VIDEO AS A MUSIC VISUALIZATION TOOL

Project: Aquatic System

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ABSTRACT

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The purpose of this thesis was to analyze and examine the production process of music visualization used during the live performances. The focus was on video manipulation techniques which later were applied in the Multicast Dynamics – Aquatic System project. This thesis describes in details the creation process of visualization from the perspective of a novice, who gains professional experience through a series of the live performances.

The theoretical section explores the terms that allow a better understanding of the process of visualization. It starts from a historical background of synchronizing film and music and then discovers the ways of video manipulation. The concept of Live Cinema combines previously described chapters into one whole.

This study was carried out as a project by using artistic research method. The empirical part consists of detailed preparation and progression of the project, active reflection and analysis. The artistic research was supported by data collected from 20 members of the Aquatic System audience. These results suggest that the visualization was successful and that it is valuable addition to the music played live.

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Key words: video, visualization, live cinema, video jockey, performance

CONTENTS

ABBREVIATIONS AND TERMS

TAMK	Tampere University of Applied Sciences
DI Box	Direct Input: the little device used to stabilize, minimalize distortions, noise and unbalanced output signal (from laptop, guitar, etc.) in order to transfer it to the balanced input such as mixer or a microphone.
WhatsApp	A mobile cross-platform instant messaging application that allows you to send free messages through internet connection.
MTV	Music Television
Island CQ	Island Creative Quarantine: Is an intensive workshop week for students, teachers, scientists and artists. The purpose of this workshop is to work on the projects in collaboration with students from partner universities (Latvia, Hungary, Finland, Belgium, and the Netherlands) in isolated environments.
C-stand	Century Stand: very widely used metal stand with the tripod base and a baby pin on top in order to attach the grip heads.
Grip head	Mounts different kind of equipment to C-stands, mainly light accessories like light modifiers, cutters or reflectors.
aka	Also known as
MIDI	Musical Instrument Digital Interface

1 INTRODUCTION

The relationship between images, sound and technology evolves and morphs on everyday basis. By using these three elements, artists are able to create something new and unique. According to Hediger V. media art is a relatively new term which "covers video art, installation art, and other artistic practices involving film, digital (moving) images, and recorded sound" (Hediger, Noordegraaf, Saba, Le Maitre 2013, 23). Almost throughout the time of my study at TAMK Media Programme I was involved in the projects and courses related to the video production process. During the workshop Island CQ (June 2012) for the first time I could experience video manipulation (including video mapping), that uses technology previously unknown to me. Afterwards, I had contact with this technique several times, but never on the professional level. Nevertheless, I wanted to learn more about particular aspects of video manipulation. Since I believe that practice makes perfect, therefore I created visualization of the Multicast Dynamics – Aquatic System performance. The project and its development process became my research project described in this paper.

In this thesis I focus on the artistic (aka art-based) research since it is built on the practice. The process of creation, placement in historical and disciplinary context and artistic experientialism are core of that research (Hannula 2004, 20-21, 42). In the same way as science research, the art-based research involves the use of systematic experimentation in order to gain the knowledge as a main target (McNiff 2008, 30-40). Since my experience with the music visualization was basic, the whole creation process is documented in details in order to present a procedure of learning this craft. Furthermore, I explain a way how a novice can start working on music visualization by using video footage. The visualization improvements are based on the feedback received from the audience and the experience gained during the Eurosonic Noorderslag Festival.

This thesis has three-part structuring. The first part is an orientation on the topic. It contains the cover, abstract, contents list and abbreviations and terms used in this thesis. The body part describes the implementation and analyses results. It consists of 6 chapters starting from the introduction. Chapters 2, 3 and 4 focus on the theoretical

research through extensive studies of literature and academic papers, supported by web sources since the topic explored is still quite new.

For better understanding of music visualization, I explain definitions related to it, starting with general introduction of music visualization in the chapter 2. In that part my focus is on the history of synchronizing image with sound starting from the magic lanterns and ending on the constantly developing production of video clips. Putting the Aquatic System project into the historical context gave me a lot of inspirations on how the music can be represented through images or videos. As follow, chapter 3 describes the process of video manipulation. In parallel with the technology development, ways of music visualization has changed. More and more artists use advanced equipment and professional software that allows for more accurate synchronization. Starting from the exploration of the video art, chapter 3 explains the role of Video Jockey who next to video artists is responsible for visualizing the music live. It also describes video mapping and other technologies (hardware, software) that were taken into consideration while creating the Aquatic System visualization. The concept of Live Cinema, explained in the fourth chapter, arranges knowledge about music visualization by division into three types: abstract synthetic cinema, graphical cinema and camera-based cinema. Based on the latter type, I created the visualization of the Aquatic System project.

Chapter 5 consists of a detailed description of creating visuals for the Aquatic System project. This part describes the creation process, the cooperation between two artists and the research execution in order to improve the project. It also covers all live performances which have been a source of new experiences and improvements: Eurosonic Noorderslag Festival (Groningen, The Netherlands), Tampere Film Festival (Tampere, Finland) and DobleCLICK Festival (Vic, Spain). The last chapter is a reflection on research practices, learning outcomes and future plans. Additionally, two appendices are added: the Aquatic System rider and the Aquatic System's stage plan and set-up.

2 MUSIC VISUALIZATION

Visualization stands for the general way of graphical interpretation, analysis and transmission of data. It allows exchanging information (also abstract) between people based on their experience in the real world. It helps in scientific research, education as well as artistic expression. Visualization can be made in different ways, like for example by usage of lights, shadows, drawings, paintings, moving images (animations) or/and videos. Music has similar functions as visuals. It can also be used in research, education and arts. According to the sound designer Murch W. "the most successful sound seem not only to alter what the audience sees but to go further and trigger a kind of conceptual resonance between image and sound" (Harper 2009, 2). Conceptual resonance means the interpretation of sound and its intensification. This phenomenon has been used by many artists that dealt with music or visual media to this day.

The idea of music visualization has a long history. One of the main purposes of its creation was to catch the viewer's attention in order to promote the music. Musicians could express themselves not only through the music but also through the visual representation of their artistic imaginary. In this thesis, the main focus is on the video, although there are other ways of visualizing music, as mentioned in the first paragraph of this chapter.

2.1. Synchronizing film and music

According to Marcovitz (2012), the history of illustrating music has begun already in 1863. The idea of synchronizing sound and image was introduced by Tony Pastor who would use the magic lantern (akin to slide projector) to accompany his song 'Heroes of the war' with projection of Civil War generals' portraits (Marcovitz 2012, 12). Altman holds that "The Little Lost Child" was the real (and first) vaudeville attraction at the end of 19th century. Allen May sung this song while George H. Thomas projected his photographs (printed on the transparent glass) in opposite of the audience. The images would correspond to the song's part played at that specific moment. The song has sold in over 2 million copies of sheet music what was a huge success at that time. Many other artists would follow this trend and improve it; black and white photographs would

be hand-coloured, live models would join the performance on the stage, the audience would interact by singing together with the choruses (Altman 2007, 107).

Sound-on film invented in 1920s by Lee De Forest (DeForest Phonofilm) allowed to record sound directly onto film as parallel lines. The first full length movie which used the sound and image synchronization was American movie "The Jazz Singer" from 1927, where the star singer was Al Jolson. In 1925 the "Song-Car Tunes" cartoons were introduced by Fleischer brothers. The animated movie was featured with the jumping ball that would point on the animated lyrics, encouraging the audience to sing along. The era between 1930s - 1950s belonged to musical movies which used the sound-on film technology (is used to this day). Musicals are movies, which provide the story that is many times interrupted by the singers who would start to dance and sing. One of the best known musicals produced in 1953 is "Gentlemen Prefer Blondes" with Marilyn Monroe. Disney produced in 1940 the feature-length animation called "Fantasia" that was composed of several unrelated stories accompanied by classical music (Marcovitz 2012, 12-15).

