatalization cannot appear twice in a single string” (Hamano 1998:177). This can be easily understood as a constraint against redundancy – a single action need not be deemed “childish” or “full of energy” twice when such double labeling is unnecessary.
- The consonants /t, (d), s, z, n/ can be palatalized in either syllable, non-coronals can be palatalized only in first syllable (Hamano 1998:177).
- Non-coronals in the first syllable may only be palatalized in the absence of a coronal in the second syllable (Hamano 1998:177).
- A dissimilatory constraint on consonantal melody “largely precludes the possibility of having to choose between two coronal sounds” (Hamano 1998:178).
- ‘r’ as a coronal is an exception; it cannot palatalize and it does not block the palatalization of a non-coronal in the first syllable (Hamano 1998:179). This is unsurprising because ‘r’ appears to behave in interesting manners across a variety of contexts.

These principles are evident in these examples:

36. pyoko-pyoko ‘hopping around'
   kyoro-kyoro ‘looking around inquisitively'
   tyara-tyara ‘cheap and flashy'
37. pitya-pitya ‘splashing water'
   petya-petya ‘chattering'
   kusya-kusya ‘crumpled'
   katya-katya the sound of keys hitting against each other

All of these constraints are easily explained in a moraic framework, and perhaps this idea of moraic assignment based upon the constituents of the mora helps frame this concept in a more easily consumed package. That is to say, palatalization ideally occurs in the second mora of a
μ₁μ₂-based template. If the second mora has an /r/ or a non-coronal, then the first mora is palatalized. As far as represented this in the templates, rather than leaving an option C(y) open for all given ‘C’ in a string, I believe a better way to notate this is to identify the mora of palatalization: either μ₀ = μ₁ or μ₀ = μ₂. The question of where the palatalization is realized is moot of course with μ-based templates because there is only one option.

ii. Regarding the μ₁Xμ₂ri Template

With the μ₁Xμ₂ri template, we would expect a geminate or a nasal to be realized in all forms.

<table>
<thead>
<tr>
<th>μ₁μ₂ root</th>
<th>(μ₁μ₂)²</th>
<th>Definition</th>
<th>/ μ₁Xμ₂ri/</th>
<th>[μ₁Xμ₂ri]</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>pi.ta.</td>
<td>pitapita</td>
<td>1. A repeated light sound made when two flat surfaces strike together gently. 2. The manner of repeatedly sticking to something</td>
<td>/pi.Q.ta.ri/</td>
<td>[pittari]</td>
<td>1. The state of two things being stuck together closely or tightly. 2. The state in which two things match perfectly. 3. The manner in which something comes to a sudden stop.</td>
</tr>
<tr>
<td>bo.ya.</td>
<td>boyaboya</td>
<td>1. The state of being absentminded or inattentive</td>
<td>/bo.N.ya.ri/</td>
<td>[bonyari]</td>
<td>1. The state in which something is blurred or indistinct, especially in outline 2. The state of being absentminded or inattentive</td>
</tr>
</tbody>
</table>

It is important to distinguish that a word like bonyari in this case is parsed with boya as the root and not bon as the root. There are forms with disparate bimoraic feet like choko-maka, kasa-koso, and dogi-magi with which Hamano calls “Mimetic Compounds” (see section c. on
page 48 for further discussion). So, potentially parsing the word as *bon-yari* could exist as a legitimate option in the mind of a speaker. However, a mimetic word *bonbon* exists and possesses two semantics meanings: “repeated loud exploding or bursting sounds”, or “the manner of doing something with vigor or saying something without due consideration; the manner of something being done smoothly or without hindrance”; neither of these meanings appear to be semantically related to *bonyari* in the fashion that *boyaboya* is, thus reinforcing the derived status of *bonyari* from the root *boya* as a result of appending */-ri// and infixing an intensifier.

However, when we view words such as *perori*, the process differs slight; that is to say in cases in which μ₂ is represented by */rV/, there is no gemination.

