

Notating Heritage Musics: Preservation and Practice in Thailand, Indonesia and Malaysia

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Abstract

Historically, notation in Southeast Asia has been used for musical documentation and preservation rather than functioning as a medium for realising music during performance. As a consequence, today both heritage and hybrid forms of script such as Balinese *ding dong* notation and Javanese *kepatihan* cipher notation play only a minor role in the musical expression of this region's predominantly aural-based forms. When musical notation is used, it may be found written on a variety of traditional and modern medium including palm leaves and plain paper to computer programs with specialised fonts or even cell phone text messages. In this article, I observe notation in three distinct traditions existing along a continuum from preservation to innovation. Despite technological advancements and the availability of Western staff notation, diverse forms of indigenous musical notation primarily serve to sustain traditions and aide the memory of musicians for teaching and learning.

Keywords heritage, memory, music notation, preservation

BACKGROUND

In addition to a diversity of regional forms of notation, Southeast Asian music practitioners also have similar systems of notation based on numbers. Numerical values assigned to musical pitches first appeared in Europe in a system called cipher notation that would eventually influence Southeast Asia. As with East Asian traditions such as Chinese music, practitioners of Thai mahori and khruang sai ensembles have adapted this type of cipher system based on numerical representations and a tablature format (Miller, 1992, p. 205-08). Central Javanese gamelan musicians in Indonesia also teach their conservatory-trained pupils using a cipher system called kepatihan (Becker, 1980, p.17). Many church choirs throughout much of Indonesia sing hymns in polyphonic counterpoint with soprano, alto, tenor and bass parts written out for Sunday Mass in beautiful harmony using only numbers typed on a page. In Malaysia, innovative notation systems help sustain and develop the teaching of *lagu melayu asli's* idiomatic improvisatory embellishment style (Arshad, 2015, p.4). In all of these examples, notation reminds musicians of their music's principal melodies and fundamental rhythms. In this article I will argue that, save for a few exceptions such as the church

choirs above, notation in Southeast Asia is seldom used in the context of performance. It is accurate to describe traditional notation systems existing along a continuum from preservation, where principal melodies and musical forms are documented and revisited to aide memory in the learning process, to innovation, where musicians design new written symbols and appropriate existing ones to transmit melodic detail from teacher to student. Here, aural tradition brings music notation to life and aural tradition dominates the heritage ensembles and musical landscape in Southeast Asia.

THAI CLASSICAL MUSIC NOTATIONS

Three principal notation systems are used in Thailand today: Western staff notation, Thai solfege and tablature notation. Each system has expanded musicians' ability to record and document more detailed rhythmic and melodic representations of instrumental, chamber, orchestral as well as vocal music traditions. Yet, none of these have become indispensable for Thai musicians in performance. This theme of oral tradition being relatively free from a dependency on written notation for performance is repeated throughout mainland and insular Southeast Asia.

Western staff notation arrived more than 200 years ago when two French visitors to the Siam royal kingdom notated short excerpts of court melodies in Western staff notation. Today, Western staff notation is principally used for piphat ensembles. The hard mallet ensemble called piphat mai khaeng has one or two circular gongchimes, xylophones and a quadruple reed instrument called pi. The soft-mallet ensemble (piphat mai nuam) has the above instruments but includes a bowed lute (so u) and a flute (khlui phiang). Also based on the hard-mallet ensemble is the piphat mon with "horseshoe-shaped Mon gong circles and a pi mon quadruple reed wind instrument with flared bell" (Miller, 1992, p. 202). In each of these ensembles, western staff notation is used but does not precisely correspond to Thai tuning systems.

Because of the nature of Thai tuning systems, western staff notation remains inadequate for accurately representing actual pitches for this system that has "seven more or less equidistant pitches (171.4 cents each) within the octave" (Miller, 1992, p. 200). Each of the seven principal tones builds a pentatonic mode or tonal centre upon itself that Thai musicians call *thang*. Thus there are seven possible *thang* in Thai music. One of the more common modes is *thang nai* built up from the staff note G with the pentatonic series G A B D E. When *thang* are notated in Western staff notation, accidentals are used to indicate the intervallic structure. All *thang* appear to have the same intervallic structure: maj 2nd, maj 2nd, min 3rd, and a maj 2nd in the modes B \flat C D F G; F G A C D; E \flat F G B \flat C. The only exception is a mode called *thang klang* but there are no known compositions in this mode. Notated pieces that modulate to different *thang* maintain the same, or similar, intervallic structure and are differentiated as much through tessitura as they are instrumentation, dramatic context, or other extra-musical phenomenon.

When Thai compositions modulate from one tonal centre to the other, a score with unconventional accidental combinations may resemble chromaticism compositions as the one found in Figure 1. The 'skeletal' melody or essential melody called *tham nong Saradtha* is similar to the part played by the large gong circle called *khong wong*

yai. However, it is the only instrument that plays this melody in the ensemble (Sumrongthong and Sorrell, 2000, p. 70). Fifteen compositions for several ensembles including piphat such as ‘Khamen Sai Yok’ have been published in two editions called *Thai Classical Music Book I* (1961, 1971) and a further 28 compositions have been published in the *Silapakon Fine Arts Magazine* (Miller, 1992, p. 201).



Figure 1 Thai staff notation of ‘Khaek mon pang khun phrom’, *sam chan* with accidentals indicating various tonal centres or *thang* (Source: Miller, 1992, p. 212).

Each *thang* has its own extra-musical associations to repertoire, instrumental accompaniment and ‘national accent’. Thai music constructs itself around major and minor rhythmic accents in a given melody with the *ching-chap*, a small pair of bronze cymbals, producing open (*ching*) and closed (*chap*) strokes, the former less emphasised than the later. Notations identify regional and trans-national rhythmic styles where:

A great number of Thai compositions of the *sepha* variety (tuneful, entertainment pieces) are composed in various national “accents” (*samniang*). The most usual are Thai, Lao, Khmer (Khamen in Thai pronunciation), Khaek (meaning Muslim and implying India or Malaysia), and Mon. Less common are Phamah (Burmese), Chin (Chinese), Yuan (Vietnamese), Yipun (Japanese), and Farang (Western). Each ‘accent’ is customarily notated in a particular key in staff notation, e.g., Khmer in F, Lao in C, Mon in B \flat , Thai in F, etc. But where these written symbols are realised on the instrument depends on the ensemble (Miller, 2000, p. 202).