The 1940s real sensations were three-minute soundies which can be called the forerunners of music videos (History 2014). Initially the soundies were well known in United States where they would be displayed onto the specially designed audio-visual (possessing both sound and visual components) jukebox called Panoram. These coin-operated machines were equipped with a glass screen that would display the closed-loop 16 mm films reel in pair with magnetic soundtrack chosen from the available songs library. In the late 1950s the Scopitone (type of audio-visual jukebox) was introduced in Europe by the French company Cameca. The Scopitone (picture 1) could play 36 films in colour, selected by the customers, while the Panoram could play only 8 black and white movies displayed on the loop, what basically means that the viewer would watch them over and over again in the same order. The French audio-visual jukebox had been introduced in United States in 1964. There were several differences between European and American Scopitone in construction of the machine, but the most important was a film quality. The American soundies were produced in Technicolor (the colour motion picture process) what keep the good colour quality at the present day (as it was made), while the French soundies did not use that process and the colours have faded out (Ben Marks 2011).
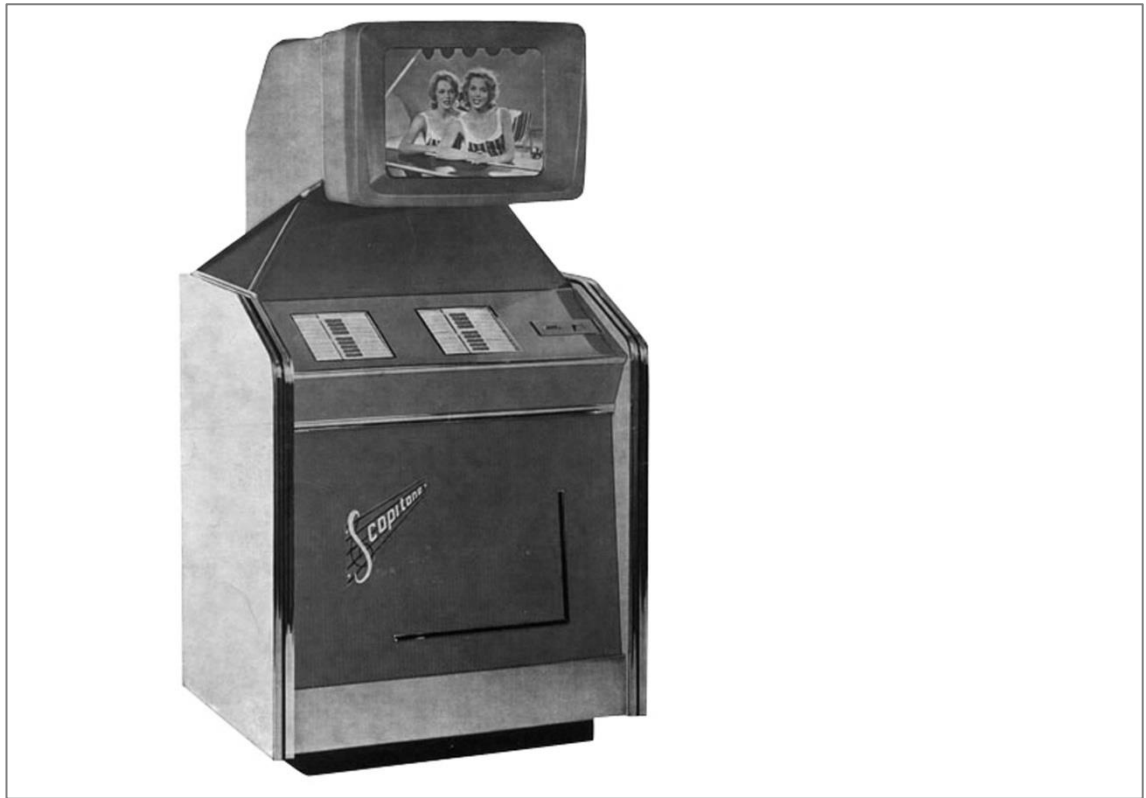
PICTURE 1. Scopitone (Collectors Weekly 2015)

2.1.1 Music videos

In 1960s when the video recording technology became more accessible, although still very expensive to use, some of the rock bands started to experiment with it. One of those bands was well known The Beatles. In 1960s they would record several videos to promote their music among with full-length feature movie "A Hard Day's Night" directed by British filmmaker Richard Lester. The storyline was very simple; it showed the ordinary day of the rock group preparing for their concert (Marcovitz 2012, 20-21). Another well-known movie from The Beatles is 'Magical Mystery Tour' where the rock band and other passengers of the bus go on the trip full of the magical moments (Harrison, Lennon, McCartney, Starr 1967). Similar as in the musicals, the plot was cut in a few places by performance of the group's songs / music videos. Videos, made for this rock band's music, helped them to climb on the top of the record charts around the world. Since The Beatles' success, many other rock and roll bands had followed their lead.

Just seven years before launching the MTV, the Australian television promoted the music programs 'Countdown' and 'Sounds' which became very popular among teenagers. In 1978 'Video Concert Hall' played several music videos every day in American TV (History 2014). The biggest impact for the music videos industry had the MTV Music Television, launched on 1st of August 1981. John Lack, the founder of the channel said "Ladies and gentlemen, rock and roll." The first music video played on MTV was "Video Killed the Radio Star" by the British band The Buggles. It did not take a long time for this 24-hour music program to conquer the whole United States and other continents and to become source of pop culture and entertainment. It is worth to mention that the essential role on MTV had so called veejays (aka video presenters) that would play different music videos on television (Marcovitz 2012, 27). They were representing a wide array of music genres, taste and personal ethnicities. Later their role changed and they would introduce video clips (less flexibility), became journalists or lead their own television shows (History 2014). MTV has played an important role in promotion of the many artists' careers, like Michael Jackson, Madonna, Prince, etc. The first music video which became an international phenomenon was Thriller by Michel Jackson. The video clip was directed by Hollywood film director John Landis, was 14 minutes long and was a very well-directed horror story. The sales of the album (containing Thriller) increased from 25 million copies to 45 million copies after promotion of music video, ending over 100 million copies at present day what made it the top-selling album on the world (Marcovitz 2012, 31-35). Since that time, music videos have become indissoluble part of the music industry. Over the years of technology development, the music industry has experimented with video production to attract the largest number of fans.

3   VIDEO MANIPULATION

According to Harper G. there is a large dependence between sound and visual media (video, film etc.). Thanks to sound, people are able to see the same image from another perspective, and thanks to the images they are able to hear sound differently. The human ear detects sounds based on experience what provokes other senses like for example a sight (Harper 2009, 1-2). Organized sound structured in time, combined with parameters such as pitch, rhythm and tone colour amongst others create music.

This thesis focuses on specific visual media which in the same way as sound can be manipulated. Video, in parallel with technology development, became a great tool of expression for many artists, from which many initially were involved in music production. At the beginning they used video to reflect the surrounding world. When recording tools and techniques improved, lots of artists were experimenting with the video, adding a new meaning to that media, often not understandable by the mainstream audience (Meigh-Andrews 2006, 180-181).

3.1.   Video art

At the time when video became a medium of communication, a lot of artists got interested in using video to avoid existing commercialism of the art market. Sony 'portapak' (analogue video-tape recording system) which could be carried by one person became an important tool in the artists' hands. It has become their third eye. Artists were attracted to the temporal nature of this video although it was/is dependent from the new technology and accessibility of specific tools. According to Meigh-Andrews, many video artists considered working 'live' as a political and artistic statement. The video art aesthetic has changed in parallel with technology improvement. New techniques, such as slow motion and frame-accurate editing, have allowed artists to express themselves in a more accurate way (Meigh-Andrews 2006, 3-8). The artist would record the footage, manipulate it and show it to the public as a conceptual art, through installation or performance.

Fluxus played an important role in video art, the art movement critical towards consumerism and materialism. The anti-art movement was represented by the group of international artist for whom video art became a great expression tool. Thanks to video they could fight against the corporate monopoly of the 'one way' broadcast television system (Meigh-Andrews 2006, 18).

Nam June Paik was one of the first artists who created art by using video. Paik initially worked within the field of avant-garde music, being fascinated by sound collage techniques. In 1962 he created 'Exposition of Music-Electronic Television' that was reacting to sound waves by stretching and twisting the image in random compositions. Paik believed that in the same way as music became electronic, 'art' as electronic image will be considered as high art (Meigh-Andrews 2006, 10-15).