<table>
<thead>
<tr>
<th>μ₁μ₂ root</th>
<th>(μ₁μ₂)²</th>
<th>Definition</th>
<th>/μ₁μ₂ri/</th>
<th>[μ₁μ₂ri]</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi.ra.</td>
<td>Hirahira</td>
<td>The manner in which small, light, thin and usually dry objects, typically leaves flutter or fall fluttering; the manner in which a flame wavers</td>
<td>/hi.X.ra.ri/</td>
<td>[hirari]</td>
<td>The manner in which a small, light, thin and dry object flutters briefly; the manner of moving nimbly or lightly.</td>
</tr>
<tr>
<td>Nu.ru.</td>
<td>Nurunuru</td>
<td>The state of being slimy or slippery.</td>
<td>/nu.X.ru.ri/</td>
<td>[nururi]</td>
<td>The manner of slipping once, the state of being slimy or slippery</td>
</tr>
<tr>
<td>Pe.ro.</td>
<td>Peropero</td>
<td>The manner of poking the tongue in and out repeatedly, or of licking repeatedly</td>
<td>/pe.X.ro.ri/</td>
<td>[perori]</td>
<td>The manner of poking the tongues out quickly, or of licking once.</td>
</tr>
<tr>
<td>Ka.ra.</td>
<td>Karakara</td>
<td>1. A light sound made by thin, dry or metallic objects coming into contact 2. The state of being completely dry.</td>
<td>/ka.X.ra.ri/</td>
<td>[kerori]</td>
<td>1. A light, somewhat resonant sound made when wooden or metallic objects strike together once. 2. The state of being pleasantly dry.</td>
</tr>
</tbody>
</table>
In this manner, words that have /-rV/ values for \( \mu_2 \) append /-ri/ in such way that no gemination occurs in the mimetic word, producing not the expected / \( \mu_1X\mu_2ri \)/ form but rather a form that realizes as /\( \mu_1\mu_2ri \)/.

### iii. Reanalysis of the \( \mu_1X\mu_2ri \) Template

However, one might begin to question why the \( \mu_1X\mu_2ri \) template differs fundamentally from the \( \mu_1\mu_2X \{ \text{to}, \text{ri} \} \) template and what the semantic implications of such a fundamental phonological difference might be. Certainly Hamano identifies semantic correlations for both manifestations of X: “/N/ indicates that the action involves elastic objects or is accompanied by a reverberation” and /Q/ “indicates that the movement is carried out forcefully or vigorously in a single direction” (Hamano 1998:106). Likewise, /-ri/ indicates a “quiet ending of the movement” (Hamano 1998:106). I would like to add on to the definition of /-ri/ that to me, /-ri/ seems to emphasize a singular nature of an event or a static, stative nature. Indeed, rather than classify it with /N, Q/ as a “final element”, as termed by Hamano, the /-ri/ seems to me to better fit in a contrastive binary semantic relationship with the reduplicative template that indicates to Hamano a “continuous, [active] stative, distributive, or repetitive movement” (Hamano 1998:105). I believe reanalysis of the \( \mu_1X\mu_2ri \) template as a variant phonologically of \( \mu_1\mu_2X \{ \text{to}, \text{ri} \} \) provides a more unified and cohesive approach to these templates both semantically and phonologically.

Below is a tableau for analysis of the template \( \mu_1X\mu_2ri \) under Optimality Theory. The new template is represented jointly as \( \mu_1\mu_2X \{ \text{to}, \text{ri} \} \). With the reanalysis of the \( \mu_1X\mu_2ri \) template
as a variant of the $\mu_1 \mu_2 X$to template, the movement of the X in conjunction with -ri can be explained as a movement catalyzed by the phonological restriction against Cr.

Following that, a linearity constraint determines the optimal ordering for the constituent parts within this template. The ranking of the morpheme integrity constraint does not affect the outcome of the analysis but is included to preserve the integrity of the bimoraic base as opposed to the moras that result from phonological processes.

