

Reverence in Ravine

A Transparent Sculpture in Coordinate Space for Installation Art

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Abstract— This paper presents a sculptural installation art project assumed as a coordinate space, which includes plural sweet-spots like spatial coordinates made of orientations of images and sounds from monitors and speakers. In the first implementation of the project, these plural sweet-spots and a structure of them, implied the existence of a transparent sculpture, like a matrix. The aim of the project was to inspire the criticism by the audience about the differences of each experience between plural sweet-spots. In the exhibition, it was observed that the audience **worked** around and searched the existence of the transparent sculpture.

Keywords; media; art; image; sound; installation; computer graphics; immersive displays; distributed VR; virtual storytelling; digital art; space; design;

I. INTRODUCTION

This paper presents a sculptural installation art project with realtime images and sounds, *Reverence in Ravine*, which was implemented by the author in January 2011, and installed at Multimedia studio, Institute of Advanced Media Arts and Sciences(IAMAS), Japan.

The project started to solve a problem on a former video art project by the author, which had distributed videos through the web for plural experiences of the audience [1]. The problem in the former project was that it mainly represented the plural experiences in virtual-world. There was a room for a further research; and it was a motivation to realize the plural experiences in the real-world in the project, *Reverence in Ravine*.

As a general approach for the project, a space of an installation art was assumed as a coordinate space first, in which plural sweet-spots of images and sounds were deployed. Sweet-spot is the focal area between two or more displays of sounds or images, where an audience is effectively capable of experiencing them. Those sweet-spots were made of orientations from monitors and directional speakers. The structures of the orientations implied a matrix on an installation art; a name, transparent sculpture, was given for it.

The aim of the project was to inspire the discussion and criticism by the audience, about the differences of each experience in a sweet-spot, and a comprehensive experience in the transparent sculpture.

II. INSTALLATIONS

There seem to be many discussions about the definition of an installation art, but here it can be defined as a three-dimensional art, including genre of the theatre or the sculpture. The concepts of the *Gesamtkunstwerk* or the *Fountain* also influenced the project [2, 3].

A. Multiple Displays

At first, it was considerable way for the project to install multiple monitors and speakers, because it was easy to realize and could imply the plural experiences. There was a representative audio visual art work by Kurokawa already, *Rheo: 5 horizons* [4].

However, there was a problem that its expression seemed to imply an experience for one sweet-spot, and the audience needed to look at a certain direction for the appreciation. These problems seemed to be same in the sound expression as well. The approach of the multiple displays did not necessarily match to the plural experiences; it could explore another way, such as *Route 66* by Paik which was sculptural video art with multiple monitors, and a sound installation with multiple speakers by Ikeda, *Matrix* which used sounds as a sculptural material [5, 6].

B. Kinetic Sculptures

Kinetic sculptures based on electronics or mechatronics are interesting genre of art. There were diverse expression: a work with autonomous dynamic movement, or a work interacting with environment data, or a work with audio visual interaction [7, 8, 9].

However, the technique did not used for the project eventually. It seemed that kinetic sculptures should be basically appreciated from, not the inside, but the outside of them to see their appearance. On the contrast, appreciation through monitors or speakers seemed to be close to watching windows to see the outside of a room. This metaphoric differences of their experiences had became the reason why the project did not included technique of that.

C. Interactive Arts

By applying the theory of artificial-life or complex theory into its systems, interactive art enabled us to appreciate realtime and variable display through its interface, such as *Life Writer* by Sommerer and Mignonneau [10]. It seemed the history of interactive art was significant and unavoidable for artists. Some works can be mentioned as interactive art works

that enable us to communicate with images or sounds through a certain device or instrument, such as an immersive screen and images by Shaw, and a piano for the realtime images and sound by Iwai [11, 12].

However, the motivation for the project was primarily to realize not interactivity, but the plural experiences in the real-world. Thus, the interactive systems were not introduced in this particular project, but installed a system of the realtime and variable display as a part of its character.

