Pertanika J. Soc. Sci. & Hum. 28 (1): 647 - 659 (2020)

PERTANIKA JOURNALS

SOCIAL SCIENCES & HUMANITIES

Journal homepage: http://www.pertanika.upm.edu.my/

Neumatic Singing in Thai Popular Singing, 1925 - 1967

Nutthan Inkhong*, Poonpit Amatyakul and Narongchai Pidokrajt

College of Music, Mahidol University, Nakhonpathom 73170, Thailand

ABSTRACT

Thai popular singing originated in 1925 during a period of radical change in the country and later became an important element of entertainment businesses including musical theatres, Thai films, bands, radio plays and television shows. Thai popular singing methodology, particularly the pronunciation, was continually developed and modified by the traditional singers. They resolved problems of incorrect pronunciation through neumatic singing which was considered the pitch of tone marks and its pattern matches the acciaccatura as an ornamentation in a piece of music. This technique resulted in linguistic verification and this helped reflect and enhance the connection between Thai language and music. If the pitch of the word's tone mark changes, the musical pitch will accordingly change. Therefore, the identity of Thai popular singing comes from the sound characteristics of the Thai language which create the melody and singing accent. This technique continues to be used in Thai popular singing by the new generation singers.

Keywords: Identity of popular singing, language and music, neumatic singing, Thai popular music, Thai popular singing

ARTICLE INFO

Article history:
Received: 17 July 2019
Accepted: 3 December 2019
Published: 19 March 2020

E-mail addresses:
dreamusica@yahoo.com (Nutthan Inkhong)
morppit@hotmail.com (Poonpit Amatyakul)
narongchai.rajt@gmail.com (Narongchai Pidokrajt)
*Corresponding author

INTRODUCTION

Thai popular singing refers to the singing of 'phleng Thai sakon'. Wong (1998) defined 'phleng' as musical piece and 'sakon' as Western. Therefore, phleng Thai sakon signified Thai music in a Western style (Amatyakul, 2011). During the early 20th century which was a time of the radical change, a new form of entertainment called Thai popular singing gained popularity over

ISSN: 0128-7702
e-ISSN: 2231-8534

traditional singing in Thai society. Western cultures, politics, governance, clothing, way of life and political values influenced Thai popular singing, particularly popular music in the 20th century which spreads all over the world. Lord and Snelson (2008) mentioned that "since the mid-1950s, pop has represented the largest and most familiar of all musical styles throughout the world".

The musical theatre was the first entertainment which introduced Thai popular singing in a western style to Thai people during the reign of King Rama VI of early 1900s. The accompanying music and singing of musical theatre has gradually changed from Thai traditional music to a new music style called 'wong khruang sai pha som' ('wong': band, 'khruang sai': string instruments, 'pha som': mixing) (Inkhong, 2016). Miller (1998) further explained that "this band is adding some Western instruments such as the pedal organ, the accordion, the violin and the piano joined with Thai traditional stringed ensemble." Finally, in 1925, the bands of Thai popular music began playing with all Western instruments and this heralded the beginning of Thai popular singing. Later, Thai popular singing became one of the important elements of entertainment such as Thai films, bands, radio plays and television shows. Until 1939, Thai popular singing became an entertainment in its own right and was directly presented by the professional singers and musicians who were members of the big bands established and controlled by the Thai Government. The popularity of such bands under the government agencies rapidly increased and encouraged the establishment of numerous private bands. The singers who were the members of the government controlled bands and the private bands became the important people who carefully nurtured and developed the method of Thai popular singing in a Western style.

PREVIOUS STUDIES ON THAI LANGUAGE AND SINGING

As highlighted in the brief history of Thai popular singing, this period presents the transitional point of popular singing from the Thai traditional style to its Western counterpart. This article focuses on the characteristics of Thai popular singing, particularly the correct pronunciation of Thai lyrics written for melodies in the style of Western music. According to Phillips (2003) and Miller (2004), pronunciation is a theory which explains the production of consonant and vowel sounds as equally important. Therefore, producing consonant and vowel sounds correctly and clearly allows singers to convey the appropriate meaning and feeling of the song to their audiences.