<table>
<thead>
<tr>
<th>$\mu_1 \mu_2 X$ri</th>
<th>*Cr</th>
<th>LINEARITY</th>
<th>MORPH-INT</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. $\mu_1 \mu_2 X$ri</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. $\mu_1 X$ri</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. $\mu_1$ri$X$</td>
<td>*</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>d. $X$ri$\mu_2$</td>
<td>**!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. $\mu_1$ri$\mu_2$X</td>
<td>**!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>f. ri$\mu_1 \mu_2$X</td>
<td>***!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Expressed in words, this simply means that Japanese finds both manifestations of $\mu_1 \mu_2 X$ri, $\mu_1 \mu_2$Nri and $\mu_1 \mu_2$Qri, phonologically ill-formed because of the Cr combination. The movement of X to closer to the front of the word is a method to resolve this issue adequately. N$\mu_1 \mu_2$r and Q$\mu_1 \mu_2$r are also phonologically impossible, and a movement of either $\mu_1$ or $\mu_2$ could potentially interfere with their semantic correlations; it is paramount that $C_1$, $V_1$, $C_2$, and $V_2$ remain in their respective locations with of their respective correlations to “tactile nature of the object”, “initial shape of the movement/object”, “type of movement”, and “resultant shape and size of the movement/object” (Hamano 1998:104). Because the mimetic stratum is not based off of morphemes in the most traditional sense, but rather systemically assigned semantic correlates between the value and position of a given phoneme, the judgment of whether any given phonological pattern is well-formed or not must always be made in relation to the semantics of the output.
iv. Grappling with Mimetics that Exceed the Four-Mora Ideal

In the initial grammatical chart listed in (I), Hamano identifies four forms that noticeably exceed the four-mora template.

38. CVCVCVCVCV-to/te  paka-pakaQ-to/te
39. CVCVCVVCV-to/te  paka-pakaN-to/te
40. CVCVCVCV-to/te  pataQ pataQ-to/te
41. Onomatopoetic forms  kokekoQkooQ-to/te

Excepting (37), these words are not to be found in The Dictionary of Iconic Expressions in Japanese. The word in (37) is an example of an onomatopoetic form based upon the natural world, the crow of a rooster to be exact, and thus is not expected to necessarily conform to the mimetic rules strictly. Though I don’t have good explanations for (34) through (36), I don’t doubt their existence – they seem like impromptu additions a speaker could add on the spot for informal nuance or a degree of playfulness, just as a young person in English might lengthen the vowel in yo to yooooo in greeting a friend of the same age group. However, there is a series of forms identifiable in the dictionary that I would like to draw attention to in order to address the forms that exceed four moras.

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
<th>Interpretation under my Template</th>
</tr>
</thead>
</table>
| 42. /zabuzabu/ [zabuzabu] | A stirring or splashing sound made by large amounts of water moving repeatedly | $(\mu_1\mu_2)^2$
|            | $\mu_1 = /za/$  $\mu_2 = /bu/$                                             |                                  |
| 43. /zabuQto/ [zabutto]  | A splashing sound, as of a heavy object falling into water and sending up little spray or when a large quantity of water is splashed, or splashes, quickly over something | $\mu_1\mu_2Xto$
|            | $\mu_1 = /za/$  $\mu_2 = /bu/$  $X = /Q/$                                 |                                  |
| 44. /zabuNto/  | A splashing sound, as of a heavy object                                    | $\mu_1\mu_2Xto$                  |
| [zabunto] | falling into water | $\mu_1 = /za/ \\
| | | $\mu_2 = /bu/ \\
| | | $X = /N/ \\
| 45. /zabunzabun/ | A stirring or splashing sound made by large amounts of water moving repeatedly | $(\mu_1\mu_2X)^2$ \\
| | | $\mu_1 = /za/ \\
| | | $\mu_2 = /bu/ \\
| | | $X = /N/ \\
| 46. /zanburi/ | A splashing sound, as of a heavy object falling into water or when a large quantity of water is splashed, or splashes, quickly over something | $\mu_1X\mu_2ri$ \\
| | | $\mu_1 = /za/ \\
| | | $\mu_2 = /bu/ \\
| | | $X = /N/ \\
| 47. /zaburito/ | A splashing sound, as of a heavy object falling into water and sending up little spray, or when a large quantity of water is splashed, or splashes, quickly over something | $(\mu_1\mu_2rito)^2$ \\
| | | $\mu_1 = /za/ \\
| | | $\mu_2 = /bu/ \\
| 48. /zaburizaburi/ | A stirring or splashing sound made by large amounts of water moving repeatedly | $(\mu_1\mu_2ri)^2$ \\
| | | $\mu_1 = /za/ \\
| | | $\mu_2 = /bu/$

This is a complex data set, and it is disheartening to think that my model cannot predict all of the entries in the dictionary from the $\mu_1\mu_2$ root zabu, particularly (41), (43), (44). However, the literary sources for the example sentences for all three of these entries are specifically identified and range in year from 1967 to 1984, which draws into question their appearance in modern speech. Additionally, I believe (42) would be preferable to (43), and it is interesting to note the appearance of -to in forms that do not meet the four mora requirement, and the disappearance of -to in the forms that exceed four moras. So even this exceptional root exhibits a tendency to favor a target from that contains four moras. Clearly this is an area that requires more consideration in future research.

v. Conclusion Regarding $\mu_1\mu_2$-based Templates
Thus, in summation, the method by which a $\mu_1\mu_2$-based mimetic word achieves its goal of 4 moras is through either full reduplication or an epenthesis of a particle and an infixing of X.