Western staff notation orients the usual end-accented Thai rhythmic pulse, as is the case with Javanese gamelan discussed below, at the beginning of a measure instead of its end. This can be problematic for uninitiated practitioners; however, Western staff notation does succeed in documenting in detail Thai piphat orchestral performance. While Western staff notation adequately represents the piphat, Thai script adds the

nuances of writing, prose and speech to indicate the vowel sounds of the solfege system. In this way, Western staff notation helps bridge the gaps along the continuum of notation usages where students may utilise multiple resources in the learning process.

More Thai musicians make use of solfege than any other notation system in Thailand. This standard notation void of detailed embellishments provides only principal melodic pitches and a basic rhythmic framework from which a number of individual instruments may derive their parts and improvise. The syllable initials used in Thai are based on the Western system: do, re, mi, fa, so (or son), la, ti.

แทนเสียง	โด	เร	มี	ฟา	ซอล	ลา	ที
อักษรย่อ	ด	ร	ม	ฟ	ซ	ล	ท
เสียงที่	1	2	3	4	5	6	7

do re mi fa sol la ti

เขมรไพโรโยค

ท่อน 1

—	ดล	--ดล	ซฟ-ซ	--ลซ	ซฟ-ฟ	รซ	พพพพ
ดล	รฟ	--ลซ	ฟซ-ด	ด	ฟร	ลซดซ	ลซฟร
—	ล	ซ	ฟซลล	ร	ดมร	—	—
ควคค	ซฟ	--ลซ	ฟซ ล	ด	ฟร	ลซดซ	ลซฟร
—	ซลลล	ดลฟล	รฟ	—	ดลฟซ	ลซดล	ซล
—	ด	—	ล	--ดล	ซฟ-ซ	—	—
ซลซซ	ซลซซ	ฟซลซ	ฟร-ฟ	—	ดลฟซ	ฟล	ซซซซ
—	ดล	--ดล	ซฟ-ซ	--ฟร	ฟซฟร	ดม	รรรร

Figure 2 Solfege syllables and notation for khluai flute demonstrating the adaptation of the Western ‘do, re, mi’ system to Thai script. (Source: Chonpairot in Miller, 1992, p. 214)

In Figure 2 of the khluai flute notation, solfege lines are read from left to right and from top to bottom. Vertical lines subdivide notes into quadratic measures. The rhythmic subdivisions in this system of notation for Thai music, which are almost exclusively duple, have four semi-quavers or sixteenth notes per bar. The beat is felt at the end of bars and groups of four receive accents based on the *ching chap* rhythmic pattern. However, the *ching* and *chap* may have different positions depending on the designated *chan* rhythm (for example, *sorng chang*, *sam chan*, etc.). The syllables and

initials of the solfege system in Figure 2 appear in the first box with cipher tones 1 through 7 below. In the khloi flute notation, hyphens extend the value of a note where the smallest subdivision in the solfege system is a sixteenth note. If only two syllables appear in a measure, these constitute two eighth notes. If there is only one, it is a quarter note. Octaves are not notated save for a few notations that make use of dots above or below a syllable indicating higher or lower pitch respectively.

Musicians realise solfege notation in performance based on the idiomatic conventions of their instruments. As with other oral traditions, Thai music in practice goes beyond what is notated by interpreting the score and include stylistic ornaments, shifts of rhythm, slides, tone bends and other aspects of a predominantly rote system of transmission. In the solfege notation system, musicians only read a generic representation. Much more musical detail is revealed in Thai tablature.

Tablature notation is perhaps Thailand’s most precise and detailed written system used by instrumentalists who require accurate reproductions of their teacher’s hand positions, finger placements, bowing techniques, and melismatic passages. Instrumental teachers keep personal collections of tablature notation for teaching both group lessons and private tuition that provides a document for students to faithfully reproduce their particular style. Some of these notations appear in cipher format such as those of Associate Professor Panya Roongruang, the current dean of the Faculty of Music at Bangkokthonburi University, but these are exceptional (Morton, 1975, p.viii in Miller, 1992, p.205). The majority of cipher notations appear as tablature where numbers indicate a particular fret, string, or hand position for fiddle players (so sam sai), or various finger hole combinations for flutists (khloi).



Figure 3 Tablature notation of ‘Lao tam nern sai’ with ciphers for the *so duang* two-stringed bowed fiddle (Source: Banchongsilpa in Miller, 1992, p. 211).

The Thai tablature in Figure 3 designates the numerical value of ‘0’ for a bowed fiddle’s open strings. The open strings of the *so duang*, a higher register two-stringed bowed fiddle that leads ensembles, are tuned to G and D. Numbers above the horizontal line correspond to D. Finger positions then follow from 0 up four more tones with the numbers 0 1 2 3 4 corresponding to d e f g and a. The same numbers and finger positions follow from the lower pitched G string. Ties indicate slurs between notes as in, for example, a slide from 4 to 3.

From the modern Thai musical notations of Western staff and tablature, we turn now to more ancient forms of musical documentation in Indonesia where, as with mainland Southeast Asia, Sanskrit and indigenous script notations have had a long history and a lasting influence on present-day practices. Considering the continuum of notated examples from preservation to innovation under purvey here, it is evident that these belong in the realm of preservation.

THE POWER OF WRITTEN TEXTS

Deeply imbedded in written documents and musical notation, is the ancient belief in Southeast Asia generally and Indonesia in particular, that written documents are often considered venerated objects of mystical power and spirituality. Script characters may serve as emblems of religiosity and become departure points for philosophical discourse among readers and interpreters. Singing written texts and making textual interpretations is still maintained in 21st century Southeast Asia in many areas of the region. From texts about science, medicine, architecture, magic spells and also music, reverence for written resources still permeates many parts of the Indonesian archipelago as evidence of what Balinese call *aksara*, or the power of written texts.

