

## R12 On Music to R47 In Grand Piano with Worship Symbol and Universe Creation in Economic Covid Era

R Mochamad A

UIN Jakarta

Email: r12r47ma@gmail.com

**Abstract.** The purpose of this research is to examine R12 as a musical constant with reflexivity to R47 on the piano string about the symbol of worship and the creation of the universe in the current economic period. R12 refers to the twelve musical notes of a piano. The R47 serves as a string support device in a grand piano. The topic of study is music, piano, and hahslm equations. This study is a qualitative investigation. The research was carried out in order to acquire information from journals, books, scriptures, and electronic media. A reflexivity approach was adopted as the method. This research discovered that the acoustic notes on the piano follow a pattern that corresponds to the hahslm encryption with code 7 major, 5 minor, and 12 tones in the digit of 472319. As a result, piano and music may be classified as comparable, where the piano is the same as music. The piano reflects the owner's intellectual ability and economic standing. The first portion of music consists of 12 tones, and the genuine part of music consists of the structure of vibration in a grand piano with hundreds of strings to produce sounds.

**Keywords:** *music; piano; r12; tones; worship.*

### 1 Introduction

The piano is a musical instrument made up of a percussion board and strings that are struck by a hammer. The piano has a large scale when compared to many other musical instruments. On the keyboard, musicians quickly executed melodic patterns and harmonies. The strength of the pianist's finger pressure on the tap surface determines the volume of the sound generated (Phillips, 2014).

Vibration necessitates the presence of an acoustic medium, which transforms vibration into sounds. As an acoustic medium, the piano is exactly that: a medium. In reality, the shape and physique of the piano is a reflection of the life of a musician. Humans are familiar with the notion of art as a discipline that is intimately tied to music and beauty. To supplement the understanding of music, efforts are made to investigate the rules of music that are forming in society (Fritzkopf, 2018).

Possession of acoustic music instruments, such as the piano, became a status symbol. A greater economic position is indicated by the size of the acoustic

chamber housing the hammer strings for tone and acoustic material. A grand piano, as opposed to a vertical piano, denotes a better established economic family standing.

Music is the science or art of changing tones or sounds in a blend of order and temporal relationships to create sound compositions with harmony and consistency. Tones or sounds structured in such a way that melodies, tunes, and harmonies are played are referred to as music.

Music, in the form of vocal (human voice) and instrumental music, is the science and art of combining rhythm and tone (instrumental sound). Melody (a succession of notes) and harmony are required to communicate emotion (chorus). When employing a sound-producing equipment, music is a tone or sound that is structured in such a manner as to incorporate melodies, songs, and harmonies (Godeliva, 2018).

Beats, strings, wind, and motion are all used in the execution of acoustic music on instrument media on musical instruments. Piano, guitar, bass, violin, saxophone, flute, and angklung are among the most popular musical instruments. Iron across the strings of the guitar creates boundaries between the sounds of this instrument. The boundaries between notes on the violin are not detected with a transverse line, thus the performer must remember where the limits are. Each note on the saxophone and flute is marked with a hole, and the spacing of the holes is consistent across the board. There are white and black keys on the piano. On the piano, the distinctions between the notes are more pronounced. White and black keys separate C and C# notes, but C and C# guitars have no color distinctions and are solely restricted by lines. Only the piano can display the 1 octave chord from C to B. Only a piano instrument can display the intricacy of a tone with seven major notes (CDEFGAB) and five minor notes (C#, D#, F#, G#, A#). The presence of a piano can indicate a musical composition consisting of  $7 + 5$  notes in one octave, which then repeats lower and higher in subsequent octaves.



**Figure 1** Vertical Piano

Source: Analysis 2020

Many mathematicians throughout history, including Pythagoras, Euclid, Al-Kindi, Al-Farabi, Leonardo da Pisa, Johannes Kepler, and Roger Penrose, have devoted considerable time studying this fundamental ratio and its properties (Abi, 2017). However, mathematicians aren't the only ones obsessed with the golden ratio. Scientists, poets, musicians, archaeologists, engineers, psychiatrists, and even mystics have argued the essence of its flexibility and appeal. It is possible that the golden ratio has inspired more intellectuals from many fields than any other number in mathematical history.

Finding a piece of music that does not employ the Golden Ratio figures is even more amazing. To show collaboration, some painters employ scale tones, while others use semitones. Both the Golden Mean and Fibonacci numbers are used to investigate the compositional structure (Van Gend, 2014).

In the same way that Golden Number Experts believe the Golden Ratio has a specific creative value in the visual arts, they also believe it has good musical impacts. To begin, the Golden Ratio literature point out that many people find the sixth major and sixth minor musical intervals to be the most pleasing, and that the Golden Ratio harmonizes with these intervals (Shannon, 2014).