Pronunciation is closely related to the lyrics which are written in various languages of their own unique pronunciations. As a result, to study pronunciation in singing, linguistic factors should be focused on in order to understand the particular method of Thai popular singing. Language can generally be divided into two main groups, namely (1) tonal language and (2) non-tonal language. In this article, the analysis of the

pronunciation of singing Thai language, a tonal language will be presented. In a tonal language, a word consists of consonant, vowel and intonation, affecting the meaning of the words. Therefore, saying words with different tones can change their meanings. Further, a tonal language may have between two and eight different tones (Crystal, 2010; Hornsby, 2014; Kennedy, 1994; Liu et al., 2010; Trask & Stockwell, 2007). For example, Cantonese has six contrastive tones (mid-level, low-level, high-falling, low-falling, high-rising, and low-rising tone), Mandarin Chinese has a neutral tone and four contrastive tones (high-level, rising, falling, and falling-rising tone), Margi (spoken in Nigeria) has four contrastive tones (two high, two low, high-low, and low-high tone), Lushai has four contrastive tones (extra-high, high, mid, and low tone) (Crystal, 2010; Grasu, 2015; Liu et al., 2010; Liu et al., 2016; Trask & Stockwell, 2007). Therefore, the study of Thai pronunciation in singing is not only the consideration of consonant and vowel sounds but also the consideration of a tone mark of sound.

The Thai language has one neutral tone (middle tone) and four contrastive tones (low, falling, high, and rising tone) (Lancker & Fromkin, 1973). Before World War II, Mary R. Haas, an American linguist learned the Thai language through direct elicitation from the native speakers and eventually became one of the leading global specialists in the language. Haas taught Thai language at the Berkeley Oriental Languages Department from 1947 to 1960 (Matisoff, 1997). She discussed the tones of Thai language. In 1958, she showed that the tones of four Thai dialects had tone patterns differing in their relation to consonants and to geographical occurrence. In addition, she invented and adjusted symbols for the five tone marks of Thai language in her book entitled "Thai English Student Dictionary" published by Stanford University Press in 1964 (Ketsiri, n.d.). Later, Ketsiri wrote a musical notation to explain the correct pronunciation of tone marks in the Thai language as in Figure 1.

As previously mentioned, the relation between the music notation and the pronunciation of tone marks in Thai language suggests that neumatic singing technique is important in the pronunciation in singing Thai popular songs. The word 'neumatic' is an adjective coming from

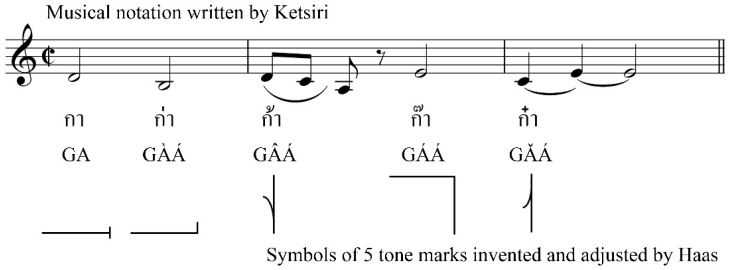

Figure 1. Musical notation and symbol to explain five contrastive tones in Thai words (Ketsiri, n.d.)

the word 'neumes', the earliest practical medieval music notations (Aubert, 2012). In music, neumatic elements define and explain syllables as a sequence of notes sung in a connected manner and forming a certain entity (Structure of Gregorian chant notation, n.d.). They are evaluated according to the principle of time length as follows: (a) at least two notes which have one time length and (b) a note characterized by flexible time length (Kampen, 2012). In relation to singing, neumatic singing is one of the categories of syllabic density which relates to the stress on a word syllable. Syllabic density can be divided into four groups: (1) recitative: many syllables sung by one note, (2) syllabic: one syllable sung by one note, (3) neumatic: one syllable sung by 2-3 notes or more, and (4) melismatic: one syllable sung by several notes or a series of notes. Differences in syllabic density are necessary for the melody line of lyrics and meaning (Mahrt, 2006; Miller & Shahriari, 2006).

