Real-time Sound Visualization with Touch OSC: Stimulating Sensibility through rhythm in nature

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Abstract: Many people today are losing their composure to chase material prosperity. Excessive competition is being caused by people being selfish and they are losing composure that way too. The aim of this study is to make people feel comfortable and enjoy playing touch OSC like an instrument and seeing generated image by the sound that they play. In that sense, there was no implicit principle connecting sound and image. However, harmony of traditional instruments and arts are important elements stimulating Chinese emotion and sensibility. This is to reflect the feeling having a cultural bond of sympathy with the audiences as well. This project was an interactive installation which was used Wi-Fi and iPhone or iPad. The audiences can play the music regardless of location and distance and they can make real-time interactive motion graphic by their playing of music through the Touch OSC. This is a wireless real-time interactive system. This installation would be expanded with VJing, a performance and media exhibition.

1. Introduction

Development of technology has given us material prosperity after the Industrial Revolution. At the same time, development of the Internet and the Mobile brought our life innovative changing and the rationalistic technology centered progress gave us convenient life. However, excessive development of rationality has made problems like dehumanization, conventionalize and overemphasize of quantity in around the society. By contrast, people want to seek new ideals by material prosperity. Meanwhile, the tool of coming true dreams was technology in the past. People want to try coming true their dream through psychological satisfaction in lately. It opens new paradigm as era of Sensibility. Art is the center to make fun and enjoying peoples' psychological satisfaction in time of Sensibility.

Meaning of art is getting important and that has different meaning previous art in this context. Harmony of a technology and art, mutual progressing connects with art and technology. The example of era of Sensibility which makes a harmonious development of rationality and sensibility is media art. All of arts progressed on the technology so far. Media art is not only being technology an expressing tool but also the goal of an aesthetic value technology itself. Therefore, media art will be a suitable subject to see the harmony and recovery of sensibility for the rationality in the modern society.

In this study, a balance between technology and art, in other words, and the author seek the restoration of sensibility and characteristic of media art that is the center of the interaction of rationality and sensibility. This project connected with Touch OSC and Maxmsp/jitter to play the sound of Chinese analogic traditional string instrument like Heptachord and Guqin. Audiences can play the music very easily through touch OSC like a musician even though they are beginners.

The player's face can be recognized by Web camera. It makes abstract curves and lines that embody the Rhythm of nature like, the sky line of the mountain like Chinese landscape painting. Therefore, audiences can experience new sensibility through sight and auditory. Making an interactive media art installation which stimulate peoples' emotion by the traditional music and repeated, curved lines like that is the goal of this study.

2. Sensibility in Nature

2.1 What is Sensibility

Sensibility means subjective feeling of human being by a sensory organ. It is hard to define objectively but what direct and simple is feeling and complex judgment which make to cause is sensibility in all of experiences. The dictionary definition of sensibility is stimulation or changing of stimulation for ability of raising sense. Sensibility means a strong, emotional reaction for beauty of nature and art.

2.2 Rhythm and Fractal in Nature

The nature is the root, subject and the material of art. Art and nature is complimentary. Nature has regular flow and repeating, changing order. The curve is soft and elegant included live temper. Nature surrounds human beings and is the target composed by sensual figures. We can recognize the rhythm in the harmony of architecture which has many shapes including high and low skylines and is surrounded by range after range of mountains. Rhythm may be generally defined as a "movement marked by the regulated succession of strong and weak elements, or of opposite or different conditions." Rhythm is the sensation of movement with repetitions and sequence at regular intervals of similar forms by point, line, and color. The expression of rhythm by visual composition gives people delight and amusement furthermore plastic beauty.

Fractal pattern and art which exist in nature include meaning related esthetic essentials to give formal and constructive features. In art works, characteristics of fractal images can be creative fundamentals. A typical characteristic of plastic art in fractal shape is over lapping, repetition, continuity and distortion. Over lapping is the way of expression to make perspective by the illusion of depth. Over lapping is an important fundamental to show three- dimensional design. Repetition is the basic order that we can see in nature and it is used for unity as a constituting principle. Infinite repeated characteristic of fractal images means what to move other way of one direction. Therefore, peoples' eyes move to take in the other elements naturally.

