

# Bi-musicality in Japanese folksong and Italian art song: A study on vocal timbre

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'Bi-musicality' is a term that was first used by ethnomusicologist Mantle Hood in 1960 in his paper entitled "The Challenge of 'Bi-musicality'". Hood spoke of bi-musicality in reference to musicians learning a foreign music, namely Western musicians who study Eastern music or Eastern musicians who study Western music.

When addressing the problem of the extent to which a Western musician can learn Eastern music, Hood suggested that for musicologists it is necessary only to secure one's basic musicianship in the music of a foreign culture. But for a musician to achieve status as a professional instrumentalist or singer among those in the country of his study, it is necessary to go beyond the basic musicianship, which Hood mentioned has only a *remote* possibility (Hood, 1960, p.58). This paper is a discussion on whether or not the possibility of achieving "true" bi-musicality is really as remote as Hood had imagined.

## Defining bi-musicality

Mantle Hood described bi-musicality as the learning of a foreign music. But I perceive bi-musicality as the result of technical training and aesthetic understanding of music from a different ethnic group while maintaining one's first learnt music.

I have arrived at this definition by considering the definition of musicality, and then by comparing bi-musicality with bilinguality<sup>1</sup>. Musicality has been described repeatedly by researchers of the psychology of music to involve not only technical ability and understanding of music but also the ability to emotionally move and excite an audience<sup>2</sup>.

In a comparison of bi-musicality and bilinguality I have discovered the importance of maintaining two or more languages<sup>3</sup>, or similarly two or more musics. To be considered a bilingual, it is commonly believed that one must be capable of communicating in at least two languages (Grosjean, 1982, pp. 231-3). Whether the languages are acquired simultaneously or at different times, both languages must be maintained not mixed or one forgotten. In comparison, to be considered bi-musical, it is in my opinion that one must be able to perform and understand two musics. Whether the music styles are acquired simultaneously or at different times, both must be maintained, not mixed or one forgotten.

Nowadays, singers and instrumentalists are actively crossing the borders of East-West as well as the borders of ethnic groups within one culture. There seem to be two tendencies in acquiring a foreign music. One is the conscious combining of musics. One

example of this is the creation of a new style of music called world fusion, where musical elements from different cultures are blended. Jai Uttal, for example, spent several years in India learning Indian music, and currently composes and performs progressive jazz employing elements of classical Indian music.

The other tendency of foreign music acquisition is replacing one music for another. Through my fieldwork in Japan, I have encountered Western musicians who are recognized as professionals in Japanese traditional music. Among *shakuhachi* (a vertical bamboo flute) players, there is Gunnar Linder from Sweden and Chris 'Yohmei' Blasdel from the USA. Among *taiko* (a type of drum) players, there is Kenny Endo from the USA. But in the process of learning the traditional music of Japan, they have chosen not to continue performance of their native music; in other words, they have replaced their native music with Japanese music. This is a concept which Mantle Hood called "alternative musicality" (Hood, 1960, p. 55), and what linguists would call "a dormant bilingual" (Grosjean, 1982, p. 239).

It is important to point out here that the Western professional musicians in a foreign culture whom I have encountered are all instrumentalists, not vocalists. It is true that some vocalists incorporate vocal techniques from other musics into their own vocal style, but few attempt to keep the styles completely separate. Students of *bel canto* are required to make a distinction between Italian art song, German lied and, in the case of Japan students, Japanese art song, but all of these vocal styles are based on the same *bel canto*. Thus, it is difficult to classify these tendencies of foreign music acquisition in the same group as Mantle Hood had mentioned: Western musician learning Eastern music or Eastern musician learning Western music.

I, personally, however, have attempted to acquire the vocal style of an Eastern music after training in the vocal technique of Western classical music. After formally studying Italian art song in university, I came to Japan where began lessons in Japanese folksong. At first I sang the folksongs all in *bel canto* style which I had learnt in university. But as time passed, I ceased practicing Italian art song and, through imitating the vocal techniques and vocal timbre of my teacher, my singing voice increasing began to sound like my fellow students who were all Japanese. As a result, I became less and less capable in *bel canto* style. At one point, a Japanese music producer told me that everything I sang, including Italian art song; sounded like Japanese traditional folksong.

Why did I lose my *bel canto* voice when training in Japanese folksong? Was it not possible to train in and produce two different vocal styles without mixing them or eliminating one or the other? This is where I began my research on bi-musicality and vocal timbre.

## Vocal timbre

To achieve "true" bi-musicality in the vocal techniques of two distinct musics, one must learn both musical styles completely. Musical style includes the elements of pitch, timbre, time, and sound intensity that vary according to the music-culture's aesthetics (Titon, 1992, p.10). Among these elements, the most noticeable differentiating element of musical style of singing is vocal timbre. According to *Voices of the World: an Anthology of*

*Vocal Expression*, a collection of recordings with text coordinated by Hugo Zemp, "...nothing is more characteristic of a musical style than vocal timbre, for a few seconds may be more than enough to identify the origin of a song" (p. 119). In other words, in an attempt to distinguish two types of vocal technique the most obvious characteristic is vocal timbre. It can be said that the possibility of a vocalist becoming bi-musical can be determined by the vocalist's ability to produce suitable and independent vocal timbre for the selected vocal styles.

