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Research on the Media Art method which makes the city environment into music

JungKi Baek[1] , Changyong Jung[1], Hyunggi Kim[1]

[1] Graduate School of Advanced Imaging Science, Multimedia & Film, Chung-Ang University, Korea
benzine@naver.com, mywood@naver.com, unzi@cau.ac.kr

Abstract. "The Station in front of Hyonchang Park reformulates the urban skyline into musical format. Music City image across the screen to transfer information to get a sense of empathy with the heart. In this study, the serialism that was the sound of artwork using the coordinates given to melody and rhythm it was implemented based media works.

Keywords: Sonification, Music, Media Art

1 Introduction

The work to make the city into music is more than just analyzing the city but making work which can be shared and appreciated. Making the city into music is the dual project which makes image information into sound and sound into music. Without counterbalancing each area and to have harmonized blending, it is essential to understand the music and sounding.

Modern artists introduce various works which make the city into music using musical instruments and music notes. However those works which make the city into music with impromptu inspiration cannot guarantee the consistency of the information nor the music which ignores the compositional techniques can be emphasized [9].

In this research performs the reasonable sounding work using the coordinate plane and introduces how to give the melody and rhythm based on the understanding of music. It also includes the process of implementing actual work.

2 Related Works

The method of expressing images through musical notes has a long history. BC Pythagoreans were expressing the ratio of the astronomical distances as the ratio of notes scale. Kepler (1571~1630) succeeded the celestial music by introducing Copernicanism and polyphony[1]. In the modern time, Sonification phenomenon appeared through machines, in 1920 Raoul Hausmann, the Dada artist, invented the machine “Optophone” which converted the images into sound, and Peter Keene in current time also re-attempted this work in 1999 [2].

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In the contemporary time, there are works which attempt to make into music using notes and musical instrument. Chinese artist, Jieming Hu introduced the art piece named "From Architectural Immanence" (2012) which was made in the form of convexo-concave and tones were placed directly. Akko Goldenbeld made the installation piece called "City Music" (2011) which was the miniature of the city in the form of cylindrical and as the cylindrical goes around, the miniature of the city play the piano keyboard. In Korea, Seul-A Lee made the number and the movement of cars recorded on CCTV as sound by implying Scheonberg's twelve tone-method. (2010) [7].

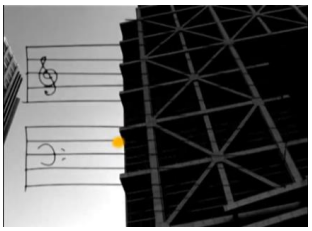

Fig. 1. Jieming Hu "From-architectural-immanence",
Single Channel Video, 6'18, 2002

3 The Station in front of Hyochang Park

3.1 Quantified City images using coordinates

Both visual images and tone have something in common as they can be analyzed numerically [8]. Music is considered subject emotional area, yet the essential elements are closely connected to numbers. For example, music uses various scales, harmony and rhythm and most of them are connected to numbers such as the third interval, the first harmony, three-four rhythm, and an eight note etc [5]. Likewise visual images can be analyzed and understood as numbers through coordinates. The method of converting the character of shapes into numbers using coordinates started 2,000 years ago in Greece and it has been linked to Descartes' analytic geometry until now. The common character which can be analyzed and both shapes and music have is the basis of being compatible with each other [3].

To represent the city images made in 2 dimensions in real number ordered pair, set coordinate system. Orthogonalize Y axis as pitch and X axis as note length. Locate the city images on the first quadrant and get the coordinate of the point. Compose tone raw by matching the unit of X as time (00;00;00), and the unit of Y as semi-note.

<Figure 2> shows the process of making city images into ordered pairs which can be numerical by using coordinates as described above.

