

การศึกษาลักษณะทางกายภาพและเทคนิคการบรรเลงซอสามสาย ของประเทศไทยและตรวซแมร์ของประเทศกัมพูชา

Study of Acoustics and Performance Practice of Thai Saw Sam Sai and Cambodian Tro Khmer

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บทคัดย่อ

การวิจัยเรื่องนี้ มีวัตถุประสงค์เพื่อศึกษาถึงเทคนิคการบรรเลงซอสามสายของประเทศไทยและตรวซแมร์ของประเทศกัมพูชา ผลการวิจัยพบว่า ตรวซแมร์ได้สร้างส่วนประกอบภายในเครื่องดนตรีให้ง่ายสำหรับการปฏิบัติบรรเลง ในขณะที่ซอสามสายไม่มีการพัฒนาเพื่อความสะดวกในการปฏิบัติบรรเลงดังกล่าว ผลการวิจัยยังพบอีกว่า เทคนิคการบรรเลงซอสามสายและตรวซแมร์มีความคล้ายคลึงกัน โดยซอสามสายมีการกำหนดเรียกชื่อเทคนิคการบรรเลงแบบต่างๆ ในขณะที่ตรวซแมร์ไม่มีชื่อเรียกเทคนิคการบรรเลงเลย ความแตกต่างด้านเทคนิคการบรรเลงที่สำคัญ คือ ซอสามสายจะเน้นการใช้คันชักที่เรียบเลื่อนสม่ำเสมอโดยประคับประคองเสียงไม่ให้เกิดการสะดุดขาดช่วง ในขณะที่ตรวซแมร์จะใช้เทคนิคการกระทุ้งคันชักในการดำเนินทำนองของบทเพลง เพื่อสร้างจังหวะและลีลาให้กับบทเพลงในขณะที่บรรเลงแทนการใช้เครื่องประกอบจังหวะ จากการศึกษาข้อมูลในภาคสนามพบว่าองค์ความรู้เกี่ยวกับซอสามสายของประเทศไทยและตรวซแมร์ที่แท้จริงยังขาดแคลนอยู่มาก อีกทั้งทัศนคติทางสังคมของประชาชนทั้งสองประเทศยังมีความเป็นชาตินิยมสูง วิทยานิพนธ์เล่มนี้

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ประโยชน์อย่างยิ่งในการศึกษาวัฒนธรรมดนตรีของทั้งสองประเทศ เพื่อใช้เป็นตัวอย่างในการศึกษา และทำความเข้าใจศิลปะวัฒนธรรมอื่นๆ ได้ในโอกาสต่อไป

คำสำคัญ: ซอสามสาย / ตรัวขแมร์ / ดนตรีเอเซียตะวันออกเฉียงใต้

Abstract

This study is intended to analyse the performance techniques of three stringed fiddles in Thailand and Cambodia. The research found that the *saw sam sai* and the *tro khmer* are spike fiddles, which have a pivot point at the front. The instruments differ slightly in their composition, as the components of the *tro khmer* are adjusted to make playing more convenient. The instruments are played using special techniques, which have specific names for the *saw sam sai* but not for the *tro khmer*. Results show that there are slight differences in the fiddling technique of the two instruments, for *tro khmer* players use their fiddle to generate the rhythm of the music in the absence of accompanying percussion. From field work, it was found that the knowledge concerning *saw sam sai* and *tro khmer* was really lacking in Thailand and Cambodia, which reflects the social attitudes towards the instruments in both countries. While the status of the instruments remains traditionally high, the popularity is on the wane. This and other research projects are necessary for the continuation of a rich tapestry of musical culture in Thailand and Cambodia.

Keywords: Saw Sam Sai / Tro Khmer / Southeast Asian Music

Introduction

Due to their shared border, Thailand and Cambodia have had a long and continuous associated history in the spheres of society, politics, culture and heritage. In fact, part of their lands were within the same empire for 436 years (the Ayutthaya

Kingdom from 1351 to 1767). This has caused striking similarities between the lifestyles and culture of Thai and Cambodian people in the modern day. This is visible in many elements of society, including music, where the two countries share similar instruments, playing methods, notation practices and musical language.