Another artist, Steina Vasulka said that video always comes with the audio track (Meigh-Andrews 2006, 125) which is an important difference between video and film. For her video was an electronic signal, the same as audio. Together with her husband Woody Vasulka, they are two of the major video artists who experimented with image manipulation already in the late 1960s. In their work 'The Matrix' (1970-72) they explored the relationship between electronic sound and image; they wanted to examine the limitations of these two media (picture 2).
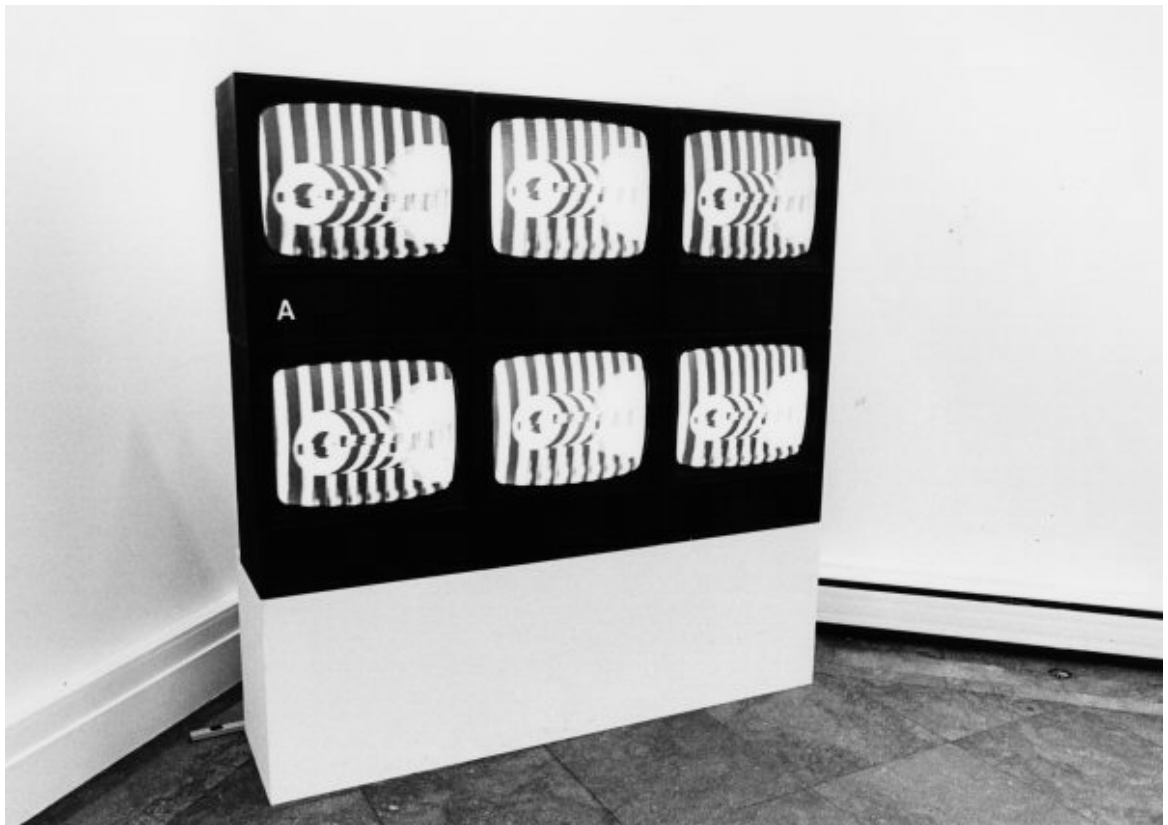
PICTURE 2. Steina and Woody Vasulka, The Matrix (Daniel Langlois Foundation 2014)

3.2. Experimental film

According to Brzeziński experimental film develops its own aesthetics. A reflection of the current experimental film / video makers, has a high autonomy and despite the many inspirations from history of art and cinema, it becomes a separate area, and therefore extremely interesting. Experimental film is diverse in theme and the way of production. It may be an image decomposition process, destruction of film, as well as works that use the language of tutorial film, destroy our sense of security and involve us in the game with the cinema. Some are kind of vigilance test for the recipient, some just offer the joy of seeing that comes from the concentration of the mind on the moving image. Some movies damage the sense of aesthetics and go back to the hidden instincts, while others tend to quiet meditation and the search for the absolute (Brzeziński 2014).

3.3. Video mixing

A lot of video artists were involved in the film industry before they started their careers with the video. It was caused by high expenses for the movie recording tools and availability of them. In parallel with technology development, many artists started to experiment with video art what gave to them bigger freedom of self-expression.

Thanks to rethinking video in the same way as sound, the term 'mixing' became part of the video art. In definition given by De Valk we can read that 'mixing' is a multiple compilation of individual sound elements (De Valk 2013, 291), while Timothy Jaeger (2006) uses this term to describe a methods for combining video clips.

Timothy Jaeger (2006) writes about the differences between montage and mixing, which are, inter alia, methods for combining video clips, and the time and place of their presentation. The montage is a combination of two carefully selected video clips, giving the third image. It was already theorized in 1920s by Sergei Eisenstein, director and film theorist pioneering in the use of montage. More challenges gives the mixing, in which the number of selected clips is unlimited, it creates something like unforeseen future cinema. While director has possibility to rethink shots at the filming location, artist who mixes video clips is not able to do it at the live performance environment. Orientation in time and space, careful planning of the whole performance, attention to interactions with the environment and graphical user interface (GUI) are the main elements which have to be taken under consideration to play a good mix (Jaeger 2006,16). It is also important to keep balance between all of these dimensions (Engström, Esbjörnsson & Juhlin 2008, 157).

3.3.1 Video Jockey

According to Engström, Esbjörnsson & Juhlin (2008) the term VJ (Video Jockey) was used for the first time in 1970s in the clubs od New York and San Francisco to describe the person who uses video, lights and film projections to accompany a DJs music sets. Since then this form of artistic expression spread internationally and appeared in many different settings like live concerts, shows, museums, festivals, art galleries and mainly

nightclubs. The indoor and outdoor events devoted to the motion picture, film and new-media art are excellent places for VJs (D-Fuse 2006, 10).

The VJ has to take into consideration a lot of different dimensions while performing and remember to keep balance between them in order to play a good mix (Engström, Esbjörnsson & Juhlin 2008, 157). Orientation in time and space, careful planning of the whole performance, attention to interaction with the environment and equipment are some of them (Jaeger 2006, 16). The sound visualization during live performances is very complex, some parts of visual materials are played manually and some of them are automated or dependent from different kinds of sensors. The complexity of this work also consists of interaction with music, audience and environment (Engström, Esbjörnsson & Juhlin 2008, 157). The activity done by VJ while performing live is so-called VJing.

Visual Jockey has to have a great imagination, sense of rhythm, technical knowledge and empathy to recognize emotions experienced by audience. Various types of media can be mixed by the artist in order to visualize the music: paintings, photographs, videos, motion graphics, oils, lights or different types of chemicals (Bergström & Lotto 2008, 1). Generated images can be looped, remixed or arranged in several different ways depending from the artist's style, visual context and space (Zingerle & Freeman 2011, 1). The visuals are projected by video projector which uses a lens system in order to project images on the screens or other surfaces available at the performance place.

According to Motomura (2011) "VJ and his interactive improvisational performance expression" is a new art category where unique software and hardware is being used in "real-time" (Motomura 2011, 5). With the development of hardware (e.g. stronger graphic cards, midi controllers instead of mouse, touchpads) and software, the artistic expression has pushed the boundaries of live interaction. Nowadays, most of the visuals are generated via digital software. A lot of artists use original footage (recorded by them) to create their own, recognizable style. Some of the visuals are generated live (without preparation of video footage) by using the hand-held camera which can show the audience or different techniques used by VJ (e.g. painting, chemical mixtures) in order to project them in big scale on the available surfaces.

3.3.1.1. Concerns of VJs

As Correia states, one of the basics problems for 'laptop' musicians and VJs is a lack of understanding on the part of the audience. Most of non-specialist audience does not know what artists are doing behind their laptops screens and they might think that audio and sound were pre-recorded. They want to refer to the artist and know what is going on behind the scenes, is like desire for the visual confirmation of authenticity (Correia 2013, 55). Taylor, Izadi, Kirk, Harper & Garcia-Mendoza also noticed that audience in club environment is unaware of performers' decisions made in 'real-time'. Laptop became a real barrier and the only thing where the interaction is (Taylor, Izadi, Kirk, Harper & Garcia-Mendoza 2009, 1251).

According to Thomas Ciufo, there are two more concerns to face by visual artists during live performances. The first is the quality of the tools used to manipulate video live. Software available on the market needs a lot of disk space to work properly and fully enjoy the power of seamless video; otherwise it results in poor image resolution and low frame rates. Another problem is the easiness of combining together unrelated footage and sound and filtering it through a range of uncorrelated filters. Ciufo draws attention to the need for conceptual work where sound and image are integrated (Ciufo 2001, 4).

3.3.2 Video mapping

The visuals are played in the dark environment on the variety of screens and surfaces. If the projection is done on the commonly available rectangular screen then all the adjustment can be done manually on projector itself. They can correct curves, blurriness, colour and other mistakes of the image. The problem occurs when the surface has uncommon shape or is three-dimensional like for example building or a sculpture. One of projection mapping examples is shown on the picture 3. The BUCUR555 is a project created by The Macula for 555th anniversary of Bucharest. The video mapping was projected on the Palace of Parliament in Bucharest, Romania (Video Projection Mapping 2015).

Video mapping (aka projection mapping, spatial augmented reality) is a technique which allows projecting visualization on irregular surfaces, adding to it an optical

illusion. It can change the objects to something else by for example adding motion to previously static objects.

