

On the Basic Affective Dimensions of Japanese Onomatopoeia and the Basic Level of Japanese Phonesthemes

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Phonesthemes are the basic unit in sound symbolism, which lies between phonemes and morphemes. In English or Swedish, there are many phonesthemes that consist of two or three consonants (Hinton, Nichols and Ohala, 1994; Abelin, 1999). Japanese does not have such phonesthemes, because it lacks such sound patterns. Hamano (1998) set each Japanese consonant and vowel as a phonestheme and analyzed Japanese onomatopoeia systematically. Her analysis is interesting, yet the selection of phonesthemes and the affective meaning depends on her intuition. In this preliminary study we tried to provide empirical evidence concerning these basic problems and relate these results to the sound symbolism of Japanese in general. 1) 60 onomatopoeia were used. All onomatopoeia were C1V1C2V2 type and related to emotion. 12 subjects rated these onomatopoeia with 24 adjective pairs. Distances among the 60 onomatopoeia in 24 dimensional adjective space were analyzed by MDS. 2 dimensions were adopted. The 1st dimension had the highest correlation with brightness, and the 2nd dimension had the highest correlation with hardness. 2) 157 Japanese morae were used. 99 subjects rated the brightness of these morae and 100 subjects rated the hardness of these morae. Average ratings were analyzed by categorical multiple regression analysis. Dependent variables were averaged brightness or hardness. Independent variables were consonants and vowels. The multiple correlation coefficients for both brightness and hardness were near 1. Consonants had bigger effects on morae than vowels.

Key words: *Onomatopoeia, Sound Symbolism, Phonestheme*

Introduction

Discussions of sound symbolism often trigger laymen's curiosity but linguist's skepticism (Hamano, 1998). Mainstream linguistics after Saussure held the doctrine that linguistic signs are arbitrary. There were a few prominent linguists who went against this mainstream. Sapir conducted a psychological experiment on sound symbolism of size impressions. Jakobson elaborated a semiotic theory of sound symbolism. Yet up to today, sound symbolism has been regarded as a peripheral phenomenon in linguistics (Abelin, 1999).

Proper study of sound symbolism requires the knowledge not only of linguistics (phonetics, phonology, lexicology and semantics) but also of psychology (sensory cognition, affective processes and metaphor). Recent developments in cognitive linguistics and

iconicity studies (Hiraga, 2005) indicate the utilization of psychological knowledge in linguistics. On the other side, there are few psychological studies on sound symbolism which utilize linguistic knowledge. We hope to fill this gap.

Theoretical Overview

The phenomena of sound symbolism are complex, heterogeneous and sometimes elusive. First we will present our theoretical viewpoint concerning sound symbolism.

Sound symbolism in a wide sense includes paralinguages, such as tone of voice and speech speed. Sound symbolism in a narrow sense is limited to sound patterns which can be transcribed by standard orthography. We will call the latter type phonemic

sound symbolism. Although both types of sound symbolism may share some common mechanisms, we limit our study to phonemic sound symbolism. The span of paralinguistic effects usually goes beyond the range of each sentence. In contrast, the span of phonemic sound symbolism is limited to each word.

1) Sound symbolic meaning and lexical meaning

Kita (1997) maintained that words have meaning in an analytic dimension, whereas onomatopoeia have meaning in an affecto-imagistic dimension.

For example, the English word “ramble” can be translated into Japanese as “bura bura aruku”, where “aruku” means walk and “bura bura” is onomatopoeia serving as an adverb. Compared to “ramble”, the meaning of Japanese verb “aruku” is under-differentiated. In Japanese, further differentiation is provided by the onomatopoeia. The meaning of “bura bura” lies in an affecto-imagistic dimension, whereas the meaning of “aruku” lies in an analytic dimension.

For most words, there exists both analytical or lexical meaning and affecto-imagistic or sound symbolic meaning. As Tamori & Schourup (1999) pointed out, the dichotomy between the words of analytical meaning and the words of affecto-imagistic is too simple, because there are different degrees of sound symbolic meaning.

