

# Bridging tradition and modernity: exploring *patutan* (the modal system) in Balinese music through the hybrid composition 'cane'



I Made Kartawan<sup>a,1\*</sup>, I Made Dwi Andika Putra<sup>a,2</sup>, Ni Putu Hartini<sup>a,3</sup>

<sup>a</sup> Karawitan Study Program, Faculty of Performing Arts, Institut Seni Indonesia Denpasar, Jl. Nusa Indah, Sumerta, Kec. Denpasar Tim., Kota Denpasar, Bali 80235, Indonesia

<sup>1</sup> madekartawan@isi-dps.ac.id\*; <sup>2</sup> dwiandikaputra999@gmail.com; <sup>3</sup> putuhartini85@gmail.com

\* corresponding author

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## ABSTRACT

This paper examines how the composer integrates traditional Balinese gamelan elements with Western musical concepts in the creation of the piece "Cane," focusing on two main aspects: the creative process and aesthetic analysis. Several strategies are employed, such as adopting, borrowing, transforming, elaborating, ornamenting, and combining musical elements from various genres and cultural traditions. The hybrid work "Cane" exemplifies this approach by blending motifs, patterns, and ornamentation from both Balinese and Western music. Additionally, the piece incorporates the processing of *patutan/patet* (modal system) from the *Semar Pagulingan Saih Pitu* gamelan ensemble. Rooted in research and experimentation, "Cane" is structured into five distinct parts, each utilizing one or more of these strategies. The music emphasizes melodic development intertwined with rhythmic, dynamic, and tempo variations. In the context of hybridization, the combination of musical elements includes: (1) Balinese traditions such as *kekenyongan*, *nyongcag*, *ngempyung*, and *kekilitan* motifs, and (2) Western elements like unison, harmony, dissonance, polyphony, and imitation.



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## 1. Introduction

Traditional music is a reflection of cultural heritage that develops along with the history of a society. Every community has its own type of traditional music that reflects their values, customs and daily life [1]. Traditional music is generally passed down orally from generation to generation, and often serves more than just entertainment, such as as part of religious rituals, traditional ceremonies or expressions of cultural identity [2]. The distinctive elements of traditional music, such as instruments, rhythms and melodies, reflect the cultural and geographical character of the people who practice it [3]. In addition, traditional music often serves as a means of communication between generations and as a reminder of a community's origins and history [4]. Traditional musical instruments, which are generally made from natural materials, play an important role in maintaining the authenticity of the inherited sounds and characteristics of the music [5]. With the advancement of globalization and modernization, traditional music remains relevant as it continues to adapt and collaborate with contemporary music, creating a fusion that enriches global musical culture [6].

The fusion of traditional and modern musical elements has become a prominent theme in contemporary compositions. As the world grows more interconnected, musicians and composers are increasingly inspired by diverse cultural expressions, blending them into unique musical forms [7]. This cross-cultural integration not only expands the horizons of traditional music but also offers new pathways for artistic expression. The Balinese gamelan, with its rich history and intricate modal systems, serves as a profound example of how traditional music can be adapted and transformed in a

modern context [8]. In recent decades, many Western composers have drawn inspiration from Balinese gamelan music, incorporating its rhythmic patterns, tonal structures, and unique timbres into their works [9]. This trend has led to a broader appreciation of gamelan music worldwide, resulting in collaborative works that merge Eastern and Western traditions. Such cross-cultural collaborations highlight the universal nature of music as a form of communication and artistic exploration, bridging geographical and cultural divides [10].

Similarly, Balinese composers have embraced Western musical elements, enriching their traditional works with modern techniques such as harmony, polyphony, and dissonance [11]. This exchange between different musical traditions has created a fertile ground for innovation, resulting in the emergence of hybrid musical forms. These new forms challenge the boundaries of conventional music-making, demonstrating how tradition and modernity can coexist and mutually enrich one another. The process of creating hybrid music often involves more than simply combining different musical elements. It requires a deep understanding of both traditional and modern forms, as well as a sensitivity to the cultural contexts in which these elements originate [12].

By navigating the complexities of multiple musical traditions, composers can create works that resonate on both a technical and emotional level, offering audiences new ways of experiencing music [13]. Since the end of the XVII century, traditional *gamelan* music, including Balinese *gamelan*, has attracted the attention of Western composers to be used to enrich musical colors and elements in creating new works of music. These composers include Claude Debussy, John Cage, Steve Reich, Collin McPhee, Lou Horison, Jack Body, Michael Tenzer, Gareth Farr, Wayne Vitale, Evan Zyporin and others [14]. Likewise, the utilization of western musical elements has also been done by Balinese composers including I Wayan Gde Yudana, Dewa Alit, Wayan Balawan and others. This crossover of musical cultures is a necessity where Bali, since the time of the independence struggle, has been in contact with people from outside the country. In the context of musical culture, this can lead to essential changes and impacts on the development of Balinese gamelan music.

The creation of musical works through cross-cultural approaches can be done in various ways such as; adopting, borrowing, transforming, elaborating, ornamenting, elaborating and combining various musical elements - which can consist of two or more types of genres or with different musical cultural backgrounds. For music artists, this situation can ignite, foster and develop their creativity because it allows them to adapt widely through exploring their own music and engaging with the music of others. This kind of interaction can lead to innovative creations and the discovery of new musical possibilities. Of course, there are other ways that composers can also enrich compositions such as motif development techniques including development by imitation, repetition, augmentation, diminution, and retrograde motif development [15]. Furthermore, combining musical elements, both in the aspect of medium or medium, both traditional and modern is one of the methods that composers often use in exploring themselves when creating new musical works and this type of music is often known as hybrid music [16].