Two of the traditional instruments that epitomise the close link between the culture of the countries are the Thai *saw sam sai* and the Cambodian *tro khmer*. These are both three stringed fiddles that share very similar characteristics. They are both within the spike fiddle class of instruments, which are characterised by the handle passing diametrically through the resonator and being played with a bow. Other famous instruments within this category include the European cello, the Central Asia *kamancheh* and the *rebab* of the United Arab Emirates.

A number of scholars have analysed the similar characteristics of the *saw sam sai* and the *tro khmer* in terms of physical characteristics, playing methods and musical repertoire. Nonetheless, the origins of the two instruments have yet to be decisively concluded due to the limitations with historical evidence. One theory attests that the *saw sam sai* and *tro khmer* both descend from the Indonesian *rabab* due to their similar physical characteristics.⁴ A second theory suggests that the two instruments derive from the Northern Thai *salor*.⁵

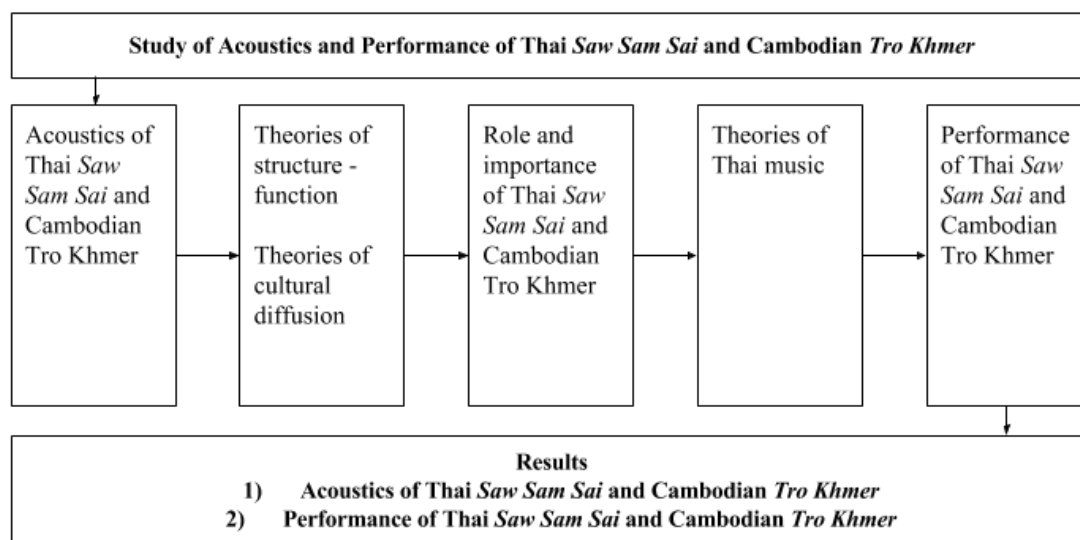
Even though the *saw sam sai* and the *tro khmer* are historically important to the peoples of their respective countries, their importance to modern society is declining at an alarming rate. This is largely due to a lack of players in younger generations and the difficulty of creating good quality instruments through lack of standardised materials and skilled craftsmen. Consequently, there are very few experts and active performers of either instrument in comparison to other types of musician.

⁴ Udom Arunrat, *Book of Siamese Music* (Bangkok: Mahidol University Press, 1991), 15. (in Thai)

⁵ Panya Rungueang, *History of Thai Music* (Bangkok: Thai Wattana Panit, 1995), 46. (in Thai)

Given these problems, the researchers were keen to analyse the acoustics and performance practice of the *saw sam sai* and *tro khmer* in order to promote their value to Thai and Cambodian societies. The key aim is to ensure that these historically important instruments remain relevant and important in modern society.

Figure 1 Research Framework



Research Aims

There are two aims to this investigation:

1. To study the acoustics and physical characteristics of Thai *saw sam sai* and Cambodian *tro khmer*.
2. To study the performance techniques for Thai *saw sam sai* and Cambodian *tro khmer*.