III. TRANSPARENT SCULPTURE

Through the researches of the above, I could reason followings conditions for the project: it included plural displays of images and sounds, a space of the installation was assumed as a coordinate space, the displays were installed like spatial coordinates in it, and the spatial coordinates implied a structure like an invisible matrix. Finally a name was given for the matrix, so that its concept is easily imagined, a transparent sculpture. Transparent meant intuitive and seamless experience of that. Some structural art works with intense sounds or lasers had influenced the concept [13, 14].

IV. COORDINATE SPACE

A. Plural Sweet-spots

For realizing the transparent sculpture, it was effective way to make plural sweet-spots of images and sounds in an installation space of the project. These plural sweet-spots were distributed in the space like spatial coordinates. Though this way, it could be claimed that the audience could appreciate it without looking at a certain direction.

B. Intelligible Space

The project made a simple structure as a first step; Secondly it did not use architectural constructions, such as poles or pipes, to enable intelligible experience of the project, because those things would get in the way of intuitive and seamless appreciations.

C. Coherent Experience

The project used a notion as a motif, which constitute fundamental expression, and maintain coherent experience of that. A clear motif was necessary to make both the plural displays and the comprehensive display in the project, without failures.

D. Motif

The motif of the project represented my personal animistic experience in the summer of Nara, Japan. The notion of the animism encompasses the beliefs that there is no separation between the spiritual and physical worlds, not only in humans, but also in all other animals, natural phenomena such as thunder, geographic features such as mountains or rivers, or other entities of the natural environment [15]. Nara is a historical place with primeval forest, and collectively forms a UNESCO world heritage site. I can see many temples, shrines, ruins, and tombs at that place.

When I was on a way to ancient tomb, Ishibutai-kofun in Nara enclosed with trees and mountain, I had a fear because I felt lost, but actually that was not only the fear, but also a feeling of reverence for somebody or something spiritual, like guardians or spirits, who seemed to surround, watch, and

protect me. After that, soon I could arrive at Ishibutai-kofun in safe, but that reverence in ravine was a transparent and plural experiences of images and sounds for me, with green leaves, little streams, sun shines, and winds of summer.

These experiences were a real story, and I wanted to reference it as a scenario for the audience and as a fundamental direction for the project. It seemed for me that the notion of animism, and my animistic experience, included interrelated and cooperative characters for a coherent experience.

E. Aesthetics

The expression of the images referenced some art history, which included *impressionism*, *abstract*, and *ukiyo-e*. It was expected to enable intuitive appreciation in a moment for the audience through those expressions.

V. SYSTEM DESIGN

A. Space Design

The main equipments to construct the plural sweet-spots were monitors and directional speakers. The directional speakers could send a sound to the limited and distant area; it was a product of TriState inc., Single-directional Speaker Kit [16]. By assuming orientations of monitors and directional speakers as lines, the project included a structure made of them as the transparent sculpture. Several crossings of orientations were a part of plural sweet-spots. In these spots, different sounds were mixed. See figure 1.

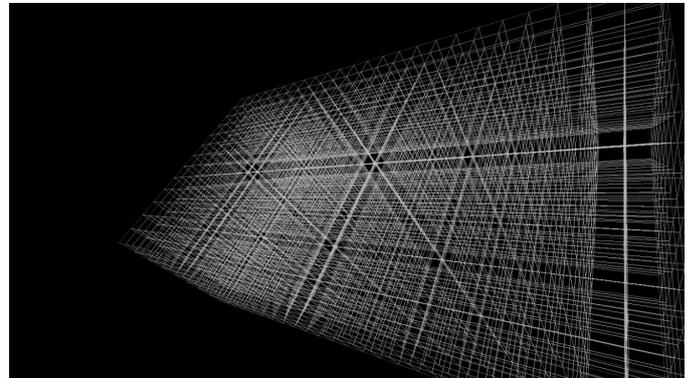


Figure 1. An example of matrix for the transparent sculpture.