Exploring musical elements into hybrid music can be realized in various forms and ways. For example, by utilizing musical techniques and patterns from different cultures or musical genres, dealing with the richness of sound colors and tuning of musical instruments from various ensembles, creating new musical instruments or even using technology. The transformation of traditional music genres into modern music can be another way of developing musical works [17]. Firdaus, *et al.* have transformed Balinese traditional music, *Baleganjur*, into jazz music. This work was inspired by the traditional game *Megoak-goakan* from Panji Village, Sukasada District, Buleleng Regency. In composing the music, the composer adopted *Baleganjur* music that is often used to accompany the traditional game of *Megoak-goakan*. The composer utilizes the *reong* instrument as the melody carrier and combines drums and *ceng-ceng* (Balinese cymbal) for rhythmic processing [18]. Mixing across genres and media as described above will often result in new ideas and concepts for the development of traditional music [19]. Kallberg in his article entitled "The Rhetoric of Genre: Chopin's Nocturne in G Minor" states that:

*"Hybridity is a term generally used in reference to things of mixed ancestry. In music composition, hybridity may describe the combination of elements and sources where genre conventions are still present, but no one genre dominates" [20].*

Blending musical elements that each have strong identities is not easy. The main challenge is to integrate the various genre elements into a coherent, blended and overall balanced musical whole [21]. However, in many cases the essential elements of different genres do not blend easily with each other. Therefore, it is necessary for the creators to combine these elements and utilize them properly to achieve the desired musical form [22]. Weiss examines hybridity discourse by applying analytical concepts from hybridity theory and using ethnographic data from university listeners responding to two pop songs from Mali. She reveals that:

*"The words hybrid and hybridity are conveniently defined in multiple ways. Despite or perhaps because of this imprecision, the terms have become iconic in discourses of globalization, postcoloniality, and postmodernity, fields in which cultural intersections and mixtures are omnipresent and variously valued" [23].*

The utilization of traditional and modern musical elements, as one example, in the frame of hybrid music can provide a wider and freer space for composers to express musical ideas and find new possibilities as a place for creativity. Deliege *et al*, state that "creativity is the process or activity of realizing insights freely". What we usually think of as the "creative process" consists of several areas, of which only one is emergent and essential among the ideas and products that can be characterized as "creative" [24]. Of course, creativity in this point of view is defined in its entirety without any other considerations concerning notions of originality or value.

Sudirana, a Balinese music scholar, suggests that Balinese composers have developed new characteristics, concepts, and working methods, often interpreting or defying traditional rules in extreme ways. He states "Today, Balinese composers have started to move towards ideas that are freer and more intuitive, with the result that Balinese gamelan becomes a more integral part of contemporary global artistic heritage" [25]. The above perspective may have encouraged many composers, including the composer himself, to try to see new possibilities by utilizing elements of traditional music as "own music" and combined with other musical approaches. In this case, the creation model is no longer limited by traditional constraints but is interpreted in a free way. This is what sparked the composer's desire to create a musical work through exploring the traditional musical elements of Balinese *gamelan* and combining them with Western musical approaches under the title 'Cane'.

*Cane* is literally a form of offering or ceremony in Balinese Hinduism that is usually offered during a plenary *pesangkepan* (important meeting) in the village or *banjar* (community group). It consists of various material elements arranged or placed in one container. *Cane* is offered as a form of gratitude and request that the meeting held can run well and smoothly and will produce decisions that can be respected and implemented by the local community. The philosophy of *Cane* - a serving consisting of various material elements, in the context of its use during *sangkep* - which combines various ideas and perspectives into one discussion space, has sparked the idea of the birth of the hybrid musical work 'Cane'. The theme of the hybrid music 'Cane' is "Unity in Diversity". The hybrid musical work 'Cane' is a musical innovation that combines musical elements from different musical backgrounds.

This combination involves a number of aspects, namely; technical (motifs, patterns, ornamentation) and modulation system exploration, known as *patutan*, which uses the medium of *gamelan Semar Pagulingan Saih Pitu*, a type of Balinese *gamelan* ensemble that is thought to have emerged in the XIV century. There are seven types of *patutan* in the *gamelan Semar Pagulingan Saih Pitu*: *selisir*, *baro*, *sunaren*, *tembung*, *patemon*, *pangenter alit* and *pangenter ageng* [26]. Of course, the exploration of tuning aspects including the modulation system requires study and analysis by measuring the frequency of the tones on the instrument. The results of this analysis can be taken into consideration in anticipating the use of *patutan* types. This paper examines how the composer integrates traditional Balinese gamelan elements with Western musical concepts to create a new piece. The investigation focuses on two key questions: (1) What is the creative process behind the hybrid composition 'Cane'? and (2) To what extent does 'Cane' reflect the fusion or elaboration of Balinese gamelan and Western musical elements into a new musical form?

From a musicological perspective, hybridity focuses on artists who produce music across genres and media that span installation, visual art, music, technology and performance. When viewed in terms of cultural studies, hybridity is often equated with inculturation, acculturation and interpreted as cultural change. So in this work 'Cane' will be directed at a form of hybridization or mixing of two

aspects put together, musical and scale, so that it becomes a new form of work that the artist believes has never existed before. Through this work, the composer wants to encourage young composers to take advantage of various opportunities that can spark creativity and innovation based on traditional music by combining elements of *gamelan* music itself with any genre or type of music outside of traditional music. This is because inculturation, acculturation, assimilation and cultural transformation are a necessity in the world community that can occur in all aspects of life including music.