To prepare video mapping of the selected object, the virtual replica (of that object) is needed. The replica is created in specialized software. The first thing is to pay attention to the choice of appropriate illustrations and videos, which will be used for visualization. Subsequently, they need to be applied to the virtual object through the help of the so-called 'masks' that allow for an exact match. Masks reflect the exact shape of the selected object or part of it. It is important to know the location of the object in space, as well as the lens used in the projector. This knowledge allows creating exact video mapping (Videomapping.org 2015).

PICTURE 3. BUCUR555 by The Macula: video mapping on the Palace of Parliament, Bucharest (Video Projection Mapping 2015)

3.3.3   Video mixing software

Nowadays, there are several video mixing programs available on the market and each one has similar features. Programs like Resolume, Modul8, VDMX 5, Arkaos, and CellDNA have ability to mix video in real-time, layering (playing a few videos clips at the same time by changing its opacity), adding special effects, etc. Some of the artists create their own, personalized software used during live performances. One of the most popular software used by VJs is Resolume Avenue. It is a real-time instrument for live audiovisual performances with simple user interface. It can apply numerous (about 70)

special effects to video such as Vignette, Hue Rotate, Dot Screen and Particles. The usage of these effects depends from the personal taste of the artist. The best way to get familiar with these special effects is to own practice. It is possible to play audio and video together in this software and what is more important, receive an audio input if it is played from the other device. Resolume Arena has the same features as Avenue plus advanced video mapping option which gives a lot of control over the screens or objects used for projection. Video artists are able to slice an image and adjust it to the surfaces. Arena also allows for soft edging used for panoramic projection, possible by combining projectors (Resolume 2015).

3.3.4   Video mixing hardware

One of the main tools for VJs is an Apple MacBook or another laptop with the special video mixing software installed. The most important is that the laptop has a lot of memory space or RAM (Random-Access Memory) starting from 4 GB up. The hard drive is next major part of the laptop; it is the place where applications and video files / images are stored (the faster access to them, the better). The standard laptops have at least 5400 rpm (revolutions per minute) which might be upgraded up to 10000 rpm. Also connectivity of the laptop / desktop is important: USB inputs, firewire, etc. The best way to choose a proper computer is to get familiar with the software requirements. For big performances, like for example projecting on the skyscraper, a media server which is dedicated for processing images and videos might be useful.

To control the visuals in accurate way visual artists use MIDI controllers. MIDI stands for Musical Instrument Digital Interface. This hardware allows interacting with the computer software in several different ways by using knobs, sliders, buttons or even keys. These features are assigned to specific functions and / or samples (video / image) in the software (picture 4).

Video mixer is a device designed to mix videos coming from different sources and to compose special effects with them. Depending from the brand and the size of the video mixer we can connect to it at least two analogue video sources like DVD players or external camera. The mixing process is based on crossfading these videos. One of the most commonly used features in video mixer is the BPM (Beats per Minute) function

which syncs rhythm of the music with video in natural way. An example of this device is shown on the picture 4 (on the right side).

There are a few options for VJs to play without their laptops. Video sampler is a device with a lot of buttons to which video / image samples can be assigned. It has limited amount of special effects like for example speed manipulation and revers button (picture 4). Another example is video synthesizer which generates a bunch of animated visual materials that can be manipulated live. It is also possible to change the XYZ coordinates, speed or colour. The DVD player is made for playing various videos, previously recorded on DVDs discs. It allows choosing the video frame from which VJ wants to play.

PICTURE 4. Examples of video mixing hardware (from the left side of the picture): MIDI Controller, Video Sampler, Video Mixer (Roland 2015)

All these devices are connected with special AV (audiovisual) cables in order to carry video signal. The most basic are RCA connectors which have only one wire. S-video has two wires which separate black-and-white and colouring signals to achieve better image quality. RGB connector is an old version of VGA (Video Graphics Array) and it still can be used with the analogue devices. Taking into consideration MIDI controllers and Synthesizers usage, the MIDI connector is needed. DVI (Digital Video Interface) connects a video source, such as a display controller to a display device, like for example computer monitor. HDMI (High-Definition Multimedia Interface) is a modern version of connector, standard for the video and audio cables. It is able to transfer uncompressed video data. Commonly used is USB (Universal Serial Bus) cable which connects computer with other electrical devices (Audiovisual Academy 2015).

4   LIVE CINEMA

In the recent years, visualization has almost become an integral part of music played during the live performances at the festivals, concert halls, theatres, etc. Digital video technology mastered areas previously reserved only for the other forms of media (such as painting, printing etc.). Film, television and advertising industries developed a wide range of technology used for virtual sets, interactive transmissions etc. The potential of these technologies are tempting to many contemporary artists and designers engaged in the visualization of the performances (Jasiukiewicz 2012, 124-125).

The concept of Live Cinema involves performance arts and music together and deals with experimental way of narrative and non-narrative film making. Thanks to the video artists and their experimental approach to film, Live Cinema has become an important part of the modern culture. Relationship between music and image / video is synergistic since the beginning of their synchronization. This concept goes back to the roots, when playing music and images, together with the audience response created the unique live performance.

The Live Cinema allows artists to experiment with selected material like pre-recorded video clips, audio-visual samples, animations, etc. and to manipulate them according to their artistic taste. All this material is run by visual artist in specially designed software. This selected material is usually projected on multiple screens using audio-visual effects, loops and layers what gives different experience than in traditional cinema (SuperEverything* 2014). The liveness here plays a key role; it can be understood as improvisation, authenticity and singularity of the performance. Cooke describes it as an act with possibility of construct a performance around decisions made in 'real-time'. All of it depends from the creativity, readiness to take a risk and ease of use artistic tools by the performers (Cooke 2011, 10-12).

During the silent era, cinema was accompanied with the music played with the piano, orchestra, etc. According to De Valk sound accompaniment to film has a very important role. Used in many movie productions, it can be beneficial for them or cause their failures. The soundtrack (sound accompaniment to film) can be an art form by itself (De Valk 2013, 225).

4.1. Types of Live Cinema

According to Michael Lew (2004), Live Cinema can be divided into three groups: abstract synthetic cinema, graphical cinema and camera-based cinema (Lew 2004, 144-145).

4.1.1 Abstract synthetic cinema

The abstract synthetic cinema is also called visual music; it corresponds to the simple elements of rhythm, shape and colour. It occurs when one of these elements is controlled by a performer (Lew 144-145). The combination of images and sound played together, by one performer or in the collaboration, has a rich history starting already in 17th century. The first audio-visual instrument ever known is clavecin oculaire (visual harpsichord) used in the performance of French artist Luis-Bertrand Castel. The most known instrument from 18th century is Alexander Wallace Rimington's Color-Organ which projected coloured light while playing. Invented Clavilux (from Latin: light played by key) by Thomas Wilfred was also well known instrument which painted music with light (Motomura 2011, 3-4). The variety of Clavilux colour scheme was small and was representation of emotions: exciting red, joyful yellow, peaceful green, cold blue, melancholy violet and stately purple (Gernsback 1931, 710). The image would be projected on the wall or canvas. The first electronic device which created and modified video in real-time was video synthesizer, similar to the audio synthesizers. Created around 1968 by Stephen Beck, it was designed to produce images without usage of camera. It could generate colour, form, motion and texture and was mainly used during live performances (Meigh-Andrews 2006, 119). Nowadays, most of the artists use special software and range of tools such as MIDI controllers or different types of sensors to manipulate an image (Lew 2004, 144-145).

An example of abstract synthetic cinema in today's world is Mariska de Groot's light-to-sound installations. In her Quadtone - Lumisonic Rotera (picture 5) she uses light projected on the spinning metal wheels with carvings. The light passing through the holes is converted into the sound by the light sensors. All the space is filled with lights, shadows and unique sound. Everything is done manually with analogue equipment (De

Groot 2014). De Groot walks over the space and is twirling the wheels, the sensors reacts to the light movement and are producing an abstract sound.


PICTURE 5. Mariska de Groot performs her Quadtone - Lumisonic Rotera installation (De Groot 2014)

4.1.2 Graphical cinema

Another type of Live Cinema is graphical cinema which is focused on projection of 2D or 3D computer graphics or sampled images which can be played live. The graphical cinema initiated in the 1980s is mainly associated with the club culture and has become almost an inseparable part of the DJ (Disk Jockey) performances. The colourful and graphical visuals are mostly related to pop art and psychedelia culture (Lew 2004, 144-145).