2) Japanese lexicon and the role of sound symbolism

The Japanese lexicon consists of four layers. Mimetic words (onomatopoeia), Yamato words, Sino-Japanese words and foreign words. They differ in the degrees of sound symbolic meaning (Fig.1).

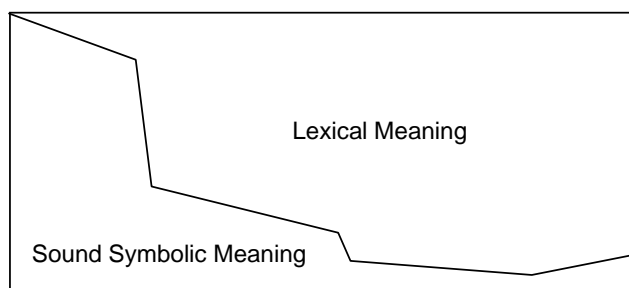


Figure 1: The Four layers of the Japanese lexicon and their degree of sound symbolic meaning.

The mimetic words of Japanese have distinct phonological characteristics. Yamato words or Sino-Japanese words do not start with /p/. In contrast to this, one sixth of mimetic words start with /p/ (Hamano,

1999). Sequential voicing is typical in Yamato-words, but rarely occurs in Mimetic words. Japanese mimetic words have CV or CVCV roots and are often repeated. Mimetic words and foreign words are usually written in katakana.

The meaning of mimetic words is predominantly sound symbolic. Mimetic words have strong bonds with specific verbs or nouns. For example, “bura bura” is usually used together with “aruku” (walk) or “suru”(do). The lexical meaning of mimetic words is provided by these bonds.

Hamano (1998) set each Japanese consonant and vowel as a phonestheme and analyzed the onomatopoeia systematically. She maintained that each consonant and vowel has specific meaning. Table 1 shows her results for the consonants of CV roots. Table 2 shows the results for vowels of CV roots and CVCV roots. She maintained that the first and second consonants of CVCV roots have slightly different meanings. (Here we skip the results for CVCV roots and other details.)

Table 1: Sound symbolic meaning of initial consonants of CV roots (Hamano, 1999).

- /p/ taut surface; explosive movement, light; small; fine
- /b/ taut surface; explosive movement, heavy; large; coarse
- /t/ lax surface; tapping, light; small; fine
- /d/ lax surface; tapping, heavy; large; coarse
- /k/ hard surface; depth; backness; pharyngeal sound, light; small; fine
- /g/ hard surface; depth; backness; pharyngeal sound, heavy; large; coarse
- /s/ smooth movement, light; small; fine
- /z/ smooth movement, heavy; large; coarse
- /h/ breath
- /m/ /n/ suppression; vagueness
- /w// / loud human voice; animal voice
- *Palatalization childishness, excessive energy

Table 2: Sound symbolic meaning of vowels (Hamano, 1999).

- /i/ straightness; high-pitched sound
- /u/ small protruded opening
- /o/ small area; inconspicuousness; modestness
- /a/ large area; totality of the object; conspicuousness
- /e/ vulgarity

Hamano (1999) provided many examples to support her claims. Tamori & Schourup (1999) critically examined her claims and stated that they were roughly valid, yet not conclusive.

Hamano (1999) limited her analysis to mimetic words. Tamori & Schourup (1999) sometimes refer to the sound symbolism of Yamato-words in relation to mimetic words. Watanabe (1999) maintained that, basic Yamato-words are sound symbolic. He set each Japanese mora as a phonestheme and analyzed the Yamato-words systematically. His analysis is intriguing, but somewhat naïve. Many linguists seem to regard his work as mere folk etymology. There are many linguistic analyses of sound symbolism of ordinary words in many languages (Hinton et al., 1995; Abelin, 1999). It seems clear that the sound symbolism of Japanese is not limited to mimetic words.

3) Productivity and universality

Sound symbolism is productive. Many new words are created by sound symbolism. Babies, caretakers and marketers all create new words using sound symbolism. Kidohshi (1990) developed a system of naming based on sound symbolism. The basics of his system are values of brightness and hardness for each consonant and vowel. He estimated these values from 1,289 words (Mimetic words and Yamato-words).

