

Reconstruction of Harmony Concept in *Karawitan* through Re-Reading the Meaning of *Angkep-angkepan* Gamelan Bali

I Ketut Ardana¹, Tri Wira Dimas Adi Wijaya², Maria Goretti Indah Della Consetta³

{ketut.ardana@isi.ac.id¹, trywiradimas@gmail.com², mariaconsetta14@gmail.com³}

Indonesian Institut of the Arts Yogyakarta, Griya Pratama Regency, RT 07, No 5, Sewon, Bantul DI Yogyakarta¹, Indonesian Institut of The Arts Yogyakarta, Parangtritis Street, Km 6.5, Sewon, Bantul, DI Yogyakarta², Indonesian Institut of The Arts Yogyakarta, Parangtritis Street, Km 6.5, Sewon, Bantul, DI Yogyakarta³

Abstract. Issues similar to harmony (western music), such as *laya*, *padang-ulihan/basing-tundun*, *angsel*, *polos-sangsih*, and *angkep-angkepan* (Balinese music), cannot be called harmony. Therefore, it is rare for research on these issues to be a big topic. It will be a source of knowledge rooted in Indonesian traditions if investigated in terminology, conception, and terms. This problem prompted researchers to research Balinese gamelan *angkep-angkepan* as an interpretation of Balinese *karawitan* harmony. This research was conducted to reconstruct the concept of *karawitan* harmony through re-reading the meaning of *angkep-angkepan* of Balinese gamelan. The study's results formulated the idea of *angkep-angkepan* (harmony) Balinese gamelan/*karawitan* as a reinterpretation of the science of harmony or the concept of harmony in *karawitan*.

Keywords: *Angkep-angkepan*, Balinese gamelan, *karawitan*, harmony

1 Introduction

Karawitan has been one of the material objects of ethnomusicological research [1] [2] anthropology [3][4][5][6], and sociology [7][8][9][10][11] [12]). Usually, these studies place more emphasis on context issues than texts, so the development of their fields of science is centered on anthropology, sociology, cultural sciences, and neurology. On the other hand, the terminology, conception, and specific terms of *karawitan*: *laya*, *padang-ulihan/basang-tundun*, *irama*, *angsel*, and *angkep-angkepan* [13], cannot be raised as an important topic due to the absence of theory. In fact, in terminology, conception, and these terms, if researched, will become a source of knowledge purely rooted in Indonesian traditions. This problem is due to the absence of theories that can be used as formal objects of research. Even if researched, some of the difficulties of the above texts usually use western music theories. However, sometimes it is not

appropriate because some of the problems that are as specific and concrete in *karawitan* are very different from western music. This fact also shows that the issue of the (intra-musical) text has not had an intense climbing and theoretical basis in discussing the problems of the text. It is what caused the science of *karawitan* not to develop. This lack of rigorous concepts and theories requires that an author or researcher always use the term western music – including its definition – in some topics related to the (intra-musical) text. On this basis, *karawitan* thinkers held a National Symposium on *Karawitanology* in 2015. They strongly believe in presenting a *karawitan* science approach to develop *karawitan*. This first problem encourages researchers to research by raising the *angkep-angkepan* or harmonization of Balinese gamelan.

Angkep-angkepan is a concept that underlies the birth of the practice of harmony or harmony of sounds in Balinese *karawitan*. Harmony is the hope in every music/character, including the artist [14]. If western music has a concept of harmony known as harmony theory [15], [16], [17], [18], *karawitan* has the same thing; it has only not been theorized. Therefore, *angkep-angkepan* research as part of the interpretation of harmony is one of the efforts to develop the discourses in *karawitan* into a theory.

Referring to the background above, the problem contained in this study is the emptiness of *karawitan* theories, especially about harmony. Exploring the emptiness of this theory is a renewal of knowledge that can provide an opening for research. In addition, this kind of topic has also never been researched before. Based on these problems, the urgency of research is: First, participate in completing the theory of *karawitan* for the world of formal higher education; Second, participate in realizing and succeeding in the vision and mission of the ministry of education, culture and higher education, namely producing Smart and Competitive Indonesian Personnel, especially specifically on intellectual intelligence points in the form of self-actualization through thought processes to gain competence and independence in science and technology. The specific specification of this Basic Research Scheme is the primary research in the field of art, which wants explicitly to formulate a theory in the context of developing art theory.

