

## Buddhism, Animism, and Entertainment in Cambodian Melismatic Chanting *smot* – History and Tonal System

### Introduction

The Cambodian Buddhist Chanting style *smot* is highly elaborated in terms of melismas and therefore unique to this area of Southeast Asia. As the style in its most sophisticated form needs extensive vocal training and precise knowledge of the correct ornaments to present, monasteries give *smot* training courses running over years with final exams finding the best singers. The musical parameters like the tonal system or performance style is discussed in relation between measurements and the musical concepts of informants. Here both, the pure tone Western and the equal Cambodian tuning exist side-by-side even within one piece. The melodies and melismas of *smot* are fixed and therefore little improvisation is normally done which is different from most chanting styles where the pitches and length of sections may be caused by semantic reference e.g. to mental visualizations (Chong 2011). Still in the follow of *dharma*, the Buddhist doctrine, this chanting is for enlightening and healing the minds of listeners and therefore can also and indeed is often sung by layman people, too. As literature about the existence of *smot* is known from times before the Red Khmer regime from 1975-1978 and only a few sources are available today, a fieldwork in 2010 was to determine if this chanting is still used. Indeed it was found to be vividly alive and recordings could be done in several monasteries. Cambodian Buddhism is known to have strong elements from Hindu and animistic traditions and also the Khmer Rouge seem to have taken over not only practices of Buddhist performances but also of musical and lyrical styles. This could explain the survival of *smot* as a musical form rather than a Buddhist doctrine. As the style is not often performed in public but rather at monastic ceremonies or in private healing or cremation contexts it is much less known to the Western world compared to other chanting styles.

### Chanting and Literature in Cambodian Buddhism

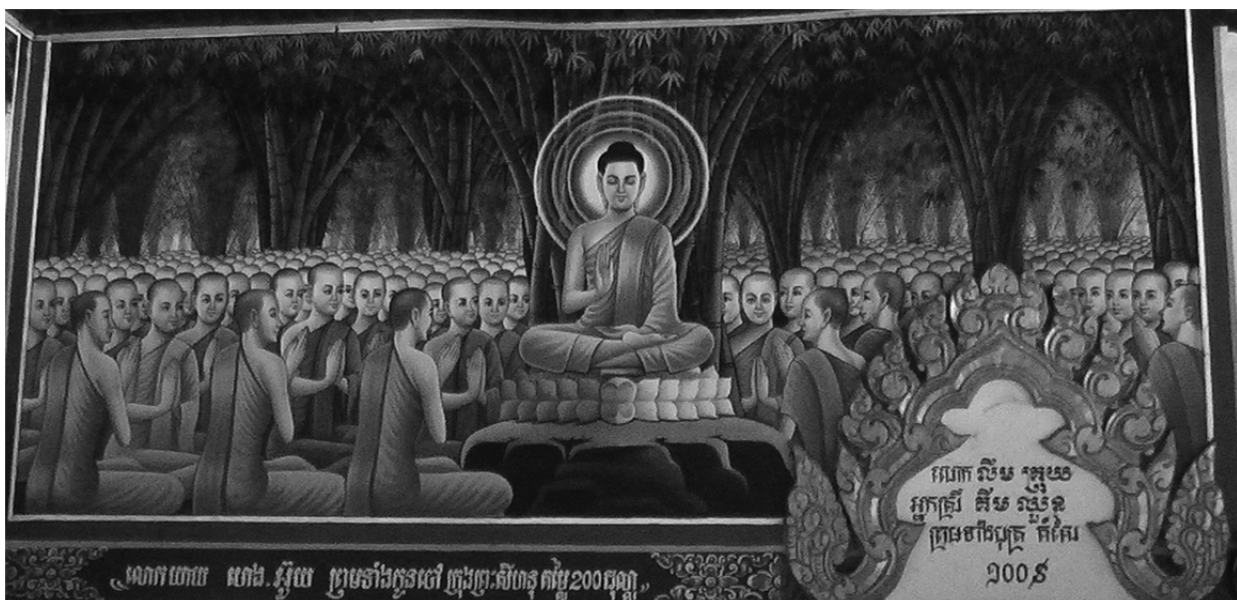
The Hinayana Buddhism of Cambodia has two main monastery traditions, the older Mahanikay and the younger Thommayut being introduced to Cambodia in the mid 19<sup>th</sup> century from Thailand (Harris 2005). According to Brunet (1967) both have different chanting styles. Where Mahanikay monks chant phrases without any interruption, Thommayut singers pause after each syllable. As Brunet is not mentioning *smot* with this practice explicitly this seems to refer to other Buddhist chanting in Cambodia (see below) staying mainly on one pitch with only using a half tone or a semitone step up or down at the beginning or the end of phrases.

Hai (1980) in the *Grove Dictionary* calls *smot* the ‘basic Buddhist prayers’, where melismas are only taught after ten years of syllabic recitation. He then distinguishes syllabic chanting staying on two to three notes from melismatic performance using

‘tritone, tetratonic or pentatonic scales’. In the later edition of the *Grove Dictionary* Sam-Ang Sam does not mention *smot* anymore (Sam 2000).

Interestingly, dealing with Khmer literature, Khing (1990) sorts *smot* among *lpaen* (secular) rather than *ghambir* (religious) texts. His reasoning follows the appearance of Buddhist stories all along the Khmer literature, also in Cambodian novels (*rieng lpaen*) which often repeat texts of the *paññāsajātaka* of the *jākata* text collection dealing with the former lives of the Buddha. He also mentions that *smot* needs many years of training.

Another important Cambodian chanting style is *badschawat*, which is used for performing the *vissakh boca*, also the name of a text collection. *Vissakh* is the sixth month of the Buddhist calendar in which the Buddha has died, and *boca* means a sacrifice. Here the chanting takes place at full moon. It is closely related to *miakh boca*, where *miakh* is the 15<sup>th</sup> day of the third month of the Buddhist lunar calendar, when the Buddha announces his death in front of 1250 monks, a scene often found as drawings in today’s Cambodian monasteries. The style was first introduced by King Rama II around 1817 in Thailand. Maha Pan, founder of the Thommayut order brought it to Cambodia in 1855. *Vissakh boca* was then taken over by the Mahanikay order during the times of king Sisowath (Harris 2005). It reminds on the birth, enlightenment, and death of the Buddha. This style is not a melismatic one which it cannot reasonably be as it is mostly sung by many monks making elaborated performance difficult (still also *smot* may be sung by more and one monk). The last great performance of *vissakh boca* took place at the yearly general meeting of Southeast Asia monks which happened to be in Siem Reap, Cambodia, at April 28<sup>th</sup> 2010 where many thousand monks chanted the texts which took about a whole day. All lines of the *vissakh boca* texts have seven syllables which is also different from *smot* texts. The style is publicly known very well, each morning the Cambodian state radio station is broadcasting chanted excerpts of *vissakh boca*.



**Figure 1:** Buddha announcing his death in front of 1250 followers. Contemporary painting in the *vihara* (main hall) of Wat Muni Sala Prek, Sihanoukville. The painting style is common throughout today’s Cambodia and canonized by the Cambodian Ministry of Culture leaving the painters little space for individual ideas.

Another Cambodian singing style is *no koriech*, meaning a small world reigned by a king, in which a similar vocal style is used as found in *vissakh boca*. Also before the *desnah*, the Cambodian story telling, songs of this kind may be sung. Chu Nath, the most prominent figure of 20<sup>th</sup> century Cambodian Buddhism which took decisive part in finishing the first Khmer dictionary and who was a supporter of a renewed Khmer Buddhism and nationalism is also known of having composed songs performed today. One of those is the ‘Buddhist flag raising song’ with the text and maybe also the melody written by him. More important may be the composition *Bat Sara Phan*, a song very well known in Cambodia performed in the *smot* style which is often reported to have been composed by Chu Nath.



**Figure 2:** Left: Advertisement of a sound system in a village near Sihanoukville to attract customers to purchase this system for their own private feasts in the future. The very loud performance lasts the whole day without people around. Right: Excerpt from top image through the right gate displaying the sound system speakers.

*Smot* may also be performed by laypersons, and often the best performers are not monks. Also women (*srei*) sing *smot* then called *smot srei*. As with all Southeast Asian countries, popular music, media, and sound systems are all around (Mamula 2008). Sound systems are used today for wedding parties (where still often the traditional *mohori* band plays), birthdays and many other celebrations. It is often cheaper to rent a sound system and play cassettes than to rent a band and therefore at celebration days in villages from the very early morning on a mostly heavily distorted sound system is playing pre-recorded traditional music. Here, *smot* music is also played via these sound systems, where people buy cassettes in Phnom Penh of *smot* and *smot srei* recorded by professional performers. These cassettes do not have a commercial market, the recordings, copying, and the distribution are all done privately. There are also famous *smot* singers e.g. Di Ballad On, a monk who lived before the civil war.

## Buddhism and Animism Performance

The coexistence and mixing of Buddhism and Animism in Cambodia has often been pointed out, maybe most prominently by Bizot (1980, 1976). Cambodian Buddhism is very liberate in terms of becoming a monk and leaving the monastery for a secular live again. Cambodians may become monks for ten years, one year or even only a day. Former monks which have been in the monastery for many years leading a secular live again are then *ajars* which are highly respected and asked to perform rituals in the monastery e.g. the dedication of a new monastery. Here with the *sima* (Buddhist *sanga* border) stones blood and musical instruments are buried clearly pointing to animistic traditions. Bizot also reports rebirthing rituals performed by monks in caves, where the cave is viewed as an uterus and where chanting is performed.

*Arak*, the music played and sung during trance rituals is performed by an *ajar* and monks chanting at the beginning of the ritual. The *ajar* is highly respected for knowing the performance ritual details often much better than younger monks. Still, when in the *arak* ritual people start drinking alcohol the monks leave the place. The *arak* music itself is not similar to *smot* chanting. The spirits in Cambodia are called *boramey*, which are possessing people. They can be religious and mythological figures as well as animals, historical figures, or *neak ta*, lit. 'old people' mostly old local people (Bertrand 2001). A medium is assigned to one *boramey* for his/her hole life. Another important figure is the *preah go*, the holy bull which also has a temple at the king's palace in Phnom Penh. Here many Brahmans, Hindu priests take over old rituals. During the funeral rites of King Monivong 1941 the king's body was dived into mercury, clearly no Buddhist ritual (Cravath 1986). In two of the analyzed *smot* chanting below, the *chey teous* and the *Bat Sara Phanh*, the *devata*, Hindu celestial figuresd or angles are called for help.