1) $$(\mu_1\mu_2)^2$$
2) $\mu_1\mu_2 X\{to,ri\}$

b. Analysis of $\mu$-based Mimetic Words

The similar processes can be seen be in $\mu$-based mimetic words, along with an additional process of vowel lengthening, in order to achieve the 4-mora goal.

1) $(\mu)^2 Xto$
2) $\mu V_\mu Xto$
3) $(\mu V_\mu)^2$
4) $(\mu X)^2$

The subscript $\mu$ on the V in (2) indicates that the value of V must be the same as the value of the V within the $\mu$. That is to say, because the template in (2) is a result of vowel lengthening, $\mu V_\mu Xto$ may not include diphthongs. Further discussion of this appears later. These templates are exemplified as below:

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
<th>Interpretation under Hamano's template</th>
<th>Interpretation under my template</th>
</tr>
</thead>
<tbody>
<tr>
<td>/aQto/</td>
<td>1. A short cry of surprise 2. In an instant [used only in the frozen expression aQto yuu ma]</td>
<td>C(y)VQ C = /O/ V = /a/</td>
<td>!</td>
</tr>
<tr>
<td>/daQto/</td>
<td>The manner of moving quickly and vigorously</td>
<td>C(y)VQ C = /d/ V = /a/</td>
<td>!</td>
</tr>
<tr>
<td>/pi.i.N.to/ [pinto]</td>
<td>To do something carefully or correctly</td>
<td>C(y)V(V)N C = /p/ V = /i/</td>
<td>$\mu V_\mu Xto$ $\mu = /pi/ V_\mu = /i/ X = /N/ $</td>
</tr>
<tr>
<td>/ha.a.Q.to/ [haato]</td>
<td>To take a deep breath, a deep sigh</td>
<td>C(y)V(V)Q C = /h/ V = /a/</td>
<td>$\mu V_\mu Xto$ $\mu = /ha/ V_\mu = /a/ $</td>
</tr>
</tbody>
</table>
### i. Forms Potentially Problematic to this Approach

The words /aQto/ and /daQto/ might seem to disprove my theory regarding the 4 mora goal of my templates, and indeed severely dent the promotion of a moraic approach over a phonemic approach. However, as /aQto/ was listed specifically in *The Dictionary of Iconic Expressions in Japanese* as being part of a frozen expression, I wish to more closely examine some of the CVN and CVQ possibilities that Hamano has listed in her appendix (Hamano 1998:220).

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
<th>Reason why can be discredited as mimetic</th>
</tr>
</thead>
<tbody>
<tr>
<td>/uNto/ [unto]</td>
<td>‘with a great deal of effort’</td>
<td>This perhaps could be considered sound symbolic, but phonologically similar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>words such as <em>untoko</em>, <em>untokosa</em>, <em>untokofo</em> exist that are interchange</td>
</tr>
<tr>
<td></td>
<td></td>
<td>with <em>unto</em>, which makes me think it is lexically separate from mimetics.</td>
</tr>
<tr>
<td>/eQto/ [etto]</td>
<td>‘umm’, ‘errr’, ‘well’</td>
<td>This is a lexical item in Japanese, but it’s not tied to the sound symbolic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>system.</td>
</tr>
<tr>
<td>/aQto/ [atto]</td>
<td>1. A short cry of surprise</td>
<td>I have only ever encountered this word in the lexicalized phrase *atto yuu</td>
</tr>
<tr>
<td></td>
<td>2. In an instant [in frozen]</td>
<td><em>ma</em>, literally ‘the time it takes to say “a”’. This fixed phrases is</td>
</tr>
<tr>
<td></td>
<td></td>
<td>widely and commonly used, and I believe this word to be lexicalized item</td>
</tr>
<tr>
<td></td>
<td></td>
<td>rather than a mimetic word.</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>expression</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>/oQto/ [otto]</td>
<td>‘uh-oh’, ‘oops’, ‘sorry’</td>
</tr>
<tr>
<td>/daQto/ datto</td>
<td>The manner of moving quickly and vigorously</td>
</tr>
</tbody>
</table>

With these examples in mind, I am dispensing with CVN-to and CVQ-to as phonological possibilities within the mimetic stratum. Indeed, they are not to be considered counterexamples or even exceptions to my moraic approach but rather further evidence that anything short of 4 moras is fundamentally at odds with the sound symbolic system in Japanese.

