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Corresponding Author: Iwan Gunawan,
Universitas Pendidikan Indonesia,
Email: iwan_gunawan@upi.edu

"Grain Gamelan": Adaptation of One More Grain Band's Songs to Gamelan Pelog Slendro

Iwan Gunawan[1], Afdhal Zikri Z.Z.[1] and Sailendra Bedantara G[1]
[1]*Universitas Pendidikan Indonesia*

Abstract: Based on a recording project initiated by the label "Yantra" through one of the musicians of the group "one more grain", Daniel Patrick Quinn, the author was asked to adapt songs from their group to gamelan instruments. The songs use Western instruments that use a very different tonal system from gamelan. The phenomenon of the difference in tone system between Western instruments and gamelan is still a dilemma, especially when music creators have the idea to combine the two types of instruments. The purpose of this writing is to reveal the artistic process of working on One More Grain Band songs adapted to Javanese gamelan with the pelog and slendro tone system. The method used is practice-led research/practice-based research by doing exploration, simulation, and practice. Artistically, the songs of one more grain band have repetitive patterns with a tendency to use only one chord and each pattern played has changes that can be interpreted openly by the musician. Both of these have the same principles as traditional gamelan music. In the composing process, an approach was found using a mixed 10-tone system of pelog and slendro tunings of Javanese gamelan tumbuk nem. Through the use of DAW, the adaptation process can be well organized and measured to produce audio simulations and notations that are ready to be played by musicians directly. In the process of practicing with the musicians, various communication and interpretation problems were encountered in adapting this work. Based on the results achieved, the adaptation of "One More Grain" songs to gamelan has new nuances and perspectives that can enrich the repertoire of gamelan music globally.

Keywords: repetitive music, gamelan, adaptation, arrangement

1. Introduction

"One More Grain" is the name of a British rock band led by Daniel Patrick Quinn, a singer and multi-instrumentalist (Quinn, 2023). Their musical works are often categorized in multi-genres such as Alternative Rock, Experimental Music, Spoken Word, Drone Music, Modal Jazz, and so on. However, if analyzed audibly, their musical ideas have characteristics such as a tendency to use mono chord, repetitive, spiritual nuances, full of variations, spontaneity and improvisation. The characteristics mentioned are very similar to musical phenomena in the aesthetics of traditional gamelan music (Benamou, 2010; Cahyadiningrat et al., 2023). Because of this, there was an interesting challenge when Daniel Patrick Quinn asked the author to make arrangements of their songs into a gamelan ensemble.

There are several orientations in the process of arranging a musical work, namely transcription, adaptation, or a combination of both to the musical work used as a source (Bekenova et al., 2020). In music arrangements that use the transcription approach, the musical ideas and aesthetics of the original musical work used are usually maintained without any fundamental compositional changes. However, there are changes in instrumentation either in the form of reduction by using fewer instruments, or expansion by using more instruments "(Rollings, 2020; Petru, 2023). Whereas in the arrangement process with the adaptation approach, there are fundamental changes from the original musical work, both in terms of style and compositional characteristics'––(Goss, 2022; Perry, 2021).

Research on music arrangement practices, especially those that focus on transcription and adaptation approaches, has been conducted by many researchers, especially in the field of western music. Petru (2023), for example, tried to transcribe C.M. Weber's "Konzertstück Op.79 For Piano And Orchestra" into accordion. Petru to do so required technical precision as well as specialized knowledge of the composer's characteristics in order to find an appropriate style of interpretation. Meanwhile, Rollings (2020) examines Harold Bauer's transcription of Franck's "Prélude, Fugue et Variation, Op. 18" and Busoni, d'Albert and Reger's transcription of Bach's "Prelude and Fugue in D major, BWV 532" for pipe organ to piano. In his findings, Rollings explains that there are different cases among the aranger's transcription efforts. But in general, there is a degradation of musical value due to differences in the characteristics of the instrument and the way the arranger works. Furthermore, research by Bekenova et al. (2020) related to the analysis of transcriptions and adaptations made by Kazakh violist Yakov Fudiman to various musical works of Kazakh composers who wrote for violin or cello but rarely wrote for viola.

If we observe from various existing studies of gamelan music, in general the direction of the study is towards the search for gamelan music values in a social and cultural context (Strohschein, 2020). Meanwhile, studies that reveal musical phenomena are very rare, especially those related to the field of intercultural music arrangements. However, there are still some interesting studies that have relevance to the world of gamelan music creation. Such as those conducted by Gunawan et al. (2022), revealing the use of tunings in the works of contemporary gamelan composers, and Smith (2019) who conducted an analytical study of Dewa Ketut Alit's "Genetics", which revealed the uniqueness of innovative compositional ideas. Given this situation, studies on the arrangement of western musical works into gamelan instruments are still very rare and need to be developed.