2. Result of Reaserch

2.1 Understanding *Angkep-angkepan*

I started by discussing the meaning of *angkep-angkepan* through the meaning of the word and the terminology used in Balinese *karawitan*. The terms *angkep-angkepan* comes from the word *angkep*. This word is the Balinese language that is also often used by Balinese people in their daily lives. According to the Balinese Dictionary, the word *angkep* means group or combination. In addition to *angkep-angkepan*, the root of the word *angkep* is also used in other phenomena, such as *sangkep*. The word *sangkep* comes from the word *angkep*, which is added with the prefix *sa*. *Angkep* means merging, while *sa* means one. Thus *sangkep* means the various opinions gathered into one common decision. This joint decision is the goal of *sangkep*.

The term *angkep* is used in various fields of activity carried out by the Balinese people. In addition to those already mentioned above, the term *angkep* is also used to build houses, especially in context, the pillars supporting houses made of bamboo and wood.

The meaning of *angkep-angkepan* is from the word *angkep*, which means group. This set means things related to sound. Sets of sounds created into one can be grouped into three. All three are based on the frequency and material from which the sound is sourced. Periodically, the set of sounds made into one is a tone, while a collection of sounds based on the material. This sound is incorporated from 2 or more sound sources played simultaneously. Therefore, this kind of *angkepan* is born from a combination of sounds sourced from wood, bamboo, iron, and bronze. These sounds have one type of sound that has different characteristics.

Secondly, *angkep-angkepan* is formed based on frequency. It relates to the Balinese gamelan tone system. Traditionally, *angkep-angkepan* is interpreted as a system of scale sequences from high to lowest. The following is an example of conventional *angkep-angkepan* in Balinese *karawitan*.

The term *angkep-angkepan* in the study is interpreted more broadly based on the terminology and meaning of the word attached to the term *angkep-angkepan*. The various definitions of *angkep-angkepan* can be configured in this study, although factually, in *karawitan* society, sometimes the purpose is narrower. However, suppose it is based on the word's meaning, relevant to various cultural practices, musicality, and others. In that case, it is possible to eat about Balinese gamelan *angkepan* from multiple perspectives.

2.2 Old Meaning

2.2.1 Meaningful questionnaires as *gembyangan* (octaves)

However, researchers first describe the meaning of *angkep-angkepan* that has been understood in *karawitan* society. Traditionally, *angkep-angkepan* in *karawitan* is a model of the alignment system used by a gamelan maker (*pande*) in making the necessary sequence of notes in a Balinese gamelan (*gong gede*, *semar pagulingan*, *gong kebyar*, and so on). In this system, *angkep-angkepan* is a space to create a tonal area, meaning how wide and many low-pitch levels are needed in a gamelan. For more details, the author completes with data about the *angkep-angkepan* system in the form of a data table below:

JG	1	2	3	5	6															
JB						1	2	3	5	6										
PN									5	6	1	2	3	5	6					
TG	6	1	2	3	5	6	1	2	3	5										
TA					6	1	2	3	5	6	1	2	3	5						
GP						1	2	3	5	6										
GPP											1	2	3	5	6					
GC																1	2	3	5	6
RP				5	6		2	3	5	6										
Barangan							3	5	6	1	2	3	5	6	1	2	3	5		

Fig. 1. Balinese gamelan *angkep-angkepan* system

Information

- JG* : *Jegogan*
- JB* : *Jublag*
- PN* : *Penyacah*
- TG* : *Terompong Ageng*
- TA* : *Terompong Alit*
- GP* : *Gangsa Panunggul*
- GPP* : *Gangsa Penggangkep*
- GC* : *Gangsa Curing*
- RP* : *Reyong Penembung*

Conceptually, the table above shows four tonal levels in the system that can be applied to the tone of each gamelan instruments. The highest level of notes is found in the tones of the instruments of *gangsa curing* and *reyong barangan*. Meanwhile, the next level, the middle tone level, is found in the tone region of the *gangsa penggangkep* instrument; some of the notes are carried out, especially the central region, most of the notes of the *penyacah* instrument, and a small part of the *terompong* tones. Furthermore, the third level region – which belongs to the middle level – is found in the region of the notes of the *gangsa panunggul* instrument, some of the notes from the *terompong alit* and a small part of the *terompong ageng*, at this third level also applied the notes of the *jublag* instrument. The last level or lowest notes of the alignment system *angkep-angkepan* unit is the sequence of notes found in the region of the notes of the *jegogan* instrument and most of the notes of the *terompong ageng* instrument.