Likewise, the word saQsato above does not fit neatly into my templates. Hamano categorizes this word as of the type C_1V_1Q-C_1V_1 (Hamano 1998:2). Though saQsato is a commonly used lexical item, the only other examples of this type I can find are paQpato, toQtoto, and seQseto. SaQsato, seQseto, and toQtoto can be found in The Dictionary of Iconic Expressions in Japanese, but paQpato cannot. While these few examples fall outside my account, their occurrence is not, in fact, completely unexpected. Mimetics are playful, employed mostly in informal speech – exactly the sort of thing we would expect to be riddled with exceptions. Indeed, the fact that there are so few exceptions of this type turns out be confirmation of the strength of the templates proposed in this thesis.

ii. In Regards to Diphthongs

Hamano analyzes vowel sequences as diphthongs under her CV templates. She argues the presence of a diphthong generally indicates circular motion. She provides several examples of this:
She states: “Three types of complex nuclei appear in mimetic adverbs. They are /ai, oi/ and are limited to CV-based adverbs. No CVCV-based mimetic adverbs employ a diphthong either in the first or in the second syllable” (Hamano 1998: 73). Hamano reasons this as being “probably because they are highly iconic, the diphthongs /oi, ui/ do not appear in CVCV-based mimetic adverbs, which are more conventional than CV-based mimetic adverbs” (Hamano 1996: 104).

While I find assigning degrees of iconicity or conventionality a slippery slope when discussing mimetics, it is true that diphthongs do not appear in either Hamano’s CVCV-based mimetics or my $\mu_1\mu_2$ templates. Under this interpretation, the idea of ‘circular motion’ as
represented by the diphthong would be semantically impossible in CVCV-based mimetics and it seems to me that this would be a gross semantic limitation to place upon CVCV-based mimetics. However, I do find $\mu_1$ with \{OV\} values, c.f. oro-oro ‘the state of being confused and unable to deal adequately with a situation’ – so why can the same \{OV\} value not be valid for $\mu_2$? With this reanalysis of $CV_1V_2$ as a bimoraic $CV_1OV_2$, the semantic impossibility of circular motion within CVCV-based mimetics is removed.

Before I exemplify my analysis of successive vowels, I would like to clarify one point: within The Dictionary of Iconic Expressions in Japanese the word used in (b) above is listed not as poi, but rather as poi('), or in modern shorthand poi(Q). Likewise, the pui from (c) is listed as pui('). These two entries in the dictionary show that the epenthesis of Q is a variant form of poi. However, I would prefer to have poiQ be acknowledged as the main form and not as a variant because that is the form that is realized in colloquial speech. In the same manner, the hoi-hoi from (d) is included in the dictionary not as hoi-hoi-to, but as hoi-hoi (to), indicating that the (to) is not obligatory in conjunction with hoi-hoi. Referencing the grammatical chart contained in (I), this obligatory status of the (to) would firmly place the word hoi-hoi among other words with a $\mu_1\mu_2$-base structure. Thus, rather than analyze it as a CV-template word with a diphthong, I would prefer to analyze it as a $\mu_1\mu_2$-based mimetic with the constituent structure of /ho-ōi/. From a semantic standpoint, rather than interpret the presence of a diphthong in a CV-based template as indicating circular motion, this could be seen as the value of \{O\} in $C_2$ position – the position that encodes “type of movement”. This makes sense to me phonologically as well because for me at least it is difficult to see “circular motion” in all the examples Hamano gives, especially (d) through (g) above.
My analysis of how Hamano’s diphthongs conform to the $\mu_1\mu_2$-base templates is exemplified below. Indeed, they should not be analyzed as diphthongs – a rare phenomena in Japanese anyway – but rather as two distinct vowels, and thus part of two distinct moras. In Hamano *poito* is listed in the example sentence without a geminate, and likewise in *The Dictionary of Iconic Expressions in Japanese*. However, I have inserted a geminate below because in listening to spoken Japanese, ungeminated *poito* does not occur as far as I know.