In Bali, some of the earliest historical writings in both Sanskrit and Old Balinese script appear from the 9th century on stone and copper tablets. These texts provide a glimpse into the early literary activity in this part of Southeast Asia. Throughout its history, writing helped legitimise the power of royal rulers who used the imported Indo-European form of Sanskrit to legitimise their place as descendants from the pantheon of Hindu deities. Royalty and religious figureheads used the local Austronesian form of writing to control and administer those beneath them, the local Balinese government, taxation and public infrastructure (Wallis, 1980, p. 6).

Gamelan music and written symbols have long been linked to cosmology. Notation therefore, is the “ultimate link between cosmological and earthly spheres of existence [and] is emblematic of Balinese reverence for literature and the written word as tools for accessing sacred power” (Tenzer, 2000, p. 34). Because royal courts were the centres of political and spiritual power, court orchestras and their music were automatically considered extensions of this power. It is important to note here that musical treatises and notations still carry these connotations of sacredness and reverence.

However, this does not explain how musical notation established its extra-musical associations to religious symbolism and spiritual power. Nor does it give a clear indication of how preservation, rather than innovation, in this type of musical notation has been emphasised in the tradition. In order to answer this question, it is necessary to examine an 18th century Balinese musical treatise called *Prakempa* as an example of the interconnectedness between literary writings and the mystical and religious symbolism of musical notation. As will be discussed below, this text explains the conception of Balinese tuning systems such as *pelog* and *salendro* and gives insight into one of the oldest notation examples on the island: notasi gambang.

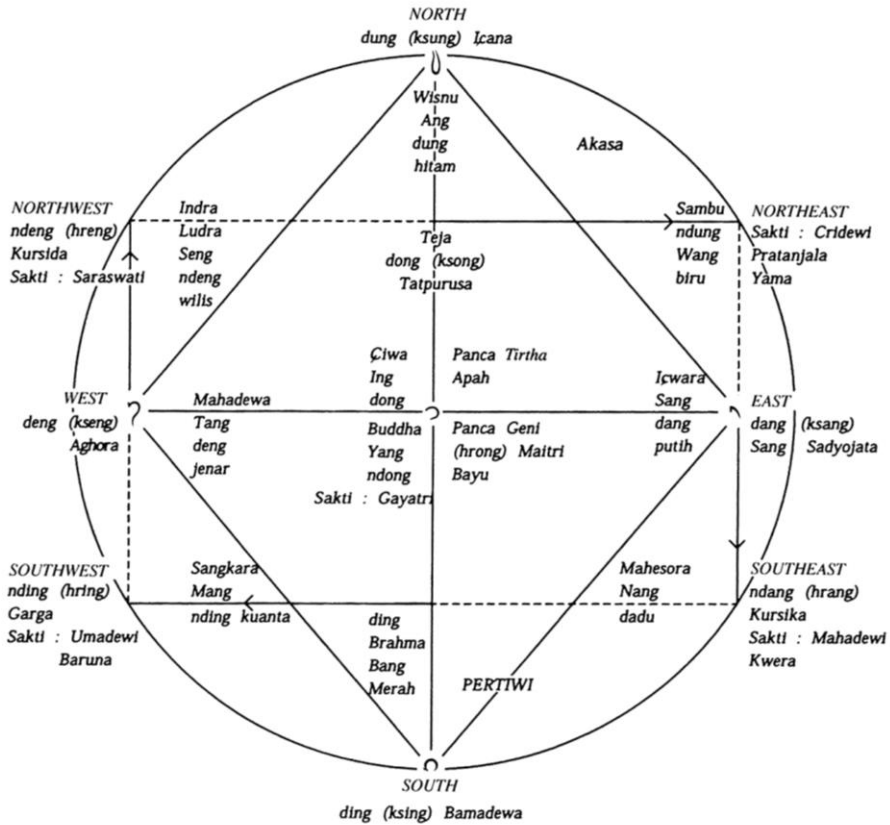


Figure 4 *Pangider Bhuwana* mandala-like cardinal directions that ascribe musical tones to the pantheon of Hindu-Baliense gods and their representative colours (Source: Bandem, 1980, p.14 and Tenzer, 2000, p.36).

The *Prakempa*, one of Bali’s earliest writings on musical aesthetics, philosophy, technique and ethics, is a treatise that likely dates from the late 18th or early 19th century (Bandem, 1986, p.7). The manuscript makes cosmological associations between musical tones, the pantheon of Hindu deities, the cardinal directions of the universe and a pallet of colours and their spiritual associations. In the passages of the text, the *Prakempa* insists that students of gamelan music pay proper respect to music instructors and their teachings. Its stanzas guide practitioners towards cultivating awareness that bronze is a medium for not only providing music for rituals, but also to sound out the tones of the gods. This symbiotic relationship has permeated written texts and notations of gamelan music for generations.

The 18th century manuscript also describes specifics about the structure of musical form, provides characters and symbols for notating scale tones, and detailed descriptions of musical ensembles. According to the *Prakempa* (Stanza 5 in Bandem, 1986, p.1), all of these elements are linked to the origins of the Balinese universe itself. Three written letters called *wisah*, *taleng* and *cecek* stand for the universe’s embodiment in the Hindu Trinity: Brahma, Wisnu and Shiva. This means sound, and therefore, music itself is notated according to symbols that represent the divine origin of the universe.

Ten musical tones map out along the directions of the universe along with the creation of heavenly and earthly bodies: the sun, moon and stars, light, rain, wind, rocks, trees, plants, animals and all living/breathing creatures belonging to the 'Five Dimensions' or '*Panca Maha Buta*'. The three symbols of the Hindu Trinity also emit an array of colours beaming to all the cardinal directions. For example, shining in the West is the colour yellow, the symbol of the God Mahadewa, the musical tone called *deng* and its written letter, *Tang*. In the South, the God Brahma resides with the colour red, the musical tone *ding* and the letter *Bang*. All together, the universe contains 10 tones, gods, directions, colours and their appropriate written script characters as outlined in the following compilation of text, descriptions and illustrations from the Prakempa:

The 10 tones were grouped into two groups of five tones each. The first group called *patut pelog (Panca Tirtha)* corresponds to the principal Hindu deities Wisnu, Brahma, Iswara, Mahadewa and Siwa.¹ These major gods also correspond to the principal cardinal directions of the universe, North, South, East, West and upper Centre and their notation symbols are the most commonly employed in musical practice today. The second group of tones called *patut slendro (Panca Geni)* corresponds to the secondary or subsidiary deities Sambu, Mahesora, Sangkara, Indra, Buddha and their directions Northeast, Southeast, Southwest, Northwest and lower Centre. Together, pelog and slendro make up the 'universe of sounds'. This universe reverberates through various pentatonic and heptatonic scale derivatives found in ensembles such as the large ritual bronze *gamelan gong gede* orchestra, the seven-tone palace orchestra called 'semar pagulingan' or the seven-tone bamboo xylophone gamelan *gambang*. The latter is one of Bali's oldest indigenous ritual ensembles that pre-dates the arrival of the Hindu-Javanese empire in the 14th century. It also uses one of the oldest indigenous notation systems: notasi *gambang*.