Literature Review

In a recent analysis of the pre-performance 'teacher respect ceremonies' *wai kru* (Thai) and *thvay gru* (Cambodian) that are conducted before all musical performances in the two countries, Jeffrey Dyer argues that the rituals transcend

nation-state boundaries.⁶ The same can be said of the musical performances that they precede. Cambodia and Thailand have a mutual history. The Khmer Empire (9th-15th centuries) covered much of modern Cambodia and Thailand, and the predominantly Thai Ayutthaya Kingdom also had major influence in some of the lands that compose modern Cambodia. Indeed, prior to the French-established protectorate over Cambodia in 1863, the Siamese had a strong influence in Cambodian government, with officials often occupying senior positions within the Cambodian courts.⁷ These political links, combined with a shared belief in Theravada Buddhism, caused strong social similarities between the two countries.⁸ Thus, their closely connected modern cultures can be traced back to their proximity and shared history.

One such example of shared musical identity in modern Thailand and Cambodia that is based on religious history is ceremonial wedding music. The *tro khmer* is an integral part of traditional Khmer nuptials, particularly the *pleng ka* played at the beginning of the ceremony. Due to the shared belief in the Theravada strain of Buddhism and elements of Hindu mythology on which regional wedding ceremonies are based, Thai ceremonial music at weddings is driven by the *saw sam sai*.⁹ Thus, these three-stringed, bowed spike-lutes are connected through culture. Interestingly, the Khmer deity *Phreah Pi Snu Kar* is often depicted holding the *tro khmer*. His Thai equivalent, *Phra Vissukam*, is known as the maker of musical instruments.¹⁰

⁶ Jeffrey M. Dyer, "Nationalist Transformations: Music, Ritual, and the Work of Memory in Cambodia and Thailand," *Yale Journal of Music & Religion* 3, 2 (2017): 26-42.

⁷ John Tully, *A short History of Cambodia: From Empire to Survival* (London: Allan and Unwin, 2005), 98.

⁸ Zachary Zimmer, and others, "Migrant Interactions with Elderly Parents in Rural Cambodia and Thailand," *Journal of Marriage and Family* 70, 3 (2008): 585-598.

⁹ Gisa Jähnichen, "The Spirit's Entrance: Free Metric Solo Introductions as a Complex Memory Tool in Traditional Khmer Wedding Music," in *Music and memory*, ed. Chieng, J. ,and Gisa Jähnichen (Serdang: Universiti Putra Malaysia, 2012), 51-70.

¹⁰ Bophary Va, *Pithi Sampeah Kru Phleng Mahori at the Royal University of Fine Arts, Cambodia* (Bangkok: Mahidol University Press, 2008), 59.

There is clearly a homogenous flavour to the instruments of Thailand and Cambodia and there are many overlapping elements.¹¹ However, while they have been equated in this instance and from a world perspective would seem very similar, the music and instruments of Cambodia and Thailand are marked by significant differences, which are particularly obvious to local eyes.¹² This is no more evident than in the encounters of Terry Miller with a local Thai scholar: "Don't say that the Thai got this and that from India, China, or anywhere else. The Thai people are quite capable of creating things themselves." Miller agrees that Thai music is indeed unique, yet argues that Thai people have transformed music from other cultures rather than create their own or, to the other extreme, merely adopted from elsewhere.¹³ The same can be said of Cambodian, or Khmer, music. In this investigation we will show that, while there are many clear similarities between the *saw sam sai* and the *tro khmer*, there remain a number of distinct differences that make them unique to their parent culture.

Research Methodology

The researchers purposively selected Bangkok as the primary study area for the *saw sam sai* and Phnom Penh as the primary study area for the *tro khmer*. These two locations were selected as they are the capital cities of Thailand and Cambodia, respectively, and they are the locations of their countries' national palaces, which promote traditional Southeast Asian music. This is a study in musicology and ethnomusicology and all informants were purposively selected and categorised into one of three groups. The first group of respondents, the key informant group, was

¹¹ Artur Simon, "Southeast Asia: Musical Syncretism and Cultural Identity," *Fontes Artis Musicae* 57, 1 (2010): 23-34.