In arranging the songs of "One More Grain" into a gamelan ensemble, there are significant problems. The problem is that there is a very different organological system and playing mechanism between the two cultures (McLachlan, 2023). Therefore, the transcription approach in the arrangement process is not considered to work well. Thus, it was necessary to study the question of how the musical aesthetics of the "One More Grain" songs could be adapted to gamelan instruments. Some other questions about which songs can be adapted for gamelan ensembles, how is the conceptual design process of the work, and how is it applied to musicians, are things that need to be answered which are not only enough to make observations or interviews, but must be done through practical activities (Ross, 2022). Therefore, there are various stages of activities based on artistic research methods in an effort to realize this idea. This process will make findings that will contribute to the world of knowledge, especially in the field of gamelan music creation.

2. Literature Review

When the author first heard the songs of the band "One More Grain", there were various intercultural artistic phenomena. These phenomena are related to the aesthetics of minimalist music, pop/rock music and gamelan music. The phenomenon of gamelan music, which has now spread almost all over the world, can be traced to historical events that began in 1889, when France commemorated the 100th anniversary of their revolution with the inauguration of the Eiffel tower and the organization of L'Exposition Universelle in Paris (Sjukur, 2014). On that occasion, the Dutch who colonized Indonesia sold tea from the Parakan Salak plantation (West Java) performed by the plantation farmers, who played a set of Sari Oneng gamelan '(Wibisono, 2012). Debussy, a famous composer in France at the time, heard gamelan

for the first time. He was very impressed with the beauty of gamelan music. He felt he had found an 'other' beauty not found in Western musical aesthetics (Sunarto, 2018).

It has evolved into various, sometimes exaggerated, versions of the story. Apart from that, the fact is that gamelan music has attracted the attention of the world, especially Western artists and ethnomusicologists (Sumarsam, 1995). Many Western musicians and ethnomusicologists have come to Indonesia to study and research the uniqueness and beauty of gamelan music. The work of Jaap Kunts, Mantle Hood and Colin Mc Phee in writing gamelan books became one of the opening doors to introduce gamelan music abroad (Hardjana, 2004). As a result of this, gamelan festivals have emerged overseas inviting various gamelan groups from Indonesia. In addition, various artist residency programs in the context of gamelan training programs in several countries are held periodically, both by the private sector and through cooperation with the Indonesian government.

The impact of the spread of gamelan music abroad has not only resulted in the creation of skilled Western 'pengrawit' and the growth of gamelan groups there, but gamelan music has inspired the aesthetic development of Western music itself. Composers such as Colin Mc Phee (Canada), Michael Tenzer (America), Jack Body (New Zealand), Ton de Leeuw (Netherlands), Dieter Mack (Germany), and others have composed music that is artistically inextricably linked to gamelan music. Even the Minimalist music genre that developed in America was inspired by the phenomenon of gamelan music (Torun, 2023). As stated by Sjukur, (2014:214) in the context of discussing the gamelan festival in Berlin in 2005 that, the diversity of gamelan music in addition to Indian and African music, has inspired the birth of the Minimalist music genre in America (La Monte Young, Steve Reich, Terry Riley, and Philip Glass) which "extends only economical patterns". The phrase "extends only economical patterns" as stated by Sjukur above, is one of the musical phenomena unique to gamelan music. In fact, it can be interpreted that this gamelan music phenomenon became the foundation for Sjukur in developing his musical concept called "Minimax" (Supiarza, 2016).