Many psychological studies about the universality of sound symbolism have been inspired by Sapir's pioneer experiment in 1929 (Brown 1958). Some aspects of sound symbolism seem to be universal, yet the precise facts and mechanisms remain unclear.

4) Sound patterns and semantics of sound symbolic meaning

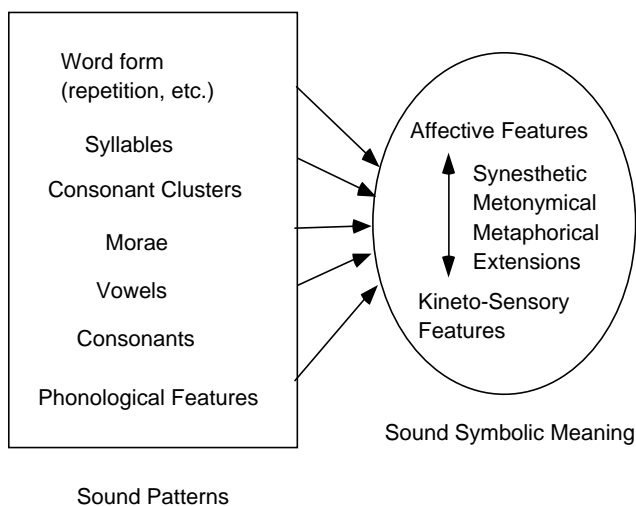


Figure 2: Correspondence between sound patterns and sound symbolic meaning.

Figure 2 shows the key points of sound symbolism, which are relevant to our studies.

The semantics of sound symbolic meaning has received only scarce attention. There are sensory features, kinesthetic features, affective features and mental attributes (Tables 1 and 2). There seems to be synesthetic, metonymical and metaphorical links among them. Semantic differential can provide an approximation to these kineto-sensory affective mental features.

The basic level of sound patterns pertinent to sound symbolism seems to vary with languages. In Japanese the basic level seems to reside in the level of consonants and vowels. Beyond the basic level, in response to the type of meaning, the pertinent level will change (Tsur, 1992).

Methods and Results

1) Basic affective dimensions of Japanese onomatopoeia
 Stimuli: 60 Japanese affective onomatopoeia (giseigo). All onomatopoeia was C1V1C2V2 type and presented in repeated form (“nikoniko”). They were printed in hiragana.

Subjects: 12 university students.

Rating: Onomatopoeia was rated by 24 adjectives on a 7 point scale.

Results: Average ratings were analyzed. Distances among the 60 onomatopoeia in 24 dimensional adjective space was analyzed by MDS (PROXSCAL). 2 dimensions were adopted. Normalized stress was 0.014. The 1st dimension had the highest correlation with brightness, and the 2nd dimension had the highest correlation with hardness (Fig. 3).

2) Basic level of phonesthemes of brightness and hardness

Stimuli: 157 Japanese morae were used. They were printed in hiragana or katakana.

Subjects and rating: 99 university students rated the brightness of 157 morae. 100 university students rated the softness of 157 morae. Ratings were done on a 7 point scale.

Results: Average ratings were analyzed by categorical multiple regression analysis (Quantification Type 1). Dependent variables were averaged brightness or hardness. Independent variables were consonants and vowels. The multiple correlation coefficient for brightness was 0.966, hardness was 0.972. The partial correlation coefficient of brightness to vowels was 0.706

and 0.963 to consonants. The partial correlation coefficient of hardness to vowels was 0.552 and 0.971 to consonants. As for brightness and hardness, the pertinent level seems to vowels and consonants. Consonants have greater effect on brightness and hardness. Figure 4 shows the categorical scores of vowels and consonants.