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
<th>Interpretation under Hamano's template</th>
<th>Interpretation under my template</th>
</tr>
</thead>
<tbody>
<tr>
<td>/poOiQto/</td>
<td>The manner of throwing a small object away casually, or of something small</td>
<td>C(y)V(V)Q</td>
<td>$\mu_1\mu_2X{\text{to, ri}}$</td>
</tr>
<tr>
<td>[poitto]</td>
<td>being dropped of falling casually</td>
<td>C = /p/</td>
<td>$\mu_1 = /p/o/$</td>
</tr>
<tr>
<td></td>
<td>V = /o/</td>
<td>V = /i/</td>
<td>$\mu_2 = /O/i/$</td>
</tr>
<tr>
<td></td>
<td>(V) = /i/</td>
<td>X = /Q/</td>
<td></td>
</tr>
<tr>
<td>/puOiQto/</td>
<td>The manner of abruptly turning away or leaving in annoyance</td>
<td>C(y)V(V)Q</td>
<td>$\mu_1\mu_2X{\text{to, ri}}$</td>
</tr>
<tr>
<td>[puitto]</td>
<td></td>
<td>C = /p/</td>
<td>$\mu_1 = /p/o/$</td>
</tr>
<tr>
<td></td>
<td>V = /o/</td>
<td>V = /i/</td>
<td>$\mu_2 = /O/i/$</td>
</tr>
<tr>
<td></td>
<td>(V) = /i/</td>
<td>X = /Q/</td>
<td></td>
</tr>
<tr>
<td>/pjoOiQto/</td>
<td>The manner of jumping nimbly once.</td>
<td>C(y)V(V)Q</td>
<td>$\mu_1\mu_2X{\text{to, ri}}$</td>
</tr>
<tr>
<td>[pjoitto]</td>
<td></td>
<td>C = /p/</td>
<td>$\mu_1 = /p/o/$</td>
</tr>
<tr>
<td></td>
<td>V = /o/</td>
<td>V = /i/</td>
<td>$\mu_2 = /O/i/$</td>
</tr>
<tr>
<td></td>
<td>(V) = /i/</td>
<td>X = /Q/</td>
<td></td>
</tr>
<tr>
<td>/Oiro-</td>
<td>The state of being confused and unable to deal adequately with a situation.</td>
<td>C(y)$_1$V$_1$C$_2$V$_2$-$</td>
<td>$(\mu_1\mu_2)^2$</td>
</tr>
<tr>
<td>Oiro/</td>
<td></td>
<td>C(y)$_1$V$_1$C$_2$V$_2$</td>
<td>$\mu_1 = /O/i/$</td>
</tr>
<tr>
<td>[iroid]</td>
<td></td>
<td>C$_1$ = /O/</td>
<td>$\mu_2 = /ro/$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>V$_1$ = /i/</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C$_2$ = /r/</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>V$_2$ = /o/</td>
<td></td>
</tr>
<tr>
<td>/hoOi-</td>
<td>The manner of casually or readily doing something or promising to do</td>
<td>C(y)V(V) C(y)V(V)</td>
<td>$(\mu_1\mu_2)^2$</td>
</tr>
<tr>
<td>hoOi/</td>
<td>something; the manner of doing things easily and quickly</td>
<td>C = /h/</td>
<td>$\mu_1 = /h/o/$</td>
</tr>
<tr>
<td>[hoihoi]</td>
<td></td>
<td>V = /o/</td>
<td>$\mu_2 = /O/i/$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(V) = /i/</td>
<td></td>
</tr>
</tbody>
</table>
I think one of the strengths of my moraic approach to mimetics is perfectly encapsulated above: my templates provide a fundamental distinction between forms like ‘piiQto’ and ‘puiQto’. Under Hamano’s template, both would be analyzed as C(y)V(V)Q because her template does not distinguish between similar and dissimilar vowels. However, under my templates, the former is analyzed as a product of vowel lengthening under the template μV_C 2Xto and the latter is analyzed under the bimoraic template μ1μ2Xto with the C 2 value of {0} indicating a null semantic value for ‘type of motion’.

