Yggdrasil: A Music Composition for Synthesizers and Rhythm Section

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Abstract

Yggdrasil: A Music Composition for Synthesizers and Rhythm Section is a composition that is presented as a crossover music between rock music, electronic dance music, and a classical music of the twentieth century. The inspiration of the composition is based on the chaotic atmosphere of the world tree, Yggdrasil in Norse mythology. The piece can be analyzed in two parts: the rhythm section part and a melody part. The crossover aspect of the music can be seen in the rhythm section in which consisted of two electric guitars playing power chords with distortion effect, an electric bass, and a drumset that has the sound and tuning of a rock drumset but playing an electronic dance music's groove. The main melody is composed using twelve-tone technique. The usage of modulation and pitch-bend from a keyboard allows the composer to present the microtones in each melody passage. The composition features many aspects in music writing such as classical music composition, technique of twentieth-century music composition, music technology, elements from songwriting and contemporary arranging. The mixing and mastering of the music is produced using panning, equalization, and reverb so that it can present an atmosphere of the world tree.

Keywords: *Crossover Music, Music Composition, Synthesizers, Twelve-tones Serialism*

1. Introduction

Yggdrasil is the world tree, an ash that linked all of the nine worlds (Grant, 1991). The tree is described as the largest and most stately tree ever to have grown. Its branches overhung the nine worlds and spread out above the heaven (Cotterell, 1996). The nine worlds consist of: 1. Asgard, the world of the Aesir gods and goddesses, 2. Vanaheim, the world of the Vanir gods and goddesses, 3. Alfheim, the world of the elves, 4. Midgard, the world of human, 5. Jotunheim, the world of the giants, 6. Svartalfheim or Nidavellir, the world of the dwarves, 7. Niflheim, the world of mist and ice, 8. Muspelheim, the world of fire, and 9. Hel, the world of the goddess Hel and the dead.

According to the mythology, there are creatures living around the tree. On the top, there is an eagle with a hawk perches on its forehead. It is said that the flapping of the eagle's wings causes the winds in the world of men. On the branches, there are four stags eating leaves and leaping on each branch. At the root of the tree, a great serpent, Nidhug, gnaws continuously at Yggdrasil. The dragon is at war with the eagle, while a squirrel, Ratatosk, runs up and down the tree carrying insults from one to the other.

The concept of the composition comes from the chaotic atmosphere around the tree. In order to reflect the idea of chaotic caused by the squirrel, the twelve-tone serialism is used to present the melody. In each presented melody, the modulation and pitch-bend are used so that the semitone can be presented. The stability of the tree is presented by the rhythm section in which consists of two electric guitars playing in unison, an electric bass, and a rock drumset.

The twelve-tone serialism is a composition technique of the twentieth century founded by Arnold Schoenberg. The twelve-tone system is designed to equalize all twelve pitch classes. The ordering of the twelve pitch classes is called the series or tone row. Each pitch class in each row must not be used again until all other pitch classes have been sounded. The series may be presented in transposition, retrograde, inversion, and retrograde inversion (Kostka and Payne, 2004).

Crossover music is a term used to define a crossing of genre from one to another. In the case of Yggdrasil: A Music Composition for Synthesizers and Rhythm Section, the drumset is performed using the groove of electronic dance music with the overall sound and tuning of a regular rock drumset.

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Modulation and pitch-bend are terms for synthesizers and computer music. Some sound patch can be modulated with the modulation wheel on the keyboard. The sound is manipulated differently in each sound patch such as the texture of sound, vibration, or the rhythmic within each note. The pitch-bend can be controlled by the pitch wheel. The pitch wheel can be moved up and down in which the sounds are sliding up and down from a microtone up to one whole step. Using the pitch-bend wheel, the microtone which is an interval smaller than a semitone can be achieved; therefore, the actual sound of the melody in each passage contains more than twelve pitch classes.

2. Objectives
    1. To compose a music using electronic musical instruments
    2. To arrange the music in crossover genre between rock music and electronic dance music

3. Materials and Methods
    1. Prepare a set of musical instruments with desired sounds
    2. Prepare twelve pitch classes of Prime 0 and create a twelve-tone matrix
    3. Prepare the backing track
    4. Provide the main melodies using Schoenberg's Twelve-Tone serialism
    5. Use the modulation and pitch bend on the melody to present the microtone in the melody

4. Results and Discussion
Yggdrasil: A Music Composition for Synthesizers and Rhythm Section is composed as a crossover music. It can be analyzed in two parts: the rhythm section part and the melody part. The rhythm section consists of synthesizers, two electric guitars, an electric bass, and a drumset. The melody part is performed by two synthesizers. There are four sounds produced by two synthesizers which mean the musicians on synthesizers have to switch the sound according to the que. Since the music is composed by using sound patch from Logic Pro X, each synthesizer player has to connect a MIDI keyboard with a computer. The sounds can then be projected to speakers through the usage of an audio interface and/or mixer.