¹² Terry E. Miller and Sam-Ang Sam, "The Classical Musics of Cambodia and Thailand: A Study of Distinctions," *Ethnomusicology* 39, 2 (1995): 229-243.

¹³ Terry E. Miller, "Appropriating the Exotic: Thai Music and the Adoption of Chinese Elements," *Asian Music* 41, 2 (2010): 113-148.

composed of ten academic experts in the fields of Thai and Cambodian music, culture and history. The second group of respondents, the casual informant group, was composed of four national level players and creators of the two instruments. The final group of respondents, general informants, was composed of ten general traditional musicians. This investigation was conducted from 2014 to 2015.

The data for this investigation was gathered from documentary analysis and field research. In the field, data was collected using a two-part survey, the first part concerning the research context and the second part concerning playing and production methods of the two instruments. The other methods used for data collection were participant and non-participant observation and interview. The primary researcher for this study was also able to draw on his own experience in the field, having studied the *saw sam sai* and *tro khmer* since 1995. Once collected, the data was validated using a multi-stage triangulation method according to time of collection, location and respondent. The validated data was then collated into groups according to the two aims of the investigation. The results concerning the two instruments were then analysed against six criteria: 1) range, 2) beat, rhythm, tempo, time and time signature, 3) harmonies, 4) tone colour, intensity, musical idiom and texture, 5) melodic unit and phrase, and 6) musical theories. The results are presented here as a descriptive analysis.

Results

The acoustics and physical characteristics of Thai *saw sam sai* and Cambodian *tro khmer*

Both the Thai *saw sam sai* and the Cambodian *tro khmer* are traditional bowed string instruments that are in contact with the ground while being played. This category of instrument has been recorded in local historical records for over 600 years, which is the length of time that the Islamic culture and religion has had an influence on Southeast Asian society. This influence can help explain the similarities between

the *saw sam sai*, the *tro khmer* and the traditional instruments of the middle east, such as the *kamancheh* and the *rebab*.

The *saw sam sai* and the *tro khmer* share the following ten characteristics:

1. The resonance chambers of the instruments are made from a special type of coconut shell with three convex bulges. The coconut shell can be substituted with other similar materials, although the bulges must be consistent (Figure 2).

Figure 2 Use of coconut shell with three bulges in the *saw sam sai* and *tro khmer*.



2. The neck of the instruments can be separated from the body and disassembled into pieces.

3. The instruments are both triple-stringed, with a principal (high), medium and low pitched string. The strings are harmoniously tuned to the pitch of the fourth interval of each other.

4. The bow is not attached to the instrument, to allow the player freedom of different bowing techniques.

5. Both instruments are rooted to the floor while played and, even though they are held at different angles, this allows steadiness when playing the instrument.

6. The tuning pegs of both instruments are located in the same place. The three tuning pegs are inserted through the neck to be attached to the three strings. The pegs attached to the higher and lower pitched strings are located on the left of the neck and the tuning peg for the middle string is located on the right of the neck.

7. Both instruments are weighted to create a delicate sound.

8. Even though the materials used to make the heel of the instruments differ, the base part of both instruments serves the same function: to stretch the strings taut.

9. The heel of both instruments is curved.

10. Both instruments have a bridge fixing the strings to the neck and the resonance chamber.

There are a number of other similarities between the instruments beyond their physical appearance. The names of the two instruments both share etymological root-words that mean ‘bowed instrument. Moreover, there is an alternative name for the *tro khmer*, *tro kasae bram*, which means ‘three-stringed fiddle’. The names for the individual parts of each instrument are also very similar and indeed refer to the same components, for example: *yong* (Thai) / *yong* (Cambodian), *kalok* (Thai) / *trolok* (Cambodian) and *tuang* (Thai) / *tung* (Cambodian). Both instruments are key elements of traditional festivals in their home cultures. This reflects the high social standing and regard of both instruments. The *saw sam sai* is used during the *kab mai* and *mahori* ensembles of Thailand. The *tro khmer* is used during the *ka* and *arak* ensembles of Cambodia. The two instruments are both used to open ensemble pieces and are equally used to mimic sounds and take part in chorus performances.