In many cases, combining elements of Balinese music with various other genres to create new compositions can lead to significant changes and influence the development of Balinese *gamelan* music, particularly within its cultural context. This is evident in the creation of 'Cane,' which blends diverse musical elements and employs both experimental and research-based approaches. Several relevant studies were referenced to strengthen the work's validity and authenticity. Yudistira, *et al* created a hybrid musical work entitled '*Pentagram*'. Using Sequencer technology, the composer combined Balinese and Western musical idioms.

The composer incorporated traditional Balinese music idioms, such as Balinese drum improvisation patterns and *kotekan* rhythmic patterns. In addition, the composer integrated Western musical idioms such as polyrhythms, metric modulation, and various minimalist techniques, including ostinato, layering, augmentation, diminution, pitch reduction, pitch addition, metamorphosis, and phasing. Utilizing Balinese elements such as *kerumpungan* drum patterns, *kotekan* patterns, and *pelog* and *slendro* scales. The composition also incorporates Western idioms such as polyrhythms and metric modulation, as well as minimalist techniques such as ostinato. For live performance, the piece requires sequencing software, which includes pre-recorded audio tracks played live alongside other pieces played live on a laptop. The pitch transitions from *Ab* to *C* to *E* to *Bb* to *D*, forming a pentagram within the Circle of Fifths, represent new innovations introduced by the composer and form the cornerstone of this composition [27].

Panggabean *et al* in their article entitled "Amir Pasaribu's 'Sampaniara' Music Composition in the Perspective of Indonesian Modern Music: Pentatonic Elements and Tonal Harmony Elements", examines the work of Amir Pasaribu, a composer who was famous in the pre-independence era until the revolution in Indonesia. One of Pasaribu's interesting works is '*Sampanaria*' which combines pentatonic and diatonic scales into his music. The author finds aspects of modern music in the piece including the use of the *A A B C B* format and the Free Form coda. There is a repetition of the theme with the exact same melody and rhythmic pattern. The texture or interweaving of sounds looks like homophony. Panggabean's study of '*Sampanaria*' is a valuable reference for how traditional scales and western music are combined in a musical work [28]. Jamnongsarn in his paper entitled "Musical Transculturation Between Javanese *Gamelan*, Angklung, and Thai Traditional Music", examines the cultural crossing of Javanese and Thai music that occurred in the 19th and 20th centuries.

Transculturation and hybridity in music occurred as a result of the influence of King V of Thailand's visits to Indonesia in 1896 and 1901 as well as the role of Indonesian immigrants to Thailand. The mixing of musical cultures can be found in many ways such as instruments, notation, Javanese accents in Thai music, and the use of scales (tuning systems). Even the way in which Thai musicians express their music in performance is very similar to Javanese *pengrawit*. This study provides very useful information in looking at the concepts of transculturation and musical hybridity that can inspire the creation of music through the combination of musical elements with different cultural backgrounds [29].

David Harnish in his article entitled "The World of Music Composition in Bali" reveals traces of the development of Balinese *gamelan* composition and explores music composition in certain genres, especially those closely related to political changes on the island. There are two genres that are the focus of his study, namely new creations and contemporary music where composers in their creative process, especially in relation to these two genres, are influenced by internal factors - the composer's musical cultural background utilizing musical genres within the scope of Balinese *gamelan* tradition, and external - musical experience outside the tradition of both archipelago music and western music including music of other countries.

Harnish argues that the composition of new music creations has changed over the past fifty years due to modernization in education and communication, lifestyle changes and government intervention. This article provides knowledge and understanding of the development of compositions



that utilize Balinese musical elements including Balinese *gamelan* instruments that can be used as a reference for writers/composers in realizing *Cane*' music compositions [30].

I Made Kartawan, *et al*, in a research report entitled "Reformulation of the *Patutan* System in *Gamelan Semar Pagulingan Saih Pitu*", examines the development of a modal system in one of Bali's seven-tone ensembles. The author reformulates existing models based on the opinions of a number of artists and scholars and then juxtaposes them. One of the interesting things is that the author found differences in the use of terminology or terms for the same type of *patutan* including the formulation or arrangement of the tones. However, the author concludes that there are seven types of *patutan* models in *Gamelan Semar Pagulingan Saih Pitu*: *selisir*, *baro*, *patemon*, *tembung*, *sunaren*, *pangenter alit*, and *pangenter ageng*. Each type of *patutan* produces a different mood. In the creation of the music composition '*Cane*', the research becomes the main reference about all types of *patutan* which are then elaborated and applied to the melody either played solo or combined with other melodies or types of *patutan* [26].

## 2. Method

The creation of the hybrid musical work "*Cane*" follows a research- and experiment-based approach. The research involves measuring the *jegogan*, *jublag* and *penyacah* instruments to obtain detailed data on their pitch and modal characteristics. Computer devices with Spectrum Analyzer software and mobile phones with Universal Tuner applications are used for measurement. To calculate intervals, the online tool at <http://www.sengpielaudio.com/calculator-centsratio.htm> was utilized. Through this data, new tones or frequencies that may arise from the utilization or combination of *patutan* types/models in *gamelan Saih Pitu* (seven tones) can be estimated. While the experiment approach is certain experiments based on the imagination of the composer.

Examples of such experiments are harmony and dissonance variations produced through playing tones in one type of instrument group or all types. The stages of the creative process of creating the music composition '*Cane*' refer to the stages written by P. Ance Panggabean, namely (1) Reading phenomena; (2) Finding ideas and themes; (3) Musical imagination; and (4) Experimentation. In addition to using the method of creation above, in the process of composing the music, evaluation is always carried out both in each stage and the achievement of progress during rehearsals and performances of the final result. In this way, it is possible for the composer to review the results that have been achieved and then as material for reflection in making improvements in order to obtain maximum results [31].