B. Images and Sounds Design

The images and sounds were realtime and algorithmic compositions, and composed as a one minute composition per minute. In this computational process, parameters of the playback location and the frames per seconds(FPS) were manipulated in realtime using at random numbers and recursive algorithm, and applied to all outputs simultaneously. In the first implementation, there were ten outputs for six monitors and two-channels stereo speakers, in which four channels sounds were mixed through a mixer.

The code of algorithm was written in C language with openFrameworks library. Computers for the process were Mac Pro of Apple inc., and their CPU were quad-core Intel Xenon 2.4 GHz. I used two Mac Pro.

For the sounds playback of the directional speakers, Mac Book Pro with 2.26 GHz CPU was used, which was connected to an audio interface, and streaming sounds.

C. Installation

The size of the first implementation was approximately: 600 cm depth, 600 cm width, and 300 cm height. All of monitors and directional speakers were suspended from the ceiling, except two-channel stereo speakers, finally. The installation intended not to include obstacles such as table or pipes for its intelligible experience. Although at the first implementation, computers and stereo speakers were on the ground, they had to hid behind a wall or a ceiling. See figure 2.

The position of the each equipment was to shape a simple structure of the orientations. Then, in the first implementation, I made an intelligible structure as the transparent sculpture with no tricks. See figure 3 and 4.

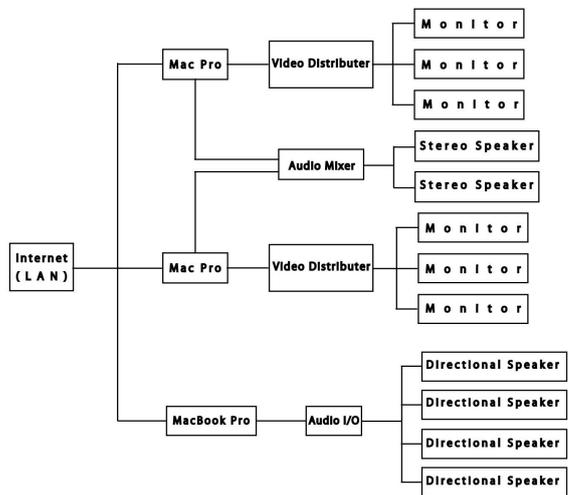


Figure 4. The system model of the first implementation.

VI. EXHIBITION

A. Feedback

In the first exhibition of the project, it was observed that the audience were walking inside the space of the installation, as if they were searching an existence of the invisible entities; they were actually orientations of images and sounds, and the structure of the transparent sculpture.

It seemed for me that the audience were not aware of the existence of the transparent sculpture at the initial appreciation. After they had found one of the plural sweet-spots, they started to look for another sweet-spot, and compared the differences of them. Since the transparent sculpture was also immersive for me, the behavior of audience was predicted as the audience would also behave like I had foreseen. Therefore, it could be claimed that the approach to make the plural experiences, and the transparent sculpture in the project was relevant at least.

About feedback from the audience, it was significant that the audience actively appreciated the project, and the criticism and discussion of the project were not calm. They discussed the message of the project, while they were experiencing realtime plural displays of images and sounds in the transparent sculpture. The criticism and discussion included those opinions: “it implies the diversity of the world”, “it criticizes existing idea of singularity, or its value in art”, “it is an alternative art work which use the technology of realtime reproduction”, and “I could understand an atmosphere of summer from the project”.

B. Discussions

At the beginning of the project, it was not clear that the project was going to use the directional speakers, and make the transparent sculpture. Concrete vision of that had gradually came to my mind, through the researches and the processes of the project. Particularly, it was significant breakthrough for the project to create a concept of the transparent sculpture. On the other hand, the transparent sculpture in the first implementation was simple. Also I could not have deep insight about a potential of the transparent sculpture.



Figure 2. A view of the project with light. The monitors and the directional speakers were suspended from ceiling.