## **2 Theoretical Basis**

The term music, or mousike, is derived from the name of one of the nine ancient gods, mousikos (musica or musa, in Latin). God Mousikos is characterized as a goddess of beauty who is skilled in the arts and sciences (Astinah, 2018).

Only left brain talents are thought to be improveable. Meanwhile, the actual brain, which regulates imagination, emotions, and time and space awareness, remains unaffected. Traditional music engages the prefrontal nerve fibers to their greatest capacity, causing the brain to go into alpha waves.

Because of its constant beat and basic texture, this form of music was thought to offer advantages at the time. This can help to regulate the pulse while also evoking emotions and memories. According to several studies, kids who listen to classical music on a daily basis appear to remember material better and have higher IQ scores.

The ability to master music demonstrates one's intellectual talents. The possession of musical instruments also reveals one's financial position. Because

learning to play a musical instrument takes a long period, certain economic norms are required to ensure training consistency. The sort of musical instrument you own can also help you grasp the tone of the music you're listening to. Because of its versatility and low cost, the guitar is the most popular musical instrument in the community. The piano is the most hardest instrument to master.

The golden ratio, often known as the golden section or golden mean, is a mathematical formula. Other names include extreme to average ratio, middle part, divine proportion, divine part (Latin: *sectio divina*), gold proportion, gold piece, gold quantity, and Phidias' meaning. The golden ratio has intrigued western scholars from varied disciplinary backgrounds for at least 2,400 years (Desyana, 2018).

The Fibonacci numbers have a peculiar feature. If you divide one number in the series by the preceding number, you'll get numbers that are comparable to each other. This number is currently assigned after the 13th digit in the series. Others discover the Fibonacci numbers in the most regularly used scales: pentatonic (5), Major and minor (8), and Chromatic (13). The problem is that the major and minor scales make up just seven notes, but the chromatic scale has twelve. Others claim that the Fibonacci numbers are used in music to explain the link between the intervals. If we add octaves, the numbers 1, 2, 3, 5, 8 represent more than 62 percent of the accessible notes on a wide scale. Except for the most discordant, all major scale intervals (minor 2, tritone, and major 7).

Given the historical association between music and numbers, it's reasonable to wonder if the Golden Ratio and Hahslm's content had any roles in instrument development or musical composition. On the piano, an octave is made up of thirteen keys: seven white keys and five black keys. One group is made up of two chords, while the other is made up of five black keys. The fact that C major is performed on white keys of the piano, for example, contributes to its primacy. To begin, keep in mind that a musical scale is made up of twelve semitones. To signify the end of the round, the same note, C, is played twice in octaves. Second, and perhaps more crucially, the two-line arrangement of keys at the top, sharply and flatly separated into groups of two or three, originates from the early fifteenth century, much before Pacioli was written and much longer before Pacioli was written. Fibonacci numbers need a deep grasp.

Pure musical pitch is characterized by a constant frequency (measured in vibrations per second) and amplitude (measured in decibels) (measured by the number of vibrations per second). Tuning A is done with the base note, which vibrates at 440 vibrations per second. When you combine A and C, you'll receive

a sixth major. The last note has a frequency of roughly 264 vibrations per second. The ratio of the two 440/264 frequencies is reduced to 5/3, which is the ratio of two Fibonacci numbers. A sixth minor can be formed by combining high C (528 vibrations per second) with E (330 vibrations per second). The 528/330 ratio, which is likewise a ratio of two Fibonacci numbers and is already quite near to the Golden Ratio, is reduced to 8/5 in this example (Hirano, 2019).

### **3 Research Method**

#### **3.1 Type, Research Approach**

This study is a qualitative study. The researcher seeks to obtain as much information as possible regarding the topics under consideration.

#### **3.2 Data Collection Techniques**

##### **Observation**

By monitoring the creation of study specimens, researchers were able to see the acquisition of data from internet pages.

##### **Documentation**

Data is gathered in the form of papers, news pieces, and articles on research topics, books, and journals.

#### **3.3 Hahslm Method**

The Hahslm approach for benchmarking a right-handed black piano with Islamic symbols was one of the strategies employed in this investigation (word roots of S, L, M). Analyze the Golden Ratio pattern with Islamic values and numerical music using the triangulation method. There is music such as piano, golden ratio, and Islamic values, as well as the Reflexivity approach to evaluate the resemblance between items.