**iii. Conclusions Regarding the μ-based Templates**

Because the μ-based templates have a smaller starting point than the u1u2-based templates, a greater variety of methods is available to achieve the 4-mora goal, but ultimately the end goal is the same: 4 moras. The methods utilized to achieve 4 moras from the base are various, but limited, combinations of reduplicative processes, vowel lengthening, and infixing. The results are as below:

1) (μ)²Xto
2) μV_C 2Xto
3) (μV_C 2)²
4) (μX)²

Furthermore, CVN(to) and CVQ(to), despite the existence of lexical items that adhere to this phonological pattern, are not to be considered phonological possibilities for the mimetic stratum. Diphthongs are not be analyzed as underlying μ but rather as μ1μ2 forms with a value /O/ in the C 2 position.

c. Compound Mimetic Adverbs
In addition to simplifying the number of templates necessary to understand the phonological patterning of the mimetic strata, I believe this idea also allows for development of a template for a class of words, relatively small in number but nonetheless present, that Hamano does not fully treat: words such as *choko-maka*, *kasa-koso*, and *dogi-magi*, collectively termed “Compound Mimetic Adverbs” by Hamano (1998, 47). Hamano identifies three types, as follows:

1. “Dissimilar stems are juxtaposed” (Hamano 1998: 48)
   a. *Piitiku*  shrill peeping of a bird
   b. *Pati-kuri*  ‘blinking eyes’
   c. *Butu-kusa*  ‘complaining sullenly’
   d. *Buu-suka*  the loud sound of a trombone
   e. *Tyoko-maka*  ‘moving around in small steps’
   f. *Soso-kusa*  ‘busily’
   g. *Gata-pisi*  the rattling sound of a poorly fitting sliding door
   h. *Guu-suka*  ‘sleeping deeply’

2. “Melodically constant across the two stems” (Hamano 1998: 48)
   a. *Kara-koro*  the sound of wooden clogs
   b. *Kata-koto*  the sound of small hard objects hitting against a box
   c. *Kasa-koso*  the sound of dry leaves
   d. *Gara-goro*  the sound of heavy round objects in a circular motion
   e. *Gata-goto*  the sound of trains

3. “The first CV sequences of the two stems are different, but the second CV sequences are identical” – coincidentally this is the most productive of the three forms (Hamano 1998: 49)
   a. *Petya-kutya*  ‘chitter-chatter’
   b. *Boka-suka*  sudden and heavy snow fall
   c. *Hedo-modo*  ‘flustered’
   d. *Musya-kusya*  ‘irritated’
   e. *Tiku-taku*  ‘tick tock’
   f. *Tira-hora*  light snowfall
   g. *Tiya-hoya*  ‘flattering’
   h. *Teki-paki*  ‘efficiently’
   i. *Tube-kobe*  ‘complaining about this and that’
   j. *Deko-boko*  ‘with bumps’
   k. *Dota-bata*  ‘stamping noisily’
   l. *Doka-suka*  ‘in a large quantity’
   m. *Dogi-magi*  ‘flustered’
   n. *Zita-bata*  ‘trying in vain to free oneself’
Hamano doesn’t deal with them in the sense that beyond labeling these words “compound mimetic adverbs” and identifying these three broad categories, she does not provide any template or derivation for them. However, this third and most productive category, at the very least, I feel should be included in $μ_1μ_2$ derivations. Using Raimy’s method of segmental reduplication (Raimy 2000), a word like $boka-suka$ (3.b) can be analyzed as:

$$\begin{align*}
\# & b \rightarrow o \rightarrow k \rightarrow a \rightarrow \% \\
& \uparrow \downarrow \\
& u \leftarrow s
\end{align*}$$

On the semantic tier, the constituent parts are reduplicated in this manner:

$$\begin{align*}
\# & C_1 \rightarrow V_1 \rightarrow C_2 \rightarrow V_2 \rightarrow \% \\
& \uparrow \downarrow \\
& V_3 \leftarrow C_3
\end{align*}$$

Because the following connections can be drawn between the position of a phoneme and its symbolic meaning:

- $C_1$: Tactile nature of the object
- $V_1$: Initial shape of the movement/object
- $C_2$: Type of movement
- $V_2$: Resultant shape and size of the movement/object

These forms with partial reduplication can be seen as being ongoing and repetitive in the motion because of the reduplication, yet contrastive in the tactile nature and initial shape of the movement during such repetitions because of the substitution of $C_3V_3$ for $C_1V_1$. This is associated in the phonological tier as:
Thus, the template for this form can be represented as \((\mu_1\mu_2)(\mu_3\mu_2)\).