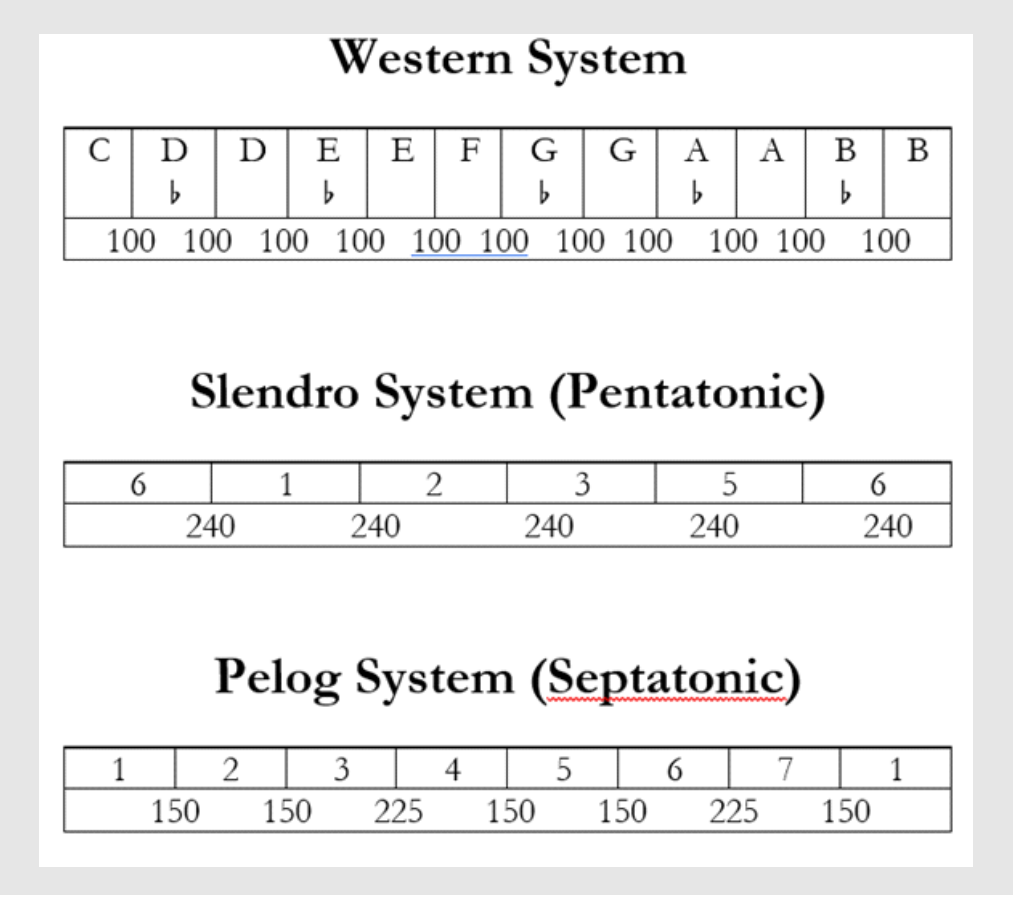
If we observe the development of Western music with a tonal system, there is a tendency for progressive vertical sound processing. This musical phenomenon is then called harmony. Harmony in the tonal system is an aspect that affects the impression of emotion for the listener. Daniela and Bernd Willimek have conducted research based on the Theory of Musical Equilibration, which focuses on the relationship between music and emotions (Russell, 2013). The research describes how chord progressions in the tonal system affect the listener's emotions based on the balance

between tension and release. This is an important foundation as the main feature in the processing of melody and harmony in the tonal system.

In terms of sound characteristics, the tones used in gamelan have a very unique phenomenon compared to other instruments globally. Based on research into the tone characteristics of gamelan, there is a great deal of diversity that is not standardized like the tonal systems of Western music. Although there is some agreement on the use of tuning system terms (*Laras*) such as pelog and slendro, each gamelan always has differences in the size of its frequency (Pramudya et al., 2018; Shiokawa et al., 2016).

The phenomenon of the difference in tone system between Western instruments and gamelan is still a dilemma, especially when music creators have the idea to combine the two types of instruments. However, to compare the differences between the two systems, an interval relation approach can be taken, as Sindusawarno did (Gunawan et al., 2022). In this concept, it can be explained that there are differences in interval structure between the 12-tones systems (Western systems), pelog, and slendro in cent measure, as shown in figure 1 below.

Figure 1. Interval Structures of Western, Pelog, and Slendro system



In figure 1, we can see significant interval differences between the three tone systems. Although all three tone systems start from the same base tone, many of the other tones are intervally different. In other words, it is theoretically impossible for a melody built on a western tonal system to be suitable when played on a salendro or pelog system (McLachlan, 2023).

Gamelan music principally uses a modal rather than tonal system. The modal system is more likely to be based on an array of tones only with the quality of each tone being more or less the same. Thus Slendro and Pelog in the gamelan tuning system are actually modal systems (Mack, 1994). If we look at the vertical sounds in gamelan music, we can sometimes perceive only one chord (monochord). The tuning used is one of the parameters of music that affects the emotion of the music, but the beauty of gamelan music is not built on its harmony progression. Melodic contours, ornamentation and "extends only economical patterns" are, as Sjukur puts it, one of the unique features of gamelan music, which Debussy perceived as 'another beauty' not found in Western musical aesthetics.

Texturally, the sound elements in gamelan music move horizontally, forming a heterophone fabric of sound. The melodic/rhythmic form of gamelan music is always based on a cycle but each repeat always has a different audio perception/experience. The concept of gamelan music is what generally inspires the Minimalist music genre. Putu et al. (2021), argue that Minimalist music is a contemporary art with an experimental style that uses a lot of repetition of limited material (minimal), but produces something maximum. This opinion seems to be the same as Slamet Abdul Sjukur's "Minimax" concept, but actually has a different meaning. The same applies to the concept of repetition in gamelan music.

Repetition in music generally has different meanings and purposes. In ritual music, for example, repetitive musical concepts are prominent. Like tarawangsa music, the melodic contours play a lot of repeating melodic phrases. However, the repetition of the melody has a specific purpose, among others, to achieve a transcendent situation (Mulyati & Suparli, 2021). In addition, naturally repetitive musical events can have a physical impact, especially rhythmic repetition. That is why when we hear a rhythmic pattern from percussion instruments, it often stimulates our body to move to the rhythm of the rhythmic pattern (Sarjoko et al., 2020). Furthermore, repetition in music can also function as accompaniment. Such as accompanying the melody in a song or poem or an illustrative movie scene. And of course there are still many properties of repetition in music that have different purposes and meanings, both in the context of art and other fields. In essence, repetition is part of the organization of time in music, which generally has two meanings of time, namely time lived and time experienced.