**Figure 3a:** *Preah go* (holy bull) temple in the king's palace in Phnom Penh.



**Figure 3b:** Fortune telling of Brahman priest (middle) to laymen (right) in the temple. The text was chosen by the layman by cutting a knife in the bundle of text palm leaves, the Brahman is then citing the text.

### *Smot during the Khmer Rouge*

The devastation of the Khmer culture by the Khmer Rouge during their regime 1975-1978 and the civil war lasting until the UNESCO lead election in 1993 also made Buddhist tradition suffer tremendously (Harris 2007). Although many figures cannot be trusted, the amount of about 60.000 monks present in Cambodia before the Khmer Rouge times ended in a handful of about 10 monks left, most of the others were forced into marriage, flew to Thailand or further abroad or were murdered. Still, according to Harris, no really systematic destruction of temples took place. Bizot (2000), himself captured by the Red Khmer and present in the French embassy during the last days of the evacuation of Phnom Penh had the chance to personally discuss the ideology and study the performance of the Khmer Rouge. His main point is the parallel nature of Buddhist with Red Khmer practices. He remembers Douch, the main responsible at the infamous torture prison Tuol Sleng in Phnom Penh interrogating Bizot to report that in the town he was born “...the monks are also mediums and the fishermen consult them. The spirit of the dead speaks through their mouths. Others are called *lok angkouy* because their bodies remain ‘seated’ while they take leave of them to inspect the surroundings of the village...” (Bizot 2003, 58). The parallels also include similar naming.

The Red Khmer called their rules *vinaya*, as the Buddhist call their ‘discipline’. The Buddhist abstentions *sila* became the Khmer Rouge moral commandments. He continues with giving up family ties, renouncing material possessions, giving new names, ect. (ibid. 110). Not a surprise he reports the performance of Chinese revolutionary songs. Still Harris, quoting Bizot also reports that “...parallels may also be found even in the way they intone their respective litanies, all the way down to the incorporation of similar trills at the end of each stanza.” (Harris 2005, 187). He also reports that the same songs were sung, where *sanga*, the Buddhist community was simply substituted by *angkar*, the Red Khmer community which should substitute all family ties and state institutions. The trills may point to *smot* singing, and therefore we may find one of the reasons for the survival of *smot* in Cambodia in the fact that the Khmer Rouge took over the singing style maybe changing the words. Informants also report that the Khmer Rouge, although they systematically killed intellectuals, court dancers, and musicians, still enjoyed when laypersons played traditional musical instruments like the *roneat deik*, a metal plate instrument similar to the xylophones *roneat ek* and *roneat tung* for entertainment.

### *Smot* Lyrics and Performance

*Smot* is music of sorrow and comfort and therefore often performed at *sok mon* (funerals). The singing is often performed at the death bed during the death feast *pchum vay* or *pchum benn* (Sam 1991) in September. The main attempt is to teach the Buddhist view as expressed maybe most prominent in the first of Four Noble Truths of the Buddha, namely that all life is suffering. Overcoming of this suffering may be done living a life according to the Buddhist path of virtues, still suffering will always be present and therefore the acceptance of this fact and a life in according to the Noble Path of virtues will give release.

According to the informants Bung Sopheap and the *ajar* and professional musician So Tia, *smot* is also often sung by monks and laypersons in private without a feast. Bung Sopheap remembers that when his father had health problems with his eyes a monk had come along and sung *bat kiriminon*, a song also recorded during the fieldwork at Wat Chan Boryvong by three monks, among those Samdeck Preah Venarat Noy Chrek, the third highest monk in the hierarchy of the Mahanikay order. The songs lyrics are about eyes thickness, describing them and advising the sufferer that nothing can be done about it and he has to cope with the thickness by simply accepting it as part of becoming older. The monk then taught Bung Sopheap, then a child, the song and from then on he sung the song to his father often later on. Kiriminon is said to be the name of a student of the Buddha who became ill. The Buddha asked another student, Annan to sing this text to Kiriminon. The lyrics are about *sengadod* which are the ten points of the illness and *sosanga*, the senses which do not work properly at age anymore.

Other *smot* songs often performed are *antrai*, texts from the *tripitaka*, *thamchak kabava-thanka soth* in which the Buddha explains five of his students how enlightenment can be achieved. *Preah kun mer* (*kun* = good deeds, *mer* = mother) is a song about the love of a mother to her children although she suffered during giving birth. *Viyo’k* (weeping) describes the sadness of Buddha about the death of his mother. *Tom nunh anan* is the



sadness of the Buddha's student Annan about the death of the Buddha. *Sovansam* describes a former life of Buddha as Sovansam. In *sang phnouv* the Buddha tells his wife and children that he will leave for the forest. So indeed, *smot* is about suffering and sadness.

Nevertheless, as discussed above, Hindu ideas are also present in this chanting style, e.g. *thor bort*, the blessing songs of the Buddha. The lyrics below are from a performance of Phen Sophaf, right secretary of the monastery Moni Prosity Vong near Phnom Penh recorded in the *vihara* by the author in March 2010<sup>1</sup>. Phen Sophaf performed this *smot* as asked by the author to perform a typical *smot* and so gave additional information about the song: “The *thor bort* was invented in pre-Buddhist times. Hindu scriptures divide the *thor bort* into three songs called *chey*.” The three songs are *chey tes*, *chey preah puth*, and *chey dorb brokah*. He further explains:

**CHEY ONE** is called “**CHEY TES**” meaning “Directions Blessings”. It describes the ten blessings of the Buddha appearing from the eight directions<sup>2</sup>.

**CHEY TWO** is called “**CHEY PREAH PUTH**”. It explains all the blessings of the Buddha dedicated to all Buddhist people.

**CHEY THREE** is called “**CHEY DORB BROKAH**”. It means the ten kinds of blessings of the Buddha starting from number one and running to number ten. These blessings have been offered by Ey Sou (Superior Silva) or Ey Sey (Hermit or Holy man).

So on this occasion I would like to chant or sing loudly and harmoniously in each *Chey* in the following sections. But before I start to chant all of them, I would like to apologize to all Buddhist people that there are little differences of the ways of singing, it can be rough and up and down in sound.

The difference between ‘rough and up’ and ‘down’ Phen Sophaf mentions in the last paragraph refers to two different performance practices, a public and a private one. His performance following this explanation is loud and public. Below is the translation of this performance.

### **CHEY TES**

(Pali) Heh Teh Pheh Sorh Pakavear. ...Preah Ratanak Tray  
(Khmer)...Hey...please get *Chey* from Buddha gods (*devata*) in the east come to bless all people on the precious stone freely  
...Heh...Eryh....please get *Chey* from gods (*devata*) in the south-east come together and give blessing to all people free and happy  
...Hey...Eryh...please get *Chey* from gods in the south coming quickly and blessing to all people on our wonderful world freely  
...Hey...Eryh....All of these called “*Chey Tes*”.

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<sup>1</sup> As there was no written text source known the lyrics are transcribed and translated from the performance by Im Phana, Sihanoukville 2010.

<sup>2</sup> Next to the four main directions, the four middle directions (south-east, north-west, etc.) are added.

## CHEY PREAH PUTH

(Pali) Chey Chey Preah Puth Thomearh

(Khmer) is a great blessing from the Buddha gods to the Royal power

....Ery...Chey...Chey...overwhelming glory is coming to protect all people to get rid of enemies

....Ery...Chey...Chey...please live in happiness and harmony more than hundred years.

This is called Chey Preah Puth in summary.

## CHEY DORB BROKAH

(Khmer) All blessing come from the Buddha gods (*devata*), they are really great happiness, harmony, and long lifes. It is given by the hermit or the holy man named Kah Sorb

...Ery...Preah Moni....Ery.....All these called Chey borb Brokah.

As can be seen from the transcription of the lyrics, the texts are sung in Pali and Khmer alike. It can be one line in Pali followed by one in Khmer, first sung entirely in Pali then entirely in Khmer or only the first line is in Pali, the rest is in Khmer.

Another example is the *smot Bat Sara Phan* which is also analysed below in terms of its tuning system. The song describes the main Buddhist doctrine (*dharma*) with the three jewels (*Buddha, dharma, sanga*) and the blessing coming to people praying to it. Again the *devata* are mentioned coming from Hinduism and a direct reference to the Khmer people is mentioned in the last phrase.

1.  
Honouring the Buddha  
Is the best to do.  
Master of all angles (*devata*) and mankind  
The sublime is praying to all beings.  
*Som Thway Bág-kum Preah Sám-put  
Práh-seur Bam-phot Khnong Look-ka  
Chea Kru Ney Monus Neng Tewada  
Trung Tras Tesna Práh-dau Shàtt.*
2.  
He shows us the Middle Path  
As best way of liberation.  
Fear and sorrow disappear.  
Suffering can be released.  
*Cháng-ol Aoy Deur Phlow Kán-dal  
Mea-kea Trá-kal Ach Kam-chàtt  
Tuk Phey Cháng-raiy Aoy Khchay-bàtt  
Ach Kàtt Sàngsa-ràk Tuk Ban*
3.  
The wisdom of the Buddha stays until today  
In sympathy since long ago.  
Learn and hear constantly, remember and understand,  
Follow the way, live happily.  
*Sasna Preah-áng Now Sáp Thgaiy  
Shàtt Mean Ni-saiy Pi Bo-ran  
Breung Rean Breung Sdàb Ches Cham Ban  
Kànn Tam Lum-an Ban Kdey Sok.*
4.  
There is no better than inner peace.  
End in happiness, free from suffering.  
In this world and in eternity.  
Welfare through the holy *dhamma*.  
*Eit Mean Sok Na Smeu Khdey Sgáb  
Bánh Cháb Treum Sok Khleat Chak Tuk  
Taing Pi Look Nich Tá Tao Muk  
Khdey Sok Neung Mean Prurs Thoir Sgáb*



5.

I bow before dhamma

And the precious sangha of all worlds.  
To admire the Three Juwels highly  
Is welfare of the universe.