An example of the computer graphic usage can be found on Motomichi Nakamura's (VJ moto) performances which are full of his own animations. His very characteristic style can be recognized by usage of red, black and white colours and subdued forms which as a Japanese artist describes "lends a subtly primitive feel to his art work". VJ moto wants to appeal to the human instinct through simplicity of his animations and their perfect fit to the bits (Nakamura 2014). On the picture 6 the photography taken at VJ moto's

performance for "Vj Op De Dom" organized by "Vrede van Utrecht" can be seen which took place in 2011 in Utrecht, the Netherlands. Video mixing was projected on the building (screens on both sides) and one screen which was placed behind Motomichi Nakamura. Nakumara's performances are good representation of graphical cinema.
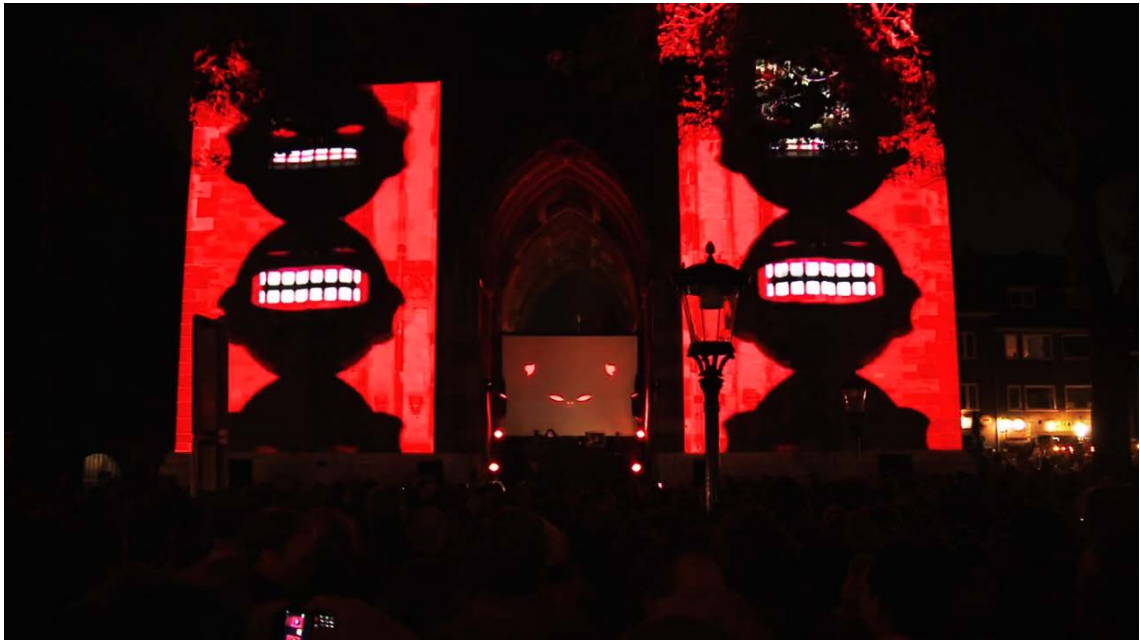
PICTURE 6. VJ moto's performance in Utrecht 2011, The Netherlands (Nakamura 2014)

4.1.3 Camera-based cinema

The most narrative from Live Cinema groups is camera-based cinema. In this group visual artists mostly use their own footage. The nature of this kind of Live Cinema is often surreal, it triggers audience to think, focus on some kind of problem. Many of the artists have started to produce films for shows where other forms of arts such as dance and acting are used (Lew 2004, 144-145).

The Light Surgeons is a multi-media group established in 1994 by Christopher Thomas Allen in London, United Kingdom (UK). An artist and filmmaker along with other likeminded people creates cross-disciplinary projects with usage of motion graphics, film, photography and many other media (The Light Surgeons 2014). In his interview for VJ: audio-visual art +VJ culture book, he describes the light surgeons work as the one which "blurs the bounders between art and design, film and theatre" (D-Fuse 2006, 87). In the wide range of audio-visual projects, installations and performances

storytelling plays an important role. One of the installations worth to mention at this point is SuperEverything* (picture 7) where the relationship between identity, places and rituals are being explored. It provokes the reflection about us as human beings and everyday rituals which shapes our environment. This audio visual performance contains projections of the footage recorded in Malaysia (collages) and the original sound designed by UK and Malaysian artists. Played for the first time in Malaysia 2011, is still touring around the world (SuperEverything* 2014).

PICTURE 7. SuperEverything* Live Cinema performance by The Light Surgeons and UK/Malaysian artists (SuperEverything* 2014)

5   AQUATIC SYSTEM PROJECT

For better understanding how to visualize the music during the live performance, I decided to take part in the audiovisual project called Aquatic System. This project was created in the cooperation with electronic music producer Samuel van Dijk under his moniker Multicast Dynamics. My role was to create the visual representation of music produced by musician. In this project I used artistic research which helped me in learning process and documentation.

According to McNiff experimentation with the method of creating an art work and learning from it, can be a primary outcome of the artistic research and a base for future profession. The researcher should focus on creating a clear method that is easy to describe and while implemented in a systematic manner, it contribute itself to the reporting outcomes. To achieve a good outcome is important to systematically reflect on work by comparing gained experiences with others (for example the viewers) and with the professional literature (McNiff 2008, 30-35).

The artistic research is emphasizing the necessity of dynamic group situation which is the closest critical environment by sharing its emotions and thoughts. Dialogues and notes can be recorded during or after the process of creation an art work. They can generate new insights, interpretations, more intimate connection between the artist and the art work which may affect his/her perception about it (McNiff 2008, 30-40).

The development process of the project Multicast Dynamics – Aquatic System is based on the experience gained during the Eurosonic Noorderslag Festival and the online survey sent to the audience after the performance. The survey consisted of ten open-ended questions where the viewers could express their emotions and thoughts concerning the performance. There were people in the ages of 20 to 60 interested in electronic music, visualization and new media art. In total I could read opinions of 20 people what helped me to improve the visual part of the performance and strengthened my self-esteem in what I was doing. The survey was sent via email or posted on Facebook page of the particular event. From the survey I wanted to know as much as possible about the visual part of the performance.

5.1. Introduction of the Aquatic System project

The cooperation on the Aquatic System project has started in early January 2014 when Samuel van Dijk was asked to represent his university, Academy of Pop Culture from Leeuwarden, during the Pop panel at Eurosonic Noorderslag Festival in Groningen, the Netherlands. The Pop panel was the educational showcase for the Dutch universities which include Pop Culture in their curricula. Van Dijk invited me to work together and to create visuals which illustrate the style of his moody and atmospheric music. After brainstorming on the project we decided to create a performance which will focus on the natural beauty and power of water. The visuals illustrate the story through a series of highly atmospheric and almost tangible images. From frozen lakes, forest creeks, rotating super cells to finally arrive at the all-imposing ocean.

Since the beginning of the year 2014 we performed Aquatic System in three different countries:

- The Netherlands: Eurosonic Noorderslag Festival in Groningen and Academy of Pop Culture in Leeuwarden,
- Finland: Tampere Film Festival,
- Spain: dobleCLICK Festival.

The performance at Tampere Film Festival and dobleCLICK Festival are described in the subsection 5.4 about development through the research process.

5.2. Introduction of the artist

Samuel van Dijk has built a solid reputation by releasing electronic music under various projects such as Mohlao, VC-118A and Multicast Dynamics. Each project has its own style, story and output respectively.
Inspired by the sounds of Basic Channel, Drexciya and Underground Resistance he began experimenting with music production software, hardware and various synthesizers. This diversity can be heard on his debut album International Airlines (released by Lunar Disko Records) where he evokes ethereal sound sculptures by combining various genres while using unique sound colour. Following this manner it is

important to mention that his productions are directly connected to the visual perception using a high amount of layered sounds, field recordings and live improvisation.

Constantly evolving sound textures, deep bass frequencies and abstract soundscapes characterize his music productions, live sets and audiovisual work presenting immersive experiences for nightclubs, exhibitions and home-listening alike. Carefully arranged, recorded and processed sounds highlight a personal exploration for undiscovered sonic landscapes (Emirella 2015).

5.3. Eurosonic Noorderslag Festival

Eurosonic Noorderslag Festival is one of the most important platforms for networking and exchange of European music. Delegates from all over the world come to see showcases of more than 300 artists, participate in various activities such as workshops, interviews, keynote speakers, etc. They also come to meet people from the music and media industry (Eurosonic Noorderslag 2014). The Festival took place from 15th till 18th of January 2014 at various locations in Groningen, the Netherlands.

5.3.1 Process of visual creation

The process of creating visuals for Aquatic System has started from detailed research about the music produced by Samuel van Dijk. He uses a lot of sounds referring to the reality in his productions, including field recordings or sound generated by synthesizers, what makes the music very illustrative; sounds related to water became the starting point of the visual production. The goal was to create an audiovisual performance, 20-45 minutes long, where digital video was manipulated and synchronized with the music played live in front of the Noorderslag' audience on 18th of January 2014.

5.3.1.1.Recording video footage

After researching about Video Jockeys and their artistic styles, I decided to use original video footage. There are two groups of video artists. The first group uses video samples

(portions of pre-existing video footage); while artists in the second group create visualization from start to finish using their own footage. I wanted to avoid usage of somebody else's work and create my own personal style. The footage was recorded in various locations shown on the picture 8.