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These two meanings of time in the organization of music greatly affect the physical and psychological impact on the listener.

If we return to the concept of repetition in minimalist music, there are significant differences with the concept of repetition in gamelan music. As in Steve Reich's "Piano Phase" (Mack, 2004), there is a concept of repetition with a very unique technique. (Please see figure 2)

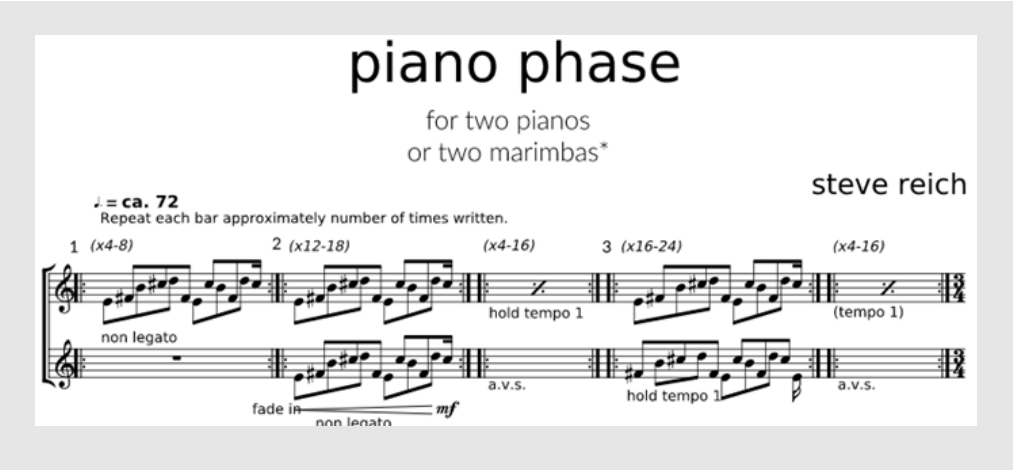


Figure 2. Excerpt of Steve Reich's "Piano Phase" notation (screenshot from musescore.com web page, accessed August 23, 2022)

The notated excerpt "Piano Phase" in figure 2 above is a piece for piano duo or marimba duo. Materially there is the exact same melodic phrase played by both instruments repetitively. However, the second player must play with a change of tempo acceleration that is gradually accelerated until the position of the melodic texture changes that are mutually insistent. Until this sound texture, the tempo of the second player must be held statically. Thus there is a shift in rhythm from the position of the thesis beat (beat) to the arsis (upbeat). This technique is performed continuously by the second player, until the shift with the accellerando causes the melodic texture to change processually.

In the case of Reich's work above, melodic repetition is a means of achieving the sound effects of tempo shifts that cause changes in melodic texture. Meanwhile, other aspects of musical parameters such as the processing of vertical sounds (harmony) are not the focus of his musical ideas. For this reason, vertically, this music has a single chord (monochord). The impact of the continuous sound of the same note (monochord) gives a meditative or transcendent experience '(Paese & Egermann, 2023). This impression is similar to some cases of tarawangsa, Indian and African music as mentioned above.

Repetition in gamelan music has different meanings. In the case of "Liyar Samas" in Balinese gamelan music, for example, there is repetition as in figure 3.

