

Berklee College of Music

FILTERING CHAOS
an Audio/Visual Performance

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Master of Music in Music Production, Technology, and Innovation

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This project would have been impossible without the financial and mental support of my family, who have always allowed me to pursue all of my dreams.

Abstract

Filtering Chaos is an Audio/Visual (A/V) Performance. The idea of the project is to reveal the need of filtering different kinds of urban life noises in order to achieve a point of balance and harmony.

The composition consists of a real-time A/V Setup, centralized around a computer that handles all the audio and video content. Most of the sounds and visuals are pre-recorded and pre-rendered, which means that the performance is focuses on the manipulation and control of the content. There were a lot of technical challenges during the creation of the piece, but the main challenge was to find the way of delivering the message in the most interesting and compelling way. Fortunately, the project was successfully implemented with a lot of promising comments for the future.

1. Introduction

Urban environments in the 21st century suffer from some of the highest levels of noise. Most urban residents are exposed to a significantly high noise floor which causes numerous negative effects to the human body like: hearing loss, sleep disturbance, hypertension, stress, psychological and cardiovascular effects. Traffic, construction, industry, home appliances, travelling, digital alarms, electrical signals are amongst sources that bombard us every day with sound pressure levels what unfortunately we are used to and we consider them as the norm. The need of filtering the chaos in our lives is now more urgent than ever. The main purpose of this project is raising the awareness of the audience in order to understand and feel the need of reconnection with nature in a smooth and peaceful way.

2. Review of the State of the Art

Filtering Chaos is inspired by various art works which present noise, order and harmony. Some of the pieces that are worth mentioning are:

- Noise / IdN Magazine by Mr. Kaplin. This is an experimental film exploring the relationship between black and white noise, made for IdN Magazines' Motion Gallery for the theme Black and White, featured in IdN v20n5¹: Organic Ornaments in January 2014. In this piece, noise is manipulated in a very detailed and careful way both in sound and video. Also, it requires strong animation skills and modelling.

¹ <https://vimeo.com/84090553>

- Noise International: The Art of Noise by Resolution². This work consists of minimal noise manipulation with alternated abstract and familiar objects. Moreover, there is synchronized narrative with the visuals.
- STM~ Duality | Performance by Luis Sanz and Niculin Barandun³. This is a performance based on quantum physics. This piece includes randomness, generative wave processing, particles and visualization of waves. The unique element of this work is the organization of noise based on rules that the creators establish. Moreover, we clearly experience the transition from order to disorder.
- Clean Organic Titles by Maro⁴. This animation involves digitally animated organic objects with smooth motion.
- Lull by Vincent Houze⁵. This work includes a semitransparent triangular structure, smoke machine and projector that create organic abstract patterns with complex behavior. It is an inspired idea of how an installation can be created making the video content immersive and alive.
- Capillaries Capillaries - Excerpts⁶. This is an audiovisual composition/performance based on cross-fertilization between sound, visuals and time. The remarkable point of this work is the tension created by alternating moments of noise, randomness, and order. Also, the first visual of the piece presents the concentration of noise in a box which delivers the message of control something that is chaotic.

² <https://vimeo.com/61860837>

³ <https://vimeo.com/119977235>

⁴ <https://vimeo.com/90621027>

⁵ <https://vimeo.com/154879680s>

⁶ <http://www.tadej-droljc.org/max-msp-jitter-m4l/audiovisual/>

3. Description

The piece is divided into three parts; chaos & random noise, filtering and at the end balance:

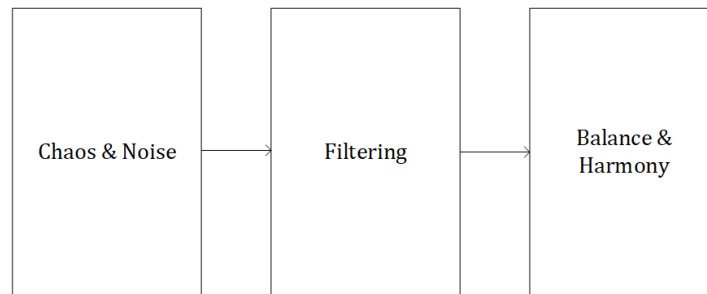


Figure 1. The Story of Filtering Chaos.

In the first part, different forms of everyday noise are revealed in an overwhelming, uncomfortable, loud, grayscale, and glitchy way. This section focuses on chaos with aspects of dissolving and deformation. The noises that are presented are digital (social media, advertisements, alerts, TV) and analog (city noises, vehicles, construction, traffic). This part presents all of these forms of noise that disconnect us from nature and alter our harmonious symbiosis with the environment.