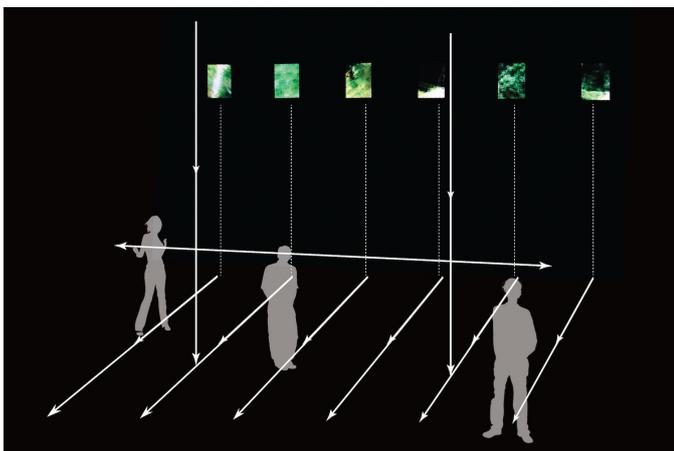


Figure 3. An illustration of the project, which draws the matrix of the orientations as arrows.

VII. SPIN-OFF PROJECTS

The project has already made two spin-offs. The one was *Undula* which included images part of the project, and exhibited from 11th to 24th, March 2011 at Songwon art center in Seoul, Korea. The other work was *Transparent Sculpture: Passages* which included sounds part of the project, and was exhibited from 30th August to 3rd September 2012, at Ars Electronica 2012 Festival in Linz, Austria. Those works were made to represent even more pure concept of the transparent sculpture by using one medium. See figure 5 and 6.

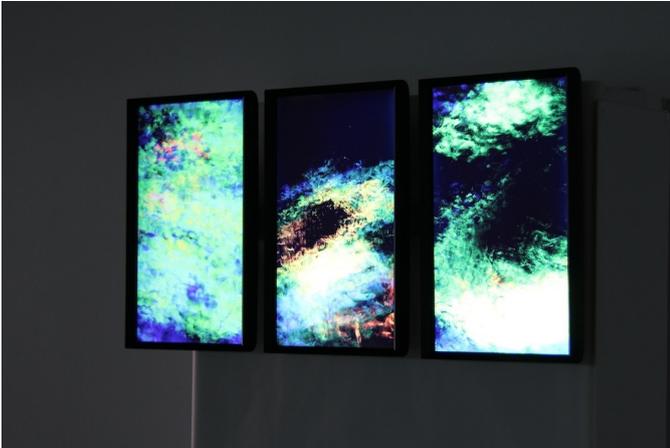


Figure 5. “Undula”, a spin-off project which included only images.



Figure 6. “Transparent Sculpture: Passages”, a spin-off project which includes only directional sounds. The black strings were metaphor of orientations.

VIII. FUTURE WORK

A. Complex Transparent Sculpture

It can be meaningful research to make a more complex transparent sculpture. For instance, if the transparent sculpture were consist of hundred outputs, it can be supposed that an experience in it is going to be enhanced. It is also considerable to make a guidance system in a plaza of a city or a public space, using the concept of the transparent sculpture. In its system, it can be supposed that a complexity of the transparent sculpture can correspond to the utility of the place; the utility may, perhaps, help to realize the vision of the ubiquitous computing.

B. Collaboration with Other Genre of Art

The transparent sculpture should be welcome for a collaboration with other genre of art, such as kinetic art and interactive art; for an application of its concept in the future, it would probably be unavoidable to feature kinetic, physical, or interactive systems.

IX. CONCLUSION

The paper has described how the project had realized the plural experiences of images and sounds in the real-world, as the transparent sculpture. In the exhibition, it was observed that the audience ~~worked~~ around and searched its existence, and ~~discussed~~ ^{walked} message of the project. I hope I can research a vision of the transparent sculpture for the future.

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