*Khgom Som Báng-kum Chhpurs Preah  
Thoir*

*Preah Sâng Bá wár Teang Krub Sáb  
Rurm Chea Traiy Roath Kur Kor-rub  
Chea Mlub Trá-cheak Ney Looka*

6.

To honour the enlightened  
As true master and example.  
The Three Jewels protect the Khmer people  
In peace and happiness forever.

*Preah Roub Preah Theat Ney Preah Put  
Wi-soth Tang Áng Preah Sa-sda  
Som Kun Traiy Roath Chuy Khemara  
Aoy Ban So-kha Tá Reang Tao.*

When asked why melismas are used at all the *ajar* So Tia and the performing monk at Moni Prosimy Vong, Kai Sokmean both clearly stated that this attracts listeners much more than when only chanting around one pitch. As mentioned above, *smot* is part of the secular text canon in Cambodia and therefore coming from a religious tradition but meant to become popular to fulfil its healing role, although not from a commercial standpoint.

### Musical Parameters

Contemporary Cambodian society of course knows Western Popular music and – maybe much more – Indian film music, so Western concepts of music theory are well known to musicians and instrument builders. An *roneat tung* (xylophone) and *gong vong* (tuned gong instrument) builder near Phnom Penh explained that he is changing the pitches of his instruments from when performing in the Khmer traditional music style with its equal tuning to a Western tuning when playing with classical Western musicians which became quite popular in recent years in Cambodia. Then he changes the tuning of his instruments by adding wax to the xylophone or metal bars, a common technique with these instruments throughout Southeast Asia. So both tunings, the seven-tone equal tempered and the seven-tone major and minor tuning, are well known to musicians in Cambodia. So Tia explains that *smot* is pentatonic using the Western solmization Do-Re-Mi-So-La leaving out the fourth step (Fa) and the seventh step (Ti). Still although the western solmization is used, he insists that the tuning is Cambodian with its equal temperament of 171 cent per step. Cambodian music theory also knows the measure of cent and divides a semitone into 100 cent. The Cambodian notion for cent is *go ma* which literally means a child denoting someone small. As many Western notions become part of Cambodian language it may be a misunderstanding of the important notion of a comma in the theory of tonality and therefore may be transformed simply because sounding similar from ‘comma’ to *go ma*. So Tia finds the Re to be nearly the same in both tuning systems but describes the Fa to be higher (or ‘harder’ as he literally states) in Cambodian tuning. Below we discuss the micro tuning in the singing performance of the song *Bat Sara Phahn* in detail. The music theory also states that *smot* melodies either start and stop at Do or start and stop at So. Combinations may be possible but seldom. So when looking at *smot* as being modal, authentic and plagal cases are possible.

*Smot* is performed in a 4/4 meter where the fourth beat is punctuated. Accenting the last beat is known from other styles, too, most prominent maybe from Indonesian *gamelan* music. The tempo is around 60 BPM and therefore pretty slow as expected from a lament style.

The melismas are all learned precisely in terms of their occasion in the piece and in terms of the amount and shape of pitch jumps and slurs. This makes the style so complex to learn and difficult to perform and tells a good performer from a minor one. The precise shape of these melismas appears from the microtonal analysis example below where the main elements are discussed.

### Performance of *Bat Sara Phanh*

Above we discussed the music theory used in Cambodia. Still to decide about the tuning system really performed with *smot*, if the Cambodian equal or the Western pure tone is used we want to take a closer look at the performance of *Bat Sara Phahn*, one of the most popular *smot* broadcasted via the national radio station every morning in the performance of Kai Sokmean, a young monk at Wat Moni Prosity Wong near Phnom Penh. Fig. 4 a-p shows the sixteen phrases of the song. Using an autocorrelation method the fundamental was calculated and plotted on a logarithmic frequency axis vs. time (the consonants are omitted). The two tuning systems are shown, the Western system has solid the Cambodian dashed lines.

The melismatic character of the style can clearly be seen. Certain elements appear throughout the performance (also of other songs):

- Vibrato around the sung pitch which is mostly pretty close around the mean pitch and never really exceeds a 50 cent distance between the extremes. So it is not touching or even crossing other pitches and is therefore limited in character although still prominent.
- Sudden fast jumps between two pitches like e.g. in Phrase 4 in the first second between fourth and fifth, in Phrase 8 around 4 seconds between fundamental and second, or in Phrase 10 around second five between fifth and seventh. Other occasions can easily be found, where the jump direction is down like in Phrase 16 after second three.
- Sudden fast upper jumps at the end of the phrase from a medium pitch up to a higher pitch to then end in the lower one performed in Phrases 1, 3, 4, 6, 7, 8, 9, 10, 14, 15.
- Slurs up and down, most prominent at the end Phrase 16 but also e.g. in Phrase 1, second five, Phrase 3 after second three etc.
- A jump in the throat register very strongly at the end of Phrase 4, slightly at Phrase 6, 7, 9, and 10. This can also be heard with other song performances.

The sudden jumps are often performed very precisely between two pitches and may be repetitive like in Phrase 8 from second four, where two jumps down from the second to the fundamental is followed by one up from the second to the third and back again. These ‘jumps’ are not really infinitesimally small but show a clear trajectory which can also be heard. So the idea is one of gradually change although very fast.

### Tuning System

To decide if Kai Sokmean uses pure Western tuning of the Cambodian equal tuning the calculated pitches were accumulated as shown in Fig. 5. Again, the Western tuning is indicated with solid, the Cambodian tuning has dashed lines. It is interesting to note that often double peaks occur in the plots caused by the vibrato and allowing the determination of a middle pitch and the vibrato amplitude. Still not always two pitches occur as in Fig. 5 c) where the higher end is sung. So we need to discuss all three cases, the mean pitch and the upper and lower pitches. In Fig. 5 a) a mean pitch of 190 Hz was used, b) shows a fundamental at 188 Hz, and c) the relations for 192 Hz. The range of 188 – 192 Hz means 36 cent and is a reasonable mean for the vibrato amplitude.

Different integration times were used for the three plots. This was done because from the 10<sup>th</sup> phrase on Kai Sokmean is slowly overall decreasing in pitch. This is not the case for the first 9 phrases and so Fig. 5 a) is integrated over the first 9 phrases. To better be able to discuss the three fundamental pitch cases Fig. 5 b) was integrated over phrases 1 and 2 only, while Fig. 5 c) was taken between 5 – 7 (although the plot does not look much different if integrated over phrases 5 – 9).

From Fig. 5 a) we clearly see that the relations between the third (second peak), fourth, fifth, are clearly Western. Such a global fitting can not be achieved with equal tuning no matter where the fundamental frequency is placed with this tuning the third and fourth are above, but the fifth is below the Western one. So simply shifting the peaks would not lead to a match of the peaks to Cambodian tuning. Still when examining Fig. 5 b) with a fundamental of 188 Hz for this lower fundamental peak we find a very good fit of the Cambodian tuning for the third and fourth. Still the fifth is not met with both of the tunings. In a similar manner, when using a fundamental of 192 Hz like in Fig. 5 c) this fundamental is in very good agreement with the Cambodian equal fifth. Here we need to keep in mind that these plots do not display between which pitches the melody changes and therefore which pitch steps are indeed performed. So the fitting between single pitches may be caused by the choice of a pitch distance between these two which would not necessarily hold for the whole tuning.

Now the use of different integration times may become more clear when interpreting these results. It seems to be that the performer changes his performance between the Cambodian and the Western tuning according to the phrase to sing. So e.g. when going from the fourth to the fifth or vice versa the pure tone distance is used, when changing from the fourth to the third the equal or pure temperament is taken. Going from the fundamental to the third and fourth the pitches meet the Cambodian tuning very well in the cases the lower fundamental is used. When a jump from the fundamental to the fifth is performed the Cambodian distance is present in these cases. As we need enough data

to perform a reasonable mean it is not always easy to perform this analysis with two notes only and therefore make a precise decision when which distance is used. Nevertheless the accumulated mean cannot simply be interpreted with respect to one tuning system only. It is furthermore interesting to see, that the mean vibrato amplitude mainly causing the double peaks in Fig. 5 a) are clearly in the range of the difference between Western and equal tuning. So here the performer may play with this uncertainty of vibrato to meet this ambiguity, too.

A very interesting example of this change of the tuning system is found in Phrase 14 around the first second. There, starting from the fifth three jumps up are performed. The first arrives perfectly at the pure tone seventh (actually the natural seventh, *Naturseptime* 4/7), the third arrives perfectly at the equal tuning seventh. Still the middle one arrives a bit above the Cambodian sixth. This phrase is also sounding very distinct and within this very short time span perfectly reminds one once of a Western and once of a Southeast Asian tuning.

### Conclusions

The survival of *smot* in Cambodian society through the Khmer Rouge times seems to come from several sources. Most important is probably the popular nature of the style where laymen and –women sing the songs often much better than monks. This again arises from Cambodian Buddhism which allows temporary entry in a monastery for years or days. Also the teaching of *smot* to laymen or children for healing purpose plays an important role. The fact that the melismas are used to attract people rather than to have any semantic or religious function is pointing in the same direction. Still, the survival of this chanting style through times of nearly complete destruction of Cambodian traditional music and dance seems also to be enhanced by the Khmer Rouge taking over many habits and styles of Cambodian Buddhism which they were naturally raised in. So singing not only Chinese revolutionary but also the old Buddhist *smot* songs while substituting Buddhist words by those supported by the *ankar* seems to have made this style survive these times after which in Cambodia only a handful of monks were left. Of course, Khmer in exile, especially at the Thailand boarder or in California, USA, were able to maintain this singing style. Traditional *mohori* music mostly used at weddings or other secular feasts or the *phen pheat* music used at the Cambodian traditional court survived abroad, too.

The influence of Hindu or animistic traditions on Cambodian culture is also found in *smot* singing which the performers are aware of and even the performing monks do not find problematic in any way. Still, any kind of inner or esoteric meaning or semantics is strictly rejected by monks and professional performers pointing to the Theravada Buddhism doctrine of healing people's minds by making them intellectually aware of the Buddhist *dharma*. So the lyrics of *smot* is for education, the melismas are for entertainment.