### **4 Result And Analysis**

Knowing music may also be discovered in the form of elegance and sound. Music is sound that has been organized into a rhythm to please our ears or to express an emotion or mood. Music has rhythm, melody, and harmony, which gives it depth and enables for the use of various instruments or sounds. Melodies, words, and even entire lines or portions of songs repeat patterns. Recognizing or appreciating this recurrence is a part of the enjoyment of performing and listening to music.

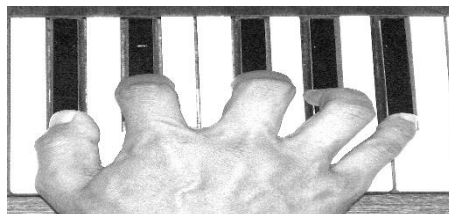
Each note pattern is allocated a letter from ABC through G, also known as the CDEFGAB sequence. After seven letters or seven notes, the series is repeated. The gap between one note and the next lowest or highest note of the same name is called an octave.

This explanation has its own meaning for both piano and music. The sound of these two jargons (piano and music) is what connects them. The fundamental attraction of these items and fields is sound (Damirov, 2020).

The scale technique for calculating pitch and absolute pitch is a reliable indication. The term "structural builder" refers to a measurement of the system's sound quality. The complete tone (primary tone) and 5 (five) tones known as the middle tone (Minor tone) are based on a 12-tone system with seven (seven) tones. Tonal coherence is required in this system not only for the beauty of the music, but also for the melodic system's clean, harmonic, and colorful nature.

While electronic and computer music provide or do not allow endless panoramic flexibility in terms of tone, current music does. For further detail, the current scale has 12 notes. These 12 notes include five intermediate notes and seven complete notes. The white keys and rows of black keys on the piano are apparent from afar.

On black keys, the right hand's position must correspond to the note sequence. Starting with the Cis note (between the C and D notes), go to the Dis chord with the index finger. After passing two notes (E and F), the middle finger is placed on the black keys Fis. The remaining two digits, including the ring and little fingers, are written on Gis and Ais's notes. On the five middle notes, this is what counts as the scale on the right hand's fingertip.



**Figure 2** Hand Piano SLM

Source: Analysis 2020

As can be observed, two tone classes are only found on black keys. The notes Cis (thumb) and Dis (dis) make comprise the first set of notes (index finger). The second tone is made up of the notes Fis (middle finger), Gis (ring finger), and Ais

(index finger) (little finger). In other words, there are two black keys on the left and three black keys on the right in these two sets of black keys.

So, like the middle five, we have five fingers on five black tones. Also separated are the two left and three right notes. The piano, it turns out, is also linked to Islam, as it bears Islamic symbols. The letter 'or sin', the letter 'L' or lam, and the letter 'M' or mim are the three root words that make up the name Islam. The word Islam is made up of three consonants: sin, lam, and mim.

On the keyboard, there is the word Islam, which has been historically clarified as being formed from the three-letter consonant sin lam mim. It is acknowledged that there are tonal arrangements on the scales that have constituted a musical heritage. The exact measure of pitch and pitch in the scale system is the absolute measure. The size of the sound in the scale system is the specification that makes up the structure. That method is based on a 12-tone scheme that consists of seven major notes and five minor notes. From afar, the notes on the piano will seem as white and black keys.

The notes of the piano have already been defined in reference to the piano-Islamic link. As is well known, there is a Qur'anic message hidden inside human fingers, which is symbolized by the Sin Lam Mim sign (Al-Faqih, 2017). The hands on the piano are also a sign of Islam, as they are right above the black piano keys. Where, contrary to the law of sin lam mim, a sign of the letter mim is found on the right thumb. The index finger then deviates from the lam and middle finger, but the ring and little fingers maintain the letter sin sign. For this note set, there are mim lam and sin symbols on the piano. According to the laws of the Arabic language, the proper reading order is right to left, hence sin lam mim is the correct reading order.

The piano and the Golden Ratio have a link where, according to Golden Number Experts, the Golden Ratio in the visual arts has a distinctive aesthetic aspect, and they have a great influence on music. Pure music's tone is defined by a specific frequency and loudness. Tuning A is done with the base note, which vibrates at 440 vibrations per second. When you combine A and C, you'll receive a sixth major. The last note has a frequency of roughly 264 vibrations per second. The ratio of the two 440/264 frequencies is reduced to 5/3, which is the ratio of two Fibonacci numbers. A sixth minor can be formed by combining high C (528 vibrations per second) with E (330 vibrations per second). The 528/330 ratio, which is likewise a ratio of two Fibonacci numbers and is already quite near to the Golden Ratio, is reduced to 8/5 in this example (Bakim 2002).