During December 2013 Samuel van Dijk and I had an opportunity to visit Fuerteventura. Fuerteventura is one of the Canary Islands (Spanish archipelago) where the nature is very raw because of influential and powerful Atlantic Ocean. Two types of videos were recorded: wide-angle videos which show unpredictability of the Ocean and a lot of close-ups, still powerful but calmer. For this footage Canon equipment was used: cameras Canon 60D and 600D, Canon Macro Lens EF-S 60mm 1:2.8 USM ULTRASONIC, Canon Zoom Lens EF-S10-22mm 3.5-4.5 and Canon Lens EF 50mm 1.1,8. At the same time Samuel van Dijk made a lot of field recordings of waves, stones moved by the ocean and water drops. This trip was a big inspiration for the whole performance.

The second location was the utter opposite of Fuerteventura placed in Finland. After discernment in the recordings, I found that the slow paced videos are needed. The Suolijärvi Lake in Tampere was the perfect place to make recordings. At that moment, lake was freezing which created a wonderful atmosphere. Images from Suolijärvi Lake are bluer and darker because of the lack of the sun and surroundings filled with fog.

The third filming took place on the Särkijärvi lakeside in Tampere, where a stream of water goes downhill from the forest to the lake. The flowing water created an interesting environment with micro rivulets and swirling foam. The recordings had to have a high contrast in order to be clearly visible on the projection screen or surface. The more was recorded, the more stories were developed.

PICTURE 8. Filming locations: Fuerteventura, Suolijärvi Lake, Särkijärvi Lake

Some of the old footage was used as well. In February 2013, I had participated in the Future Film Project in the Oulanka National Park, Finland. A lot of recordings of melting ice were recorded during that project in order to create video called "prediction". Soundtrack to this video was produced by Samuel van Dijk that was our first collaboration.

5.3.1.2.Editing video footage

About 20 GB of video footage illustrating movement of water was collected. For editing I chose Adobe Premiere Pro CS5.5. It allowed me to combine all files together, select the most interesting parts of the videos and combine them into the individual, short stories by focusing on their colour range, location, water type and shot size (extreme close ups, medium shots, wide shots). The output of the editing process was the creation of 150 individual video clips.

One of the most important roles in footage editing is exporting video clips in the correct codec. Every software for VJing has own specific codec format which improve its performance. For the performance I planned to use Resolume software which uses DXV video codec; it allows mixing more video layers on a higher resolution by doing video decompression straight on the video card (Resolume 2015). This gives certainty that visual presentation will be seamless.

The visuals were created in parallel with the music. After creating all 150 video clips, Samuel van Dijk and I started to brainstorm on the exact concept. The first ideas were based on the different colour scheme: 'from Dark to Light' or 'from Light to Dark'. The

footage colour from Fuerteventura was light blue, beige or green; the footage taken in Finland usually had strong blue or dark blue colour.

5.3.1.3. Visualization

I decided to use Resolume Arena 4 Media Server for performing because of its features such as: advanced video mapping option which gives a lot of control over projection on different kinds of surfaces, great selection of visual effects, simple interface, auto pilot option and possibility to use MIDI controller with it.

My knowledge about VJing was elementary at that time, based on the projects I participated in during the workshops such as Island CQ or Future Film Project. During these courses I could try out Resolume Arena for the first time. For the Aquatic System performance essential was to get acquainted with that software and to test previously edited video footage. During the testing I explored visual effects, graphically interesting for me. From the bunch of special effects I selected the subtle ones, 'not disturbing' the audience's eyes. The most appropriate were:

- Flip with blend mode Darken or Black &White – this video effect simply flip the video horizontally or vertically.
- Mirror – the most used video effect at the Multicast Dynamic - Aquatic System performance, it allows mirroring video horizontally or vertically at any position on the video.
- Trails - this effect creates a delay. It samples the frames and keeps them as long as the user wants. It creates overlapping samples with transparency.

In order to better utilize the software, I got familiar with the manual. One of the helpful information was auto pilot option which allows playing a layer (with video clips) automatically. The transitions between video clips can be also automated. Another interesting fact was a possibility of adding new sets and layers. By this function I could divide visuals into the groups which would represent different water behaviours (in total 5 sets). The manual informed me also about the ways of controlling the software by using external devices. I decided to use MIDI controller U-CONTROL UC-33. I could map it into the software and control some features by that device. To do so, I had to

highlight the interface element (Mapping > Edit Application Midi Map or the Mapping > Edit Composition Midi Map) and them twist the knob or move the slider which I wanted to map.

The most important features mapped with MIDI were:

- Sliders mapped to the opacity feature. This allowed me for smooth fading out the video layers projected on the screen. It was very handy since the laptop touchpad is not so precise.
- Knobs mapped to the gain feature in order to control the mirror special effect synchronized with sound.

The technical method of synchronizing video with sound was found. The best solution was direct input from the external sound card used by musician to my laptop. By this action I could sync the BPM (Beats per Minute) with one of my special effects assigned to the background layer. The chosen special effect called 'Mirror' would respond to the high frequencies and its intensity was controlled by the MIDI controller. During the testing I tried to use external hardware such as camera in order to provide additional video source. The end result was not satisfactory, the visual style of live recording differed too much from the footage.

The projection screens' setup was simple due to limitation of time (10 days) and large distance to the place of performance. Samuel van Dijk and I decided to use three rectangle shapes which can be seen on the picture 9. Two screens marked with the letter *A* represent the background to which the automated transition was applied during the performance. All the video clips were placed in the right order (as the story line goes) and they were changed from one to another by the software. The projection on *A* screens was vertically mirrored, creating abstract shapes and movements. The screen on the middle marked with the letter *B* was the main screen where primary visuals were played during the Aquatic System performance. This layer was the most manipulated. There are a lot of possibilities with this kind of setup.
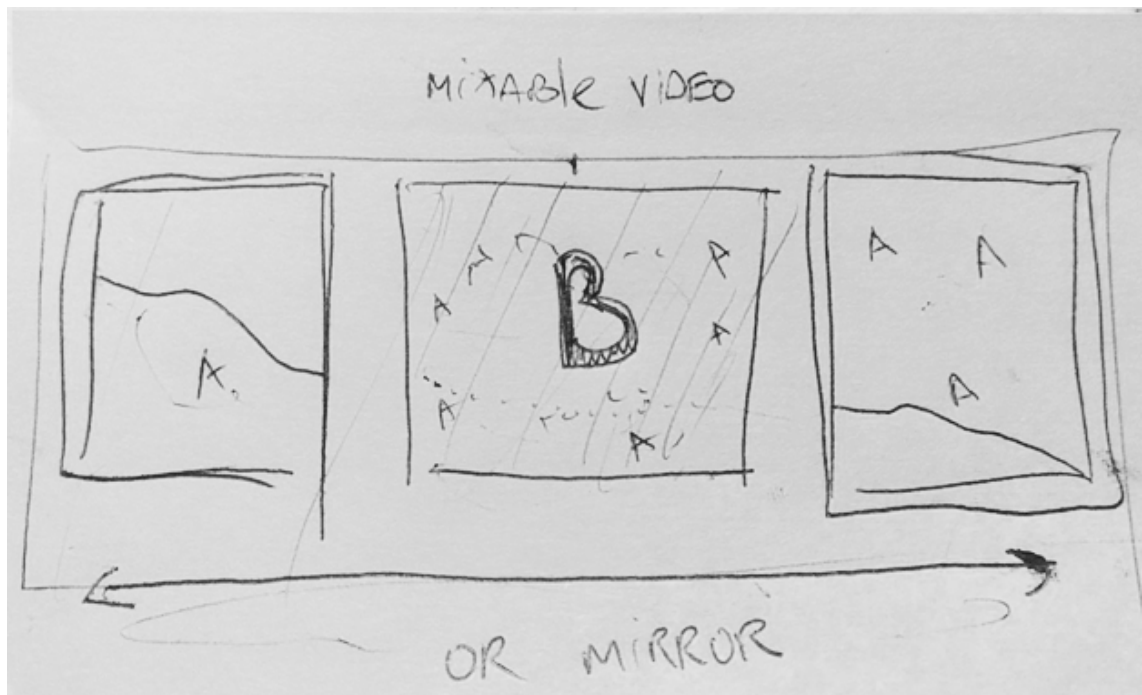
PICTURE 9. The final sketch with screens and effects setup
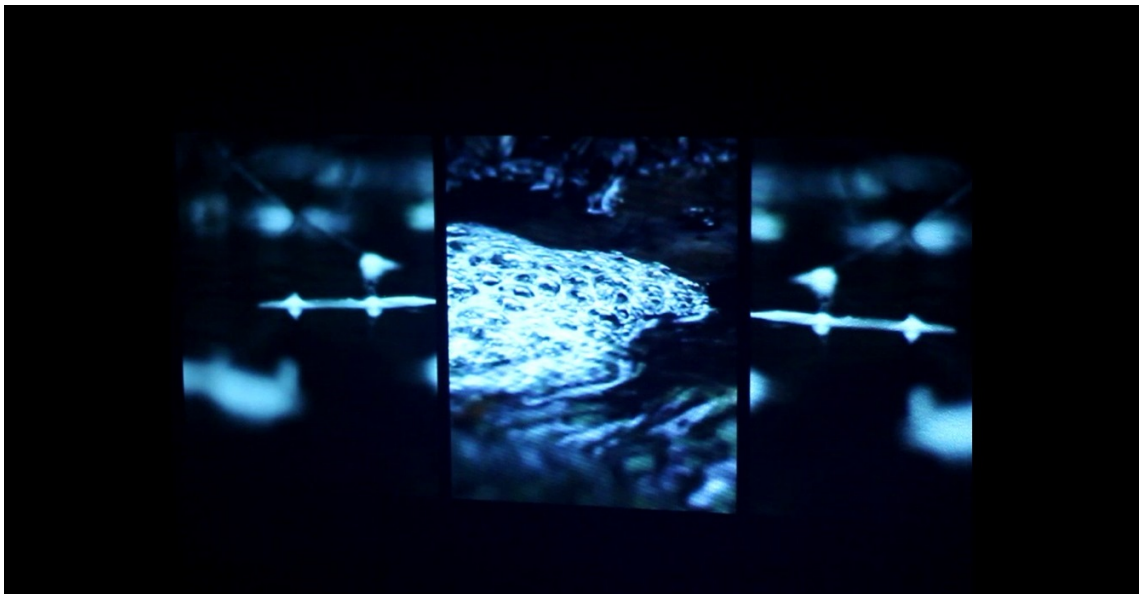
PICTURE 10. Video mapping during the rehearsals on 10.01.2014