Notasi *gambang* is one of two types of Balinese script notation (the other is notasi *ding dong* which will be discussed later). Notasi *gambang* is one of only a few non-standardised regional notation systems that uses different script characters for different octaves. By comparison, the more modern and standardised notasi *ding dong* and some cipher notation systems in Thailand or Java maintain the same script character but use a dot above or below it to indicate higher or lower pitches. Notasi *gambang* script characters are not identical but vary slightly depending on the specific region or even the particular tendencies of a writer. The version presented here is from the village of Tebola, Sidemen in the Eastern part of the island.

Lower and uppercase letters below Balinese script characters stand for the vowel sounds of each pitch. Each script character has its own name. In Figure 5, I O A E U a o are called *cecek*, *wa*, *guru*, *taleng*, *kapal*, *bisah*, and *windu* respectively.

Notasi Gambang Desa Adat Tebola Sidemen

Notasi	᳚	᳛	—	᳜	᳝	᳞	᳟
	I	O	A	E	U	a	o
Cara baca	DING	DONG	DANG	DENG	DUNG	Dang	Dong

Figure 5 One of Bali’s oldest notations called gambang that utilises different script characters for its seven-tone, multi-octave bamboo xylophone instruments called gambang

A gambang ensemble consists of a pair of seven-keyed, single-octave bronze metallophones called *gangs*a and four 14-keyed bamboo xylophones called gambang. Gambang keys span two octaves arranged in an unconventional configuration. The unusual arrangement allows a player to perform octaves with a double-headed mallet held in each hand.

There are three types of gambang in an ensemble, each with its own pitch arrangement. I have chosen the gambang *penyelat* that has the lower octave *dong* (O) as its first key labelled with number 1 in Figure 6. ‘O’ appears again as xylophone key 4. The octave of *dong* appears again on keys 9 and 13 using a different script character that corresponds to a lower case ‘o’. This indicates *tessitura* is a determinant of script character selection.

Gambar Instrumen Penyelat

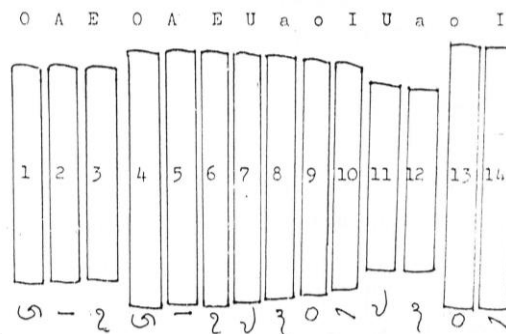


Figure 6 Unconventional configuration of gambang bamboo keys with different script characters for its multiple octaves (Source: Tantra, 1992, p.32).

Gambang compositions were traditionally notated on palm leaf manuscripts where writers carefully etched notches in the shape of script characters on the surface of dried palm leaves and then smeared them with black soot. The soot lodges into the carved notches and any excess is wiped clean, revealing script characters. The transcription of one of these *lontar* compositions in the figure below is called ‘Puh

Rangga', one of the assistants of Prince Panji, the legendary hero of the Malat stories that developed in the 14th century. This particular piece uses all seven available tones.

Puh Rangga

Kawitan

၁ ၁ ၃ ၃ | ၅ ၇ ၇ ၁ | ၃ ၃ ၅ ၅ | ၁ - ၃ ၃
 ၇ ၇ ၅ - | ၃ ၇ ၅ ၅ | ၁ ၃ ၇ | - ၅ ၇ ၅

Pengawak I

၃ ၅ ၁ ၃ | - ၁ ၇ ၅ ၅ - - ၃ | ၃ - ၅ ၁
 - ၅ ၃ ၇ | ၃ ၅ - ၃ | ၃ - ၅ ၁ | ၅ ၇ ၇ -
 ၅ ၅ ၇ ၅

Pengawak II

၁ ၅ - ၁ | ၅ - ၇ ၁ | - ၁ ၅ ၇ | ၇ ၅ ၁ -
 ၇ ၇ ၇ - | ၁ ၅ - ၃ | ၁ - ၅ ၇ | ၅ ၅ ၇ ၁
 ၇ ၅ ၅ ၅ - ၇ ၅ ၇ | - ၇ ၁ | - ၅ ၁ ၅
 ၅ ၇ ၅ - | ၁ ၅ ၇ ၇ | ၇ ၅ - ၅ ၇ ၅ -

Figure 7 A fragment of a full gambang composition illustrating the use of all seven script characters in *notasi gambang*.

Compositions using five or six pitches are more common, but for our purposes I have chosen this piece so that the reader may see all script characters written in the context of a composition. The notation illustrates three of the four sections of this piece including its melodic introduction (*kawitan*) and the first two main melodies (*pengawak I* and part of *pengawak II*). Principal pitches are grouped here into four-beat units.²

We turn now to *notasi ding dong*, a much more commonly used script-based notation employed in the study of both instrumental and vocal music. Like *notasi gambang* above, script characters stand for specific pitches and intervals. However, *notasi ding dong* is much more generic in its application. It is used by conservatory trained musicians, professional composers and amateur performers in both traditional and modern contexts. In this way, *notasi ding dong* has multiple applications and exists on a broad expanse of the notation continuum between preservation and innovation.