## 3. Results and Discussion

### 3.1. Creation process

The process of creating a work of art, whether musical or otherwise, is all activities that have relevance to efforts to realize the work of art in question, both directly and indirectly. What is meant directly are activities that basically involve aspects of the work such as idea discovery, idea formulation, music concept formation, instrument selection, training, performance and evaluation. Meanwhile, indirect activities include determining musicians, funding, scheduling rehearsal activities, selecting performance venues, and documenting. The emergence of the idea or idea to process the *patutan* on *gamelan Semar Pagulingan Saih Pitu* into a hybrid musical work is a longtime desire of the composer. By paying attention to the richness of the mood in the *gamelan*, it has accumulated stylists to explore it and this is a very wide "field" to be utilized as one of the elements of creating a new musical work. This desire was finally welcomed because the stylist could realize it through the funding support of the Research, Creation, Art-Design Dissemination Grant Program (P2DSD) organized by the Institute for Research and Community Service and Educational Development (LP2MPP) ISI Denpasar, through DIPA Fund 2024. The author is very grateful and thankful for winning the grant so that this music composition work can be realized. There are several main activities carried out as stages of the process of composing the musical work '*Cane*', which are as follows:

- Choosing a musician: At this stage, the composer selected musicians consisting of two students (research members) and four other musicians. The musicians were chosen by considering their musical skills or abilities. After that, the composer initiated a meeting with the musician

candidates which was held on May 13, 2024, at Sanggar Sidakarya, Jalan Sidakarya No. 79 Denpasar. At that time all the musician candidates were willing to participate and be fully involved in the creation of this music composition work 'Cane'.

- **Setting the instrument:** Instruments are one of the essential elements for a successful musical performance. Thus, choosing the right instrument in accordance with the concept of the creation of the work is certainly not an easy thing. Because if the instrument used is not suitable or does not have good quality, it will have implications for the decline in the quality of the performance itself. For the music composition work 'Cane', the stylist chose to use the *gamelan Semar Pagulingan Saih Pitu* owned by ISI Denpasar. The *gamelan* has good sound quality and scale. For the purpose of creating the musical work 'Cane', the stylist only used a few instruments, including 2 pieces of *penyacah*, 2 pieces of *jublag* and 2 pieces of *jegogan*. The three types of instruments are generally grouped as melodic instruments where they function as melody carriers. They have different octave levels from highest (*penyacah*), medium (*jublag*) and lowest (*jegogan*).
- **Establish a schedule of training activities:** The rehearsal schedule is not set on a regular basis, but is incidental and flexible which is done according to the agreement and time availability of all musicians. This allows us to organize the meeting time appropriately and produce cohesive attendance. Information or discussion on setting an updated schedule is done through Whatsapp Group. The use of communication media like this is very effective and efficient where it is not only used as a means of disseminating information on rehearsal schedules but also helps the composing process where notations and audio recordings of rehearsal progress can be disseminated through this media.
- **Learning method:** This stage describes how to transmit the musical concept from the composer to the musician. Traditionally, there are three methods known as: *meguru panggul*-where the instructor plays directly the pattern taught and the students pay attention to the pelvic movements of the instructor then the students imitate and play it, *meguru kuping*-students listen first then play it, and *meguru rasa*-students are encouraged to actively interpret certain patterns based on the student's experience, hearing and playing the pattern (enculturation). In the transmission process of the music composition 'Cane', the notation method is used. In addition, for the effectiveness of the training process, other methods are also used, such as *meguru kuping*, *meguru panggul* and *meguru rasa*. Fig. 1 illustrates the composing process of the music 'Cane'.
- **Recording and performance:** The documentation of the work includes audio and visual (video) recordings. Audio recording is not only done for the final result of the work but also for each rehearsal session. This is intended to determine the progress of the achievement of each rehearsal process and as a correction material for both the composer himself and the musicians.



**Fig. 1.** The process of composing

The composer's personal experience as a musician and *gamelan* tuner has also contributed to the creative process of creating music, including this 'Cane' composition. As a musician who often hears and plays *gamelan Saih Pitu*, this experience has strengthened his imagination, intuition and knowledge of the modulation system, both its formulation and application in the repertoire. However,

determining the pitch (frequency) of a particular type of *patutan* is very difficult to do considering the variations in tuning that occur in most Balinese music including the *Semar Pagulingan Saih Pitu gamelan*. I believe that the experience of hearing and playing music, especially as a daily life, can shape one's musicianship and as a way of maintaining the music itself. In his thesis "*Melajah Nabuh: Teaching Balinese Gamelan within the Context of the University of Canterbury, Christchurch, New Zealand*," Kartawan suggests that Balinese people are immersed in gamelan music from birth, through seeing, listening, and eventually playing. He states:

*"Many scholars recognize that young Balinese students accept the teaching and learning methods of music as a cultural norm. For example, the rote learning approach is used as a teaching method when playing music. Balinese children learn the music naturally: how to hold mallet, how the hands move when striking or damping gamelan keys, and how to play music without notation". [32]*

This early exposure to music not only shapes musicianship but also enhances a composer's sensitivity in utilizing musical elements for their creations. In line with the above, expertise as a *gamelan* tuner is also formed from listening experiences that are trained continuously so that they can reach a certain level of ability. In this case, the ear's sensitivity to frequency, interval, octave, wave and mood is the most important aspect. In relation to the creation of the music composition '*Cane*', knowledge of the mood in the modulation system is the most basic thing. As mentioned above, '*Cane*' is a musical work that carries the concept of processing the types of *patutan* in the *gamelan Semar Pagulingan Saih Pitu*. Thus, the arranger's knowledge as a *gamelan* tuner can be useful in understanding the principles of the tuning system including harmony and dissonance.