This article presents the synthesis of an important skill for correct pronunciation in Thai popular singing. The main questions are, "What is the characteristic of neumatic singing of Thai popular singing?", and "How neumatic singing reflects the relationship between tonal language and music?"

METHOD

The time scope of the study concerns Thai popular singing from the period of 1925 – 1967. The year 1925 was considered the beginning of Thai popular singing, the singing style which gradually developed through the period of time. Thai popular singing improved continually until it became the high quality singing which resembled the singing style of Western popular music. The year 1967 marked a significant change in a singing style. Big bands, which were previously the most popular music style, were succeeded in popularity by the smaller bands and rock bands. The change in the characteristics of the bands and the music genres significantly affected the singing style, resulting in the development of singing technique into a new direction. The year, therefore, marked the end of the time scope of the study. The sample of the study was selected from four entertainment businesses including the musical theatres, Thai films, big bands under governmental authorities, and private bands respectively. Twenty notable singers were selected by the Thai popular music experts, advisors and authors. Famous songs of each singer were listed by the authors and three to five songs from each singer were selected through the votes of the Thai popular music experts, advisors, and authors. Consequently, the sample comprised eighty-eight songs from twenty singers.

The melodies of the sampled songs were transcribed and the accuracy of the notes was checked. The neumatic singing sections were then observed from the notation. The categories of neumatic singing techniques were classified from the pronunciation of the linguistic tones and the movement of musical pitches. Consequently, the neumatic singing techniques were divided into two groups: the correct linguistic tone pronunciation and the incorrect linguistic

tone pronunciation. Moreover, the authors collected data through in-depth interviews with relevant individuals including national artists, former singers of Public Relations Department, singers of 'Luk-krung' style (a genre of Thai popular song), and the singers and composers of 'Sunthraphon band' (a famous band of Thai popular music during 1925-1967). The data derived from the interview were used to support the findings on neumatic singing. The authors compared the findings using the Western music theory as well as the related previous studies to discuss and to check the results by the triangulation method.

FINDINGS

The correct pronunciation is an important element for high quality singing because lyrics are important intermediaries for communication between singers and their audiences. When the singers utter song lyrics correctly and clearly, the audiences will hear and understand the meaning of such lyric meaning correctly while they are listening to music. If singers pronounce lyrics incorrectly and unclearly, the performance may fail because audiences cannot understand the lyrics in the song and they may lose their interest in listening to the music. In the early period of Thai popular music development, the method of singing was not adjusted to the correct pitch of tone mark of the lyrics. Later, the incorrect pronunciation was solved by professional singers who used neumatic singing to adjust the pitch of the tone mark.

This study of neumatic singing began with the selection of 88 sample songs recorded between 1925 – 1967 and sung by Prathum Prathiprasen, Chuangchan Chanthrkhana, Manee Sumonnat, Chamrut Suwakhonth, Manthana Molakun, Phensri Phumchusri, Uea Sunthonsanan, Suthep Wongkamheang, and Charinth Nanthanakhon. The finding indicated that the characteristics of neumatic singing of Thai popular songs can be divided into 6 types: (1) singing slides from the lower pitch up to the tone mark pitch of the lyrics, (2) singing slides from the higher pitch down to the tone mark pitch of the lyrics, (3) singing slides from the tone mark pitch of the lyric up to another pitch, (4) singing slides from the tone mark pitch of the lyric down to another pitch, (5) singing slides from the pitch of a syllable up to the next syllable, and (6) singing slides from the pitch of a syllable down to the next syllable. The term "neumatic singing" was used to refer to the technique. The word was borrowed from the theories of Western singing.