The *angkep-angkepan* system can be translated according to the tastes of each gamelan maker. For example, there are one or more levels of tone sequences in one instrument/*ricikan/tungguhan* (*gangsa penunggal*, *pengangkep*, and *curing* instruments) used in gamelan *gong gede*. [19]Next is an example:

<i>Gangsa Panunggul</i>	1̣ Ding	2̣ Dong	3̣ Deng	5̣ Dung	6̣ Dang
<i>Gangsa Penggangkep</i>	1 Ding	2 Dong	3 Deng	5 Dung	6 Dang
<i>Gangsa Curing</i>	1̇ Ding	2̇ Dong	3̇ Deng	5̇ Dung	6̇ Dang

Fig. 2. Balinese gamelan angkep-angkepan system on gangsa instruments

The above is different from the gamelan gong kebyar. Each kebyar gong instrument uses more than two *angkepan* tone area of the device. For example, in the types of *ugal*, *pemade*, and *cantil* instruments (which are commensurate with the *gangsa panunggul*, *pengangkep*, and *curing* in gamelan gong gede), the arrangement of the notes used in one gamelan gong kebyar [19], as follows:

Ugal	2̣	3̣	5̣	6̣	1̣	2̣	3̣	5̣	6̣	1̣
	Dong	Deng	Dung	Dang	Ding	Dong	Deng	Dung	Dang	Ding
<i>Pemade</i>	2̣	3̣	5̣	6̣	1̣	2̣	3̣	5̣	6̣	1̣
	Dong	Deng	Dung	Dang	Ding	Dong	Deng	Dung	Dang	Ding
Kantil	2	3	5	6	1̣	2̣	3̣	5̣	6̣	1̣
	Dong	Deng	Dung	Dang	Ding	Dong	Deng	Dung	Dang	Ding

Fig. 3. Angkep-angkepan system in Balinese gamelan on ugal, pemade, cantile instruments.

In a single gamelan, a minimum of two octaves of scales or more are used on different instruments. In this context, *angkep-angkepan* is the number of octaves in a gamelan.

The data above interprets *angkep-angkepan* as a system showing a high and low number of notes from one ensemble with several gamelan instruments represented. In other words, this meaning only shows the octave system (*gembyangan*) in a gamelan. Still, it is not straightforward to interpret *angkep-angkepan* into a game engineering system, even though engineering is a system that should be integrated with the ensemble contained in gamelan.

2.3 New Meaning

2.3.1 *Angkep-angkepan* means as a playing technique of *Polos-sangsih*, *Nelu* and *Ngempat*

In addition to being meaningful about developing the instrumentation system of tuning (one ensemble and one gamelan instrument), *angkep-angkepan* is also very relevant to be associated with the Balinese gamelan playing technique called (*polos-sangsih*) and the *nelu*, *ngempat*, and *ngembat* techniques.

The *basic* technique is known as a technique played by two players with the same instrument (in pairs). This technique is mainly played by agencies that serve as song decorators. As in *karawitan*, Bali is known for the functions of different instruments such as that function as *bantang gending* (main melody), *gending* (melodi), *papayasan* (interlocking), *pengramen* (remender), and *pemanis* (sweetener). *Polos-sangsih* is a technique played by an agency that works as a *papayasan* (ornament). Thus, this technique is played by instruments serving as *papayasan*, namely *pemade*, *kantil*, and *ugal*.

It is applied in various gamelan compositions, both traditional, new, and contemporary. Next, data on the pattern of the musicality of songs (*gending*) played in pairs with a simple technique. Traditionally, *polos-sangsih* is used to weave a melodic way whose cultivation is based on the development of other melodies called *bantang gending*. Next comes the notation about *polos-sangsih* in tradition.

Bantang	.	1	.	5	.	3	.	1	.	3	.	2	.	6	.	5
Gending	.	1	.	5	.	3	.	1	.	3	.	2	.	6	.	5
Polos	61.6	1̄ 5̄	65.6	5̄ 6̄	56.5	6̄ 3̄	3̄ 3̄	1̄ 3̄	23.2	3̄ 2̄	12.1	2̄ 6̄	56.5	6̄ 2̄	2̄ 2̄	5̄ 1̄
Sangsih	6.56	.6.1	6.16	.5.3	5.35	.5.5	.5.2	.2.1	2.12	.1.6	1.61	.5.3	5.35	.1.3	.1.3	.6.5

Angkep-angkepan polos-sangsih ←

Fig.4 Angkep-angkepan system in a plain context

The pattern above is an example taken from the accompaniment gending for Pendet dance. This traditional Balinese dance is well known by the public and is commonly played by most Balinese *karawitan* groups.