3. Work

3.1 System

The sound was base of this work as the sound makes interactive motion graphics. This project used Live and MaxMSP/Jitter to make music, sound and interactive motion graphics, used iPhone's multi-touch screen and a Wi-Fi network to create a sonic and motion graphic in real-time wirelessly.
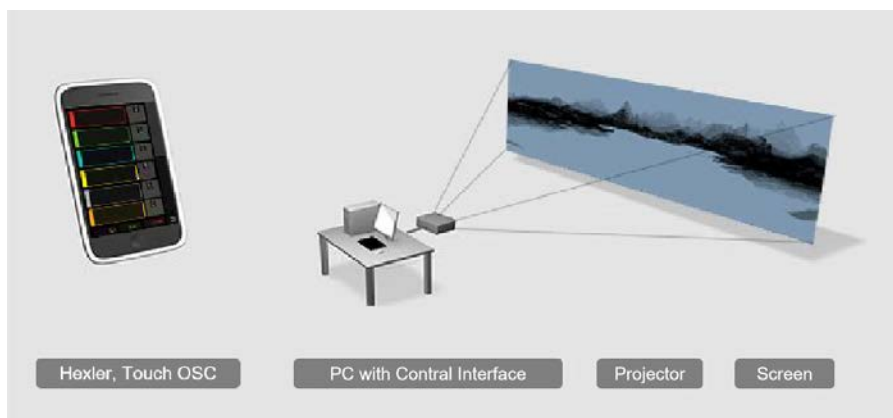

Fig. 1. System

People were able to make and enjoy their own sounds including motion graphics through the iPhone touch OSC. The project used application hexler to make bridge between people and MaxMsp /Jitter.

3.2 Programming with MaxMsp/Jitter

This project bought Touch OSC app and downloaded OSC editor from hexler.net, and made buttons and sliders using the interface of OSC editor. After that, the author used the 'sync' button to synchronize the iPhone and MaxMsp/jitter. When the computer and iPhone communicate together, they should keep same network IP address.

We received data from OSC in order to connect with iPhone and MaxMsp/Jitter, and used the 'unperceived' patch on MaxMsp. The port is 28000 which we selected randomly and set the same port (28000) between the iPhone and MaxMsp. 'OSC-route' patch receives the data from the touch OSC. We made the buttons and sliders before we had a path so we connected them to OSC-route patch.
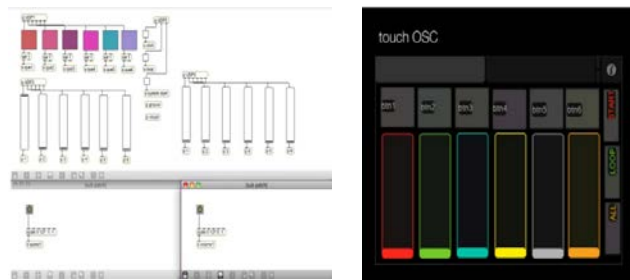