NOTASI DING DONG AND MODERN CONTEXTS

Script-based notations in Balinese music still use vowels to represent predominantly pentatonic musical compositions. The vowels i, o, e, u and a constitute the solfeggio system with the following intervallic pattern:

dang agung	ding	dong	deng	dung	dang	ding alit
∧	○	⊃	⌒	∪	∧	○
A	C#	D	E	G#	A	C#
6	1	2	3	5	6	1

Figure 8 Notation names and script characters, approximate notes in Western notation, and cipher notes for notasi ding dong.

Pitches 4 and 7 are part of the seven-tone pelog scale and because most Balinese music is pentatonic, these pitches are omitted creating a gap.³ The larger intervallic gaps between A and C# as well as E and G# are represented in Figure 8 with a larger space between notes and numbers.

Conservatory trained vocal students studying classical Balinese ‘*tembang macapat*’, a poetic verse form usually sung by a soloist during dance dramas, can just as easily notate a poem’s principal vocal pitches using the numbers of kepatihan cipher notation. However, students more often choose to scribble their teacher’s version of a song on bits of paper or in pocket-sized notebooks using the five symbols of Balinese notasi ding dong. Students new to the study of *tembang* notate their teacher’s principal melody by assigning symbols to text as in the following ‘*tembang macapat*’ poem:

Ginanti Welasasih: laras pelog

○ ∪	∧ ○ ⊃	○ ∧ ∪	
we las	a si he	pu ni ku	
⊃ ○	∧ ∪	∪ ∧ ○ ∪	
Be cik	ang gen	a pang pas ti	
∧ ∪	○ ∧	○ ∪ ⊃ ⊃	
Pe teng	le mah	a ja lu pa	
∪	⊃	⌒ ∪ ⊃	○ ∧ ∪
Nga cep	i sar wa	ma u rip	
∪ ∪	∧	○	∪ ∧ ⊃ ⊃
A pang	mang gih	ke san to san	
∪ ⊃	⌒ ∪	⌒ ○	∧ ∪
Pa ngan	ki num	wi buh sa mi	

Figure 9 Example of Balinese *notasi ding dong* script notation from the *tembang macapat* or ‘reading in fours’ poetic form. (Source: Bandem, 2009, p.53)

A line of text may have written above or below it, several melodic indicators reminding the singer of specific vocal techniques. A fast undulation of the vocal chords to produce a ‘shaky’ vibrato embellishment called *geregel* may be notated with a wavy line. A more specific decorative melismatic vocal passage called *wilet* is written out with exact note values precisely as a teacher has demonstrated. When more detailed

melodic and rhythmic representation is required, an adaptation of cipher notation is used such as the following fragment from poetic verse form Kakidungan Wirama Indrawangsa:



Figure 10 Detailed Balinese notation of Wirama Indrawangsa: Kakidungan fragment using lines and slurs to indicate performance aspects of rhythm and vocal style.
(Source: Bandem, 2009, p.30).

The text fragment of Wirama Indrawangsa alludes to the moment the hero of Mahabharata, Arjuna, asks permission to leave from the peak of Gunung Indrakila where he has received the weapon called *pasupati* from the god Sang Hyang Siwa. The notation tells its reader a grace note-like melodic figuration is appropriate when singing the ‘i’ in *mam-wit*. The tie between ‘na’ and ‘ren’ denotes a slurred rise and fall between pitches 1 and 2 or ding and dong. Lines and double lines above script characters indicate a higher level of specificity in melodic embellishment. These subdivisions may be equated to the eighth and 16th note. However, rhythmic execution is a subjective element of an individual’s own performance artistry. Actual rhythmic values, therefore, are according to an individual singer’s interpretation of rhythm. In addition to lines above script characters, single dots indicate a vocalist should extend the sung melodic line to the note preceding the dot.

Balinese script notation endures in modern contexts. Today, classical Balinese song has been turned into chants called *kidung* and *macapat* and often integrated into the daily yoga practices of hundreds of Balinese hotel staff working at the many hotels and spa centres that offer holistic health treatments to an increasingly health conscious tourist market. Each practice begins with the recitation of a chant. Transmission of chants still involves writing and notating text and melodies in Balinese script notation. Yoga classes initially established to cater for international tourists have expanded to include local staff to strengthen team building among employees. The Indian-based practice of movement and breath seems to be accepted by most young staff who take a keen interest in the meditative aspects of yoga.

Other modern contexts for script-based notation in Bali are daily television and radio broadcasts and the tens of annual festivals and competitions of song chant called *pesantian*.⁴ In *pesantian*, once again students use notation as a means to study the principal melodies outlined in a given piece. Notation is sometimes used in performance, however, *pesantian* melodies are usually committed to memory well before a festival competition. Groups often perform in daily television broadcasts on local television channels such as TVRI and Bali TV.

As discussed above, Balinese *gambang* and *ding dong* notations have been copied and recopied in palm-leaf manuscripts to pass down repertoire from generation to generation. However, in the neighbouring island of Java, notating repertoire for preservation emerged only in the last century.

CENTRAL JAVANESE GAMELAN NOTATION

Javanese notation seems to be only a relatively recent technology despite written manuscripts that date back to the 8th century and generations of pre-Islamic Indian literary influence. Sanskrit-based script entrenched itself in Java and in much of Southeast Asia into the 10th century. After the 10th century, Sanskrit writing continued to be influential in royal courts and religious centres and Indian culture influenced the region's religious beliefs, ritual architecture, civil structure and musical theories and treatises. Loan words such as *rasa* for 'feeling' and *nada* for 'tone' still maintain diachronic associations between historical and contemporary aesthetic and musical expression. These notation styles enjoy a continuity of presence and have multiple applications from preserving melodies for memory recall to the scribbling of innovative composers creating new music.