The instrumentation and setup for the piece are as follow:
    2 Electric guitars with distortion: one is set the panning to be on the left and one on the right
    1 Electric bass
    1 drumset: setup and tuning for rock music
    2 Synthesizers: for Hybrid Morph Synth, Classic Trance, Analog Lead, and Hybrid Chord

Hybrid Morph Synth, Classic Trance, Analog Lead, and Hybrid Chord are sounds coming from synthesizer in Logic Pro X. Each sound is unique on its own including characteristic of sound and preset reverb.

The overall form of the music can be considered as introduction – A – A' – interlude – B – outro. The introduction is presented by a synthesizer and followed by a groove from an electric guitar on the left for four measures. Two electric guitars play the same groove repeatedly every four measures. An electric bass and a drum fill enter for four measures then the drum's groove changes to an electronic dance music's groove. The different in A, A', and B section is in the sound of instrument and the variation of rhythm in melody.

The A section starts on measure thirty-seven with a classic trance on one synthesizer and hybrid chord on another synthesizer. Another melody is presented using different pitch classes on analog lead.

The A' section starts on measure fifty-seven with analog lead and hybrid chord then with classic trance and hybrid chord. The melody is also presented in a duet-like passage by classic trance and analog lead. The editing is made with the panning left and right so that the projected sounds are presented on the left and right speakers. By the end of A' section, hybrid chord presents the melody from another pitch classes.

An interlude section consists of a drumset and an electric guitar for four measures. It is presented with a drum fill and a slightly different groove by distorted electric guitar. The mixing and editing of the passage are done in a way that the sound of guitar is far away from the microphone, thus it presents a contrasting sound from previous section.

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The B section starts on measure eighty-one with a hybrid chord playing an element from an introduction passage. The following melody is performed by classic trance and hybrid chord in the same rhythmic pattern. The melody is then presented by analog lead and hybrid chord.

The outro section starts on measure one hundred and seventeen with the same groove for electric guitars and electric bass with chords chromatically descending, while the drums play fill until the end on measure one hundred and twenty-nine. From there, hybrid morph synth presents an element from the introduction passage with different modulation and pitch-bend.

Notation for Modulation and pitch-bend are presented in Ossia staff above and below the main staff. The straight line stands for moving the wheel directly according to the commanded direction. The wavy line is a que to the musician to rapidly moving the wheel up and down to the commanded direction.

A modulation wheel should be set to the lowest and played accordingly to the guideline in the score. The outcome of each performance will be slightly different as there is no specific modulation placement. In Logic Pro X and other DAW software, the modulation is displayed as dots and lines. Each dot contains number. The number is a specific modulation placement.

The pitch-bend wheel is automatically set to be in the middle. The pitch can be bent up to a whole tone. If the wheel moves down, the pitch is lower. At the same time, if the wheel moves up, the pitch becomes higher.

The Rhythm Section

The rhythm section consists of two electric guitars, an electric bass, a drumset, and a synthesizer. The chord progression for the rhythm section is based on F Phrygian. It consists of F5 – Gb5 – F5 – Ab5 – F5 – Eb5. The chord symbol consisted of the letter, and 5 is the symbol of Power Chord in which they are popularly written for guitar. It means that the root and the fifth of the chord are played together. The function of the progression can be analyzed as follow: I – bII – I – bIII – I – bVII. The bVII to I minor is considered to be a minor full cadence (Kachulis, 2005). However, since all chords are played without the third, it is impossible to determine if the chord is major or minor; therefore, the resolving sound of the bVII to I minor remains the same even without the third.
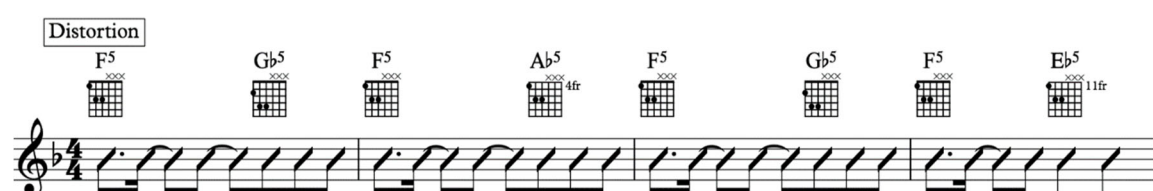

Figure 1 Rhythmic and chord progression for electric guitars

An electric bass is expected to be played as written as seen in figure 2. Notes are based for F Phrygian mode and corresponded with chord progression played by guitars.