It has to be a whole. The unity is an interweaving of melodic patterns. It means melody traditionally if it is played through a *polos* design. Its meaning is a pattern that can decorate the underlying theme and make it aesthetic. In addition, the straightforward and *sangsih* ways are realized through techniques of *beburu*. This technique is like an analogy of people going hand in hand, chasing each other. Therefore, the *polos-sangsih* contained in the *gending* interprets the philosophy of the hunt. *The polos-sangsih* shows people who are in tandem or chasing; otherwise, if it is only played by a *polos* pattern or *sangsih* alone, it will not show a way that is chasing or going hand in hand. This requires that *polos-sangsih* is a unit so that this can be referred to as Balinese gamelan *angkepan*.

In new creations, the pattern is also applied more freely. That is, the design is independent of pre-existing models. The composer interprets it more. However, the same thing with tradition is that the incorporation is a melodic interweaving that embellishes the gending. The playing technique used is not found in the concept of tradition in general. That is, the method is engineered with the interpretive ability of the composer. For example, to show that the *polos-sangsih* are a unit in a melodic interweaving is the gending "*tabuh* of Lekesan's creation." Here is the notation data:

Gending	. 6̄	1̄ 6̄	5̄ 6̄	3̄	5̄ 6̄	1̄	. 6̄	3̄	. 6̄ 1̄	6̄ 3̄	. 5̄	. 3̄	5̄ 3̄	2̄ 3̄	. 5̄	. 3̄	3̄ 5̄	3̄ 6̄	1̄
Polos	.	.	.	3.53	.35.	111.	1.1.	3.53	.35.	111.	1.1.	3.23	.323	.323	. 32	.3 5	333.	3	12.2
Sangsih	.	.	.	.65.	6.56	.112	.2.2	.65.	6.56	.112	.2.2	.56.	56.6	56.6	5 16	.1 5	1115	.	5.35

Angkep-angkepan polos-sangsih ←

Gending	$\overline{6} \ 1 \ 5 \ 2 \ 3$	$\overline{5} \ 3 \ \overline{5} \ 3 \ \overline{2} \ 3 \ 1$	$\overline{6} \ 1 \ 5 \ 2 \ 3$	$\overline{5} \ 3 \ \overline{5} \ 3 \ \overline{2} \ 3 \ 1$
Polos	$\overline{12.2} \ \overline{56.6} \ \overline{52.2} \ \overline{32.2}$	$\overline{32.2} \ \overline{53.3} \ \overline{53.3} \ \overline{12.2}$	$\overline{12.2} \ \overline{56.6} \ \overline{52.2} \ \overline{32.2}$	$\overline{32.2} \ \overline{53.3} \ \overline{53.3} \ 1$
Sangsih	$\overline{.535} \ \overline{.212} \ \overline{.212} \ \overline{.53.}$	$\overline{353.} \ \overline{565.} \ \overline{565.} \ \overline{5.35}$	$\overline{.535} \ \overline{.212} \ \overline{.212} \ \overline{.53.}$	$\overline{.535} \ \overline{.212} \ \overline{.212} \ \overline{.53.}$
Gending	$\overline{6} \ 1 \ 5 \ 2 \ 3$	$\overline{.} \ 5 \ \overline{.} \ 2 \ 3 \ \overline{.} \ 5$	$\overline{.} \ 2 \ 3 \ 5 \ \overline{.} \ 1 \ 6$	$\overline{.} \ \overline{.} \ \overline{.} \ i$
Polos	$\overline{12.2} \ \overline{56.6} \ \overline{52.2} \ \overline{33.3}$	$\overline{5.33} \ \overline{.35.} \ \overline{33.3} \ \overline{5.33}$	$\overline{.35.} \ \overline{35.3} \ \overline{5.21} \ 6$	
Sangsih	$\overline{.535} \ \overline{.212} \ \overline{.212} \ \overline{33.3}$	$\overline{.233} \ \overline{.3.2} \ \overline{33.3} \ \overline{.233}$	$\overline{.3.2} \ \overline{3.23} \ \overline{.32.} \ 3$	

Angkep-angkepan polos-sangsih ←

Fig. 5. Angkep-angkepan system in the context of polos-sangsih in the case of gending Lekesan

The aforementioned three-line pattern is a new model. First, a composer pays attention to the underlying melody; there is a gending anyway; the next step is to think of the correct melodic pattern to fill the song with various rhythmic patterns. The musical design is practiced with *polos-sangsih* playing.