Fig. 2. Touch OSC

Fig. 3. MaxMsp/Jitter and iPhone

'Read' message opens the sound source and 'buffer~' object works as a buffer of memory in which samples are stored to be save. 'r que1' object receives data from 's que1' object of main patch. That is start button of this patch and 'r start' object is power switch of whole patch. 'r speed1' object adjusts speed of sound. 'r loop' is looping of sound. All of them get the data from 'udpreceive' patch connected with Touch OSC.
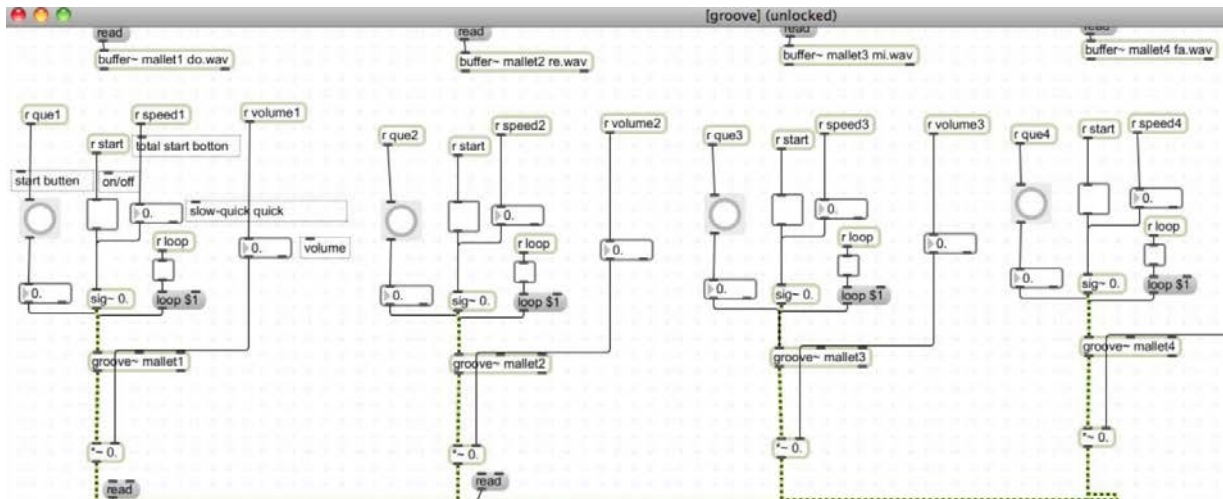

Fig. 4. Maxmsp/jitter (The part of groove button patch)

The 'grooves~' object is a variable-rate, looping, sample-playback object which references the audio information stored in a 'buffer~' object having the same name. We made six buttons to play sounds. Therefore, we made six 'groove' patches to connect with the buttons of Touch OSC. 'Send~ advi' object of 'groove' patch below sends sound data and 'visual' patch receives that data. 'fffb~' object implements a bank of band pass filter objects. An input signal is applied to all filters. Sound is the mix of frequency. The human can hear voice range of about 22,000Hz. 'loadmess freq' object is able to visualize special range of voice or sound. Our marimba sound source is proper range about 700Hz. We connected that to 'z-axis' of Jitter. So whenever sound reaches to jitter, it interacts with sound and motion. 'Open' message opens web camera to grab the face's silhouette in front of the camera. 'jit. rgb2luma' object makes capturing the face's silhouette as a grayscale mode. 'P

backgroundDiff' object catches white face's silhouette and delay moving of white part of face. 'P accumLuma' visualize the elasticity in the shape.
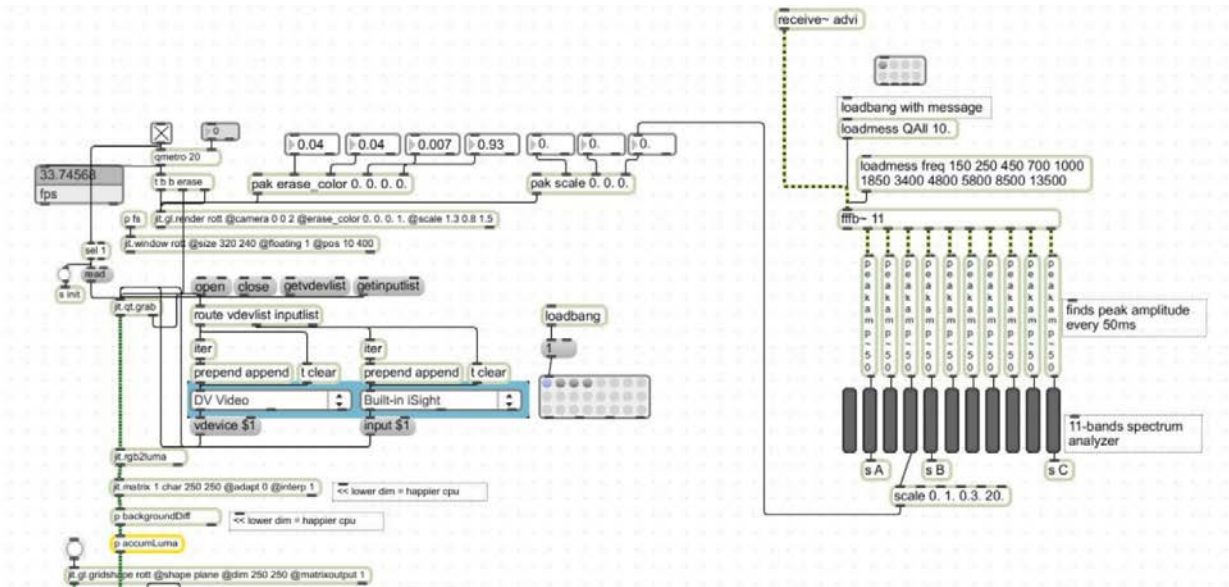