### 3.2. Creation Source








The musical composition '*Cane*' is an interpretation of the form of *Cane* offerings in Balinese Hindu ceremonies, where it is a combination of various small *banten* materials and also has a varied shape. *Cane* is a small *upakara/banten* that is offered during a plenary or official *pesangkepan/parum* (meeting) in the village or in other traditional institutions. *Cane* usually consists of several small *upakara* elements put into a *dulang* (container) decorated with *sesiyokan* or *jaro* made of *janur* (palm leave) in the form of a circle. *Cane* consists of three main elements, namely base *lekesan* (*betel nut*) 11 pieces, *pasucian*, and *canang*. The purpose of offering *banten Cane* is to request that the meeting run well, get the expected results and all decisions taken can be obeyed with full awareness by the local community.

The shape of the *Cane*, which is an integration of various materials, sparked the composer's awareness and inspired him to make it into a musical artwork. The combination of various materials is represented as the unification of various musical elements, both based on traditional Balinese and Western music components, into a unified form of musical composition. Of course, this unification poses a new challenge because it can potentially cause conflicts in terms of musical concepts and expressions in performing the music because it is formed from two different musical cultural backgrounds. An example is interpreting the time signature and starting the beat. In the Western concept, the rhythm of the beat tends to be regular and if played repeatedly it will more or less sound the same. This is quite different from the rhythm in Balinese music which tends to be dynamic and even the timing is always different. The combination technique often results in a new type of music known as hybrid music.








### 3.3. Concept of Creation, *Patutan* and Notation

The initial concept of the music composition '*Cane*' was to combine elements of technique and instruments from Balinese and Western music traditions. The plan is to use a type of percussion instrument, namely a group of bladed instruments *Gamelan Semaradhana*-instruments that function as playing melody and use pentatonic scale such as *penyacah*, *jublag* and *jegogan*, and Xylophone-instrument elaboration that uses diatonic scale. The musicians who will play the composition consist of 10 (ten) players. However, due to the difficulty of finding someone who would allow the loan of the Xylophone instrument, the music was focused on using only the *Semaradhana gamelan*. This constraint not only had the consequence of changing the concept of the composition but also the number of performers who would play it, which consisted of only six musicians. Table 1, Table 2, and Table 3 present the measurement results for each pair of *jegogan*, *jublag*, and *penyacah* instruments.








**Table 1.** Measurements of the *jegogan* instrument

Balinese Syllable	Pengumbang (Pg)				Pengisep (Ps)				Difference Pg & Ps (Hz)
	Pitch (Hz)	Interval (Cents)	Western Scale	Octave	Pitch (Hz)	Interval (Cents)	Western Scale	Octave	
 Ding	156.12		D#	3	161.58		E	3	5.46
		115.38				115.92			
 Dong	166.88		E	3	172.77		F	3	5.89
		210.16				198.85			
 Deng	188.42		F#	3	193.8		G	3	5.38
		187.31				182.37			
 Deung	209.95		G#	3	215.33		A	3	5.38
		169				165.05			
 Dung	231.48		A#	3	236.87		A#	3	5.39
		154				150.61			
 Dang	253.02		B	3	258.4		C	3	5.38
		174.97				171.50			
 Daing	279.93		D#	4	285.31		D#	4	5.38

**Table 2.** Measurement of the *jublag* instrument

Balinese Syllable	Pengumbang (Pg)				Pengisep (Ps)				Difference Pg & Ps (Hz)
	Pitch (Hz)	Interval (Cents)	Western Scale	Octave	Pitch (Hz)	Interval (Cents)	Western Scale	Octave	
 Ding	320.73		D#	4	326.78		E	4	6.05
		104.60				106.58			
 Dong	340.77		E	4	347.53		F	4	6.76
		190.28				188.91			
 Deng	380.86		F#	4	387.6		G	4	6.74
		163.11				156.53			
 Deung	417.94		G#	4	424.28		G#	4	6.34
		112.61				151.04			
 Dung	456.03		A#	4	462.96		A#	4	6.93
		200				198.41			
 Dang	512.16		C	5	519.18		C	5	7.02
		158.52				157.50			
 Daing	561.27		C#	5	568.63		C#	5	7.36








































**Table 3.** Measurement of the *penyacah/pemade* instrument

Balinese Syllable	Pengumbang (Pg)				Pengisep (Ps)				Difference Pg & Ps (Hz)
	Pitch (Hz)	Interval (Cents)	Western Scale	Octave	Pitch (Hz)	Interval (Cents)	Western Scale	Octave	
 Ding	641.5		D#	5	646.67		E	5	5.17
		89.48				90.46			
 Dong	675.53		E	5	681.36		F	5	5.83
		173.38				170.47			
 Deng	746.69		F#	5	751.87		F#	5	5.18
		197.45				195.81			
 Deung	836.9		G#	5	841.91		G#	5	5.01
		186.53				185.49			
 Dung	932.11		A#	5	937.13		A#	5	5.02
		134.27				133.57			
 Dang	1007.28		B	5	1012.3		B	5	5.02
		148.49				148.25			
 Daing	1097.49		C#	6	1102.81		C#	6	5.32



The data is then used as a reference in exploring the *patutan* model and discovering the possibility of new frequencies when combining different *patutan* models at the same time in the *gamelan Saih Pitu* scale. Table 4 is the tonal arrangements of the *penyacah*, *jublag* and *jegogan* instruments, and the types of *patutans* in *Semar Pagulingan Saih Pitu*. The composer understands that there are variations in tuning that almost occur in every type of *gamelan* ensemble/barungan, including those that occur in *gamelan Semaradhana* and *Semar Pagulingan Saih Pitu*. This is partly due to the absence of a standard pitch in these types of *gamelan* ensembles so that differences in mood characteristics will inevitably occur. However, in the musical arrangement of 'Cane', the composer puts aside these differences and emphasizes the exploration of patter according to the formulation or pattern of intervals formed based on the pentatonic scale.