Third, the practice of *polos-sangsih* musical patterns is contained in the work of new compositions. The course is that *polos-sangsih* in contemporary works is very accessible; these *polos* can be categorized as a kind of pattern 1 and 2 in western music. Therefore, this *polos-sangsih* is not a pattern of unity in forming a melody pattern. Instead, it is a combination of melodic ways that enrich the melody; The *polos-Sangsih* that tends to be worked on in contemporary compositions is more flexible. It is not a whole. If what is played is only plain, the intertwined melody is already part of the *pepayasan*.

2.3.2 Angkep-angkepan means as a ngumbang-ngisep system

Ngumbang-ngisep has two meanings in Balinese *karawitan*: first, *ngumbang-ngisep* as a volume of sound from a specific musical presentation; second, the high-low frequency system of sounds in the Balinese gamelan tone system.

Ngumbang-ngisep, which is closely related to the meaning of *angkep-angkepan* is the second sense. The discussion of sound frequency in the *ngumbang-ngisep* system must be based on an explanation of the Balinese gamelan tone system. Therefore, the debate in this sub-chapter begins with a description of the Balinese gamelan tone system.

Balinese gamelan tones generally consist of 7 notes and five tones. The following is a table of conceptions of Balinese gamelan tones.

Nada	1	2	3	4	5	6	7
Suara	Ding	Dong	Deng	Deung	Dung	Dang	Ding

Fig 6. 7-tone system in Balinese karawitan

The table above is a seven-tone gamelan sequence-tone system. These tones are found on the gamelan *semaradana*, *semar pagulingan*. In addition to the above concepts, there is a five-tone pelog-barreled Balinese gamelan. The idea is as follows:

Nada	1	2	3	5	6
Suara	Ding	Dong	Deng	Dung	Dang

Fig. 7. 5-tone system in Balinese karawitan

The five-tone concept above is found in gamelan *kebyar*, gamelan *bebarongan*, *palegongan*, *gong gede*. Although there are different sequences of tones, the pitching system for each of the notes of all gamelan devices is realized by two different frequencies with the same tone, for example, the uploader's 1 (*ding*) tone and the 1 (*ding*) tone of the commute. The following is an overview of the concept of *ngumbang-ngisep* each Balinese gamelan tone.

Frekuensi Suara	Ding Pengumbang	Dong Pengumbang	Deng Pengumbang	Deung Pengumbang	Dung Pengumbang	Dang Pengumbang	Ding Pengumbang
Nada Pengumbang	1	2	3	4	5	6	7
Nada Pengisep	1	2	3	4	5	6	7
Suara Frekuensi	Ding Pengisep	Dong Pengisep	Deng Pengisep	Deung Pengisep	Dung Pengisep	Dang Pengisep	Ding Pengisep

Fig. 8. Puller-sucker system on a 7-tone laras pelog

The same is the concept of the five-tone *laras pelog pe-nada-an* found in gamelan *kebyar* and others. Here is the procedure below:

Frekuensi Suara	Ding Pengumbang	Dong Pengumbang	Deng Pengumbang	Dung Pengumbang	Dang Pengumbang
Nada Pengumbang	1	2	3	5	6
Nada Pengisep	1	2	3	5	6
Suara Frekuensi	Ding Pengisep	Dong Pengisep	Deng Pengisep	Dung Pengisep	Dang Pengisep

Fig. 9. Selector-sucker system on a 5-tone laras pelog

Referring to the data of the pitch system above, the initiators are an *angkep* of a tone that traditionally Balinese gamelan cannot be ignored. Apart from being a unit, *ngumbang-ngisep* is a characteristic of the Balinese gamelan tone-up system. This is what distinguishes it from the gamelan tones in other *karawitan* such as Javanese gamelan (yogyakarta-surakarta- east Java) and Sundanese. Because *ngumbang-ngisep* is a unit in the *pe-nada-an* system, it is a configuration of *angkep-angkepan* specially created to give the peculiarities of Balinese

gamelan so that it has an impact on aesthetic value and how to play it. Thus, *angkep-angkepan* can be meaningful as a unit in the Balinese gamelan tone system called *pengumbang-pengisep*.