Figure 2 Bass line by an electric bass

The drums fill is opened for drummer's improvisation. Each fill can be played differently according to the availability of the measure and accordingly to the que given.

Figure 3 Drums fill during introduction

An electronic dance music drum's groove as a four-measure groove with a slight variation in the snare drum on the last measure is presented from the beginning until the end of the piece.

Figure 4 Electronic dance music drum's groove

During the interlude, a groove for electric guitars is changed slightly. The progression is still based on F Phrygian mode. The progression is as following: I – bII – I – bII – I – bII – I – bVII.
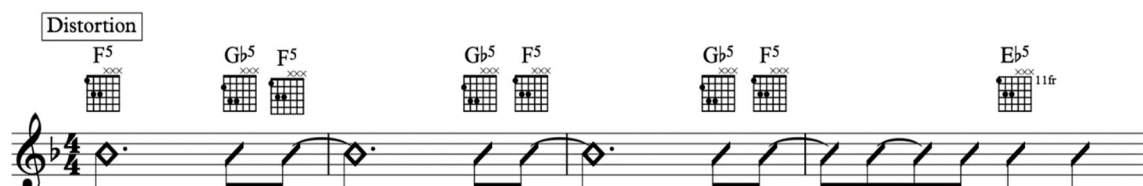

Figure 5 Rhythmic and chord progression for electric guitars during an interlude

A synthesizer used in the rhythm section provides both harmonic progression in which based on F Phrygian and atmospheric passages in an introduction and an outro. A hybrid chord is used to provide the harmonic progression; while, a hybrid morph synth is used to provide the atmospheric passages. Both sounds have been manipulated by modulation and pitch-bend.

In an atmospheric passage in an introduction, the progression used is as follow: F – Fmaj7 – F7 – F6. Each chord has a duration of two measures. The progression is repeated once more with a difference in modulation. The F5 chord is performed in the last six measures with modulation and pitch-bend.

Figure 6 An atmospheric passage in an introduction by hybrid morph synth

The progression in an outro is as follow: F – Fmaj7 – F7 – F6 – F add b13. Each chord has a duration of one measure except for the F add b13 that has a duration of four measures.

Figure 7 An atmospheric passage in an outro by hybrid morph synth

Hybrid chord is a sound coming from synthesizer. It provides a sounding of major triad chord built from the played notes. For example, if F is played on the keyboard, the sound that comes out is F major chord. In each section, the hybrid chord is played similarly to the progression as seen in figure 1 with slight variation on modulation and pitch bend according to the que given.

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Figure 8 Chord progression by hybrid chord at A section

The Melody

The melody of the piece is based on twelve-tone serialism in which played over F Phrygian chord progression. The core of the twelve-tone system is the tone row in which it is an ordered arrangement of the twelve pitch classes. The row has four basic form as prime, retrograde, inversion, and retrograde inversion. Prime or P is the original set of the twelve pitch classes. Retrograde or R is the original set in reverse order. Inversion or I is the intervallic mirror of the original set. Retrograde inversion or RI is the inversion of the retrograde set (Kostka, 1990).

Figure 9 The original set twelve pitch classes used in the composition

The original set of twelve pitch classes is written as seen in figure 9. The set can be sub-divided into three motivic groups according to the intervallic pattern of the 2nd and 5th as seen in figure 10. The melodic sequence is created based on the similarity of sounding interval used in each motif. On the last motivic group, the 5th becomes diminished 5th instead of perfect 5th. Minor 2nd that follows the 5th in both measure one and measure three are there to create a sense of resolution for each motif. Augmented 4th in the last motivic group is there to strengthen the sense of resolution to the theme.

Figure 10 The relationship of each motivic groups according to the sounding intervallic of each note

From the original set of twelve pitch classes mentioned in figure 9, the twelve-tone matrix is created. The original set is named as P0; therefore, the inversion of P0 is called I0. From there R0 and RI0 can be achieved.