Everyone can own music, but people's access to musical instruments is limited based on their socioeconomic condition. The general population has access to a

huge number of guitars at reasonable prices with a diverse range of tones. Pianos, on the other hand, were associated with more established economies, having a larger number of notes but a more pleasant tone than guitars. The look of the white and black keys adds to the piano's convenience. Because of its intricacy and convenience, the piano is known as the mother of musical instruments.

Music therapy, according to the World Music Therapy Federation (WMFT), is music utilized by a trained individual to communicate with a group, depict expression, or achieve other therapeutic purposes (Luwes, 2010).

Sacred music utilized for treatment assists individuals with spiritual awareness to be more tranquil and calm through Islamic music therapy (Otterbeck, 2017). Music may be utilized as therapy in a variety of ways, including calming tunes, popular music, and classical music. However, relaxing music or songs with a pace of 60 beats per minute are frequently advised (Dana, 2019). Regardless of the musical genre. Muslim thinkers such as Al-Kindi and Al-Farabi have embraced music as a wellness therapy.

## 5 Conclusion

The piano is the most readily absorbed representation of music. As a result, piano and comparable music may be classified, where piano is the same as music. The piano continues to exhibit the Hahslm phenomena, implying that it is likewise Islamic. The piano reflects the owner's intellectual capacity and financial standing.

The acoustic notes on the piano, as a consequence of this study, are patterns that correlate to the golden ratio. Some of these patterns carry the connotation of hahslm, which is the fundamental notion of worship in God's creation.

The application of strategies in the treatment of physical and moral well-being can benefit from Islamic music. Music can help individuals feel more comfortable and religious by healing pain and absorbing verses with many interpretations.

## References

- [1] Abi, A. M. (2017). Integrasi etnomatematika dalam kurikulum matematika sekolah. *JPMI (Jurnal Pendidikan Matematika Indonesia)*, 1(1), 1-6.
- [2] Al-Faqih, K. M. (2017). A mathematical phenomenon in the Quran of earth-shattering proportions: a Quranic theory based on gematria determining Quran primary statistics (words, verses, chapters) and revealing its fascinating connection with the golden ratio. *Journal of Arts and Humanities*, 6(6), 52-73.



- [3] Astinah, M. D. (2018). *Improvisasi Lagu Lingsir Wengi Versi Sunan Kalijaga Menggunakan Barisan Fibonacci dan Golden Ratio* (Doctoral dissertation, UIN Sunan Ampel Surabaya).
- [4] Bakim, S., & Seyit, Y. Ö. R. E. (2002). Investigation Of Applications of Fibonacci Sequence And Golden Ratio In Music. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 29(3), 49-69.
- [5] Damirov, A. (2020). *Azer Rzayev: Traits of Azerbaijani Folk Music and Dance In His Sonata For Violin And Piano* (Doctoral Dissertation, Temple University. Libraries).
- [6] Dana-Picard, N., & Hershkovitz, S. (2019). Computer assisted activities about the Golden Ratio in Space and Time.
- [7] Desyana, L. V., & Godeliva, P. (2018) *Kajian Bilangan Fibonacci Dan Golden Ratio Pada Lagu Daerah “Dek Sangke”*. *Prosiding Sendika*, 4(1).
- [8] Frishkopf, M., & Spinetti, F. (Eds.). (2018). *Music, Sound, and Architecture in Islam*. University of Texas Press.
- [9] Godeliva & Desynna L. (2018). *Kajian Bilangan Fibonacci dan Golden Ratio pada Lagu Daerah*. *Jurnal Seminar Nasional Matematika dan Pendidikan Matematika, Pendidikan Matematika*
- [10] Hirano, Y. An aspect of the historical development of the concept of the “golden ratio”. No. 24 (Special Issue 2019), 50. ISSN 2477-8443
- [11] Luwes, N. J. (2010). Fibonacci numbers and the golden rule applied in neural networks. *Interim: Interdisciplinary Journal*, 9(1), 33-43.
- [12] Otterbeck, J. O. N. A. S., & Larsson, G. Ö. R. A. N. (2017). Islam and Popular Music. *The Bloomsbury Handbook of Religion and Popular Music*, 111-120.
- [13] Phillips, M. E. (2019). Rethinking the role of the golden section in music and music scholarship. *Creativity Research Journal*, 31(4), 419-427.
- [14] Shannon, A. G., Klamka, I., & van Gend, R. (2018). Generalized Fibonacci Numbers and Music. *Journal of Advances in Mathematics*, 14(1), 7564-7579. Universitas Muhammadiyah Purworejo. Vol. 20, 2014, No. 1, 72–77.
- [15] Van Gend, R. (2014). The Fibonacci sequence and the golden ratio in music. *Notes on Number Theory and Discrete Mathematics*, 20(1), 72-77.