The fusion of Western and Cambodian culture is clearly present in the performance of the *smot* analyzed above. If the performer is aware of these tuning changes is hard to say as much of it is in his practice and in theory the singing should clearly be in equal

tuning. Still we find obvious cases of Western influences with some tonal relations. It is also remarkable that these often small deviations are not only heard but performed in such a precision. The fact that musicians clearly mention both systems and are perfectly aware of them when it comes to tuning their instruments is also pointing to a fusion of Cambodian and Western style in the performed tuning system, and makes it reasonable to appear even within one performed song.

### Acknowledgement

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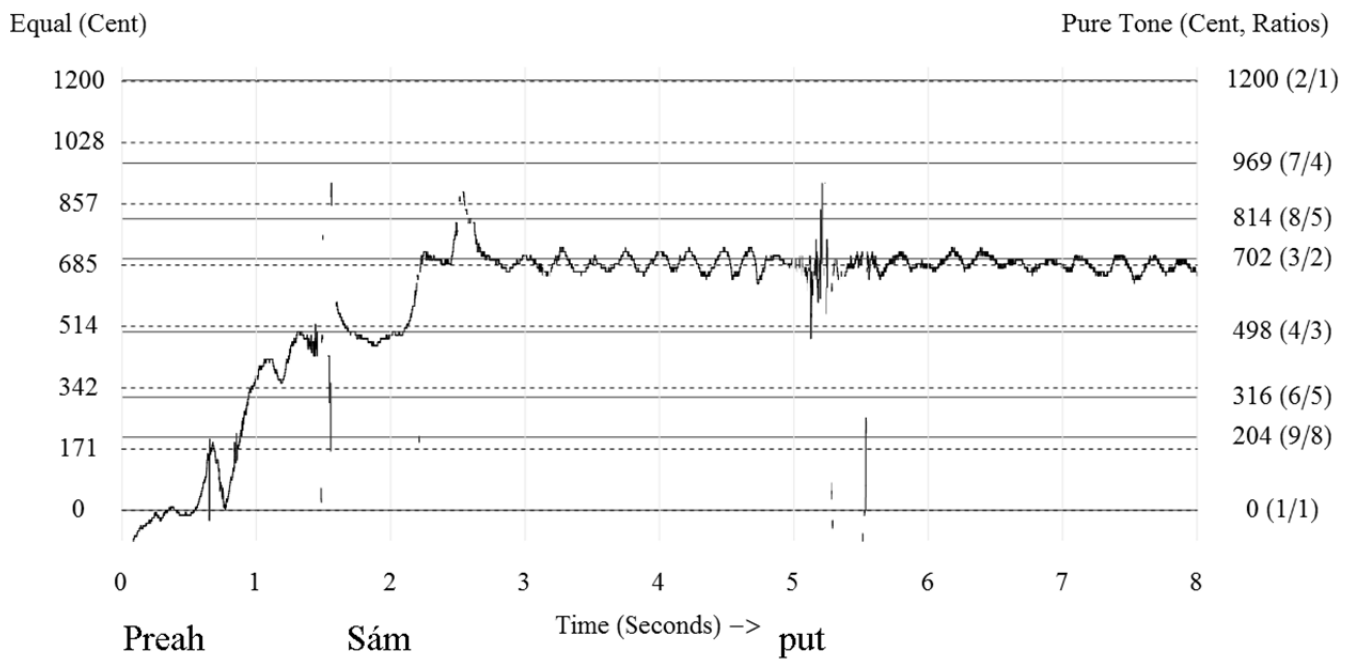
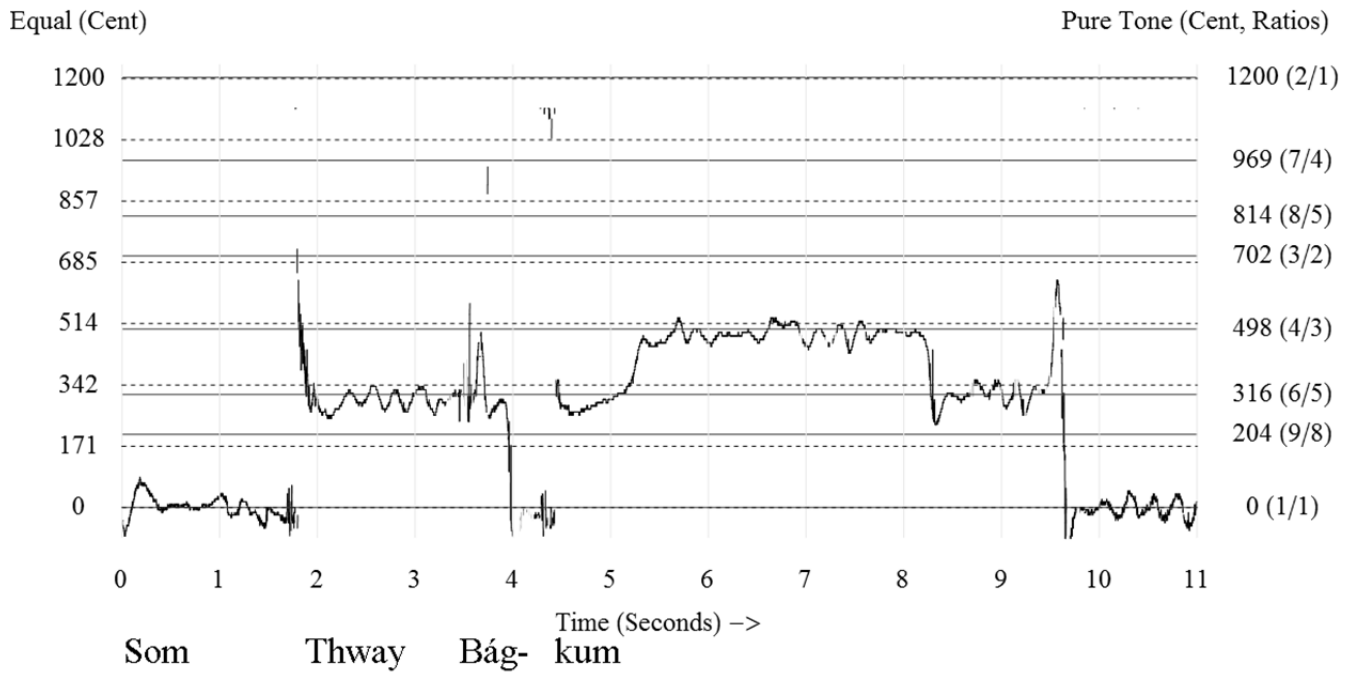
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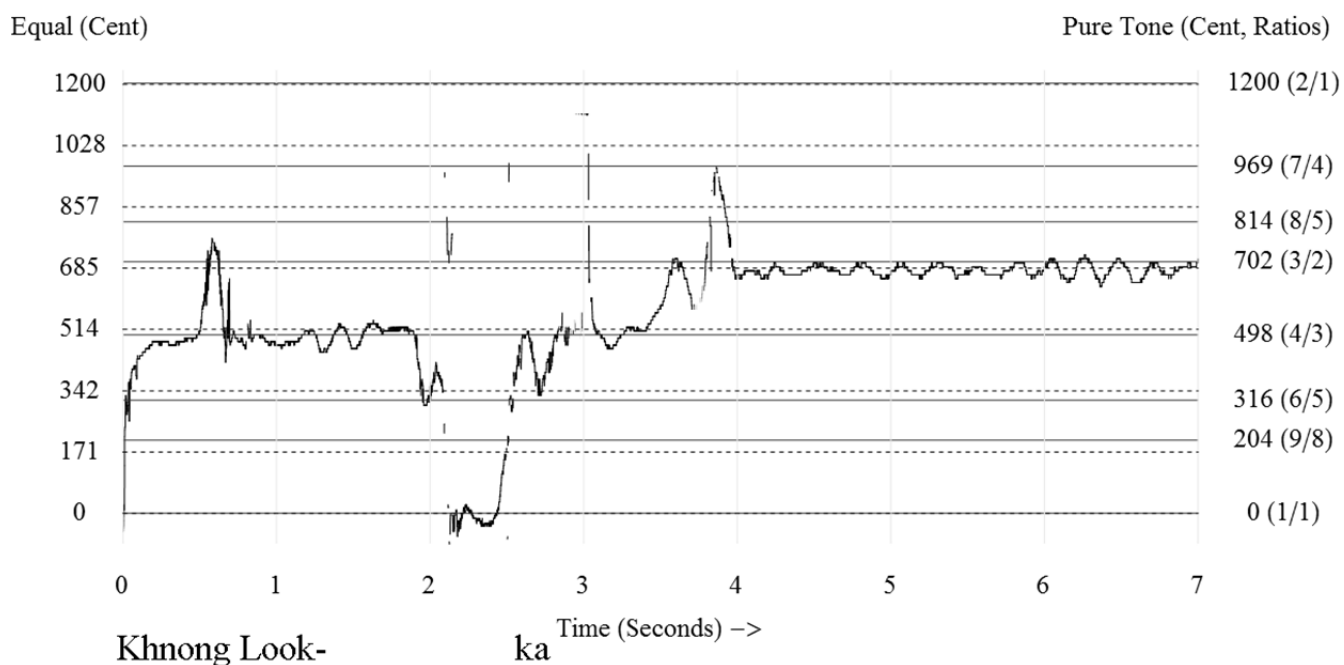
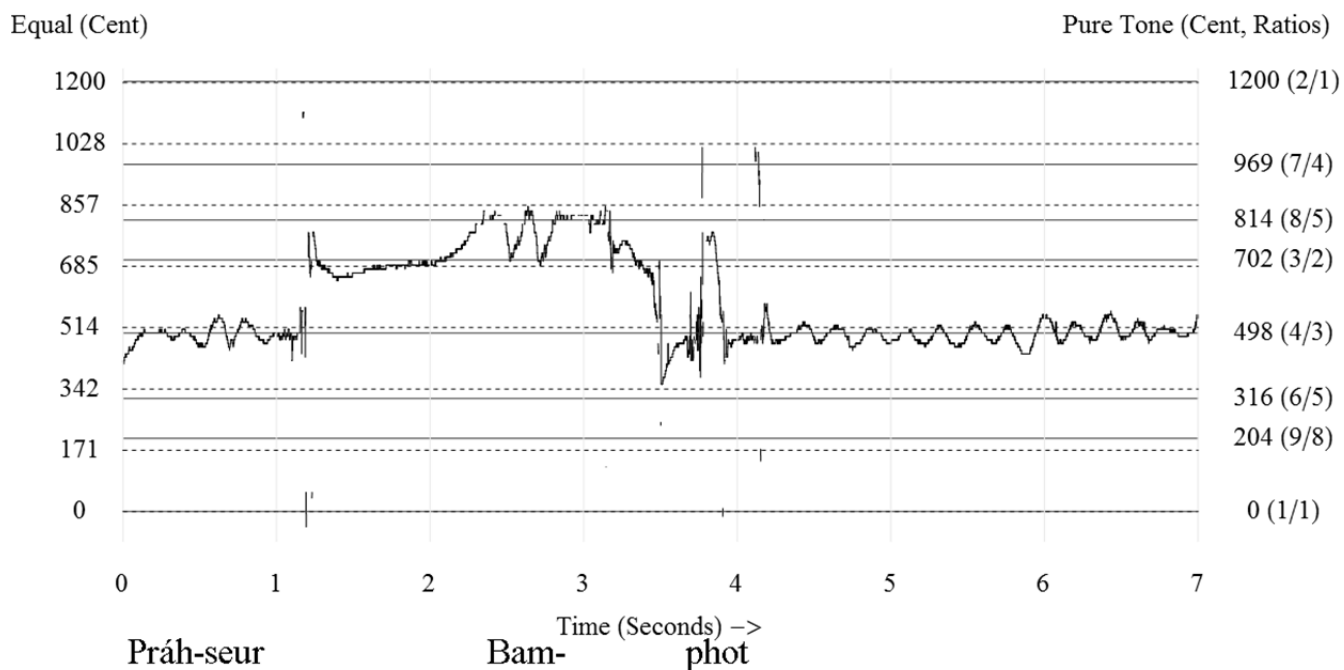
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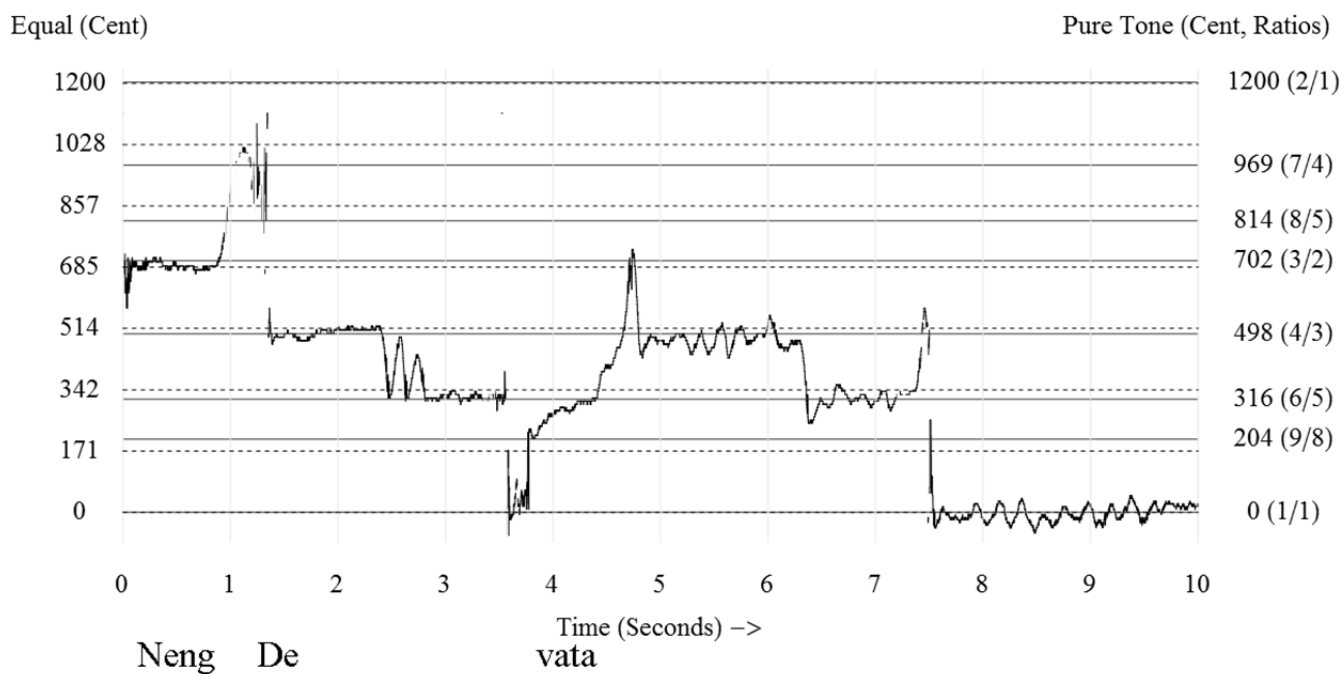
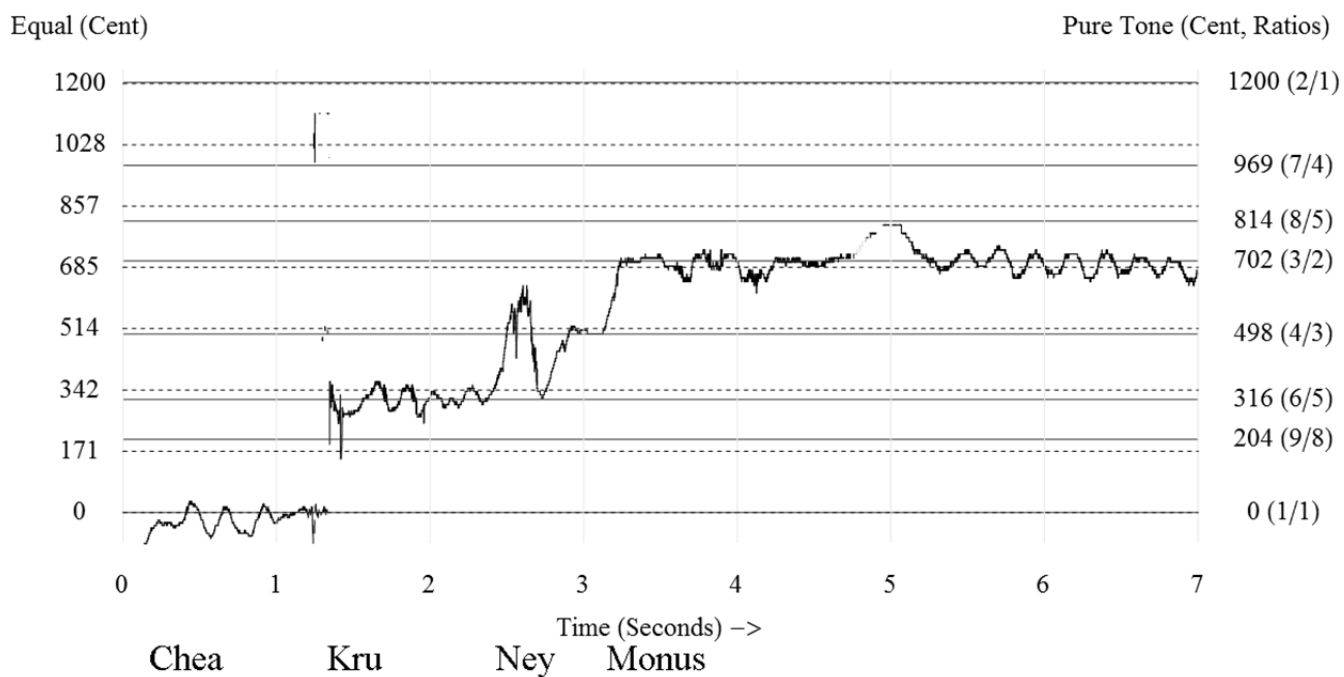
# Figures