In the late 19th century, Central Javanese courts in Yogyakarta and Surakarta became increasingly exposed to Dutch and other European cultural influences including concepts of preserving music through written notation (Becker, 1980). During this time, discussions among intellectuals and visiting scholars at the Central Javanese courts likely included the works of prominent French, Italian or German composers whose music could be played long after their passing and became permanent fixtures in the annals of the Western classical canon. However, permanently fixing a piece of Javanese music in written notation may have been problematic for some Javanese musicians. Until this time, it was not an inherent cultural concern for Javanese to write down their gamelan pieces, essentially fixing it in form and function, as it is performed in a given place and time. The permanence of notation may have made an impression upon the Javanese that notation would not allow their musical tradition to evolve. After all, aural transmission trumps notation and continues to drive the tradition as Javanese musicians have little need in their music for "freezing the inherent transience of musical performance" (Brinner, 1995, p.147). However, court musicians decided not to risk losing compositions inherited from generations passed and instead sought out an appropriate system of notation to document their repertoire.

Between 1886 and 1912, Javanese scholars and palace musicians experimented with methods for notating gamelan (Becker, 1980). Initially, there was much debate over which of the numerous melodic lines of the Javanese orchestra was representative of the entire ensemble. In the Javanese gamelan orchestra, there are more than 25 musicians playing four major groups of instruments: horizontally and vertically suspended knobbed gongs; single and multi-octave metallophones; percussion including drums and idiophones; miscellaneous flutes, xylophones and string instruments. In addition to choosing and notating a single representative melodic line, palace musicians were faced with the challenge of notating gamelan music's formal structure so that they could differentiate the organisation of melodies according to form. In Javanese gamelan music, form is determined by metric patterns realised on large and medium sized knobbed gongs. One cluster of gongs suspends from cord tied to a large wooden frame. These gongs punctuate cyclic periods of time called *gongan* to realise colotomic structure and work in tandem with a set of smaller horizontally suspended knobbed gongs called *kenong*.

As the search for a representative melodic line continued, palace musicians considered notating the melodic leader's instrument, two rows of kettlegongs called

bonang and the multi-octave metallophones called gender. Gender instruments perform largely improvised elaborations of instrumental and vocal compositions. Even the two-stringed spiked fiddle called *rebab* was considered essential to notate because the most senior and experienced musicians are entrusted with this instrument to lead the orchestra.

The dilemma continued until Javanese scholars and musicians decided the saron family of metallophones would best represent the Kraton repertoire (Perlman, 1991). These metallophones perform a realisation of Central Javanese gamelan's principal pitches, later termed *balungan* meaning literally 'skeletal' melody. Similar to the *tham nong Saradtha* from Thailand above, the *balungan* was chosen because all other melodic parts in the orchestra have an inherent melodic relationship to it, even though its melodic line may change over time as musicians inherit pieces. *Balungan* is more or less fixed but can also be considered a melody shared among musicians who have reached a consensus on its contour and direction.

With the dilemma resolved, scholars and musicians turned their attention to finding an appropriate notation system (Becker, 1980). One of the earliest attempts at notating the Kraton repertoire came in 1888 when Kyai Demang Gunasantika adapted Western staff notation for the purposes of gamelan. Gunasantika's system of notation uses five horizontal staff lines but spaces them in groups of three and two to reflect the large and small intervallic structure of *pelog*, a heptatonic scale from which pentatonic scales are derived. In Figure 11 of *Gending Emeng pelog pathet nem* in *titilaras rante* or 'chain notation', dots or note heads tied together on each of the five lines create a "chain of notes" on the staff. Staff lines correspond to the pentatonic scale called *pelog pathet nem*. In this scale, only five keys of the seven-keyed metallophone are required. As with the Balinese *ding dong* system, these pitches correspond to keys 1, 2, 3, 5 and 6. Dots in the space in between the third and fourth lines are used for pitch 4 that is played twice in this example. Dots in the space above the top line is pitch 7, also appearing twice. *Titilaras rante* was also used to notate vocal melodies (*titilaras rante pesindhen*). Chain notation fell into disfavour as other notation innovations were also being developed around this time.

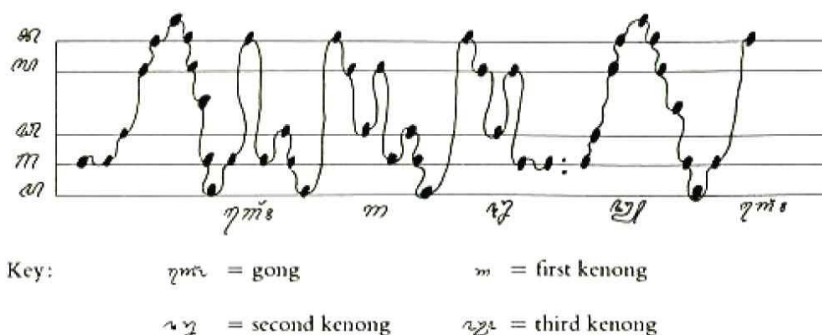


Figure 11 *Titilaras rante* or "chain notation". (Source: Soetandija in Becker, 1980, p.15)

In 1890, *titilaras andha* tablature notation was developed at the palace of the Sultan in Yogyakarta (Becker, 1980 p.14). The tablature resembles European lute notation with intersecting vertical and horizontal lines that read from top to bottom, left

to right. Termed ‘checkered script’ notation by Dutch ethnomusicologist Jaap Kunst, the seven vertical lines of Figure 12 represent the heptatonic pelog scale. The example is *Gending Hardjuna Mangsah* in the musical mode *pathet barang* with the pitches *ro*, *lu*, *mo*, *nem* and *pitu* that correspond to the Javanese terms for 2, 3, 5, 6 and 7 respectively. Javanese script characters for drum patterns may be seen hanging on the left edge of the tablature. Hanging from the tablature’s right edge are the large gong *ageng* and other punctuating smaller gongs that determine form. Evenly spaced horizontal lines representing units of time intersect these vertical lines to form a tablature grid. Groups of four horizontal lines indicate the quadratic rhythmic organisation of the melody. A solid note head on any of the vertical lines indicates melody as the reader follows the tablature from top to bottom and left to right. The absence of a dot indicates the previous pitch carries over into the next beat.