In the second part, organized chaos is introduced. In this section, the concept of balance starts to appear both in sound and visuals; colors start balancing the grayscale first part, and the noise starts to be shaped into familiar objects. In addition, there are alternating moments of musical dissonance and consonance with experimental grooves made of noisy sounds. Audience awareness and filtering begin in this section.

In the third part, the main focus is on nature expressed through harmony, melody and colors. The audience experiences both the beauty of living a balanced life and the need to escape a rushed and noisy life. The piece finishes with alternating nature footage, full of colors and musical consonance.

The A/V setup is the following:

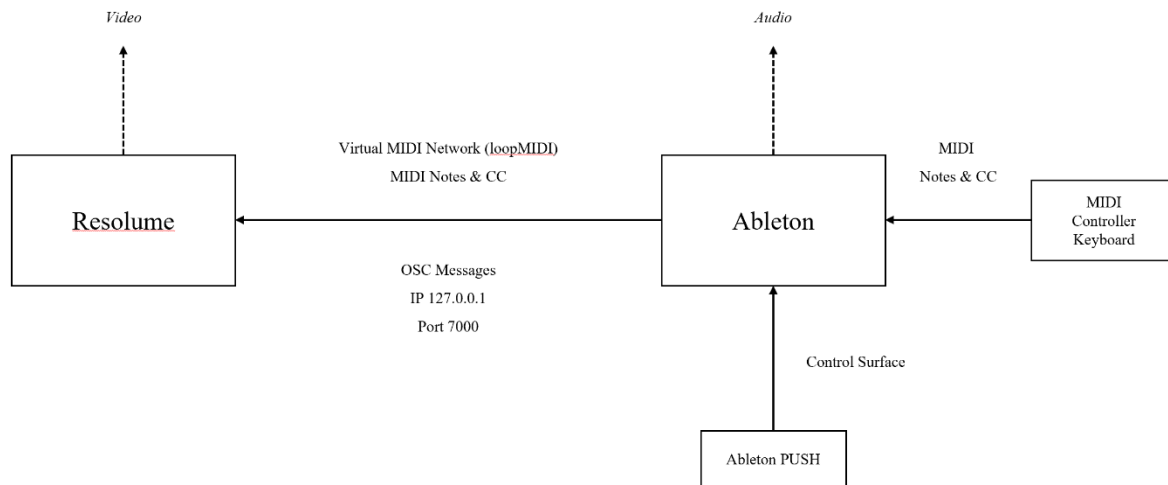


Figure 2. Filtering Chaos A/V Setup Configuration.

There is one computer running Ableton for audio and Resolume for video. In Ableton there are two input signals, one from a MIDI Keyboard/Controller that sends MIDI Notes & CC messages, and one from an Ableton PUSH 2 that is used as surface control of Ableton. Moreover, for best audio results, this computer is connected to an external audio interface via USB or thunderbolt. All Resolume content and effects are controlled by Ableton via MIDI through a virtual MIDI network, and via OSC protocol sending at the local IP Address 127.0.0.1, Port 7000. MIDI network provides better performance results with fast changes in video, while OSC gives a more stable connectivity between the two software. Finally, Resolume is exporting video through an HDMI Port.

The project contains all original audio and video content. Ableton triggers Resolume clips with MIDI Notes and alternates continuous parameters of Resolume with OSC. For a more dynamic A/V re-action, the Envelope Follower max patch is used on audio, and its output is connected to video parameters via OSC with Ableton's OSC Send patch.

4. Innovative Aspects

The project is not innovative in terms of technical specifications, meaning that all software and hardware already exist. The existing technology is used in an effective way for the purposes of the project. The innovative aspect is the artistic choices that are made for delivering the message of the project in a compelling and unique way.

5. New Skills Acquired

There were various skills acquired during the creation of Filtering Chaos:

- Learning of A/V communication protocols such as MIDI and OSC.
- Performing with an A/V Setup.
- Designing and creating visual content using Blender, Adobe After Effects & Adobe Premiere Pro.
- Doing field recordings.
- Researching and troubleshooting.
- Working with intense time deadlines.
- Presenting and proposing a project.
- Choose the most suitable setup and technology for the project.
- Collaborating with musicians.
- Finding the correct balance between time and quality.