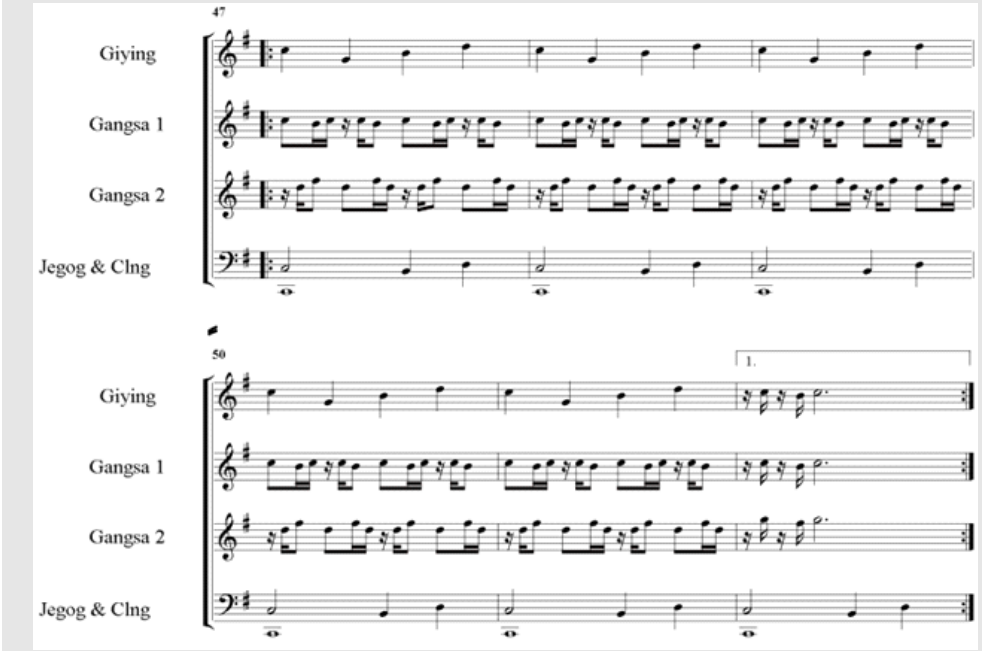


Figure 3. Notation excerpt of the Saba Village version of "Liyar Samas" (notation transcript by the author, notation source obtained from Dieter Mack)

If we look at the notation excerpt in figure 3 above, the repetition of the melody as a means of processing the dynamics to achieve a sound with dynamics that rise and fall alternately like the sound of waves. In addition, the improvisational drumming (not written in the notation) causes the dynamic fluctuations in that section of the music to change unexpectedly.

Besides gamelan music, repetitive sound material is also very prominent in popular music, even becoming the most basic element as a background or accompaniment to a solo or vocal melody. Even in the EDM (Electronic Dance Music) genre, repetitive musical material is the main idea, as this music is often played non-stop with the aim of stimulating the listener to move/dance and transcend (Ramires et al., 2020).

In the world of digital music, repetitive musical material is known as loops. Loops are rhythmic/melodic patterns that are fixed and mechanical in nature. However, with the development of technology at that time, rhythmless and organic sounds (free sound) can be made into loops with the technology of beat spectrum analysis and audio construction (Roma & Serra, 2015). Although loops are repetitions of sounds played by machines, the technology was developed more widely. Such as the

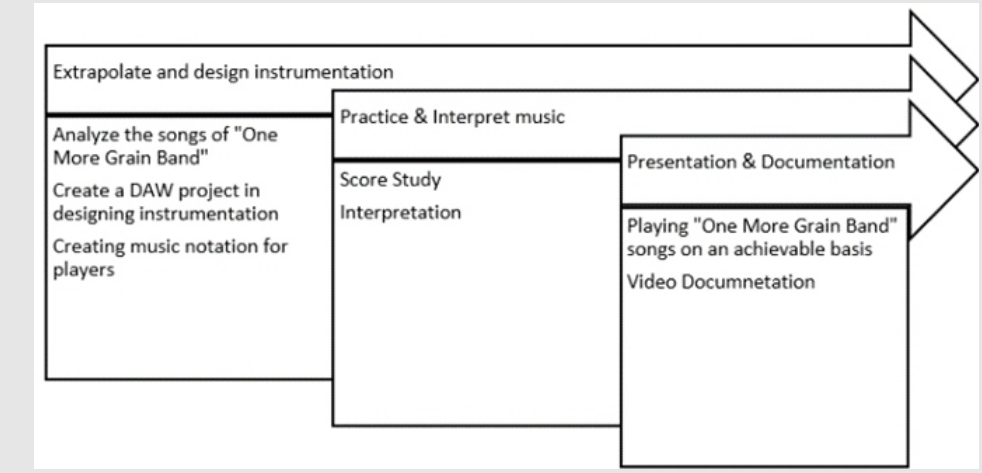
innovation created by Shepardson & Magnusson (2023) who created a real time software system for predicttion and continuation of audio signals in the format of a looping pedal. This is done so that musicians can still control and predict every moment of sound they create.

3. Methods

The method used is an artistic research method that leads to efforts to find new understandings of practice, and it is practiced. Nelson (2022) states that research can be undertaken through a practice and where the practice (praxis) itself is primary and serves as primary evidence of the research. Therefore by using this method a practitioner can become a researcher-practitioner.

There are two types of this method, namely pre-factum research, which is based on the absence of the object under study, and post-factum, which is based on the object of an existing work of art (Hendriyana, 2021; Borgdorff, 2016). In this case, the author uses a combination of the two types of methods. This is because there is material used as an object of existing artwork, namely songs from the group "One More Grain", while the adaptation process in the gamelan ensemble is an object that must be discovered through practical activities. Some of the steps taken can be explained in the form of a chart as shown in figure 4 below.

Figure 4. Method Stages



The stages carried out in the method as in figure 4 above are, 1) analyzing and exploring songs that are suitable for the tone system on the gamelan, 2) simulate the concept of compositorial work in a DAW, 3) conducting technical trials into each gamelan instrument used and then can be written in the form of notation as an

instruction manual for musicians, 4) carrying out the process of musical realization through practical activities by players in the form of practicing and interpretation, and 5) preparation for presentation and documentation.