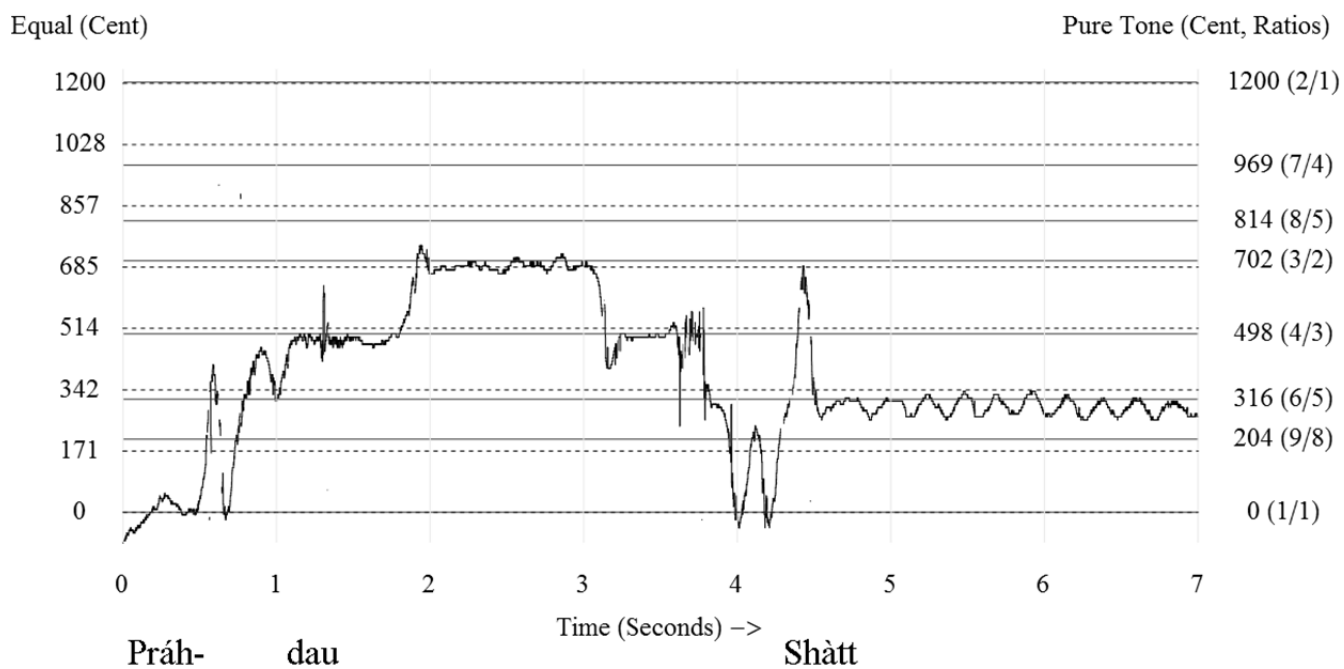
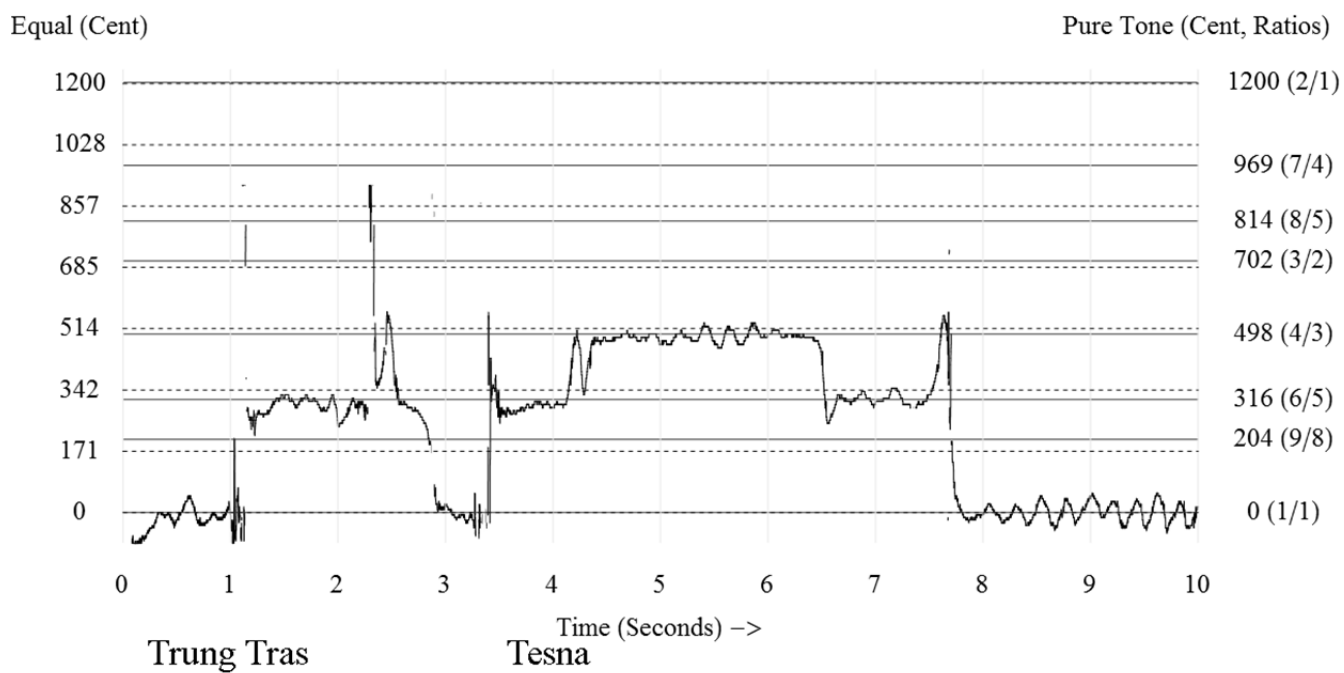