Table 4. *Patutan* Formulation

I	II	III	IV	V	VI	VII	VIII	Type of <i>Patutan</i>
			-			-		<i>Patutan Selisir</i>
1	2	3	-	5	6	-	1	
-				-			-	<i>Patutan Baro</i>
-	2	3	4	-	6	7	-	
	-				-			<i>Patutan Patemon</i>
1	-	3	4	5	-	7	1	
	1	-				-		<i>Patutan Tembung</i>
1	2	-	4	5	6	-	1	
-			-				-	<i>Patutan Sundaren</i>
-	2	3	-	5	6	7	-	
	-			-				<i>Patutan Pangenter Ageng</i>
1	-	3	4	-	6	7	1	
		-			-			<i>Patutan Pangenter Alit</i>
1	2	-	4	5	-	7	1	

In addition, the combination of melodies, rhythms, motifs and others, based on the concepts of Balinese *gamelan* and Western music, is another main idea of this work. Box notation has been used to record and assist the process of composing and performing the music composition 'Cane', as evidenced in Fig. 2. This system is very common in music notation. This notation usually consists of several rows of boxes and where each box represents a unit of time (beat). An empty box indicates the absence of any event (sound). In addition, several types of symbols are also used especially to mark the notes played by certain instruments, repetitions and desired playing techniques. The numbers 1,2,3,4,5,6, and 7 on the beat indicate the notes played according to the sequence of notes on the instrument.



Fig. 2. Recording process

### 3.4. Form of Work

The structure of the music composition 'Cane' consists of five parts where each part has its own melodic contour. Contour in music means the shape and direction of melodic lines or musical grooves in a song. The contour can be smooth or jagged, and with different types of movement. The best melodies are those with varied contours. This is also the case in the music composition 'Cane' where

the nature of the melody, which is sometimes symmetrical or contrasting, becomes the identity of each part. The concept of the music can be described as follows:

- Part A: This section consists of seven melodic lines where each line consists of 16 beats played together by all instruments. Each melodic-line also uses one type of patter. This section is intended as an introduction to the arrangement or formulation of all types of *patutan* through melody so that the listener can understand the differences and mood characteristics of each type of *patutan*. The melody is played repetitively so that the listener's perception of the *patutan* played on the melody is established.

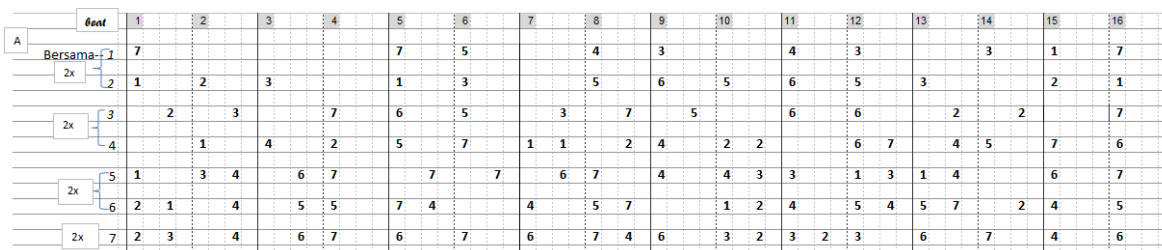


Fig. 3. Melodic Contour of Part A

The unison playing pattern is strongly emphasized in this section, as shown in Fig. 3. Each line describes each type of *patutan*: line 1 plays *patutan* patemon, line 2 *patutan* selisir, line 3 *patutan* sunaren, line 4 *patutan* tembung, line 5 *patutan* pangenter ageng, line 6 *patutan* pangenter alit, and line 7 *patutan* baro.

- Part B: In this section both *jegogan*, *jublag* and *penyacah* have their own melodic patterns but sometimes meet on the same beat, namely on beats 1 and 8. This section only plays *patutan* selisir and is repeated 2 times round.

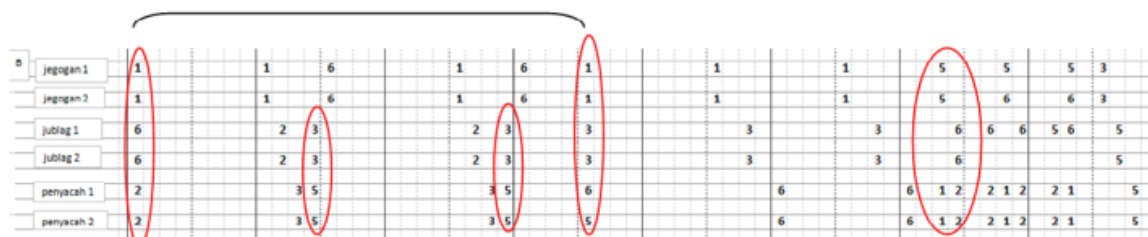


Fig. 4. Melodic Contour of Part B

At beats 1 and 8 the three instruments play different notes, resulting in dissonant frequencies (not cords), as illustrated in Fig. 4. Similarly, the sub-divisions of beats 3, 6, 13, 14, and 15 involve only 2 groups of instruments, both between *penyacah* and *jublag* and between *penyacah* and *jegogan*.