On the picture 10 an implementation of the visualization done during one of the rehearsals can be seen. In Resolume Arena 4 I mapped 3 rectangular shapes. The middle projection displays separate video layers, while side projections use one autonomous video layer with mirror effect applied. The background layer was made from 150 video clips. This setup can be easily mapped on the square objects like for example IKEA LACK tables, taken into consideration if there would not be a projection screen at the location. This kind of setting was made in Advance Screen Setup window in Resolume

Arena 4. By creating slices and masks (in this case there are only three slices used), the user is able to create multiple projections using only one video projector. Every slice displays a layer or composition assigned to it. The shape of slices was very flexible and could be mapped to any object by using Wrapping Transformation screen in Advance Screen Setup window.

During rehearsals Samuel van Dijk was composing music. That helped me a lot in creating the visual part of the Aquatic System project. While listening to the selection of sounds I could choose video clips which would represent them in the best way. As mentioned before, the Dutchman uses a lot of field recordings in his productions. That time he used sound of the water currents, breaking ice and ocean waves recorded in the same locations as videos. Additionally, he used Tinysizer, modular synthesizer produced by Anyware Instruments. The synthesizer is an electronic musical instrument which converts electric signals to sound. The Tinysizer is fully analogue; it creates for instance bass lines, percussion and experimental soundscapes. The software chosen by Samuel van Dijk to manipulate the music is called Ableton Live 8. The whole story line was composed in it, plus it had an input from Tinysizer which was used live during performance.

5.3.1.4. Dramaturgy

During the preparation, Samuel van Dijk and I had a lot of brainstorming sessions which were documented. This is an important action while a lot of ideas are generated and some of them might be forgotten. In the same way the sketch of Aquatic System has been created, based on the dramatic composition. On the picture 11, the timeline of the performance can be seen, in total around 40 minutes. On the top of that picture the main strategy of visuals is shown: from macro shots, through middle sized shots to the wide angle shots. The upper part of the timeline represents visuals and the lower part represents the audio tracks produced by Samuel van Dijk. The whole visualization was divided into 8 segments: Ice, Contact, Pulses, 2 x Bubbles, Sea, Spain and Return. Each segment has its own keywords which describes the video. The Ice section is displayed while *Oriva* and *Unitila* audio tracks are played. The atmosphere is calm; the ice is breaking and slowly dissolving. The next section, called Contact is played in parallel with *Valta* audio track. The water movement appears like during the spring season,

when snow is melting. When the Pulses are heard in the music (*Sinua* audio track) videos of flowing water (rivulets) appear. One of the sounds produced by Samuel van Dijk was called by me 'bubbles'. The Bubbles are represented by foam (they can be seen in the middle part of the picture 10) revolving on the water surface. The movements are faster, the tempo speeds up and from the *Nebulous* to *Vascular* audio track the transformation of the colour appears. Colours becomes warmer, the footage from Fuerteventura is being used. The Sea segment illustrates the ocean movement next to the coast where drops of water are sparkling like crystals, it is played while the *Tie* audio track. *Hiernamaals* is the most powerful audio track; the wildness of the open ocean is shown till the climax. After the climax the sound slows down drastically, the videos are in the orange colours like during the sunset. The final video shows people standing on the cliff; the visuals are being faded out.
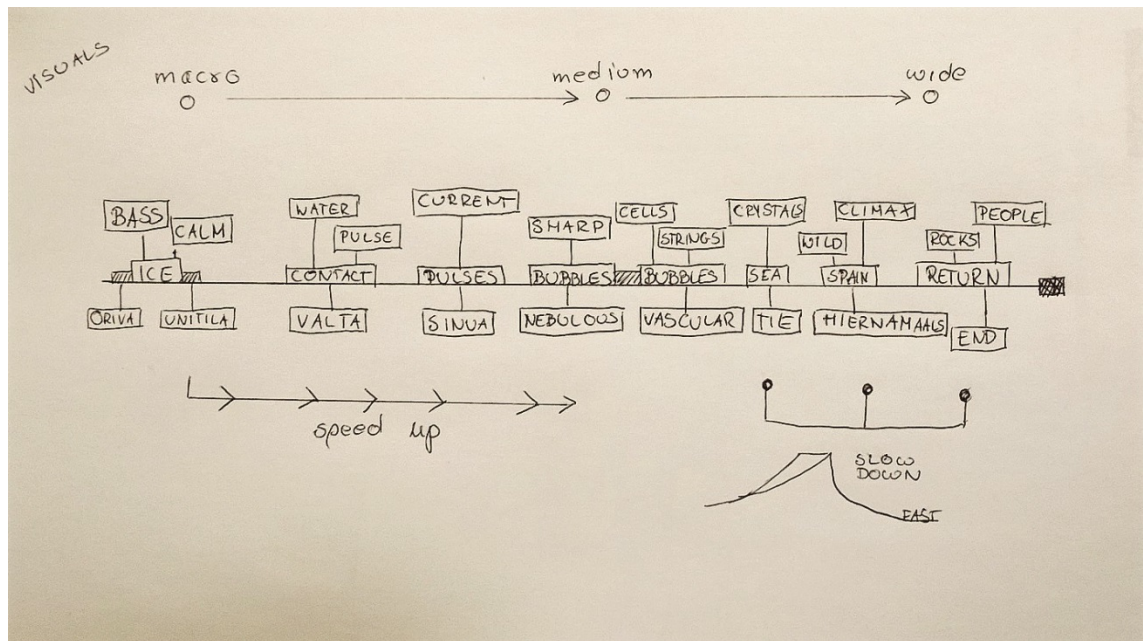
PICTURE 11. Sketch of the Aquatic System timeline