According to Johan Sundberg (1987), the "fourth formant is highly relevant to voice timbre" (p. 101) and the frequency of this formant is determined by "the vocal tract length and the vocal tract dimensions within and around the larynx tube" (p. 101). Thus, in this research, vocal timbre is used as a basis to determine the possibility of bi-musicality, and is measured by observing the formants and the settings<sup>4</sup> of the vocal tract of two distinct vocal styles sung by a single subject. The following is a brief review of the suitable formants and settings of the vocal tract for Italian art song and for Japanese folksong, the two vocal styles targeted in this research.

The formants produced by Western opera singers and those produced by Japanese traditional music singers have been found to be distinctly different. In Western classical singing, a formant peak is typically found in the neighborhood of 3 kHz and is generally referred to as the "singer's formant". In Japanese traditional vocal styles, including both classical and folk, a characteristic formant peak has also been observed in experiments conducted by Nakayama et al (1998) and Kobayashi et al (1990). This "Japanese singer's formant"<sup>5</sup> is in the neighborhood of 4-5 kHz, which is considerably higher than in Western classical singing.

However, observation of formants alone does not determine whether or not the subject produces the vocal timbre in the same manner as Western classical singers and Japanese traditional music singers. The settings of the vocal tract must also be considered. This research focuses on larynx height, pharyngeal port dilation, and pharyngeal port movement. In Western classical singing, the singer maintains the setting of a lowered larynx and a well-rounded pharyngeal port creating a long vocal tract for most of his or her range (Pershall, 1987, p. 189; Sundberg, 1987, p. 112-3). In Japanese traditional vocal music, the singer, in general, has a raised larynx and a narrow pharyngeal port creating a short vocal tract. This position, however, is not maintained but rather dynamic movements of the pharynx and soft palate are seen throughout vocalization (Niimi, 1990, p. 160; Kobayashi, 1990, p. 44).

## The experiments

### Method

**Purpose:** To determine a singer's ability to produce suitable and independent vocal timbre in the two distinct vocal styles of Italian art song and Japanese folksong.

**Subject:** An American female (the author of this paper) who studied Italian art song in university for four years. After which the subject learned Japanese folksong in

Japan for approximately eight years. During that time, the subject's practice of Italian art song became non-existent. Lessons in Italian art song were resumed and taken simultaneously with lessons of Japanese folksong for the one year preceding these experiments.

**Procedures:** The subject sang the five vowels /a/ /e/ /i/ /o/ /u/ on a scale from  $c^1$  to  $b^1$  in both vocal styles as well as short passages and complete pieces from each genre. For Italian art song, *Lasciate morire* and *Ombra mai fu* were sung, and for Japanese folksong *Kome-bushi*, *Ise-ondo*, and *Hyuga-kobiki-uta*.

The formants of each vowel were analyzed by use of a spectrum envelope. The characteristics of each vowel were determined. After which, the pitch  $g^1$  was selected to compare each vowel sung in scale to the same vowel sung within a song.

The settings of the vocal tract, including larynx height and pharyngeal port dilation and movement, were observed with a video fiberscope. The larynx height was determined by measuring the length of the vocal folds. Shorter vocal folds signify movement away from the video camera and thus the lowering of the larynx. Longer vocal folds signify movement toward the video camera and thus raising of the larynx. The pharyngeal port dilation was determined by the area of the pharynx.

## Results of the experiment on formants

For Italian art song as sung by the subject, a formant peak was seen in the neighborhood of 3-4 kHz for each vowel sung in a scale. And the same formant peak was seen at approximately the same place when compared to the same vowel approximately the same pitch sung within a song. This formant can be considered the "singer's formant" found in the voices of trained Western classical singers.

For Japanese traditional folksong as sung by the same subject, a formant peak was in the neighborhood of 3.5kHz or 4.5 kHz for each vowel sung in a scale; and, depending on the vowel, another formant peak in the neighborhood of 5-6 kHz was seen. Comparing this with the same vowel at the same pitch sung within song, the same formant peak was seen in the neighborhood of 3.5 kHz or 4.5 kHz and another formant peak in the neighborhood of 5-6 kHz for each vowel. The second formant can be considered the "Japanese singer's formant" found in the voices of Japanese music singers<sup>6</sup>.

## Results of the experiment on the vocal tract settings

**Larynx Height:** The length of the vocal folds was shorter for Italian art song and longer for Japanese folksong. The shorter vocal folds for Italian art song indicate movement away from the video camera and thus a lowered larynx. The longer vocal folds for Japanese folksong indicate movement toward the video camera and thus a raised larynx.