In addition to the mentioned categories of neumatic singing, the authors counted the number of neumatic singing technique used in each sample song. The number was calculated into percentages to understand the usage of each genre of neumatic singing. The frequencies of the usage of the neumatic singing were ranked: the 1st type (96.85%), followed by the 3rd type (94.39%), and the 4th type (70.36%). The neumatic singing technique was used less than 50% in the 2nd type (36.79%), the 5th type (21.23%), and the 6th type (17.37%) respectively. The

authors used the information to create the interview guide for the in-depth interviews. The finding indicated that the 1st and 2nd categories of neumatic singing were used to adjust the incorrect pronunciation of the early singers. When the singers pronounced a word syllable that matched the music but its sound did not match the tone mark of the word, they would try to sing two notes by sliding the pitch up or down to the tone mark pitch of the word. Therefore, neumatic singing was a skill that the early singers practiced by themselves because they wanted to pronounce Thai words correctly and the composers did not write the music notation to facilitate neumatic singing. Later, the composers realized the importance of selecting the lyrics which matched the melody of the music. If the chosen lyrics did not match the music, they would change the lyrics or the melody for the singers so that they may easily pronounce the words with the music.

As a result, this study focused only on the 1st and 2nd categories of neumatic singing. The example and the explanation of the relation between Thai linguistic tones and musical pitches were presented to demonstrate the connection between music and language. Moreover, it is revealed that the practice of neumatic singing had the pattern which matches the acciaccatura, a species of grace note, indicated by a small note with its stem crossed through (Kennedy, 1994). The process of the 1st and 2nd categories of neumatic singing to solve the incorrect pronunciation consisted of (1) pronouncing a syllable of lyrics that did not match the tone mark pitch on the grace note with an oblique stroke through the stem, and (2) continually pronouncing from the grace note sliding up or down to the main note which matched the tone mark pitch of such syllable. Examples of neumatic singing in Thai popular music are as follows:

Example 1 in Figure 2, a singer wants to sing the syllable 'kʰáŋ' which has a high level tone mark and is a syllable of the word 'náa̋m kʰáŋ' matching the English word 'dew'. However, when the singer pronounces this syllable on a note 'D', its sound become 'kʰāŋ' which has a middle level tone mark and matches the English word 'chin', so the singer sings the increasing neumatic singing from a note 'D' to a note 'E' to pronounce the syllable 'kʰáŋ' correctly while 'D' is the supertonic in C Major scale.

Example 2 in Figure 3, a singer wants to sing the syllable 'sŭ:äj' which has a rising level tone mark and matches the English word 'beauty'. However, when the singer

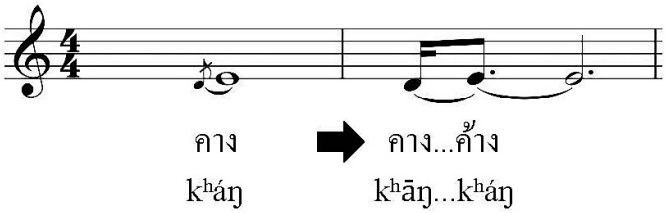

Figure 2. Example 1: The practice of increasing neumatic singing (1st type) of Thai popular music

pronounces this syllable on a note 'C', its sound become 'sūːäj' which has a middle level tone mark and matches the English word 'unlucky', so the singer sings the increasing neumatic singing from a note 'C' to a note 'A' to pronounce the syllable 'sŭːäj' correctly while 'C' is the tonic in C Major scale.

Example 3 as shown in Figure 4, a singer wants to sing the syllable 'pʰî' which has a falling level tone mark and matches the English word 'elder sister or brother'. However, when the singer pronounces this syllable on a note 'A', its sound become 'pʰī' which has a middle level tone mark and matches the English word 'fat', so the singer sings the decreasing neumatic singing from a note 'A' to a note 'E' to pronounce the syllable 'pʰî' correctly while 'A' is the submediant in C Major scale.

Example 4 as in Figure 5, a singer wants to sing the syllable 'Kʰâm' which has a falling level tone mark and matches the English word 'evening'. However, when the singer pronounces this syllable on a note 'F', its sound become 'Kʰám' which has a high level tone mark and matches the English word 'word', so the singer sings the decreasing neumatic singing from a note 'F' to a note 'D' to pronounce the syllable 'Kʰâm' correctly while 'F' is the subdominant in C Major scale.