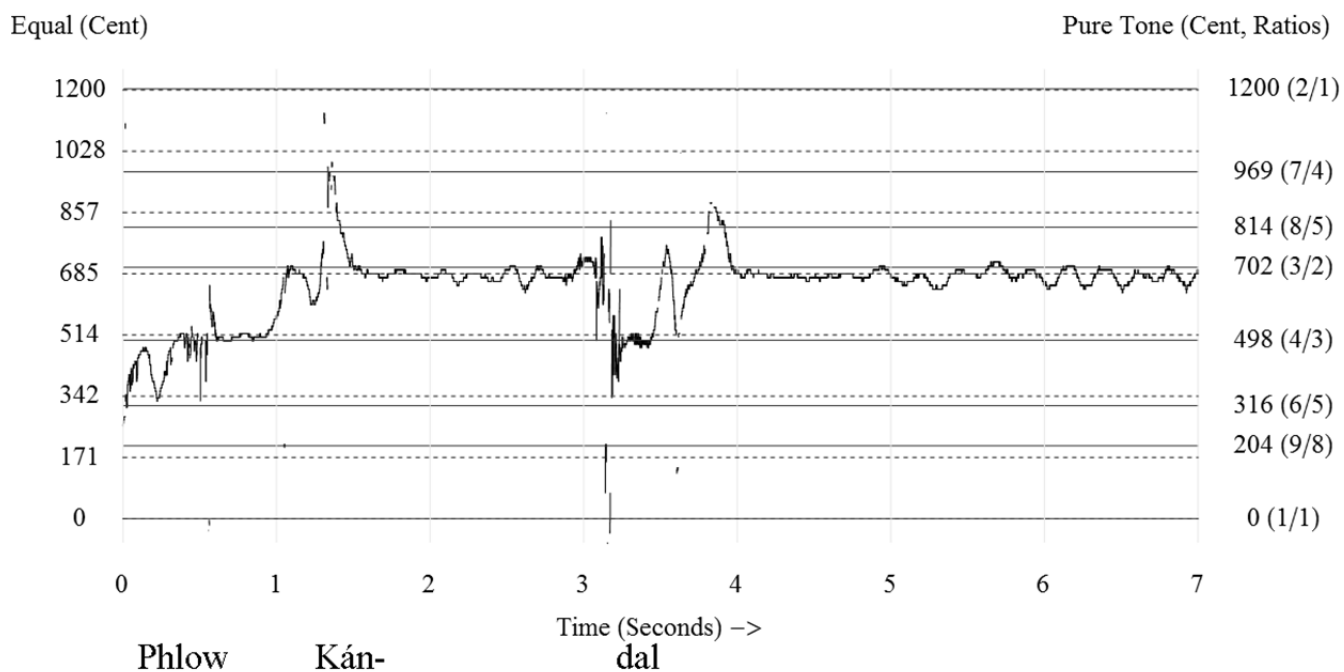
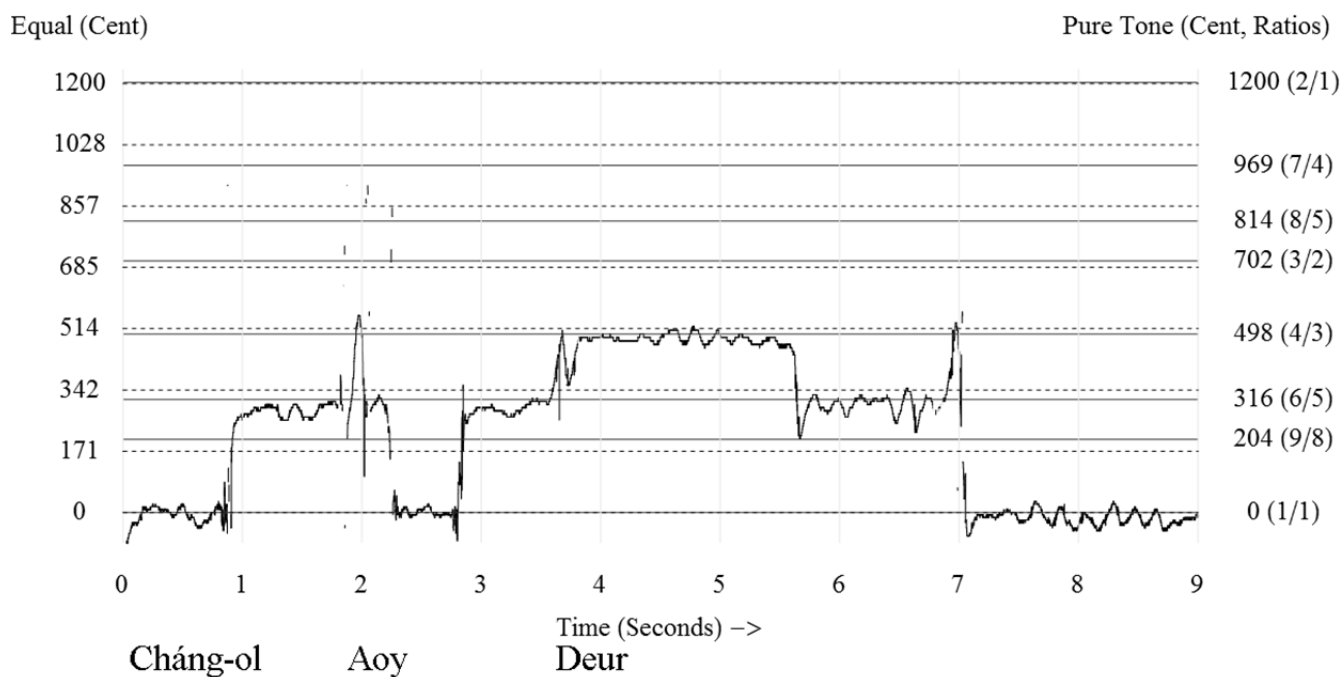