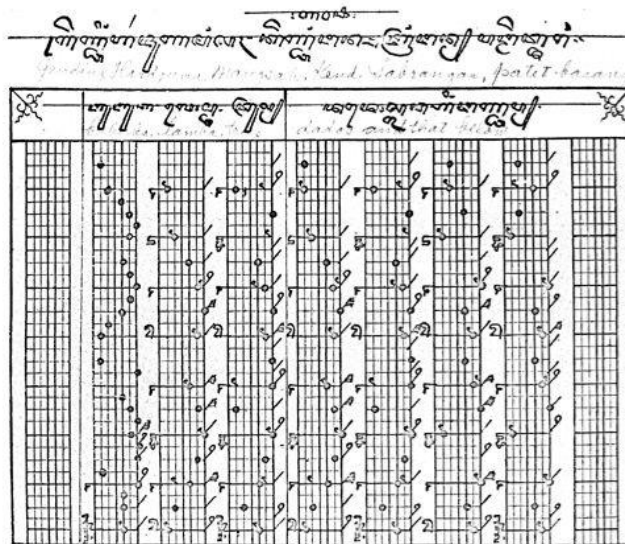


Figure 12 *Titilaras andha* tablature notation developed at the palace of the Sultan in Yogyakarta.

Around 1890, a resident and nobleman named Raden Mas Tumenggung Wreksadiningrat of the Surakarta royal residence devised a system that has become the most widely used gamelan notation in use today (Becker, 1980, pp.16-17). Modelled after a solfege system of cipher notation developed in France a few years earlier, Wreksadiningrat assigned numbers to the Javanese *saron* single-octave metallophones. As with chain and tablature notation discussed above, the principal *balungan* melody was notated.

Kepatihan notation uses numbers instead of dots on a staff of tablature to indicate pitch. This is interesting because Javanese practitioners still use traditional Javanese terms derived from anthropomorphic references for the names of notes. In the *slendro* tuning system, pitch 1 is called *barang* meaning ‘thing’, pitch 2 is *gulu* meaning ‘neck’ and pitch 3 is *dhadha* or ‘chest’ while 5 and 6 are simply the Javanese terms *lima* and *nem* meaning five and six respectively (Sutton & Vetter, 2006, p. 245 fn). Borrowing from European models of solfege, Wreksadiningrat assigned numbers to the single octave metallophone for each of the two tuning systems in the Javanese gamelan.

For the heptatonic *pelog* system, keys were numbered one through seven from lowest to highest. For the pentatonic *slendro*, system keys were numbered 1, 2, 3, 5 and 6 where *slendro* is a five-tone scale extraction of *pelog*.

Reading from left to right in Figure 13, numbers are grouped into four-beat units called *gatra*. Two *gatra* called *kenongan* equal one strike from the punctuating *kenong* kettlegong. There are four *kenongan* resulting in a 32-beat melody.⁵ In Javanese *gamelan*, rhythmic emphasis is felt at the end, not the beginning, of a melodic phrase or rhythmic statement. Reading the first *gatra*, beats 2 and 4 receive more rhythmic emphasis than beats 1 and 3.

Pangkur
laras pelog, pathet barang

Buka:

. 3 . 2 . 3 . 2 3 7 3 2 . 7 5 6

Irama I:

[3	2	3	7	3	2	7	6]
))		
	7	6	3	2	5	3	2	7	
))		
	3	5	3	2	6	5	3	2	
))		
	5	3	2	7	3	2	7	6]

Figure 13 Kapatihan cipher notation developed in the late 19th century becoming one of the most widely used systems for notating Central Javanese gamelan music.

Rhythm leans forward anticipating the conclusion, rather than the beginning of a line or entire melodic statement. Rhythmic weighting is strongest at the end of a notated line and at the end of a piece marked with a large vertically suspended knobbed gong ageng. In the notation of ‘Pangkur’ in Fig. 3, a circle around pitch 6 demarcates its finalis.

The introduction or *buka* of ‘Pangkur’ is played by a soloist on the bonang double row of kettlegongs. The bonang notation at the buka includes dots and numbers. Dots indicate a subdivision of the beat, numbers indicate which of the 14 kettlegongs are played in the phrase, 3. 2 . 3. 2 leading up to gong tone 6. Dots below pitches 5, 6 and 7 in the ‘buka’ guide the bonang player towards the instrument’s lower octave kettlegongs. In addition to the circle around pitch 6 denoting the large gong ageng, a semi-circle above a number indicates a smaller punctuating gong. An upward facing semi-circle found at a lines’ midpoint marks the kempul, one of several smaller tuned hanging gongs in the Javanese orchestra. A downward facing semi-circle at the end of a line marks the beat where the kenong, a row of large kettlegongs horizontally suspended on a rack, accentuates the melody.

From its beginnings in the late 19th century, kepatihan has evolved and is now readily available today as a computer font compatible in most word formatting software programs. This type of innovation shows how traditional and hybrid notations can serve as a platform for innovation. In several versions, it was copy written by Matthew

Arciniega in 1994 as KepatihanPro. The font is clear and legible allowing users to notate detailed aspects of musical form, melodies in multiple octaves, drum notation, colotomic structure and other performance aspects of Javanese gamelan. Numerous traditional compositions are notated in kepatihan notation and are readily available on websites devoted to classical repertoire such as Barry Drummond's *Gending Jawi/ Javanese Gamelan Notation*.⁶ The library cross references hundreds of compositions of Central Javanese *gamelan* pieces and search criteria can be set so that users can find notations based on the musical form, mode, alphabetical name, or balungan fragment of a composition.

DOCUMENTING DETAIL IN *LAGU MELAYU ASLI*

Although less comprehensive than its Central Javanese counterpart, Malaysian instrumental and vocal art forms such as lagu melayu asli are being notated down in precise detail. The roots of lagu melayu asli, according to the *Hikayat Hang Tuah* and *Tuhfat al-Nafis*, likely reach back as early as the 17th century (Matusky & Tan, 2012, p.359). Traditionally, lagu Melayu Asli served as accompaniment for social dances called ronggeng and the singing of poetic verse called pantun, both of which were popular during social gatherings including weddings and theatre performances. In the 1930s, the popular theatre form called bangsawan helped proliferate syncretic forms expanding its instrumentation to include western flutes, trumpets, trombones bass, piano, guitar, tambourine and maracas. Today, its highly embellished instrumental style centres on violin and accordion melismatic passages accompanied by rebana drum and hanging gong. Lagu melayu asli's repertoire draws on related instrumental and dance styles such as inang and joget and includes pieces such as 'Bunga Tanjung,' 'Tudung Perioik,' 'Mas Merah' and 'Seri Mersing' (ibid., p. 360).