The examples demonstrated two issues concerning the connection between language and music. Firstly, the movements of the linguistic tone pitch and the musical pitch were coherent. In example 1, the linguistic tone of the word moved up from the middle tone to the high tone and the musical pitch moved up from D4 to E4. In example 2, the linguistic tone of the word moved up from the middle tone to the rising tone and the musical pitch moved up from C4 to A4. In example 3, the linguistic tone of the word

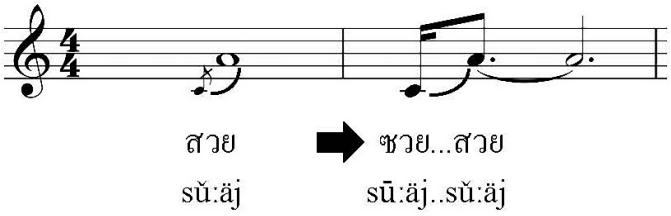

Figure 3. Example 2: The practice of increasing neumatic singing (1st type) of Thai popular music

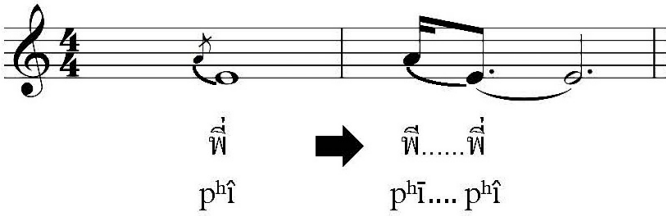

Figure 4. Example 3: The practice of decreasing neumatic singing (2nd type) of Thai popular music

moved down from the middle tone to the falling tone and the musical pitch moved down from A4 to E4. In example 4, the linguistic tone of the word moved down from the high tone to the falling tone and the musical pitch moved down from F4 to D4. Secondly, the linguistic tone controlled the musical pitch. The correct pronunciation of the Thai linguistic tone was considered crucial in the Thai language and became the characteristic of neumatic singing in the Thai popular songs. The 1st and 2nd categories of neumatic singing concerned the movement of singing pitch from the incorrect linguistic tone to the correct one. This style of singing, therefore, created the new notes in the melody. As a result, changing the tone mark pitch of the lyrics not only affects the meaning of lyrics but also the pitch of the music. This is because when the tone mark pitch changes, the pitch of the music changes accordingly.

To conclude, neumatic singing in the Thai popular music was created from the characteristics of the language, which influence accents and melodies, resulting in the uniqueness of singing techniques. However, neumatic singing is merely a part of a musical sentence, which mostly consists of the syllabic text setting with only several neumatic ones as presented in Figure 6.

The example demonstrates the syllabic text setting at 'b1' (middle and rising tone) and 'b2' (low, low, high, rising and falling tone) and the melismatic text setting at 'c' (middle tone). Neumatic singing was demonstrated at 'd' (from high to falling tone). The incorrect linguistic tone pronunciation was shown at 'a1' (incorrect: low tone – correct: falling tone) and 'a2' (incorrect: middle tone – correct: falling tone). Although neumatic singing was used to adjust the incorrect linguistic tone, the incorrect linguistic tone pronunciation continued to be found in some syllables. One of the reasons for this is that some composers do not want to change the melody of a song; thus, the singer has to sing according to the melody by pronouncing a syllable which does not match the tone mark pitch of the word. Moreover, some composers believe that audiences can understand the words and meanings of the words.