2.3.3 Angkep-angkepan means as a gamelan system

Most Balinese gamelans require various materials to enrich the sound character in one gamelan. For example, they are made of wood, bamboo, iron, bronze, and leather. All these materials present various sound characters so that every composition, traditional, creational, and modern art, is more harmonious. The diversity of materials is made of different kinds of musical instruments (instruments) such as flute, *rebab*, xylophone, *gangsra*, *pemade*, *gong*, *reyong*, and so on. These various instruments are packaged in one gamelan, each with different functions. Flute and *rebab* serve as sweeteners, xylophones (examples in *luwang* gamelan) serve as *papayasan*, *reyong*, *gangsra*, *pemade* also have the same as xylophones, *kendang* serves as *papayasan* (ornamentation with rhythmic patterns).

These musical functions indicate a single entity that makes the Balinese *karawitan* gending model feel complicated, beautiful, and worthy of being on par with western music. The diversity of functions also reflects the characters' different types of musical patterns.

Aesthetically, this statehood is needed to enrich the variety of sounds presented in a *karawitan* composition. Djelantik calls it unity *and diversity*, [20] a unity in difference. Not only can these differences be seen in the types of melodies, rhythms, and notes presented, but they are also visible in the character of the sounds arising from instruments with different materials. Therefore, in this context, the difference that cuts off more than one type of musical instrument material and its function in musicality can be called a necessity for *the angkep-angkepan* material in gamelan devices to present different functions.

In more detail and detail, the author presents data on instrumentation from several Balinese gamelan devices with a diversity of material materials, including gamelan gong gede and gamelan gong *kebyar*.

3. Conclusions

The re-reading of the meaning of Balinese Gamelan *angkep-angkepan* is based on three essential things: first, the meaning of *angkep-angkep and gamelan* is relevant to the Balinese gamelan alignment system. This reasoning interprets *angkep-angkepan* as a pattern of two applied to the tone of the *pengumbang* and the *pengisep*. Both are paired concepts that combine to determine a tone in Balinese gamelan. This kind of *angkep-angkepan* model gave birth to a model of Balinese gamelan tone characteristics that are very distinctive and vibrational. Second, the meaning of *angkep-angkepan* is based on playing techniques and musical patterns, such as melody in a composition. The game technique as the basis for interpreting *angkep-angkepan* is configured in a Balinese gamelan technique called *polos-sangsih*. Like the tune of the *pengumbang* and the *pengisep*, *polos-sangsih* is a second pairing technique that blends to make the musical pattern whole and meaningful. Third, *angkep-angkepan* is analyzed from the differences in the materials of each instrument in the gamelan ensemble.

The third requires that the *angkep-angkepan* is a configuration of the diversity of frequencies,

ways of playing, and material materials. In other words, *angkep-angkepan* is an indicator of the occurrence of harmony in a gamelan composition. Therefore, *angkep-angkepan* can be said that it is a factor in the occurrence of harmony in gamelan. In other words, *angkep-angkepan* is the product of harmony or harmony itself.