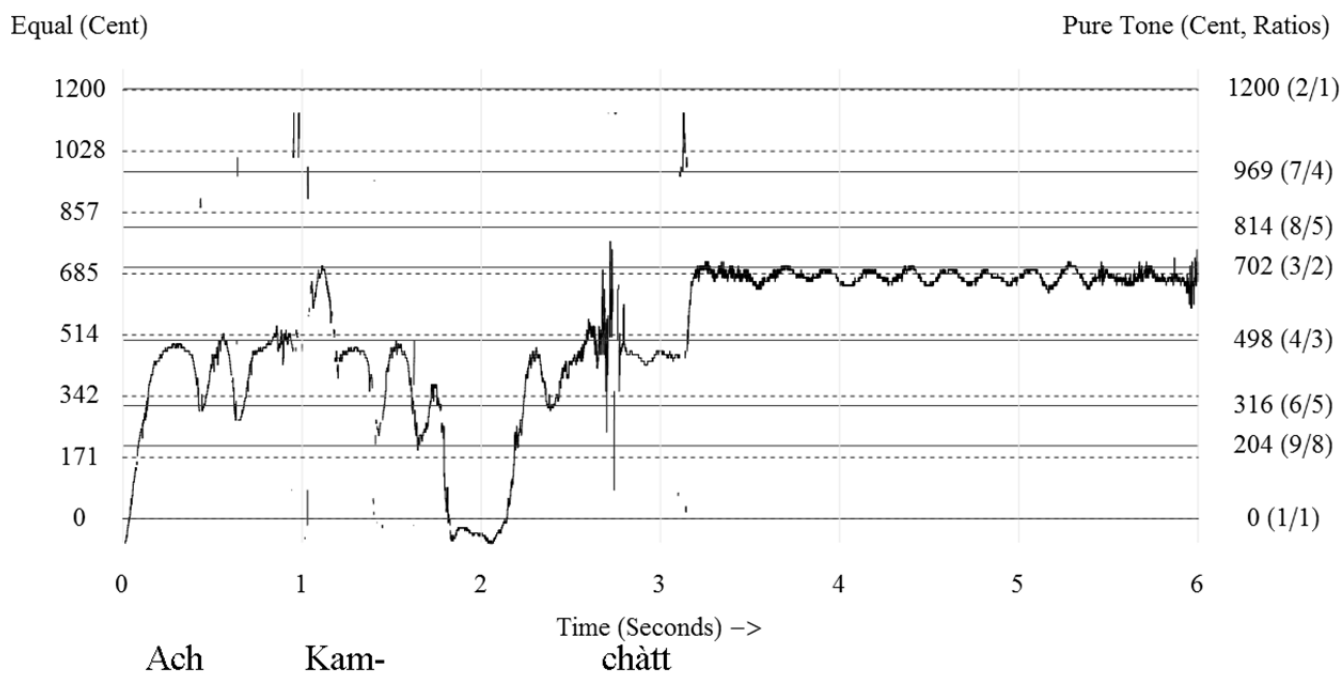
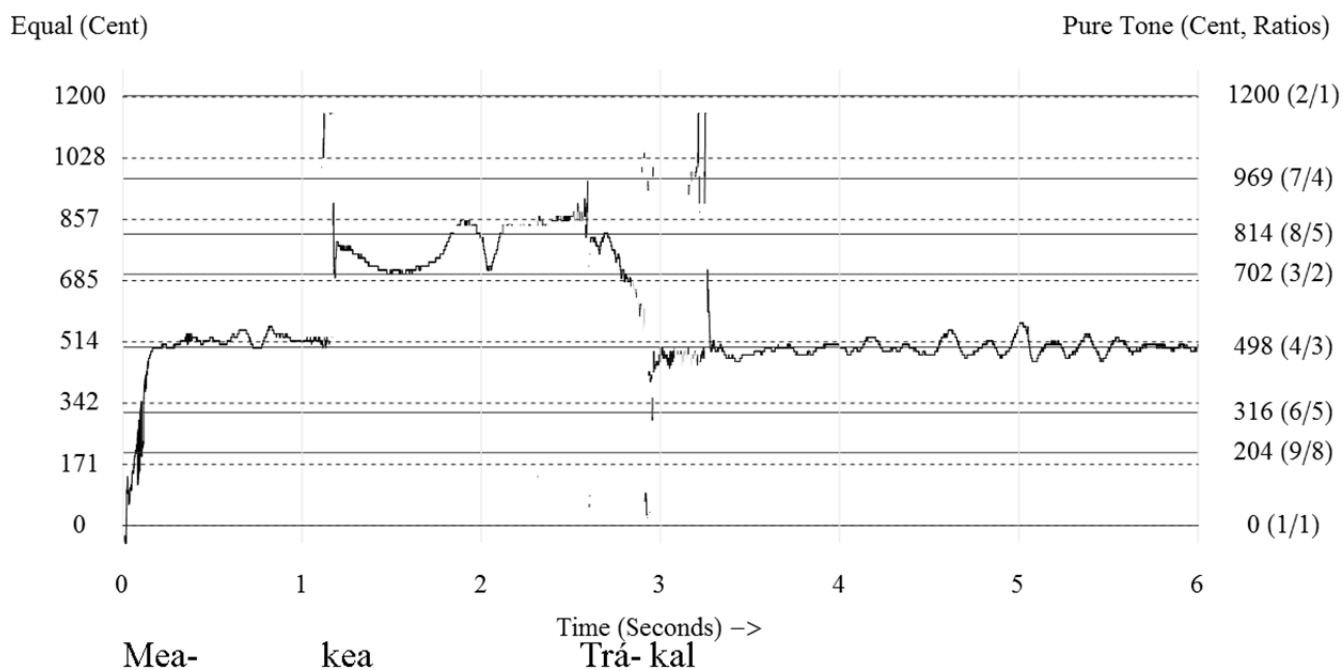
**Fig. 4 a) – d):** First four phrases of *Bat Sara Phan* performance of Kai Sokmean, pitch fundamental shown. Solid lines: Western pure tone, dashed lines: Cambodian equal tuning.



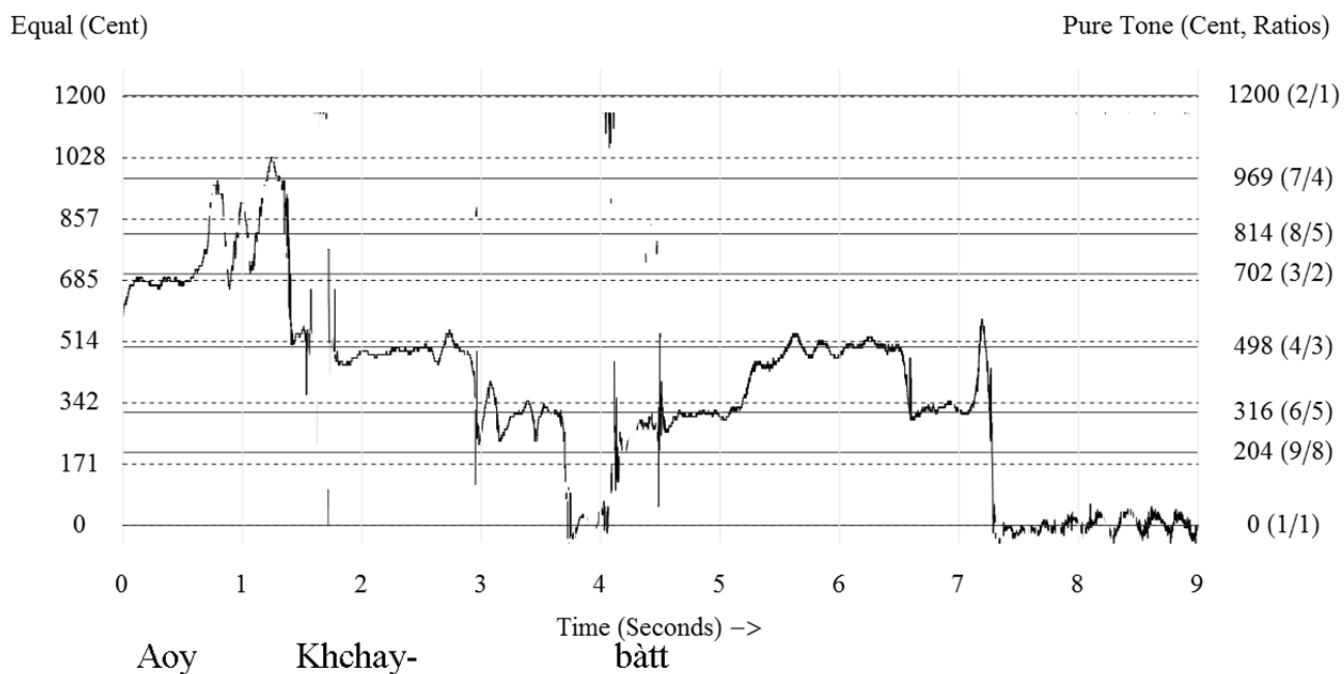
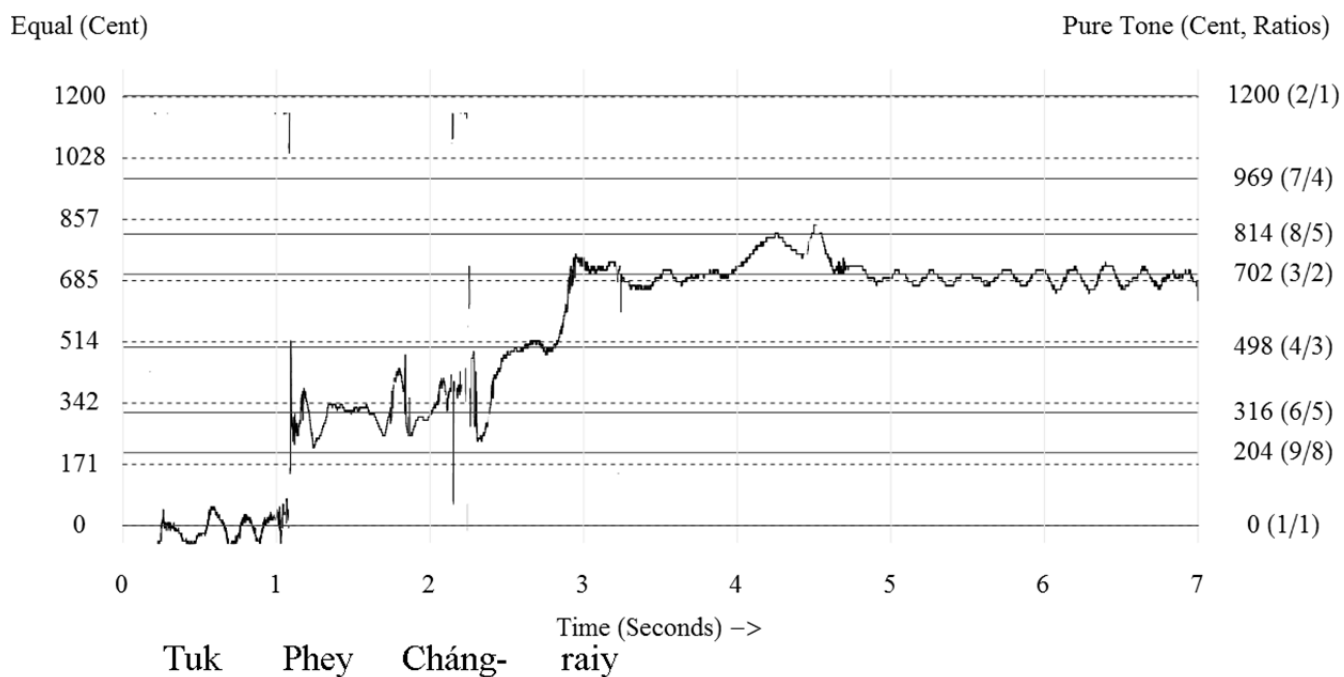