Tasteful melodic embellishments and improvised stylistic ornamentations help weave together the musical tapestry that lies at the heart of *lagu Melayu asli*. However, until recently, notating these intricate ornaments has largely been ignored (Arshad, 2015). Until recently, precise transcriptions were not required in order to teach violin or accordion parts to young students. Traditionally, disseminating from teacher to student were "bunga-bunga" or melodic elaborations and ornaments of a principal melody that were absorbed aurally in the transmission process. This auditory submersion method, however, was contingent upon continual reinforcement through other elements in a student's soundscape including vocalisation, speech and singing, among others. Today, learning melodic ornamentations such as *patah lagu* ("melodic phrasing"), *bunga* ("flowering"), *lenggok* ("meandering") increasingly requires students to read notation examples to help bridge the generational gap between traditional and contemporary *lagu Melayu Asli* styles (Arshad, 2015, p. 5).

The following are examples of notated and performed grace note and trill ornamentations in lagu Melayu Asli style. The first example in Figure 14 is an *acciaccatura* excerpt taken from a popular piece called lagu 'Damak'.



Figure 14 *Acciacatura* example from the song *Damak* (Source: Arshad 2015, p. 43).

The *acciaccatura* is applied with the purpose of “facilitating the notation of decorative notes or *bunga lagu*” (Arshad, 2015, p. 42). The term in this context has similar applications where demisemiquavers function as gracenotes that anticipate principal pitches. Their value is approximately half that of its principal note (ibid., p. 43).

Figure 15 is an example of notated and performed versions of an upper mordent from an excerpt of the song ‘Gunung Banang’. The short squiggle line (not unlike the Balinese *gregel* suggested in Figure 10 above) that appears above F in the notated version is adequate for informing the performer that an upper mordent should be realised on this principal pitch.



Figure 15 ‘Upper mordent’ example from the song ‘Gunung Banang’.
(Source: Arshad 2015, p. 43).

In the adjacent bar of the performed version, the trill-like execution of the upper mordent involves F’s upper neighbour G. The speed at which the player executes the uppermordent, “sesuai dengan tempo lagu yang dimainkan” or loosely translated as “depends on the tempo of the piece” (Arshad, 2015, p. 43).

CONCLUSION

In this article, I have observed notation in three distinct traditions that exist along a preservation to innovation continuum. Despite technological advancements and exposure to Western staff notation, a myriad of indigenous musical notations principally serve to sustain traditions and aid the memory of musicians for teaching and learning. Keptihan cipher notation, Thai tablature and Balinese ding dong, among other examples discussed above, leave the details of vocal embellishments, dynamics, tempo and instrumental improvisation to the performer’s interpretation of their respective Southeast Asian traditions. That said, notating as accurately as possible the details of lagu melayu asli’s stylistic practice in western staff notation demonstrates the necessity for some new initiates to learn the musical heritage markers of the tradition’s

improvisatory style including trills, mordents and acciaccatura, among others. Along the continuum of notating principal pitches and detailed embellishments lies the important role of notation to help bridge understandings. These understandings about putting notation to practice are often illusive auditory details the ear of a young initiate may, or may not fully grasp.

In the late 19th and early 20th centuries, hybrid forms of notation emerged between European and indigenous script notations in Thailand and Java to both expedite the study of specific instruments as well as document and preserve threatened palace repertoires. In Bali, written texts tell us that musical notation often carries with it cultural connections to religion and philosophy. For centuries, Balinese notations have been copied and recopied to preserve repertoire performed in ritual contexts. As a result, notations themselves symbolise the pantheon of Hindu gods who preside over ceremonies.

Script notation continues to maintain a meaningful degree of relevance in modern-day Southeast Asia where the need for written music still requires this traditional writing system. Even though other, more modern notation systems such as Western staff and cipher notations are available to many musicians in public schools, social organisations and professional arenas, script notation still maintains a strong presence and represents local forms of musical identity for musicians. As more ubiquitous forms of staff and cipher notation become more prevalent in the region, local forms of script notation form an ‘icon of difference’ for Southeast Asian musicians to distinguish themselves from one another.

Notation continues to adapt and change to modern contexts in Southeast Asia where television and radio broadcasts feature ‘textual performance’. Cipher and script-based notation are found throughout much of the region and are entwined in traditional and contemporary musical practice. With an increase in awareness of cultural identity and regional autonomy, it seems likely then that music notation in the region will continue to help preserve and document Southeast Asian oral traditions in the future.

ENDNOTES

¹ The two tuning systems *pelog* and *slendro* are more commonly used among Central Javanese music practitioners rather than in Bali where the terms *saih gong* and *saih gender* respectively are more commonly employed. It is generally accepted that the terms *pelog* and *slendro* made their way from Java to Bali in the mid 20th century with the establishment of government-run music conservatories and public educational institutions. The *Prakempa* manuscript evidences the use of these two tuning system terms among the Balinese literary community almost two centuries earlier.

² Gambang compositions often have an odd number of principal pitches. The second section of this piece, *pengawak I*, has 35 *gangs*a pitches and the entire composition has 189. For a discussion of these and other performance aspects of *gambang* see Tantra and Bagiartha, 1996; Tenzer, 2000, p.236-45; and especially Schaareman, 1980, p.465-82.

³ For a related visual interpretation of these gaps in staff notation form, see Figure 11 *titilaras rante* notation.

⁴ Creese, H (2009) “Singing the Text: On-Air Textual Interpretation in Bali” In Jan van der Putten and Mary Kilcline Cody (Eds), *Lost times and untold tales from the Malay World* (218). National University of Singapore Press.

⁵ Sutton and Vetter (2006, p. 237-272) make a detailed analysis of 'Pangkur' in the mode *slendro pathet sanga* in terms of its various rhythmic levels or *irama* and the general flexibility of form in Javanese gamelan.

⁶ Gendhing Jawa: Javanese gamelan notation. Retrieved from <http://www.gamelanbvg.com/gendhing/index.php>

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