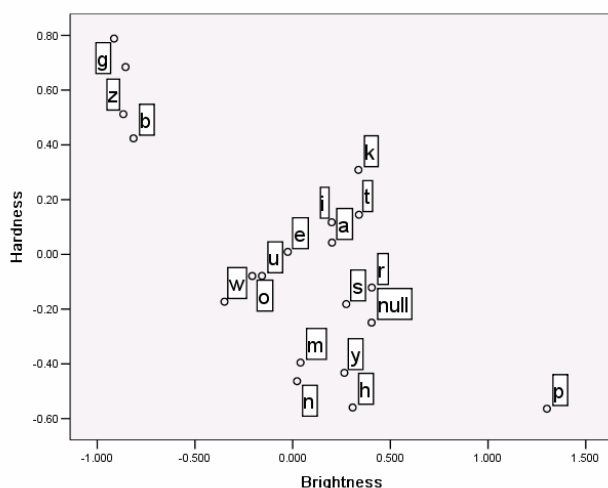


Figure 4: Categorical scores of vowels and consonants.

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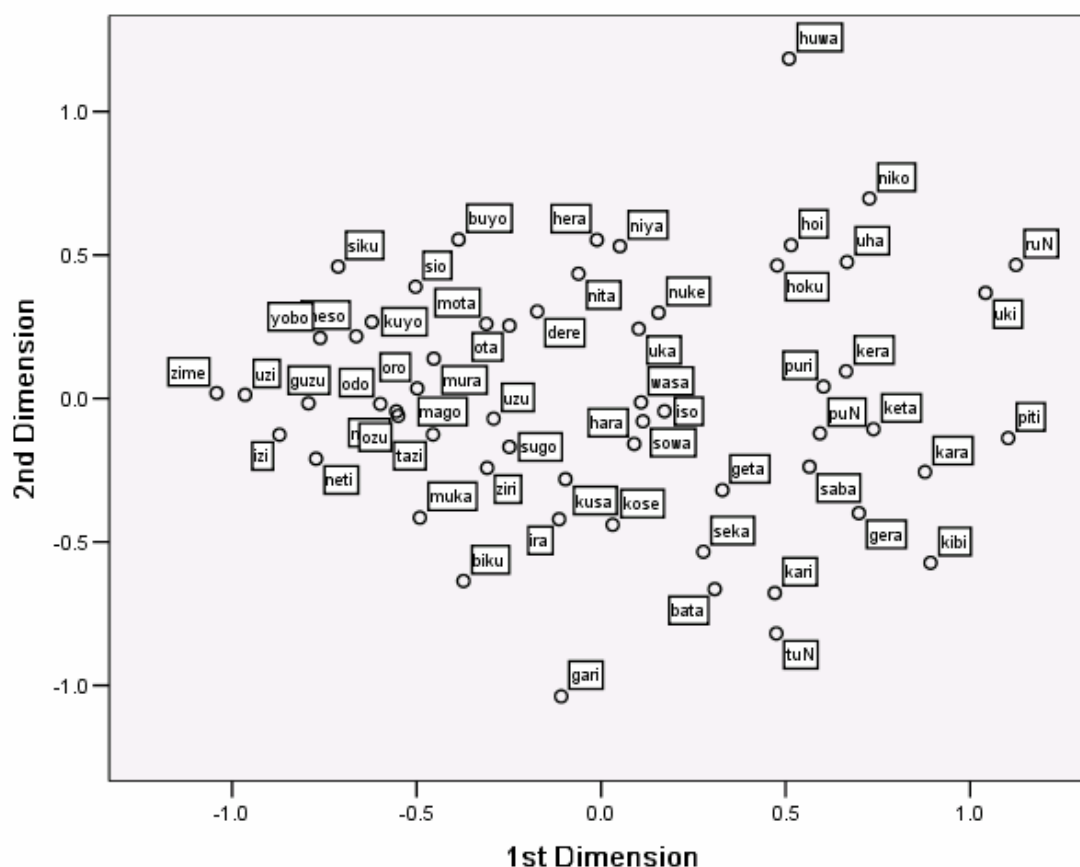


Figure 3: MDS configuration of 60 onomatopoeia. Onomatopoeia were presented in repeated form.