DISCUSSION

Neumatic singing was developed during 1925 – 1967 from the attempt of the singers to adjust the utterances of lyrics by

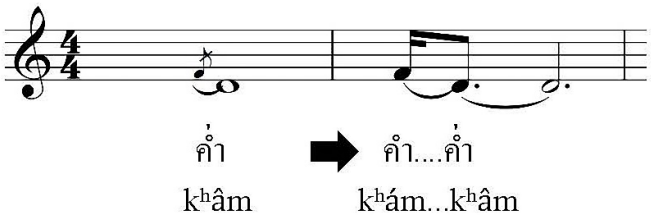

Figure 5. Example 4: The practice of decreasing neumatic singing (2nd type) of Thai popular music

Figure 6. Example of the overall singing methods in Thai popular songs

considering the correct speaking or reading pronunciation principles. Therefore, the resolution of the problem involving the incorrect pronunciation of Thai popular singing was propelled from the verification of the correct pronunciation according to the language principle. This opinion corresponds to the results of Nakayama (2004) who mentioned that when Japanese letters were sung in the Western classical music style, the natural characteristic and different pronunciation of the Japanese language usually disappeared and the sounds of lyrics might be difficult to understand. The solution of the problem is to consider the verification of traditional Japanese singing based on cultural principles and language history and consequently check the information to compare with Western style vocalization.

To analyze the characteristics of neumatic singing in Thai popular music, the correct linguistic tone pronunciation was focused upon. The linguistic tone is a major component of a word in tonal languages which affects the meaning of a word. When the tone mark of a word which consists of the same initial consonant, vowel and final consonant changes, the meaning of the word also changes. This characteristic is not present in non-tonal languages such as English because it consists of consonants and vowels without tone marks (Alderson, 1979; James, 2006; Musk, n.d.). Therefore, changing the tone of a word in the English language bears no effect on the meaning.

This opinion corresponds with Grasu (2015) who mentioned that tone change in English could be pronounced with a downward or upward pitch, it might convey information about the emotion of the singers but it did not indicate anything or affect the meaning of the word.

The findings in this study revealed that neumatic singing reflected the connection between language and music since different linguistic tone pronunciations resulted in the coherent change in musical pitch. This relation was divided in to two issues: (a) the similar direction of linguistic tone and musical pitch and (b) neumatic singing in one syllable which was created by raising the pitch to the correct linguistic pronunciation. Neumatic singing consequently created a new note. The finding indicated that the prosody of the Thai language was an important factor which influenced the creation of melodic style in Thai popular music. This finding was coherent with a number of studies concerning the relation between language and music. Proto (2015), for instance, mentioned that in order to create the lyrics into music, the speech units and musical pitches should be coherent with the singing idiom. The way features of speech such as stress, pitch and vowel length interact with the features in music, for example beats, intervals and durations is beneficial to the prosody, intonation, and rhythm in language and the relation with music. Ketkaew and Pittayaporn (2014) mentioned that pitch was an important element in both language and music. In languages, pitch is used to convey different levels of meaning at the lexical, sentential, attitudinal, emotional levels among the others. In music, the pitch serves the melodic structure, whether played on instrument or sung by voice, in order to express meaning to the listener. Kirby and Ladd (2016) studied the relation between the linguistic tone and the musical melodies. The finding of the study indicated that there were three characteristics of Vietnamese tone-melody correspondence: the similar motion (77%), the contrary motion (4%) and the oblique motion (19%). The percentages indicated that the majority of linguistic tone pronunciation moved in the same direction as the musical pitches. Ho (2006) mentioned that matching two linguistic tones with the music was the pitch movement from one tonal endpoint to another which was coherent with the musical pitches. This finding indicated that the singing technique in the study was similar to the characteristic of neumatic singing in Thai popular music.

Neumatic singing is an important aspect for singers who are interested in studying and practicing Thai popular singing. This skill can be applied to correct Thai pronunciation according to the language principle. This knowledge should be encouraged and disseminated widely through a variety of processes including (1) designing exercises and textbooks of Thai popular singing for Thai and foreign singers to practice this skill correctly, (2) including knowledge of this skill in the curriculum of music education, and (3) writing musical notation of the neumatic

singing of syllables that are pronounced incorrectly to ensure that the singing and melodic accents of Thai popular songs are clear. Moreover, future research should study (a) neumatic singing of Thai popular music in depth, particularly the connection between each tone mark of the Thai language and music pitch to better comprehend the movement of the melody and the interval of acciaccatura and (b) similarities and differences between the characteristics of neumatic singing of each Thai popular singer and the singing method of each music style.