In the first stage, there were 20 recordings of songs offered for arrangement, then selecting songs based on the character and tones or sounds used through music analysis. In the second stage, it is reproduced through DAW so as to produce audio simulations which are then evaluated for playability. In the third stage, trials are conducted with players by making improvements and developments until the notation is ready to be played. In the fourth and fifth stages, the rehearsal starts from the study of the score and interpretation until it can be presented and documented.

4. Findings and Discussions

Based on the data collected and the process of analysis carried out through practical activities ranging from exploration, instrumentation design, to the presentation of the work, there are various interesting findings on various things that can be achieved in this artistic research.

5. Result

Auditive Analysis and Exploration with DAW

The most basic point of interest is in terms of musical composition. Based on the nine songs from the compilation of "One More Grain Band" songs provided by Daniel Patrick Quinn as a resource person, namely the songs "Channelkirk and The Surrounding Area", "On Dream Hill", "Nine Standards Rigg", "Ettrick Pen", "Spring Green", Walking The Map", "Doctor's Bolero", "Tropical Mother Law", and "Won't Get Fooled Again"(Gunawan & Quinn, 2022), audibly there is a strong characteristic from the musical side, namely the use of repetition which is very distinctive. This repetition technique is related to the aesthetics of traditional gamelan music and minimalist music (Sjukur, 2014). The distinctiveness of repetition lies in the memorable contours of melodies that seem to "ring out" and rhythms that have a physical impact (Sarjoko et al., 2020). However, there is a problem with the different tonal systems used. The nine songs of "One More Grain Band" certainly use the Western tonal system, but how can these songs be adapted to gamelan instruments that have a different tonal system?

Through the Digital Audio Workstation, using a variety of virtual instrument products, exploration and analysis was conducted resulting in a specific tonal

approach to adapting the western tonal system to the gamelan's pelog slendro system, as shown in figure 5 below.

Figure 5. 12-tone system approach in *pelog slendro*

12-Tones	C	D♭	D	E♭	E	F	G♭	G	A♭	A	B♭	B
Sld		1		2			3		5		6	
Plg	7		1		2	3			4	5	6	

The tonal approach shown in figure 5 is an application of the sindusawarno concept (Gunawan et al., 2022), which resulted in the existence of 10 tones that can be used on the *pelog slendro* gamelan, out of 12 tones in the Western music system. The two tones not available in pelog slendro are G and B. However, it should be noted that this approach works with the Javanese gamelan *tumbuk nem* in Bb, meaning that tone 6 (*nem*) in both slendro and pelog is approximately the same as tone Bb in the Western music system.

Basically, almost all of the nine songs that were worked on, harmonically only use one chord (mono chord) as the center of the melody played. Therefore, when there are G and B notes (which are not available in pelog slendro) in the case of certain songs, the solution is to transpose up half or down half in the adaptation process.

This adaptation process results in an audio simulation of all the elements of the composed sound so as to provide certainty about the number of instruments used, the number of musicians needed, or in other words, a technical description of how this design can be applied by the musicians. At this stage, the musicians were assigned to do a study by listening to songs that had been designed through the DAW based on the instrument to be played. Through this activity at least each musician has mental readiness and knows their respective duties.

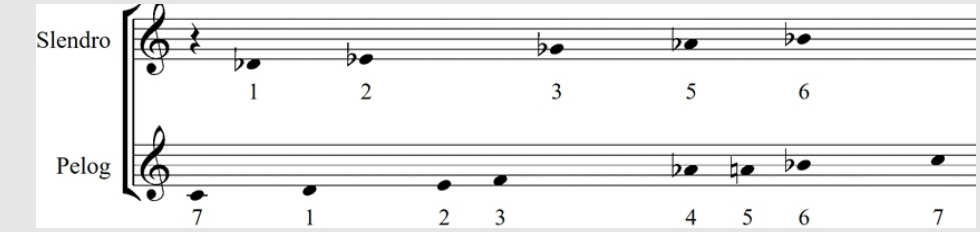
Notation Design for Musicians

When these audio simulations were given to musicians to learn, the musicians struggled to understand how each sound element in each song played out. This happened for two reasons. Firstly, because of the non-standardized concept of instrumentation, especially the simultaneous use of pelog slendro instruments. Secondly, the concept of repetition and micro-changes that are difficult to predict

audibly. To overcome these problems, the solution is to design notation as an instruction manual that instructs musicians how each sound element is interpreted and played.

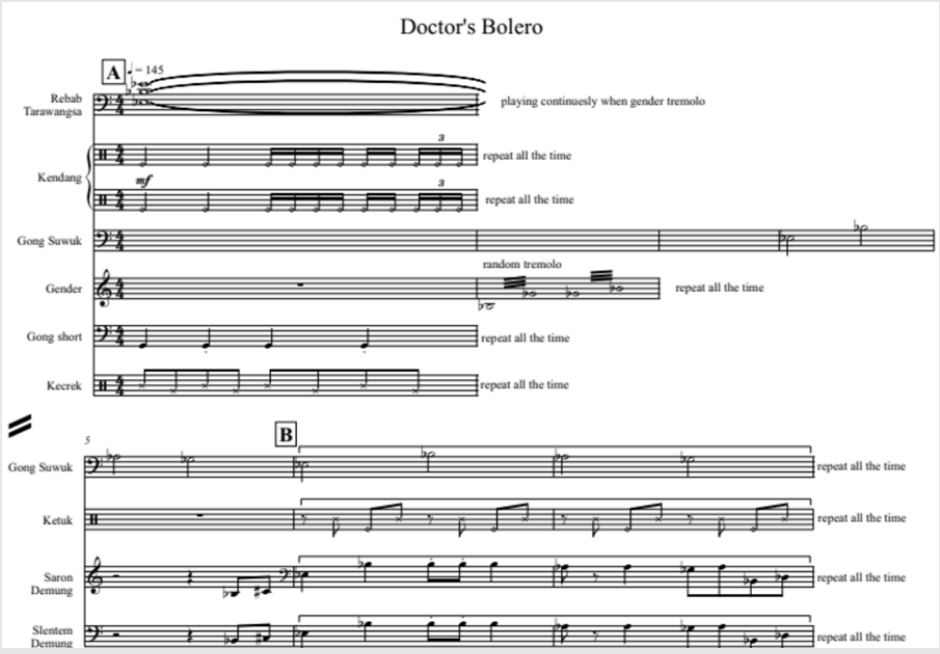
In the notation design, the note placement for pelog slendro was approached as shown in figure 6 below.

Figure 6. Placement of *pelog and slendro* notes in notation



Based on the MIDI data that has been designed in the DAW, the next step is to export the data into notation software. In this process, various settings are made in relation to the midi data presenting the pitch and duration as it is. Therefore, adjustments are still needed so that the notation can be read properly. For example, the result of notating one of the songs, as shown in figure 7 below.

Figur 7. Notation of the song "Doctor's Bolero for Gamelan *Pelog Slendro*



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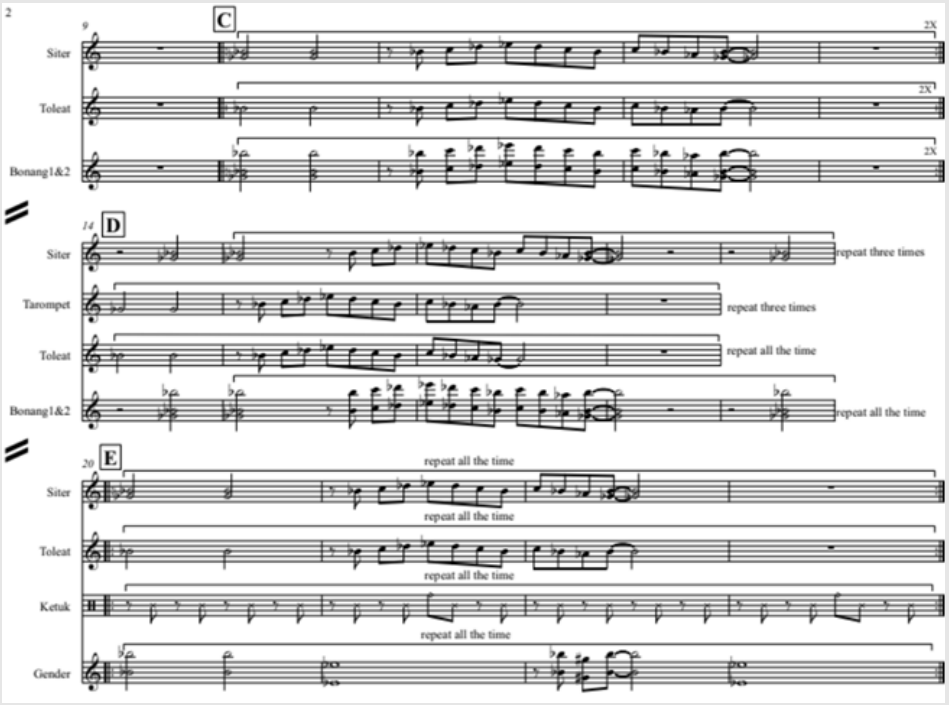


If we look at the notation in figure 7 above, the pitch placement system is based on the concepts discussed above, but the notation does not present the concept of time as normal notation. The various melodic phrases are just material to be played, but how many times the repeats should be played, and when to start or stop, have flexible rules, depending on the decision of each musicians based on their interpretation. Interestingly, there are instruments that have repetition sentences with different cycle lengths. With this difference, the effect will be a melodic texture that is contrapuntal or complementary between several instruments, such as the phenomenon of canon melodies.