Fig. 5. Maxmsp/jitter (The part of Visual button patch)

3.3 Generated Image by Sound

This art work generated motion images through Heptachord and Guqin sound source. Whenever tones of sound are changed through Maxmap/Jitter, they make curved lines like in a Chinese traditional landscape painting. Therefore, the audiences can enjoy music and motion paintings by their touch.
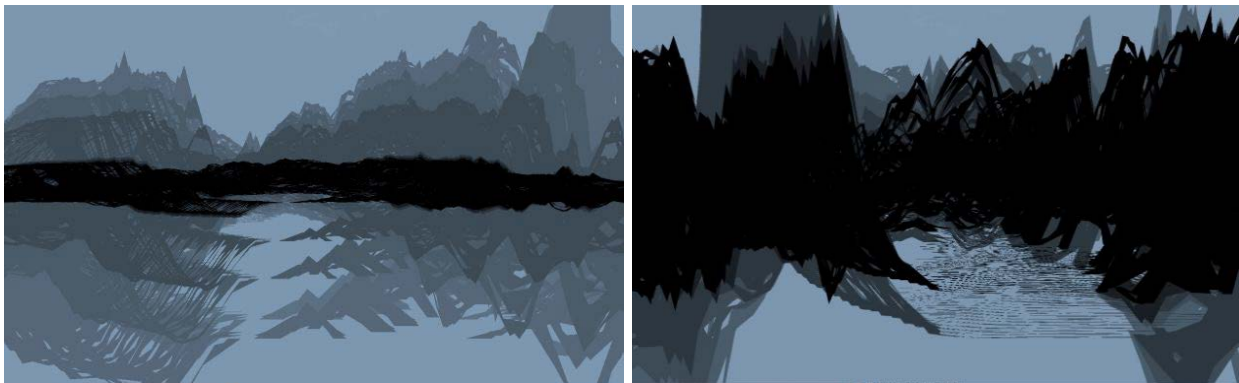

Fig. 6. Chinese Painting through touch OSC with MaxMsp/Jitter

3.4 Installation art work Show

We made a booth which sat the speakers for the sound, the 8 inch monitor for the instruction and the iPhone which used Touch OSC. The web camera captured the audiences' face as a grayscale mode. We set up the rear screen as well because the audience can see the real-time motion graphic when they touch the interface of iPhone.

Whenever the audience touches the interface of the iPhone, wireless real-time sound can play and that sound makes the Chinese traditional landscape painting by realizing the audience's curve of the face as a grayscale model. Through the rear screen, audiences can see the real-time motion graphic back-and forth across the screen.

Fig. 7. Touch OSC and real-time sound visualization show

4. Summary

When we appreciate the art works, it is affected by personal emotion and cultural elements more than logical reason. What to connect between image and sound in the art works is influenced by individual elements as well. In that sense, there is no implicit principle connecting sound and image. However, harmony of traditional instruments and arts are important elements stimulating Chinese emotion and sensibility. This is to reflect the feeling having a cultural bond of sympathy with the audiences as well.

This art work is an interactive installation which is used Wi-Fi and iPhone or iPad. The audiences can play the music regardless of location and distance and they can make real-time interactive motion graphic by their playing of music through the Touch OSC. This is a wireless real-time interactive system. This installation would be expanded with VJing, a performance and media exhibition.

In conclusion, development of digital media technology can enrich our lives. We hope digital media art gives more happiness and enjoyment in human life and it is stimulating peoples' emotion to a better living.

Acknowledgement

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