<table>
<thead>
<tr>
<th>Word</th>
<th>Definition</th>
<th>Hamano’s Template</th>
<th>My Template</th>
</tr>
</thead>
</table>
| /jiyahoya/    | The manner of paying too much attention to the comfort or wishes of someone | Impossible to derive – considered compounds of other mimetics                    | \(\mu_1\mu_2-(\mu_3)\mu_2\)  
\(\mu_1=/'\text{ji}/\)  
\(\mu_2=/'\text{ya}/\)  
\(\mu_3=/'\text{ho}/\) |
| /jiyaffiya/   | *                                                                          |                                                                                 |                                                                               |
| /hoyahoya/    | The state in which food is freshly prepared or hot                          |                                                                                 |                                                                               |
| /hedomodo/    | The manner of speaking hesitantly or brokenly; the state of being confused and not knowing what to say. | Impossible to derive – considered compounds of other mimetics                    | \(\mu_1\mu_2-(\mu_3)\mu_2\)  
\(\mu_1=/'\text{he}/\)  
\(\mu_2=/'\text{do}/\)  
\(\mu_3=/'\text{mo}/\) |
| /hedohedo/    | *                                                                          |                                                                                 |                                                                               |
| /modomodo/    | *                                                                          |                                                                                 |                                                                               |

I prefer this partial reduplicative approach semantically as well, because it is difficult for me to see the semantic connections of how a word like chiyahoya is compounded from chiyachiya and hoyahoya.

For the three types of “Compound Mimetic Words”, I struggle to find an explanation for a form in which “dissimilar stems are juxtaposed” (Hamano 1998:48) like pii-tiku ‘shrill peeping of a bird’ and buu-suka ‘the loud sound of a trombone’. Perhaps because they are more onomatopoetic than sound symbolic, the rules governing mimetics do not apply as strictly. Hamano draws a connection between the second, “melodically constant” compounds and “historical word formation process in Old Japanese” (Hamano 1998:49). I concur with that
conclusion. However, for the most productive type of compounds in which the first and third moras are dissimilar, but the second and fourth moras are identical, I find a partial reduplicative approach a more accurate description than calling them compounds. Regards, all three type of Mimetic Compounds as defined by Hamano composes but a minute fraction of the entire mimetic stratum. Thus, if for this category of words, the \((\mu_1\mu_2)(\mu_3\mu_2)\) partial reduplicate form is considered a subset of the full reduplicate, the list of bimoraic \(\mu_1\mu_2\) templates that achieve the 4 mora goal can be expanded:

1) \((\mu_1\mu_2)^2\)  
   a. \((\mu_1\mu_2)(\mu_3\mu_2)\)
2) \(\mu_1\mu_2X\{to, ri\}\)

VI. Conclusions Regarding the Mimetic Stratum in Japanese

The entire goal of my proposal is to examine mimetics in Japanese using a moraic approach. Hamano’s past work most excellently lays forth the semantic correlates associated with phonemic position and phonemic values, and the multitude of semantic affixes at the disposal of the speaker that can be used to nuance the semantic meaning of her base. However, in the phonological tier, the mora reigns as the determining factor in whether a mimetic word is well-formed or not. With the goal of 4 moras in mind, a number of processes are utilized to produce the goal from \(\mu\)-bases or \(\mu_1\mu_2\)-bases. These processes can be summed up in a number of templates, as follows:

1) \((\mu)^2Xto\)
2) \(\muV\muXto\)
3) \((\muV_\mu)^2\)
4) \((\muX)^2\)
5) \((\mu_1\mu_2)^2\)  
   a. \((\mu_1\mu_2)(\mu_3\mu_2)\)
6) \(\mu_1\mu_2X\{to, ri\}\)
There still remain a few knots in this proposal to untangle in future research, but I believe that the switch from a fundamentally phonemic-based model to a moraic model enriched by a semantic tier provides insight into the phonological structure of the mimetic stratum that far outweighs the knots. Perhaps too, the mora as a unit may carry semantic meaning, in which case a mora-based analysis of the semantics tier would prove an interesting endeavor, but my conclusion remains wholly phonologically and my evidence for a mora-based analysis of Japanese mimetics remains restricted to the scope of the phonological tier.
Works Cited:


