DIGITIZATION AND DEVELOPMENT OF PANTOK MELODY THEMES
TONGKEK USING LEON STEIN’S THEORY APPROACH

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ABSTRACT
This paper presents a study on the composition of traditional music performance in Pancor Village, East Lombok, Indonesia with a focus on the creation of digitalized compositions based on traditional music. The study employs the approach of Leon Stein’s theory of composition, which emphasizes the importance of understanding the cultural and historical context of musical works in order to create innovative and meaningful compositions. The study involves field research, where traditional music performances in Pancor Village are recorded, transcribed, and analyzed using Stein’s approach to composition. The analysis focuses on identifying the characteristic elements of the traditional music, such as melody, rhythm, and instrumentation, and exploring how these elements can be integrated with digital technology to create new compositions. The results of the study show that the integration of traditional music with digital technology, while employing Stein’s approach to composition, can lead to the creation of innovative and compelling musical works that are relevant to contemporary audiences. The digital compositions created in this study demonstrate how traditional music can be transformed and reimagined in new and exciting ways, while still respecting the cultural and historical context of the original works.

Keywords: approach to composition, digital composition, East Lombok, Leon Stein, Pancor Village, traditional music

ABSTRAK

Kata Kunci: Musik Tradisional, Komposisi Digital, Desa Pancor Lombok timur, Pendekatan Teori Leon Stein

Dikirim: 21 Mei 2023; Diterima: 29 Desember 2023

Vol. 1, No. 1, Desember 2019
Introduction

The composition of this study is based on the Bedodok tradition, which originates from Pancor Village, Selong District, East Lombok Regency, West Nusa Tenggara, Indonesia. According to the Indonesian Sasak dictionary (2020), the words bedodok mean to wake up. According to Amir in Mutiarani (2014) that the Tongkek musical instrument functions as a communication tool to awaken the Pancor community to perform the morning and dawn prayers in the month of Ramadan which are carried out by young people to adults who are held together in Pancor village.

I chose this digital platform because the idioms of Tongkek music can be developed, composed and expressed in various modern instrumentation or western music instrumentation. This is also my attempt so that through this study, the Tongkek tradition can be accessed easily. This ease of achievement has allowed Tongkek's musical traditions to be disseminated to the wider community as well as providing motivation to the younger generation to develop further investigations.

Problem Statements

The problem statement of this study are as follows:

1. References related to Tongkek musical instruments are very limited. So far there are only two references related to Tongkek music. The first reference is based on a study conducted by Alfian (2018) related to organology and tuning systems. While the second reference is based on a study conducted by Amir (2014) related to rhythm patterns, game techniques and functions in society. However, these two studies do not explain the development and implementation of Tongkek musical instruments in the form of notated compositions.

2. Digitizing Tongkek compositions requires an understanding of existing composition development techniques. In relation to that, there are two aspects which is an artistic challenge in this work.

   The first is related to the Tongkek musical instrument which is played repeatedly and only consists of five notes that are played as many as 2 octaves starting from the low G tone to the high C tone. Because Tongkek is played by at least 7 people in a group according to the number of tones found in the Tongkek instrument so it is not possible to perform.

   The second is related to the selection of musical composition development techniques that feature some features of simple motif development. Based on this problem, the implementation of Leon Stein's composition technique is the platform I use because In his book Structure and Style: The Study and Analysis of Musical Form (143) Leon Stein explains 22 approaches that can be used in developing variation themes. The application of Leon Stein’s theory to this composition was chosen because it can provide a more structured guide to develop the Tongkek melody theme. So that it can help me organize ideas in a more logical and effective way.

Research Objectives

1) To develop the Tongkek musical idiom by using a theoretical approach, Leon Stein.

2) To Digitalize Tongkek's musical compositions to be further documented into a digital platform.
Traditional Music *Tongkek*

References related to *Tongkek* musical instruments are very limited. So far there are only two references related to *Tongkek* music. The first reference is based on a study conducted by Alfian (2018) related to the manufacturing process and adjustment system on *Tongkek* musical instruments. While the second reference is based on a study conducted by Amir (2014) related to rhythm patterns, game techniques and functions in society. However, there are some studies on traditional local instruments in Southeast Asia that have similarities with the work I do. One of them is the study by Mohd Nasir and Ismail (2014) focusing on Indonesian Gamelan music, which is played using a set of traditional instruments made of bronze or bamboo. This study examines the influence of gamelan music on contemporary music in Indonesia and finds that many contemporary Indonesian musicians incorporate gamelan music into their compositions.

Further research conducted by Wong and Tan (2017) explores the use of traditional Malay musical instruments in contemporary music production in Malaysia. The author found that traditional instruments such as *Rembab*, *Kompang*, and *Genga* are used in new and innovative ways in contemporary music, and this helps preserve and promote traditional Malay music.

Further research conducted by Nguyen and Ninh (2019), the authors investigate traditional Vietnamese music, including the use of instruments Dan Bau, a visiting zither, and Dan Tranh, who is sixteen years old. This study explores the importance of traditional music culture in Vietnam and the challenges faced in preserving and promoting this music in modern times.

Although the references related to the *bedodok* tradition are limited, the literature related to the *Tongkek* musical instrument is displayed below. In his playing, *Tongkek* musical instruments bring a minimalist concept, where *Tongkek* uses a melodic motif that repeats continuously. According to Amir in Mutiarani (2014) The form of melody used in the *Tongkek* music game is:

![Tongkek motif](image)
This rhythm is a rhythm that is always attached to the Tongkek music game and is played repeatedly. In further development, based on research conducted by Amir 2014, it was found that an artist and maker of Tongkek musical instruments named Rau’f developed the rhythm of Tongkek music into 5 tones as shown in figure 3 below:

In the rhythm developed by Ra’uf, the sound is more varied, Rauf fills the gaps in the Tongkek music that is played so that it sounds like reciprocating or Canon. Along with its development, the Pancor community called Tongkek developed by Rauf as Tongkek doremisola. The pronunciation of doremisola is based on the number of notes contained in the Tongkek, which is 5 tones. According to Rubiono (2012) ‘Pentatonic comes from two words, Pente or Penta (Greek) = five, and Tonos = tone which means a scale consisting of five tones.

In Indonesia, there are 2 types of Pentatonic Scales, namely Pelog and Slendro, both of these scales are based on gamelan barrels that are spread in Java and Bali. In the beginning, the regular frequency of gamelan is not the same as the diatonic (modern) frequency, and also the interval. But both then fill the diatonic scale until the gamelan scale gradually adapts to the diatonic frequency. Therefore, if these two pentatonic scales are expressed in modern notation as follows: 1) Pelog 1-3-4-5-7 (Do, Mi, FA, So, Ti) or C-E-F-G-B and Slendro: 1-2-3-5- 6 (Do, Re, Mi, So, La) or C-D-E-G-A (Rubiono: 2012). Based on this, the Tongkek musical instrument tuning system can be said to have been adapted from the Slendro tuning system on the pentatonic system, although the Tongkek musical instrument frequency tuning system does not have standardization in the tuning system. The tuning of Tongkek musical instruments only depends on the feeling of the Tongkek craftsman so that the basic tone can change according to the wishes of the Tongkek musical instrument craftsman. The lowest to highest notes in Tongkek musical instruments are sol bewek, la bewek, do tengek, re tengek, mi tengek, sol tengek, la tengek, do atas, re atas, mi atas, sol atas, and la atas. Bewek means bottom or low, Tengek means middle and atas means top or high which all represent octaves on the Tongkek musical instrument. For more details about Tongkek music, you can see the following YouTube link https://youtu.be/pqUbeF6hUuc

Leon Stein Theory

In his book Structure and Style: The Study and Analysis of Musical Form (143) describes 22 approaches that may be used in developing the theme of variation, However, in this composition I used six techniques that are suitable for the Tongkek melody, that is (1) Use the same harmony with a new melody (2) Figuration of harmony (3) imitation (4) Diminuation (5) Augmentation (6) Register Treatment.

In this regard, Leonstein provides an example in Brahams Variations on a Theme by Haydn for orchestra, op. 56a. Some of these procedures include:
1. Use of same harmony with a new melody found in bars 40-43

![Figure 4](image1)

Figure 4. An example of the same harmonic use with a new melody is found in bars 40-43 of Brahms's variation on a Theme by for orchestra, op. 56a.

2. Embellishment of melody or making decorations on the melody found in the variation 1 Bar 30-34.

![Figure 5](image2)

Figure 5. Examples of Embellishment of melodies or making decorations on melodies are found in variation 1 Birama 30-34 in Brahms's variation on a Theme by for orchestra, op. 56a.
3. Figuration of harmony or the use of figures in the harmony found in bars 98-100.

Figure 6. Examples of the use of figures in the harmony found in bars 98-100. on Braham’s variation on a Theme by for orchestra, op. 56a
4. Register Treatment, use of a high or low register throughout a variation or in contrasting sections of a variation.

*Figure 7. Examples of using Register Treatment, use of a high or low register throughout a variation or in contrasting sections of a variation. orchestra, op.56a*
Computer music technology

The previous research which is Exploring the Creative Process of Music Composition Using Digital Audio Workstations was conducted by Scholtz (2021). This research explores the use of Digital Audio Workstation (DAW) can influence the creative process in music making. Researchers found that DAWs can help reduce some obstacles in the creative process, such as organizing musical structures, repeating and recording musical parts. As well as exploring new musical ideas.

Further research conducted by Machover (2021). With the research title From Sound Objects to Musical Narratives: Composing with granular Synthesis and AI Tools. This research discusses the use of granular synthesis techniques and artificial intelligence (AI) tools in creating music. Researchers found that the use of granular synthesis techniques can help create new and unique musical structures and patterns. In addition, the use of AI can help in producing more and more complex musical variations.

Further research Creating Music with Artificial intelligence: Challenges and Opportunities conducted by Scholtz, Santos et al (2020) this research discusses the challenges and opportunities in creating music using artificial intelligence (AI) tools. Researchers found that the use of AI in creating music can help in producing musical variations which are more and more complex, but also face challenges such as the lack of human skills in evaluating and choosing the most appropriate music.