6. Challenges

Some of the challenges, both expected and unanticipated, of the project that were appeared include:

- Render time. Depending of the quality of the animations, render times could exceed 24 hours.
- Choosing communication protocol. The most suitable of the available protocols had to be chosen in order to achieve the goal with less complexity and more stability.
- Creating Transitions. The three parts of the project (Chaos – Filtering - Balance) had to transition carefully to keep the interest.
- Computer processing power. Real-time high-quality video content is not yet easily handled by regular laptops with standard CPU and GPU. New laptop had to be bought in order to handle both audio and video with no latency and glitch.
- Noise samples recording and editing. There were many hours of recording and editing of samples, especially in the random noise part.

7. Future Ramifications

After the completion of the project, and especially the feedback during the final CE Defense, the future plans of the project and the creator are:

- Extend the total time of the performance to 45 minutes.
- Create and develop a social-media representation. Firstly, a name has to be chosen and secondly, a portfolio has to be uploaded online. Moreover, a short teaser-demo of Filtering Chaos has to be created to a high standard.

- Apply for A/V festivals. Filtering Chaos can be presented in various international A/V festivals as a performance or as an installation.
- Immersive upgrade of Filtering Chaos:

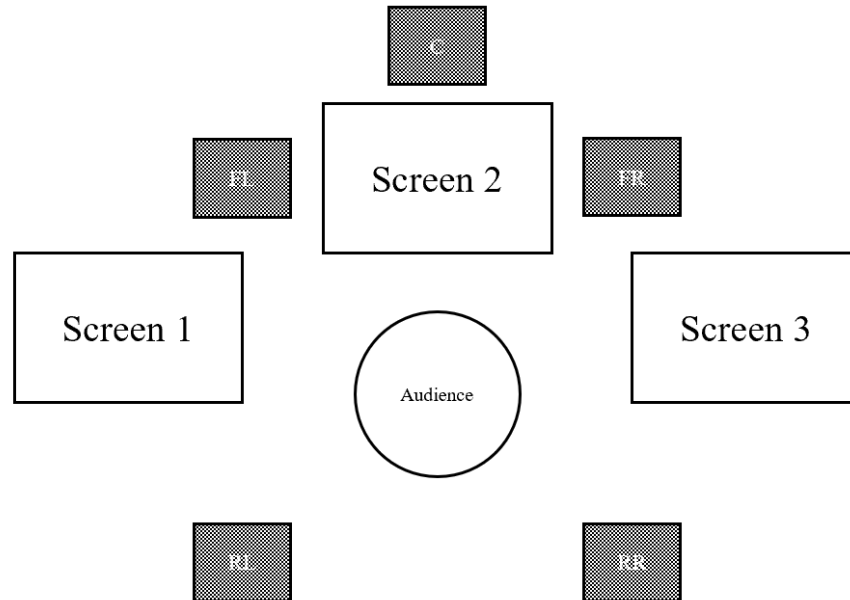


Figure 3. Future plan for the project. An immersive approach.

The idea is to project on to three screens and have a 5.1 surround sound system. All of the video and audio will probably be handled by one computer. Furthermore, a lighting DMX-universe will be implemented to give the project more of an immersive feeling.

8. Conclusion

In conclusion, this project, expounding such a widespread theme, has the potential to be presented in several places in the future. This program, giving all the logistics, necessary knowledge and inspiration, created the environment for the project to be presented. With great

optimism and big dreams, Filtering Chaos is just the beginning of many A/V performances and installations to come.

Bibliography

Drolic, Tadej. 2018. *Tadej Drolic*. Accessed February 13, 2019. <http://www.tadej-drolic.org/max-msp-jitter-m4l/audiovisual/>.

Houze, Vincent. 2016. *Vimeo, lull*. Accessed February 12, 2019. <https://vimeo.com/154879680>.

Kaplin, Mr. 2014. *Vimeo, NOISE / IdN MAGAZINE*. Accessed February 12, 2019. <https://vimeo.com/84090553>.

Maro. 2014. *Vimeo, Clean Organic Titles*. Accessed February 12, 2019. <https://vimeo.com/90621027>.

Resolution. 2013. *Vimeo, Noise International: The Art of Noise*. Accessed February 12, 2019. <https://www.espruino.com/Individually+Addressable+LEDs>.

Sanz, Luis. 2015. *Vimeo, STM~ Duality | Performance*. Accessed February 12, 2019. <https://vimeo.com/119977235>.

Squidsoup. 2018. *Squidsoup*. Accessed October 27, 2018. <http://www.oceanoflight.net/blog/>.