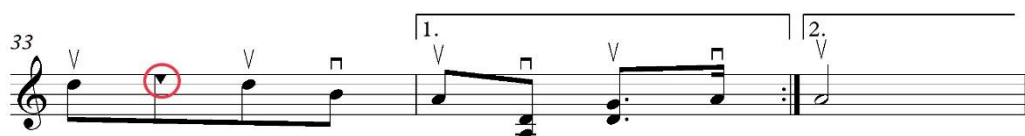
The performance techniques for Thai *saw sam sai* and Cambodian *tro khmer*

This investigation found that beyond the striking visual similarities between the Thai *saw sam sai* and the Cambodian *tro khmer*, there is a catalogue of shared

playing techniques that indicate the mutual history of the two Southeast Asian string instruments. Following field research, it is possible to conclude seven major performance techniques that are shared by both the *saw sam sai* and the *tro khmer*:

1. Both instruments can be played using a *niw rood* technique, whereby the little finger slides further up the string than normal to create a higher sound (Figure 3).

Figure 3 Music played using the *niw rood* technique



2. Both instruments can be played using a *niw kran* technique, whereby the index and middle fingers are used to press down on the fourth finger position, while sliding up the string (Figure 4).

Figure 4 Music played using the *niw kran* technique



3. Both instruments are used to play music where the finger positions can be raised higher than normal (Figure 5).

Figure 5 Music played using a technique where single finger positions are raised higher than normal



4. Both instruments use the *beut saw* method, which is to play the third string in harmony with the other two.

5. Both instruments use the *sabat* method, which is when the musician plays three different notes consecutively very fast.

6. Both instruments use the *see paew* method, which is where the musician plays very softly at intervals to generate greater contrast between parts of the music.

7. Both instruments use the *see dang* method, which is where the musician plays very loudly at intervals to generate greater contrast between parts of the music.

Players of the *saw sam sai* and *tro khmer* both emphasise the harmony of the three open strings, which are tuned at the pitch of the fourth interval of each other. Although the rhythms are slightly different, the musical pieces played by both the *saw sam sai* and *tro khmer* share similar names, such as *pleng pad cha* (Thai) / *pleng pad jia* (Cambodian) and *pleng pra tong* (Thai) / *pleng pa dong* (Cambodian).

However, there are some key differences between the playing of the two instruments. Although, the techniques for holding the bow when playing both the *saw sam sai* and the *tro khmer* are similar, they differ slightly in the finger positions of the player. Moreover, the *saw sam sai* is pivoted on the ground using the base spike at a 45 degree angle, while the *tro khmer* is pivoted at a 90 degree angle, causing the instruments to be held slightly differently. The *saw sam sai* is played using difficult and complicated finger and bowing techniques for performance pieces only. This is to showcase the skill of the performer. For all other pieces, the fingering and bowing techniques will be simple. The playing methods used by *tro khmer* players are always complex, befitting the status of the instrument. The methods used for playing the *saw sam sai* that are not used to play the *tro khmer* are the *niw kwong*, *niw air*, *niw nak sadung*, *niw kun*, *karn chak nam lai*, *karn see baeb kab mai*, *kan chak ngu leauy*, *cha-ngak saw* and *cha-ngak kan chak* methods. The only technique found to be used when playing the *tro khmer* that was not used to play the *saw sam sai* was the *kan chak kratung* method. The *saw sam sai* is played to emphasise the harmony and

clarity of the sound, while the *tro khmer* is played to emphasise the rhythm of the music.