**Pharyngeal Port Dilation and Movement:** For Italian art song, the area of the pharynx became slightly larger as the pitch became higher. But overall, a rounded pharynx setting was held during vocalization. For Japanese folksong, the narrow area of the

pharynx became narrower as the pitch became higher. Dynamic movement of the pharyngeal port occurred when the subject used ornamentation.

## Conclusion

As observed in the experiments above the subject was able to produce suitable formants and to dilate the pharyngeal port in manner similar to that of trained singers in Italian art song and Japanese folksong. From these results, it can be determined that it is possible for a singer to produce suitable and independent vocal timbre in two distinct vocal styles, and thus, the acquisition of a music of a foreign culture while maintaining one's first learnt music is possible. Perhaps the possibility of becoming truly bi-musical is not as remote as Hood as imagined. However, before a concrete conclusion can be made concerning the acquisition of "true" bi-musicality, further research on the other elements of musical style, including pitch, time, and sound intensity must be conducted.

## Reference list

- Davies, J. B. (1978). Musical ability and musical aptitude: the problem of definition. In *The psychology of music*. London: Hutchinson & Co..
- Grosjean, F. (1982). *Life with two languages: an introduction to bilingualism*. Cambridge, Mass.: Harvard University Press.
- Hood, M. (1960). The challenge of 'bi-musicality'. *Ethnomusicology*, 4 (2), 55-59.
- Kobayashi, N., Tohkura, Y., Tenpaku, S., & Niimi S. (1990) Acoustic and Physiological Characteristics of Traditional Singing in Japan. *Denshi Jouhou Tsuushin Gakkai SP89-147*, 39-45. (English article in Japanese journal) .
- Laver, J. (1980) *The phonetic description of voice quality*. Cambridge: University Press.
- Macnamara, J. (1967). The bilingual's linguistic performance: a psychological overview. *Journal of Social Issues* 23, 59-77.
- Nakamura, I., Amano, F., Uehata, T., Kawauchi, A., Kojima, T., Kobayashi, N., Sugito, M., Takagi, H., & Yanagida, M. (1998). An attempt to compare vocal expressions in Japanese traditional and western classical-style singing, using a common verse. *Ongaku Jouhou Kagaku* 24(15), 93-100. (Abstract in English, article in Japanese).
- Niimi, S. (1990) Japanese traditional music and the larynx (Hougaku to koutou). *Jibi-toukei* 62(2), 160-1. (In Japanese).
- Pershall, K. E. (1987) Supraglottic contribution to voice quality. *Journal of Voice* 1(2), 186-190.
- Shuter-Dyson, R. (1982). Musical ability. In D. Deutsch (Ed.), *The psychology of music* (pp. 391-412). New York: Academic Press.
- Sundberg, J. (1987) *The science of the singing voice*. Illinois: Northern Illinois University Press.
- Theiry, C. (1978). True bilingualism and second language learning. In D. Gerver and H. Sinaiko (Eds.), *Language interpretation and communication*, (pp. 145-153). New York: Plenum Press.
- Titon, J. T. (Ed.). (1992). *Worlds of music: an introduction to the music of the world's peoples* (2<sup>nd</sup> ed.). New York: Schirmer.
- Voices of the World: an Anthology of Vocal Expression (Les Voix du Monde: Une anthologie des expressions vocales)* (1996). Collection du Centre National de la Recherche scientifique et du Musee de l'homme. Hugo Zemp, directeur de la collection. Le Chant du Monde CMX 374 1010.12 (CD). (Notes in English and French).

## Endnotes

<sup>1</sup> Giving details of the definition on bi-musicality are beyond the scope of this paper. Only a brief description of my conclusions will be discussed here.

<sup>2</sup> For discussions on the definition of musicality refer to R. Shuter-Dyson (1982) and J. B. Davies (1979).

<sup>3</sup> For discussions on the definition of bilinguality refer to C. Theiry (1978) and J. Macnamara (1967).

<sup>4</sup> "Setting" is a term used by John Laver throughout his book *The Phonetic Description of Voice Quality* (1980) in regard to the positioning of the vocal tract in singing.

<sup>5</sup> For the purposes of this paper, the formant seen in the singing voice of traditional Japanese music is referred to as the 'Japanese singer's formant'. However, it must be noted that there has not been extensive research on the vocal styles of Japanese music, and this name has not yet been formally recognized.

<sup>6</sup> The difference in formants when singing scales and in song of Japanese folksong can be explained by looking at vocalization practices. For bel canto, it is typical to begin a practice session with vocalises before attempting to sing an entire piece. Thus, the singer is accustomed to producing the same vocal timbre for both scales and in song. On the other hand, in a practice session for folksong no vocalises are used and the singer typically begins directly with a song without warming up. Thus, the singer is not accustomed to singing scales or other vocalises possibly resulting in different vocal timbre when asked to sing a scale.

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