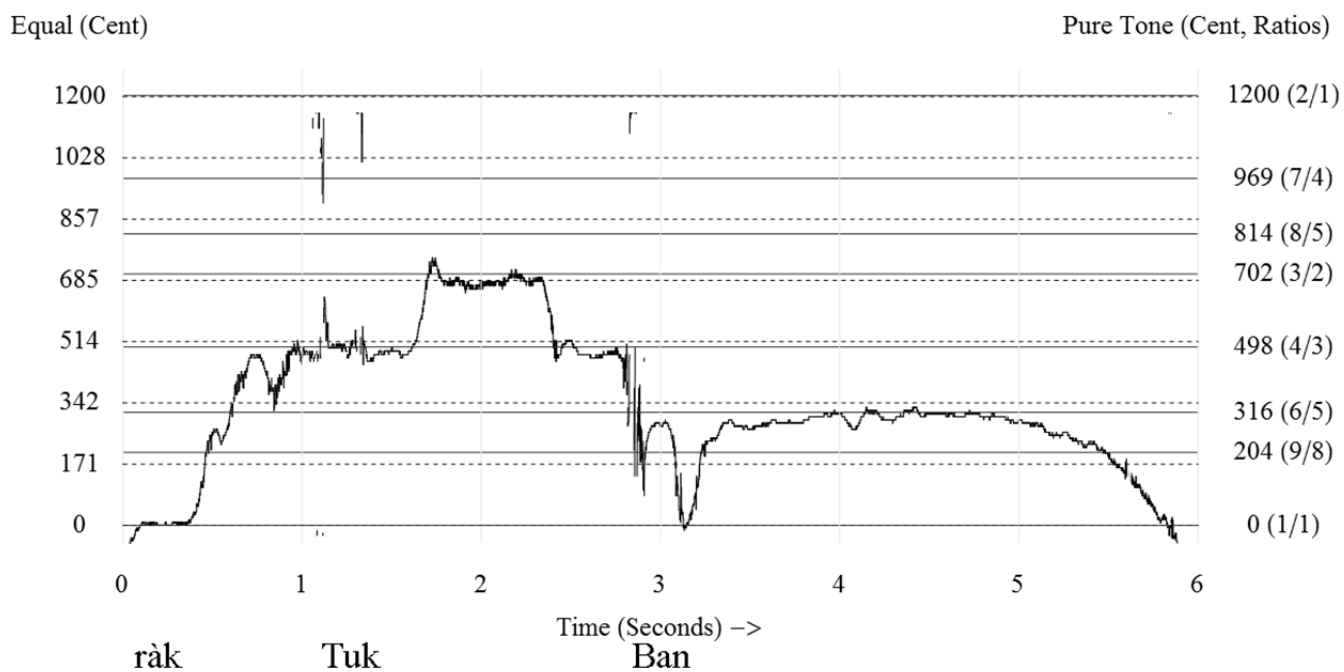
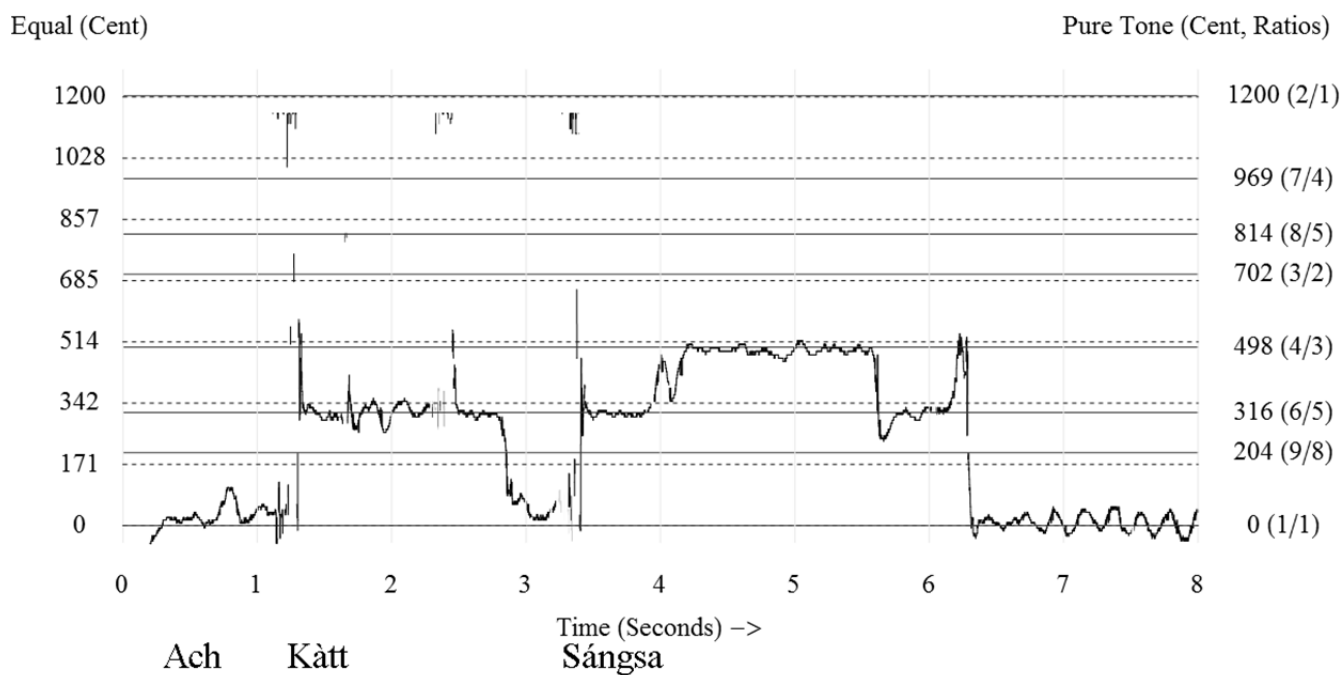
**Fig. 4 e) – h)** Phrase 5 – 8





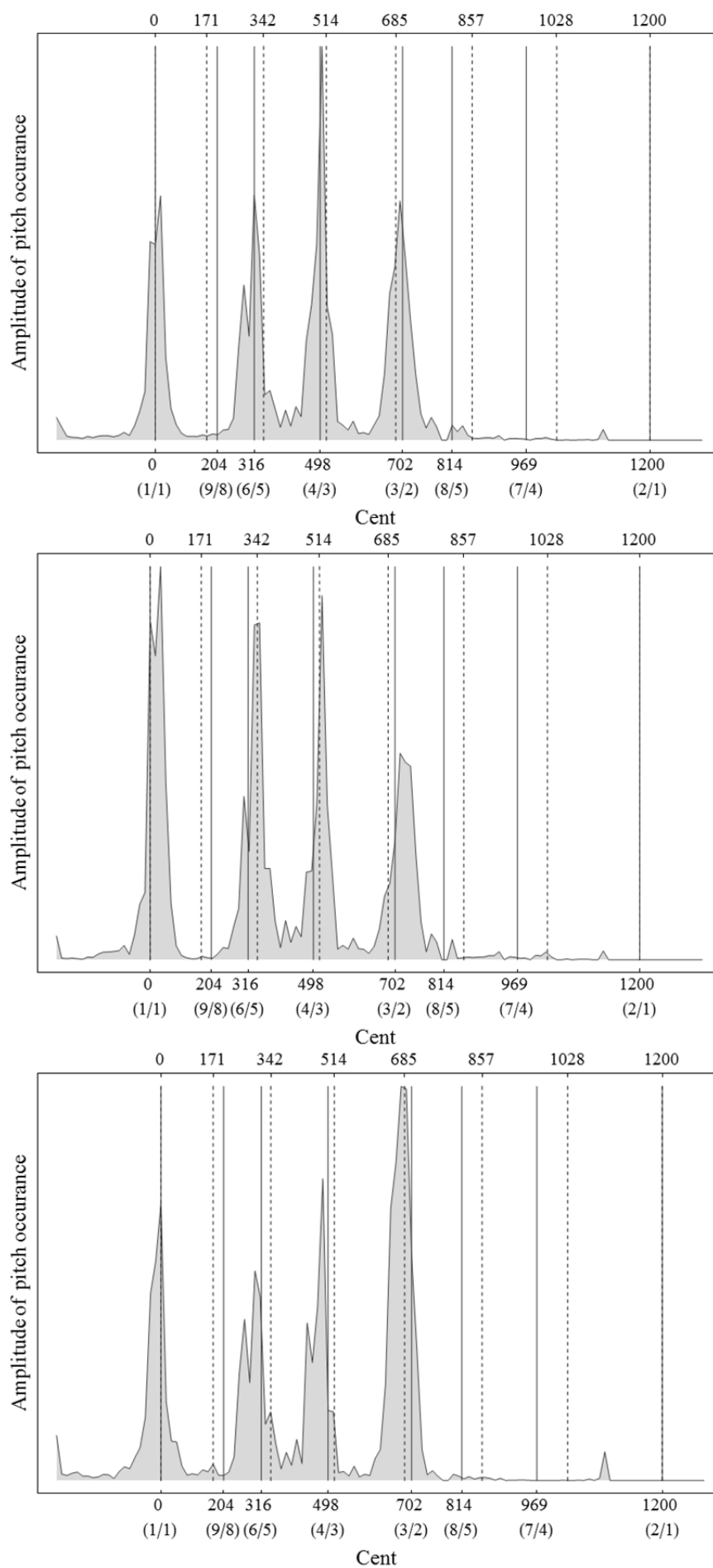
**Fig. 4 i) – l):** Phrase 9-12





**Fig. 4 m) – p):** Phrase 13-16





**Fig. 5:** Accumulated pitches of a) Phrase 1 – 9, fundamental taken as 190 Hz, b) Phrase 1 – 2, fundamental taken as 188 Hz, c) Phrase 5 – 7, fundamental taken as 192 Hz.