Discussion

This investigation has highlighted a host of key similarities between the *saw sam sai* and the *tro khmer*, which indicate a mutual history and cross-border influence. Theories of cultural diffusion suggest that culture, heritage and social norms are fluid and transferable.¹⁴ It has been argued that cultures continue to be practised on both sides of political borders in Southeast Asia and, by inference, that there are no true concepts as ‘Thai’ or ‘Cambodian’ culture.¹⁵ The results of this study show this to be partially accurate. The *saw sam sai* and the *tro khmer* clearly originated at the same starting point - they share the same style, nomenclature and status. However, this investigation reveals something far more telling: the two instruments are not the same; they have a unique repertoire of playing techniques that indicate a transformation of culture both sides of the political border. Thus, while from Western eyes it may seem as though culture is a borderless phenomenon, local eyes can see a more striking difference marked by the political boundaries of nations. This is not to say that culture is not transferable, merely that the Thai and Cambodian interpretations of musical culture are slightly, yet significantly different.

The *saw sam sai* and the *tro khmer* have a clear and important identity within the cultures of Thailand and Cambodia and are products of the traditional knowledge of local ancestors. It is clear from the design, acoustics and performance techniques of the two instruments that both cultures have been influenced by their neighbour, which is a feature of culture in general across the Southeast Asian peninsular.

¹⁴ Terry E. Miller and Sean Williams, “Waves of Cultural Influence,” in *The Garland Encyclopedia of World Music, Volume 4, Southeast Asia*, ed. Miller, T., and Sean Williams (New York: Garland, 2017), 55-86.

¹⁵ Christoph Antons, “Geographies of Knowledge: Cultural Diffusion and the Regulation of Heritage and Traditional Knowledge/Cultural Expressions in Southeast Asia,” *The WIPO Journal* 4, 1 (2008): 83-91.

Regardless of modern day changes, both instruments were initially crafted from local natural resources to respond to religious and cultural demands for ceremonial music, as well as for entertainment and relaxation purposes. Given the very specific reasons for their creation, the instruments are featured in a narrow selection of ensembles and there is a declining number of players. This decrease in popularity has also been caused by a general increase in modern technology and communications, as well as government interest in industry and commerce rather than culture and heritage. Ultimately, the situation demands greater conservation of the *saw sam sai* and the *tro khmer* in order to preserve these beautiful instruments for future generations to come. It is hoped that this investigation may generate increased realisation of the merits and values of preserving the *saw sam sai* and *tro khmer*.

Suggestions

From the results of this investigation, the researchers wish to make a number of suggestions. From field investigation it was found that there are very few workshops for the creation of *saw sam sai* and *tro khmer*. In addition, there are discrepancies between aesthetic value of the instrument (as designed by artisans) and the acoustic quality of the instrument (as demanded by players). For these reasons, there should be a drive to promote the knowledge of three-stringed fiddle production and a program of shared knowledge between artisans and musicians to create *saw sam sai* and *tro khmer* with the correct balance between beauty of form and beauty of sound.

There is currently a lack of material for studying the two instruments. Further research must concern the production of learning materials for new students of *saw sam sai* and *tro khmer*. Moreover, these new materials should be made suitable for a modern audience to encourage younger students of the two instruments and their music. One particular reference book of considerable importance would be a compendium of playing techniques for the two instruments, as there is not currently

a clear instruction manual that compiles the various methods for both instruments in the same place.

The sounds and notes of experienced *saw sam sai* and *tro khmer* musicians should be recorded electronically, so that they are not lost to future generations. Currently, many musical notes are hand-written and the performers only play to live audiences. As a result, there are very few materials for students to learn from. In addition, experienced performers should be video recorded in order for students to observe their playing techniques in action.

From analysing groups of musicians in both Thailand and Cambodia, the researchers experienced and observed a number of interesting features of Thai and Cambodian culture that fell outside the objectives of the current investigation. Nevertheless, it is recommended that future studies could focus on: 1) the belief systems in the pre-performance *wai kru* ceremonies of *saw sam sai* and *tro khmer* musicians, 2) cultural and historical links between Cambodia and Thailand that have influence modern lifestyle, 3) the musical aesthetics of *saw sam sai* and *tro khmer* performances.

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