- Part C: In this section, the development is mainly in melody and harmony by utilizing the baro *patutan*. When compared to the previous section, more complex melodic patterns with different phrases occur especially in the *jublag* and *penyacah* instruments.

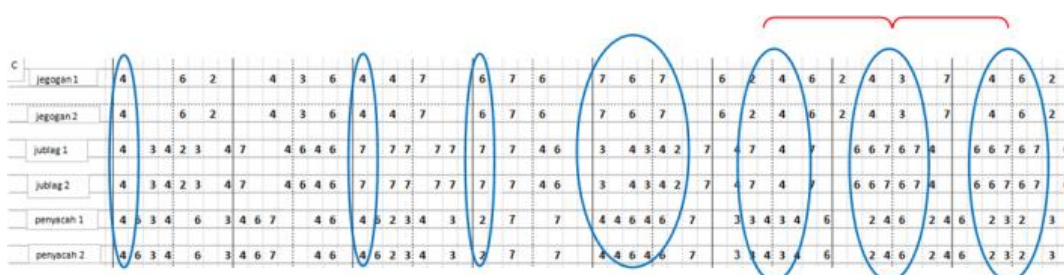


Fig. 5. C Section Melodic Contour

As shown in Fig. 5, polyphonic motifs are evident in this section, where three groups of instruments play different patterns simultaneously within a single timeline. This is very rare in traditional Balinese compositions. Dissonance is also still present in this section and appears regularly especially in the final phrase.

- Part D: The main pattern in this section is in the first half (8 beats) of the whole melody which consists of 16 beats. There is no change whatsoever when played in the next half. So the repetition is very intact.

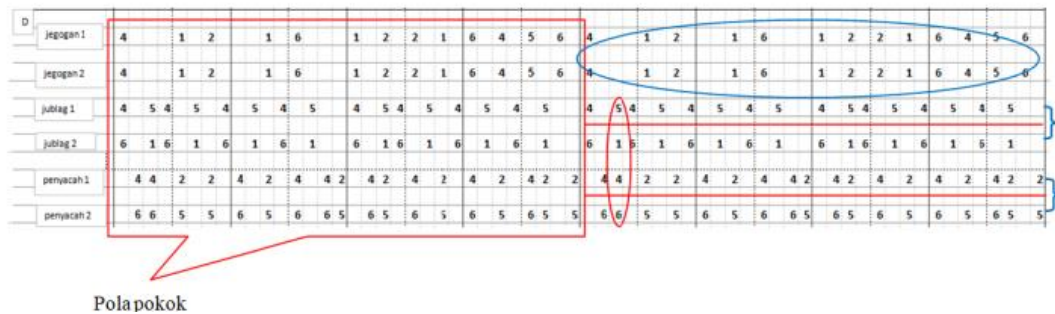


Fig. 6. Melodic Contour of Part D

However, if you look closely at the pairs of instruments, especially the *jublag* and *penyacah* have different melodies even though the rhythmic patterns are the same, as indicated in Fig. 6. In addition, each pair of *jublag* and *penyacah* instruments sometimes form a dissonance (formed from 4 different tones). So in this section there are also polyphonic motifs with short phrases played in repetition and the focus of exploration on *patutan* Tembung.

- Part E: In this section each type of instrument has its own melody with a length of 16 beats and is played in pairs. This section only uses *patutan* Selisir although it is not played entirely by one type of instrument but is spread throughout the section.

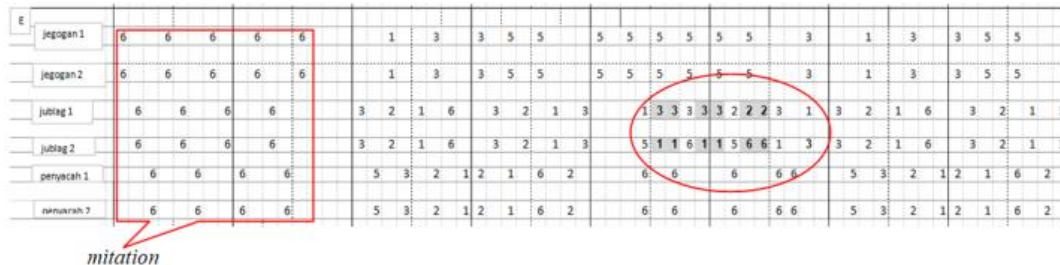
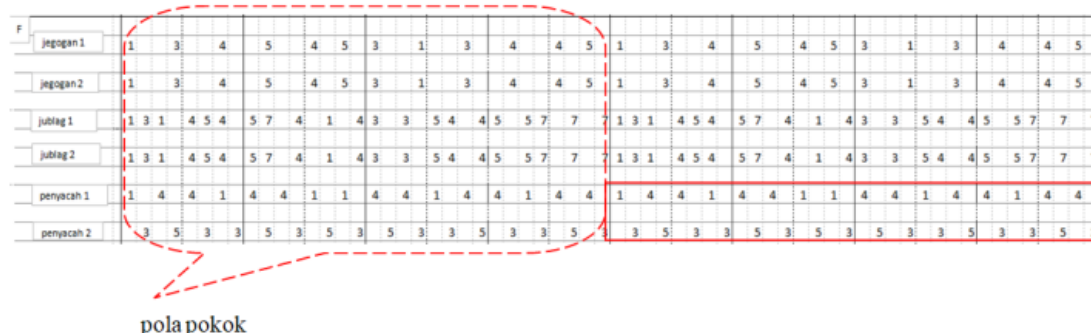


Fig. 7. Melodic Contour of Part E

The imitation pattern presented at the beginning of the phrase is played at different octave levels from the lowest note (*jegogan*) to the highest note (*penyacah*). What is somewhat different when compared to the other sections is the combination of techniques played by the *jublag* instrument (black block mark), as highlighted in Fig. 7.