6. Discussion

Musical Rehearsal and Interpretation

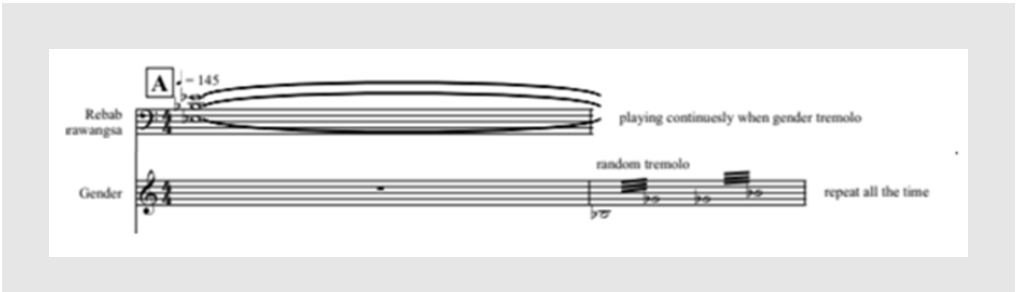
When the notation is attempted to be applied by musicians, there are various problems encountered. The problem is not the complexity of the melodies and rhythms that must be played, but rather the aesthetic understanding related to the interpretation in understanding each sound element played.

Based on observations made, the musicians still focus on the written notation without understanding the relationship between players in executing each note in the notation. The various variations that must be played eventually feel rigid until each repetition is played almost like Loops in EDM music (Ramires et al., 2020). For this reason, the musicians tried to remember each melodic phrase or rhythm contained in the notation, then they were asked to repetition by trying to make similar but not the same variations.

Of the nine songs that had been designed, only two songs could be realized by the musicians as a test, including the songs "Doctor Bolero's and "Walking on The Map". In the process, there are various things that become findings in understanding the relationship of each sound element.

In the song "Doctor Bolero's" there are several elements that musicians need to understand. First, there is a layer of sound that plays chords that are played continuously as a drone sound. This chord is played by Rebab, Tarawangsa and Gender, as in the notation in figure 8 below.

Figure 8. Layers of drone sounds in the song "Doctor Bolero's"



The layers of sound played by several instruments as in the notation in figure 8 above, instruct the player to play the sound continuously in loops. But actually it must be realized in a varied sound. In stringed instruments, for example, the direction of bowing alternation between rebab and tarawangsa must not be the same speed of swiping so that there will be a complementary rhythmic impact, because when starting to swipe both left and right directions of the two instruments will produce accent sounds. In addition, the angle of the swipe direction and vibrato variation will produce unexpected sound colors, even though the same tone is used continuously (drone). The changing sound colors of the two instruments are enriched by the chords played by the gender through the tremolo sound of two notes that change inconsistently, resulting in a wavy sound.

The second layer of sound is the section of instruments that play ostinato sounds, namely *Demung, Slentem, Kendang, Gong Suwuk*, and *Ketuk Kempyang*. Some of the

instruments that play this layer of sound function as accompaniment that keeps the rhythm, just like loops. It's just that in some parts they have to make changes in dynamics to adjust to the repetition of the melody played by the wind instrument. The ostinato sound section can be seen in figure 7 above.

The third layer of sound is a melodic repetition played by the woodwinds that alternates with the vocal melody, but in some sections when the vocals are sung, this melodic repetition can be played at any given moment, depending on the agreement of the woodwinds.

The various technical issues and technical analysis and interpretation carried out above are the findings obtained from practice. Although there are some specific cases that differ in the second song, "Walking on the Map", the steps and methods used are basically the same, starting from understanding each sound layer, understanding the concept of time of each sound element, and interpreting each sound moment played.

In the next step, the two songs were played and recorded several times, and then evaluated with the musicians to see how far the adaptation of the "One More Grain band" songs could work for gamelan pelog slendro.

7. Conclusions

From the results and discussion presented above, it can be concluded that the Western music tonal system used in the nine songs of "One More Grain" can be adapted to the gamelan instrument pelog slendro with a 10-tone interval-based approach as described above.

In terms of musical concept, this music is difficult to write down in the form of standardized notation that presents a linear timeline. This is due to the tendency of repetitive melodic or rhythmic sentences with different cycle lengths.

To play this kind of music, musicians need to understand each layer of sound, understand the concept of time from each sound element, and need to interpret each moment of sound played. Thus, the role of musicians is not only to play what is written in the notation (like a slave who only follows the orders of his master) but the musicians must become a re-creator, so that this music can be more alive and varied at every moment of sound.

The technical conclusions drawn from the practice-based findings described above open up new perspectives on how gamelan music can be developed. However, in adapting musical works from western musical aesthetics to gamelan, an in-depth study is needed that is not only looking for compatibility of tones used, but a study of

the musical phenomena of the two cultures is needed, so that a process of cultural interaction will occur that will form an authentic musical work.

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