CONCLUSIONS

An essential skill to correctly pronounce the words in Thai popular singing is the neumatic singing. Its pattern matches the acciaccatura as one of the ornamentations in a piece of music. This skill occurs from the examination of the linguistic data and the effects on the connection between language and music. If the tone mark pitch of the Thai language changes, then the music pitch will accordingly change. Therefore, the melodic style of Thai popular singing comes from the characteristics of the Thai language. Although the early Thai popular singers practiced singing without the knowledge of Western popular singing, their desire to preserve the identity of Thai language and culture urged them to develop the neumatic singing method and improved it until it became an important element of high-quality singing. Neumatic singing, which is considered an advanced singing technique, has been used in the singing of Thai popular music up to the present day.

ACKNOWLEDGEMENT

This research project was supported by Mahidol University.

REFERENCES

Alderson, R. (1979). *Complete handbook of voice training*. New York, USA: Parker Publications.

Amatyakul, P. (2011). *The foundation of Thai popular song: Musicology concepts.* Bangkok, Thailand: Amarin Printing and Publishing Public Company Limited.

Aubert, E. H. (2012). Historicizing neumatic notation: Medieval neumes as cultural artifacts of early modern times. In K. Fugelso (Ed.), *Studies in Medievalism XXI: Corporate Medievalism* (pp. 65-88). Suffolk, England: Boydell & Brewer. Retrieved December 24, 2018, from https://www.academia.edu/6177239/Historicizing_Neumatic_Notation_-_Medieval_Neumes_as_Artifacts_of_Early_Modern_Times_Studies_in_Medievalism_XXI_2012

Crystal, D. (2010). *The Cambridge encyclopedia of language* (3rd ed.). New York, USA: Cambridge University Press.

Grasu, D. (2015, June 24). *Tonal vs. non-tonal languages: Chinese vs. English* [Blog post]. Retrieved October 5, 2019, from https://www.lexington.ro/en/blog/item/29-tonal-vs-non-tonal%20languages-chinese-vs-english.html

Ho, W. S. V. (2006). The tone-melody interface of popular songs written in tone languages. In M. Baroni, A. R. Addessi, R. Caterina & M. Costa (Eds.), C*onference proceeding of the 9th International Conference on Music Perception and Cognition* (pp. 1414-1422). Bologna, Italy: ICMPC and ESCOM. Retrieved October 5, 2019,

from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.460.6886&rep=rep1&type=pdf

Hornsby, D. (2014). *Linguistics: A complete introduction.* London, England: John Murray Press.

Inkhong, N. (2016). *Development, characteristics and knowledge of Thai popular singing* (Unpublished Doctoral dissertation), Mahidol University, Thailand.

James, A. (2006). *101 singing tips: Stuff all the pros know and use.* Milwaukee, USA: Hal Leonard Corporation.

Kampen, D. V. (2012). *The authentic rhythm of Gregorian chant-between mensuralism and semiology.* Retrieved December 25, 2018, from https://gregorian-chant.ning.com/forum/topics/the-authentic-rhythm-of-gregorian-chant-between-mensuralism-and?commentId=3327296%3AComment%3A49742

Kennedy, M. (Ed.). (1994). *The Oxford dictionary of music* (2nd ed.). New York, USA: Oxford University Press.

Ketkaew, C., & Pittayaporn, P. (2014). Mapping between lexical tones and musical notes in Thai pop songs. In *Conference proceeding of the 28th Pacific Asia Conference on Language, Information and Computation* (pp. 160-169). Bangkok, Thailand: Department of Linguistics, Chulalongkorn University. Retrieved October 5, 2019, from https://www.aclweb.org/anthology/Y14-1021.pdf

Ketsiri, K. (n.d.). *Music sound of Thai language. Thai identity dissemination subcommittee of Thai identity committee, The Secretariat of the Prime Minister.* Bangkok, Thailand: Prakaiphruek.