- Part F: This section features *patutan* patemon processing played by all instruments. One melodic line is 16 beats consisting of an 8-beat phrase, seen in the first half which is then played again in the next half. There is a crossing playing pattern (in Balinese music tradition called *nyogcag*) by the singer who plays 2 notes each. This section is played at a fast tempo and repeats 3 times (loud-low-hard volume). Indeed, the most repetition occurs in this section which is intended to give the impression of a climax, as portrayed in Fig. 8.



**Fig. 8.** Melodic Contour of Part F

Each part of the music composition '*Cane*' is a combination of musical elements based on the concept of Balinese *gamelan* music tradition and Western music. Although the composer realizes that its application is very limited in scope. However, this can at least represent the realization of music with the theme of hybridity by utilizing the modulation system on the *gamelan Semar Pagulingan Saih Pitu* and the technical aspects of the two different musical cultures. Of course, the composer understands that further development of the concept of the *patutan* system and the combination of other musical elements is very open and at the same time encourages the growth of creativity in the creation of other works in the future.

### 3.5. Aesthetic Analysis

In this work, the exploration of patten becomes a key element through melodic processing and is arranged in a specific rhythm, dynamics and tuning. Through aesthetic analysis, we can understand how these elements interact with each other and form a unique musical structure.

- Section A: The dominant unison pattern in this section gives a sense of unity and clarity in the delivery of each *patutan*. It helps the listener to focus on the individual characteristics of each *patutan*, so that the differences in mood and tonal color can be perceived more clearly, as shown in Fig. 3. This section intentionally uses the unison motif to introduce the mood characteristics of each *patutan* to the listener through repetition, so that the listener can grasp the subtle differences between each type of *patutan*.
- Section B: This section uses *patutan Selisir* and explores the dissonance in melody between *jegogan*, *jublag* and *penyacah*. These three instruments have different melodic patterns but sometimes meet on the same beat, creating dissonance frequencies. The use of dissonance on beats 1 and 8 and certain sub-divisions create an interesting tension, giving a different color to the *patutan Selisir*. Dissonance here is not only an aesthetic element but also provides dynamics and depth to the composition, reflecting the complexity and diversity in *patutan Selisir*, as illustrated in Fig. 4.
- Section C: This section introduces the *patutan Baro* with more complex melodic and harmonic development. A polyphonic pattern is evident where the three groups of instruments have different patterns and are played simultaneously. This is rare in traditional Balinese compositions, giving the piece a new feel. The regular use of polyphony and dissonance in the final phrase provides a rich contrast between harmony and disharmony, enriching the musical texture and deepening the emotional expression of the *patutan Baro*.
- Section D: A section that features a complete repetition of the main pattern consisting of 16 beats, with different melodies between *jublag* and *penyacah* despite the same rhythm. Polyphonic motifs with short phrases played in repetition provide a focus for exploration of *patutan Tembung*. The repetition in this section provides stability and familiarity, while the melodic differences between the instruments add a richer harmonic dimension, creating deep emotional layers.
- Section E: This section uses *patutan Selisir* with imitation patterns at various octave levels, from the lowest to the highest notes. The combination of different techniques, especially on the *jublag* instrument, provides variety and dynamics in the processing of the *patutan Selisir*. The



imitations played in pairs create a dialog between the instruments, giving a lively feeling of cohesion and interaction between the various voices in the ensemble.

- Section F: This section emphasizes *patutan* Patemon with a fast tempo and repetition that gives the impression of a climax. The *penyacah'snyogcag* playing pattern, with its use of two tones, creates intense dynamics and reinforces the sense of culmination. Repetition and varying volume (*loud-loud-loud*) add to the emotional intensity, giving the composition a strong resolution and leaving a lasting impression on the listener.

The musical work "*Cane*" demonstrates a fusion of traditional Balinese concepts and elements from Western music, resulting in an explorative and innovative hybrid work. Although its application is limited in scope, this work successfully represents how the *patutan* system can be used in a modern and global context. Further development of the concept of *patutan* and the fusion of other musical elements could encourage creativity in future work, bridging tradition and innovation.

#### 4. Conclusion

The creative process of the musical work "*Cane*" involves two key aspects: technical—processing motifs, melodies, rhythms, and dynamics—and instrument tuning, utilizing the modulation system (*patutan*) on the *gamelan Semar Pagulingan Saih Pitu*. For the composer, exploring these aspects presents a unique challenge, as the strong identity of the combined elements can give the initial impression that the work lacks a clear identity or feels "at a crossroads." However, this is natural, as it often takes time to fully accept new concepts. Additionally, the use of notation in rehearsals and performances was a new experience for the musicians. In the first week of rehearsals, they struggled to read the notation while playing their instruments, as they were accustomed to learning music through the traditional rote method. This work does not emphasize musical strata as is often the case in Balinese *gamelan* compositions - one melodic line can be played by several types of instruments. In the composition of '*Cane*' the composer only focuses on the melodic instrument group (*jegogan*, *jublag*, and *penyacah*). The musical structure consists of five parts where each part explores one/more *patutan* models, except for part 1 which uses all models, through the processing of melody, rhythm, dynamics and tempo. The combination of musical elements includes; (1) Balinese musical traditions such as *kekenyongan*, *nyongcag*, *ngempyung* and *kekilitan* motifs, and (2) Western musical elements including unison, harmony, dissonance, polyphonic and imitation. Through the combination of these elements, it is hoped that this work can achieve the musical aspects as conceptualized as hybrid music.

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