	I0	I11	I6	I5	I10	I9	I4	I3	I2	I8	I7	I1	
P0	B	A#	F	E	A	G#	D#	D	C#	G	F#	C	R0
P1	C	B	F#	F	A#	A	E	D#	D	G#	G	C#	R1
P6	F	E	B	A#	D#	D	A	G#	G	C#	C	F#	R6
P7	F#	F	C	B	E	D#	A#	A	G#	D	C#	G	R7
P2	C#	C	G	F#	B	A#	F	E	D#	A	G#	D	R2
P3	D	C#	G#	G	C	B	F#	F	E	A#	A	D#	R3
P8	G	F#	C#	C	F	E	B	A#	A	D#	D	G#	R8
P9	G#	G	D	C#	F#	F	C	B	A#	E	D#	A	R9
P10	A	G#	D#	D	G	F#	C#	C	B	F	E	A#	R10
P4	D#	D	A	G#	C#	C	G	F#	F	B	A#	E	R4
P5	E	D#	A#	A	D	C#	G#	G	F#	C	B	F	R5
P11	A#	A	E	D#	G#	G	D	C#	C	F#	F	B	R11
	RI0	RI11	RI6	RI5	RI10	RI9	RI4	RI3	RI2	RI8	RI7	RI1	

Figure 11 The twelve-tone matrix built from the pitch classes in figure 9

The main theme starts in measure thirty-seven as P0. The que states that the synthesizer is to perform under the classic trance. The motif, which is not only appears in the form interval, appears in a form of repeated rhythmic as well.

Figure 12 The main theme from P0

A developed theme starts in measure forty-five and is presented as P8 with variation in sound of the synthesizer, direction of notes, and rhythm. In the first measure of figure 13, the direction of the note moves down a minor 2nd as in the theme in P0, then the note moves down instead of moving up.

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Figure 13 Theme presented in P8

The next passage starts in measure fifty-seven. The theme is presented in the sound of analog lead and transformed to R11. The rhythmic pattern of the melody may not be noticeable as the theme in figure 12 and 13; however, the motivic transformation comes in term of different modulation on the modulation wheel.

Figure 14 Theme presented in R11

The following passage of melody comes from I9 and is presented in classic trance. This passage contains similar rhythmic pattern that can be noticeable as rhythmic sequence.

Figure 15 Theme presented in I9

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Another passage starts in measure seventy-two presented as a duet-like between two synthesizers. The melody starts with analog lead and followed by classic trance as an echo. Both synthesizers play pitches from P0.

Figure 16 Theme from P0 is presented as a duet-like passage

The passage from measure eighty-five is played in the sound of hybrid chord using the RI1 with variation in rhythm and modulation.

Figure 17 Melody and modulation presented in RI1

Figure 18 The transition passage and a melody taken from P0 and P10

In figure 18, the passage from measure ninety-seven to measure one hundred and nine presents an element from chord progression as seen in an introduction passage in hybrid chord as a small transition passage for four measures. The progression is as follow: F – Fmaj7 – F7 – F6. Then, it is followed by the melody from P0 by classic trance and from P10 by hybrid chord. The melodies are played together at the same time in the same rhythmic pattern. The dissonant created by major 2nd interval is presented.

The last melodic passage of the music taken from P4 starts from measure one hundred and nine to measure one hundred and twenty. It is presented in the sound of analog lead. The original rhythmic pattern of the melody has been augmentation. Longer notes can exaggerate and emphasize the melody more than shorter notes or medium length notes (Kachulis, 2003).

Figure 19 The melodic passage from P4

5. Conclusion

The techniques used to compose the music comes from many aspects in music writing such as classical composition, technique of twentieth-century music composition, music technology, elements from songwriting and contemporary arranging. Once the boundary of music is overlooked, a new music can be created by mixing and integrating all knowledge of the composer. The harmony provides pedal tone based on F Phrygian. The sound of rhythm section provides a cross-genre music between rock music and electronic dance music. The melody and harmony are performed by two synthesizers in which four sound patches are switched according to the que given. The modulation and pitch-bend are used to alter the sound so that variations of sounds and microtones are presented. The mixing and mastering of the music is produced through the usage of panning, equalization, and reverb so that it can present a chaotic atmosphere of the world

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tree where a squirrel, Ratatosk, runs up and down the tree carrying insults from both the dragon and the eagle as both animals are at war.

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