Further research done by Kramarz and Schmieder (2019) on the use of music technology in contemporary music composition. The authors find that music technology has become an important tool for composers, allowing them to experiment with new sounds, create complex arrangements, and produce high-quality recordings.

Further research conducted by Han and Park (2017) explores the use of computer-based music software in the composition of electronic dance music. The authors find that music software has revolutionized the production of electronic dance music, allowing composers to create complex arrangements and produce high-quality recordings without the need for expensive studio equipment.

Finally, research conducted by Tanaka and Kato (2017) investigates the use of artificial intelligence (AI) in music composition. The authors found that AI-based music composition systems are becoming increasingly sophisticated and can produce music that is indistinguishable from that created by human composers.

The literature highlights above discuss various aspects in making music compositions using music technology, starting from the use of digital Audio Workstations (DAW), the use of artificial intelligence (Artificial Intelligence) in creating music, to the use of computer-based music software used in making music compositions. Although a lot of research has been done related to the use of technology in making music compositions, there is still little research that examines the use of music technology in acoustic music or traditional music, especially the Tongkek musical instrument.
Score Transcription

The original rhythm pattern transcription of the Tongkek instrument is based on https://www.youtube.com/watch?v=_t03OrYAsds&t=1s and Batua’s article (2014). The score transcription show the three staff in treble clef. Since, the Tongkek instrument played by 3 persons as illustrated at figure 4

Figure 9. Tongkek Melodi 1
Development of composition Pantok Telu

This work composed based on the development of the four Tongkek themes. This work has a total duration of Nine minutes and forty one seconds which consists of 6 expansions of variation. For more clarity on the description of this work will be explained as follows. The shape and structure of the composition were created by the development of the Tongkek theme using Leon Stein's theoretical approach. Which will be explained as follows:

1. The original Tongkek motive melody and chord accompaniment

The figure above is the basic theme of Pantok Telu's composition which is transcribed from the playing technique and arrangement of the Tongkek Do-re-mi motif. The above melodic pattern can be identified as the Slendro scale. This theme has a range of tones that are close or also called a disjunction consisting of the M2 interval. The intended movement is as shown in the figure below.
Harmonious Movement

Development of ideas based on the Leon Stein Theory approach

Intro *Pantok Telu*

1. Diminution
   The application of diminution techniques based on Leon Stein approach in bar 1 to 8 illustrated at figure 15-16

Figure 12

Figure 13

Figure 14 Full Score in Bar 1-12
2. Augmentation

The application of Augmentation techniques based on Leon Stein approach in bar 29 to 31 illustrated at figure 18 and 19.
3. **Register Treatment**

The application of Register Treatment techniques based on Leon Stein approach in bar 17 to 24 illustrated at figure 13 and 14.

<table>
<thead>
<tr>
<th>No</th>
<th>Composition al form</th>
<th>Instrumentation</th>
<th>Number of Bar</th>
<th>Theme Development</th>
<th>Leon Stein Theory approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Theme</td>
<td>Piano</td>
<td>1-17</td>
<td>Repetition based on the theme melodic pattern</td>
<td><em>Imitation and diminution</em></td>
</tr>
<tr>
<td>2</td>
<td>Variation 1</td>
<td>String</td>
<td>25-40</td>
<td>Extending the rhythm on theme</td>
<td><em>Augmentation of theme or thematic</em></td>
</tr>
<tr>
<td>3</td>
<td>Variation 2</td>
<td>Basson, oboe, Clarinet, Flute</td>
<td>17-25</td>
<td>Repetition melodic theme</td>
<td><em>Imitation And register treatment</em></td>
</tr>
<tr>
<td>4</td>
<td>Variation 3</td>
<td>Horn, flute, oboe, clarinet Basson</td>
<td>27-41</td>
<td>To create the melodic figure based on harmonic of theme</td>
<td><em>Figuration of harmony</em></td>
</tr>
<tr>
<td>5</td>
<td>Variation 4</td>
<td>piano</td>
<td>41-56</td>
<td>To create the new</td>
<td><em>Use same harmony with</em></td>
</tr>
</tbody>
</table>
The Process of digitizing Works

The digization process for this work goes through three stages, namely the track creation process in Studio One by moving the score data in Midi form into Studio One and changing the sound of the Midi data using Virtual Instrument.

The next stage is Mixing, at this stage the sound from the Virtual Instrument is added to effect to produce the desired sound character. At this stage, Panning and Balancing are also carried out, namely adjusting the sound volume on each instrument so that it sounds in harmony.
The final stage is mastering, in this process the sound of all the tracks that have been combined during mixing is adjusted again by adding effects and adjusting the sound volume according to predetermined standards.

**Figure 23. Mastering Process**

### Conclusion

This study demonstrates the application of Leon Stein's theoretical approach to the development of Tongkek's original melodic idea. The findings of this study contribute to our understanding of Tongkek music, particularly in the domains of notation documentation, composition development using western theoretical approaches, and digitization. For future research, it is strongly suggested to focus on compositional development utilizing alternative theoretical approaches.

### References


Rubino, P. (2012)