Kirby, J., & Ladd, R. (2016). Tone-melody correspondence in Vietnamese popular song. In *Conference proceeding of the Tonal Aspects of Languages* (pp. 48-51), New York, USA: ISCA. Retrieved October 5, 2019, from https://www.researchgate.net/publication/305991873_Tone-melody_correspondence_in_Vietnamese_popular_song

Lancker, D. V., & Fromkin, V. A. (1973). Hemispheric specialization for pitch and 'tone': Evidence from Thai. *Journal of Phonetics, 1*, 101-109. Retrieved December 24, 2018, from https://pdfs.semanticscholar.org/13ed/749869fed23fc93483ddcfbb4b1537454083.pdf

Liu, F., Chan, A. H. D., Ciocca, V., Roquet, C., Peretz, I., & Wong, P. C. M. (2016). Pitch perception and production in congenital amusia: Evidence from Cantonese speakers. *The Journal of the Acoustical Society of America, 140*(1), 563-575. Retrieved December 25, 2018, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4958102/

Liu, H., Wang, E. Q., Chen, Z., Liu, P., Larson, C. R., & Huang, D. (2010). Effect of tonal native language on voice fundamental frequency responses to pitch feedback perturbations during sustained vocalizations. *The Journal of the Acoustical Society of America, 128*(6), 3739-3746. Retrieved December 25, 2018, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3037774/

Lord, M., & Snelson, J. (2008). *The story of music from antiquity to the present.* Potsdam, Germany: h.f.ullmann publishing GmbH.

Mahrt, W. (2006). Gregorian chant as a paradigm of sacred music. *Sacred Music Spring 2006, 133*(1), 5-14. Retrieved December 20, 2018, from http://media.musicasacra.com/publications/sacredmusic/113/1/1_1 .html

Matisoff, J. A. (1997). Remembering Mary Haas's work on Thai. *Anthropological Linguistics,*

39(4), 594-602. Retrieved March 6, 2019, from https://www.jstor.org/stable/30028493?seq=1

Miller, R. (2004). *Solutions for singers: Tools for performers and teachers.* New York, USA: Oxford University Press.

Miller, T. E. (1998). Music cultures and regions: Thailand. In T. E. Miller & S. Williams (Eds.), *The Garland Encyclopedia of World Music Volume 4: Southeast Asia* (pp. 218-334). New York, USA: Garland Publishing.

Miller, T. E., & Shahriari, A. (2006). *World music: A global journey* (3rd ed.). New York, USA: Routledge.

Musk, N. (n.d.). *The vowels and consonant of English: Lecture notes.* Retrieved January 15, 2019, from https://old.liu.se/ikk/english/files/Course%20Web pages/english-3/1.20614 7/CompendiumVowelsConsonantsofEnglish.pdf

Nakayama, I. (2004). Comparative studies on vocal expressions in Japanese traditional and Western classical – style singing, using a common verse, Mo4. C1. 1. *Conference proceeding of the International Congress of Acarology* (pp. 295-296), Kyoto, Japan: Congress of Acarology. Retrieved December 25, 2018, from http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.470.592

Phillips, P. S. (2003). *Singing for dummies.* New York, USA: Wiley Publishing.

Proto, T. (2015). Prosody, melody and rhythm in vocal music: The problem of textsetting in a linguistic perspective. *Linguistics in the Netherlands, 32*(1), 116-129.

Structure of Gregorian chant notation. (n.d.). Retrieved December 25, 2018, from http://gregorio-project.github.io/structure.html

Trask, R. L., & Stockwell, P. (2007). *Language and linguistic: The key concepts* (2nd ed.). London, England: Routledge.

Wong, D. (1998). Popular music and cultural politics. In T. E. Miller & S. Williams (Eds.), *The Garland Encyclopedia of World Music Volume 4: Southeast Asia* (pp. 95-112). New York, USA & London, England: Garland Publishing.