References

- [1] J. Roeder and M. Tenzer, "Identity and genre in Gamelan Gong Kebyar: An analytical study of Gabor," *Music Theory Spectrum*, vol. 34, no. 1, pp. 78–122, 2012, doi: 10.1525/mts.2012.34.1.78.
- [2] D. Hamish, "Tolerance of Ambiguity: Negotiating Religion and Sustaining the Lingsar Festival and Its Performing Arts in Lombok, Indonesia," *Religions (Basel)*, vol. 12, no. 8, pp. 1–12, Aug. 2021, doi: 10.3390/rel12080626.
- [3] M. B. Balkan, "Preventive Care for the Dead: Music, Community, and the Protection of Souls in Balinese Cremation Ceremonies," in *The Oxford Handbook of Medical Ethnomusicology*, B. D. Koen, Ed., Oxford: Oxford University Press, 2012. doi: 10.1093/oxfordhb/9780199756261.013.0011.
- [4] M. M. Hood, "Gamelan Gong Gede : Negotiating Musical Diversity in Bali ' s Highlands," *Musicology Australia*, vol. 32, no. 1, pp. 69–93, 2010, doi: 10.1080/08145851003794000.
- [5] M. Hynson, "A Balinese 'Call to Prayer': Sounding Religious Nationalism and Local Identity in the Puja Tri Sandhya," *Religions (Basel)*, vol. 12, no. 8, pp. 668–685, Aug. 2021, doi: 10.3390/rel12080668.
- [6] F. Dean, Roger T., Bailes, "MODELING PERCEPTIONS OF VALENCE IN DIVERSE MUSIC: ROLES OF ACOUSTIC FEATURES, AGENCY, AND INDIVIDUAL VARIATION," *Music Percept*, vol. 34, no. 1, pp. 104–117, 2016, doi: <https://doi.org/10.1525/mp.2016.34.1.104>.
- [7] I. K. Wardani, P. Sittiprapapom, D. Djohan, F. Tyasrinestu, and P. Suyajai, "Keyseg: adaptive segmentation for spontaneous electroencephalography map series into spatially defined microstates of musicians' brain," *Bulletin of Electrical Engineering and Informatics*, vol. 10, no. 4, pp. 2006–2015, 2021, doi: 10.11591/eei.v10i4.3063.
- [8] I. M. O. Adnyana, N. P. A. P. Mahadewi, and A. A. A. P. Laksmidewi, "Musical Therapy with Balinese Flute Increased Cognitive Function, Brain-derived Neurotrophic Factor Serum levels, and Decreased Interleukin-6 Serum Levels among the Elderly in West Denpasar Primary Health Clinic," *Macedonian Journal of Medical Sciences*, vol. 8, pp. 699–704, Jan. 2020, doi: 10.3889/oamjms.2020.4522.
- [9] E. P. Setiawan and M. R. Maryati, "Noise Effect of Gamelan Jegog to the Risk of Hearing Loss among Jegog Players in Sangkaragung Village, Negara, Jembrana," *Biomedical and Pharmacology Journal*, vol. 11, no. 4, pp. 2169–2174, Dec. 2018, doi: 10.13005/bpj/1598.
- [10] A. A. A. P. Laksmidewi, N. P. A. P. Mahadewi, I. M. O. Adnyana, and I. P. E. Widyadhama, "Instrumental balinese flute music therapy improves cognitive function and serum dopamine level in the elderly population of west denpasar primary health care center." *Open Access Maced J Med Sci*, vol. 7, no. 4, pp. 553–558, 2019, doi: 10.3889/OAMJMS.2019.116.
- [11] V. Sørensen and J. S. Lansing, "Prakempa: The Colour Music of the Balinese Calendar," in *International Conference on Human-Computer Interaction 2020: Culture and Computing*, M. Rauterberg, Ed., Copenhagen, 2020, pp. 386–395.
- [12] J. McIntosh, *The women's international gamelan group at the Pondok Pekak: Intercultural Collective Music-Making and Performance in Bali, Indonesia*. New York USA: Oxford University Press, 2018.

- [13] P. M. Sukerta, *Gong kebyar Buleleng Perubahan dan keberlanjutan tradisi gong kebyar*. Surakarta: PPS & ISI Press Surakarta.
- [14] E. Schwitzgebel, "Effects of Chord Inversion and Bass Patterns on Harmonic Expectancy in Musicians," *University of California Press*, vol. 39, no. 1, pp. 41–62, 2021.
- [15] K. E. S. Prier, *Ilmu Harmoni*. Yogyakarta: Pusat Musik Liturgi Yogyakarta, 1989.
- [16] K. O. Olaoye, "'Timbre harmonic model for measuring sound harmony: A case study of Gmelina arborea wood,'" *Applied Acoustics*, vol. 177, no. 107925, Jun. 2021.
- [17] F. Lanzellotti, "In Search of Perfect Harmony: Giuseppe Tartini's Music and Music Theory in Local and European Contexts," *Cambridge University Press*, vol. 18, no. 2, pp. 329–331, Aug. 2021.
- [18] T. de Clereq, "'The Logic of Six-Based Minor for Harmonic Analyses of Popular Music,'" *Music Theory Online*, vol. 27, 2021.
- [19] M. P. Saukerta, *Tetabuhan Bali I*. Surakarta: ISI Press Solo, 2010.
- [20] A. A. M. Djelantik, *Estetika Sebuah Pengantar*. Bandung: Masyarakat Seni Pertunjukan Indonesia, 2010.