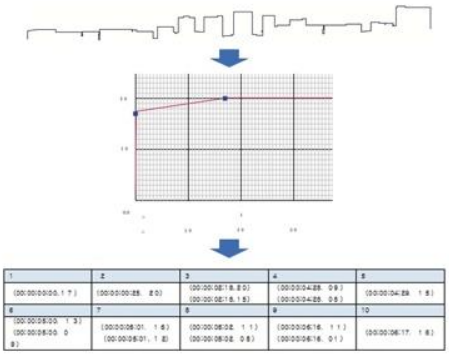

Fig. 2. Visual and auditory substitution using coordinate

3.2 Melody Form

Melody is determined by two elements, pitch relationship and durational relationship [6] Therefore basic melody is produced by setting the note value based on the X of ordered pair, and the Y as pitch. The melody was gained this way contains the structural information of city skyline but that cannot be music as it is. Viewers have cultural melodic consent. Viewers recognize melody depending on the degree of match with expectation which they acquired that tone raw is melody [4]. In this study, the basic melody which is obtained through coordinates will insert in Kayageum (Korean string instrument) scale which is familiar and harmonious.

Kayageum scale has five notes, so it provides harmonious melody without dissonance. The note progress on the twelve string Kayageum matches with the expectation for traditional music and creates familiar melody [6].

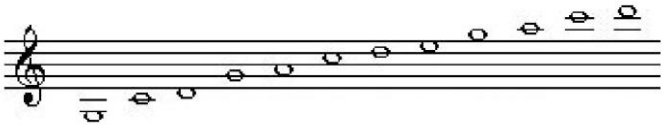

Fig. 3. Kayageum's five tone and twelve strings

3.3 Creating Rhythm

There could be music without melody or harmony, but there is no music without rhythm. Rhythm makes it possible to have an understanding for music by making regular staffs on melody [4]. The length of tone abstracted out of city skyline is irregular and no regular temporal pattern. In this study, discrepancy and repeat are used to give rhythm an irregular raw tone. <Figure 4> shows the way to give rhythm through discrepancy and repeat.

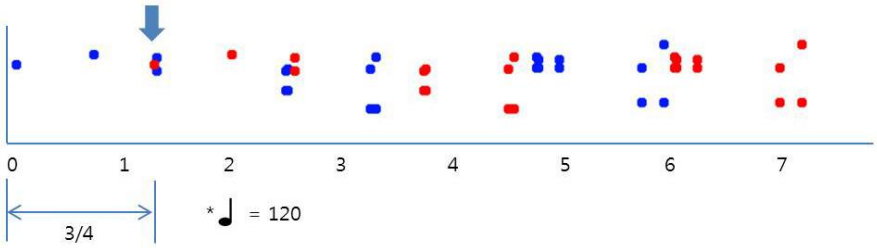

Fig. 4. Example for rhythm using discrepancy and repeat

When the staff temporal which repeats the same melody takes two seconds, four-four rhythm is induced and for 0.5 second, three-four rhythm is induced. Audiences get to recognize the incident of repetitiveness of tones in every regular time line in melody.

In existing music, rhythm is recognized through accent, beat and tempo, yet in this study, rhythm is recognized through grouped melody according to repeat time interval. It has weak rhythm, yet it is an effective way to bring both the informational aspect which reproduces the city and the music aspect which gives emphasis.

3.4 Implementation work which makes city skyline into music

In this study, multi media work is produced by making city music which can express city images according to methodology suggested. "The Station in front of Hyonchang Park" (Video, 3m58s, 2013) is created as music which accurately expresses the regional environment by replacing the height and width of buildings as tone effectively. This work was presented at the 13th Seoul International New Media Festival (2013, Seogyo Art experimental center) and received the review that it refreshed the recognition for environment which no one was interested in.

Fig. 5. "The Station in front of Hyochang Park" image

4 Result and Future Research

The study performs the method which makes melody by using coordinates to turn images into numbers and based on the data. Furthermore the method which heightens the degree of completion of music is contained by giving rhythm into melody. Through this, the art piece "The Station in front of Hyochang Park" which contains the original regional characters was created and received the successful reviews.

It can be the standard method which makes city images into music in the future. However in order to be works which have completion musically, more sensitive composing methods based on various music theories should be implied.

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