Naming sounds helps during the live performance from the visual point of view. They trigger attention and help in playing associated videos prepared beforehand. On the figure 1 the final version of the Aquatic System timeline is shown in more graphical way. The orange colour represents sound; the tracks are written in chronological order at the bottom of the timeline. The visuals are represented by the brown colour; print screens of the particular videos are shown below. The visualization starts from the dark environment of the Finnish water. The monochromatic, cold colours appear: ultramarine, navy blue, light blue. During the building up process, they are becoming

brighter, changing through the various shades of green. The yellow shades of the Fuerteventura coastline appear when the *Vascular* audio track plays. In the climax, when the water is rough, the colour changes to white, the combination of all colours of the visible spectrum. The performance slows dawn drastically after the climax. The warm brown tones are displayed which symbolizes stability and simplicity, leaving room for the audience to rethink the performance.
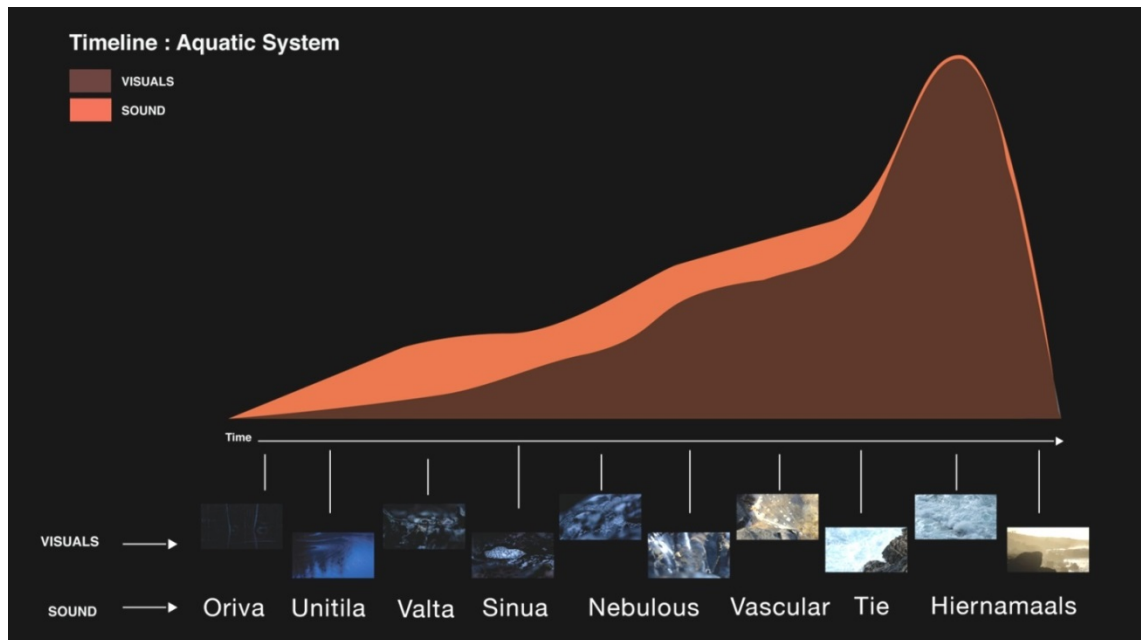

FIGURE 1. Timeline of the Aquatic System performance by Samuel van Dijk and Emilia Ewa Kwiatkowska

5.3.1.5.Documentation and promotional materials

Creating good and clear documentation about the project is one of the most important things. The biography, rider and press kit are essential. The biography is used for describing the core of the project and can be used for the promotional purposes. It is placed in technical rider and press kit which is sent to the clients (organizers of the festival, concerts, etc.). The Aquatic System biography:

> Aquatic System is an audiovisual live-performance by Samuel van Dijk as Multicast Dynamics in cooperation with visual artist Emilia Ewa Kwiatkowska.
>
> Recordings of various types of water are manipulated live by the artists using sound and videos to create an intense audiovisual story.

Field recordings from various types of water together with subsonic frequencies, melancholic pads and pulsating electronic rhythms are forming the sonic infrastructure, while the visuals illustrate the story through a series of highly atmospheric and almost tangible images. From frozen lakes, forest creeks, rotating super cells to finally arrive at the all-imposing ocean.

Aquatic System is a unique cinematic experience about the time and space of nature and its fascinating shapes and sounds. (Appendix 1)

The rider (Appendix 1) is a document which describes the artist's needs which set criteria of performance. It usually describes hospitality (including food, transportation, accommodation, etc.) and the technical side of the performance such as sound requirements, lightening, backline (amplifiers, guitar cabinets) and other.

The Aquatic System rider is made of 9 sections. First of all, it names the project and describes the concept of it. Very important is to think through what is needed during the performance. In case of Aquatic System there was specific hardware and help needed:

- 1 x High quality professional 4- channel PA mixer
- 2 x DI box (1/4" plug)
- 2 x High quality professional monitor speakers, positioned left and right from the artist, and controllable via mixer on stage
- 1 x Video projector with minimal resolution of 1280 x 720 pixels
- 6 x European Power sockets (220<-240 Volt)
- 1 x Solid shockproof table / riser (minimum 1x2x1m) with sufficient space for all equipment
- 2 x Solid chairs
- At least one qualified engineer with knowledge of the actual sound system and projector needed during sound check and performance.
- In order to set up the best show possible: photographs, videos or visits to the available space are essential

As listed above, every detail is important. The next thing described in the Aquatic System rider is the sound and visual check which describes the amount of time need for preparation at the location. In case of this specific performance, there were 40 minutes needed.

The hospitality section describes transportation options, the amount of luggage, food, drinks and type of accommodation. It is crucial to receive (before arriving to the place) the confirmation of the rider from the organizer. It is very important to provide the contact details of at least one of the artists. In case the phone number is needed, the organizer or technician can check it from that document. The rider might contain links to the press kit and teaser trailer if available. Press kit is a package of promotional materials of the person / group of people distributed to media for promotional purposes. The first Aquatic System press kit contained logo, rider and photos from the rehearsals.

5.3.2 Performance

The Multicast Dynamic – Aquatic System performance took place on 18th of January 2014 at Prins Claus Conservatorium in Groningen, the Netherlands. This concert hall has great acoustics, visualization and stage design possibilities. On the picture 12 the stage is shown. Behind the curtain is a large projection screen which was used during Aquatic System performance.

Samuel van Dijk and I arrived to the venue at the morning to check the sound system and possibilities for projection. At the location we were informed that the allocated time of the performance is shorter and instead of 45 minutes, it could last only for half an hour. That situation was challenging, especially that it was my first performance, but from another hand, it showed our flexibility and good preparation.

Just before the performance at 3:20 pm, we decided to sit together in front of the audience. This was very helpful since Samuel van Dijk and I did rehearsals in that setup. It is uncommon for VJ and musician to sit at the same place. Usually, the visual artist sits somewhere on the side or behind the audience since she/he has to see the visuals. This move gave us an opportunity for direct communication with each other and the assistance in case of the complications. The problem with not seeing the screen was solved with a small mirror placed between us (picture 13). From the mirror I was able to fully control all three projections. During the performance we were highly concentrated. Everything went smooth, without any problems. After the show we were invited by the Academy of Pop Culture to show Aquatic System at their premises during the following day.

PICTURE 12. Prins Claus Conservatorium in Groningen, the Netherlands
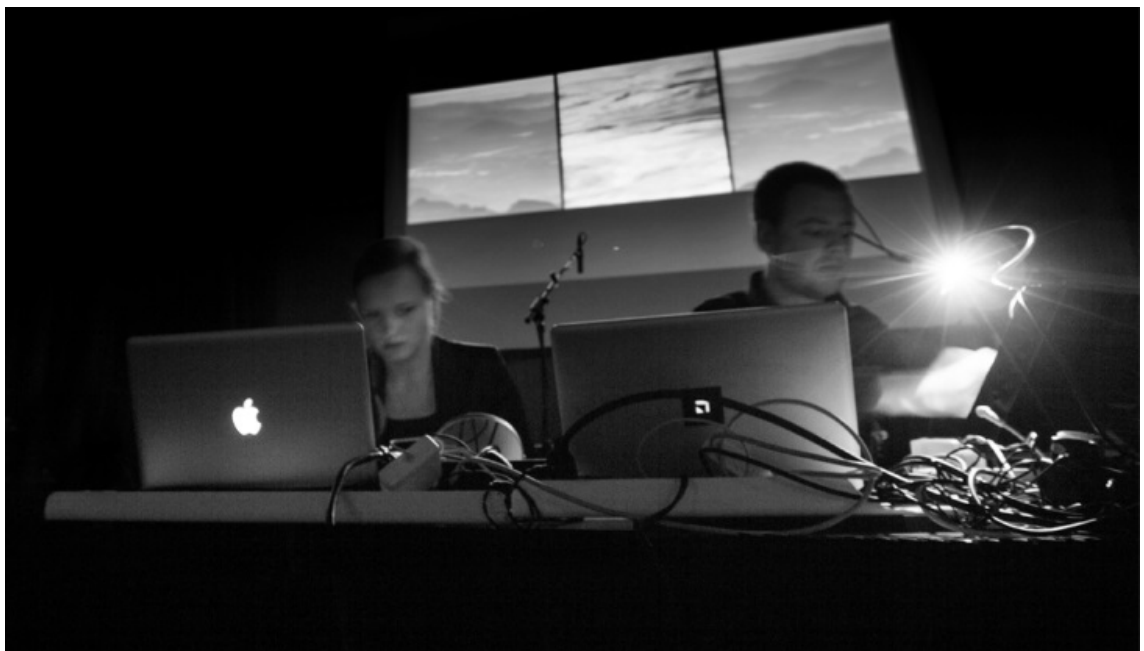
PICTURE 13. Emilia Ewa Kwiatkowska and Samuel van Dijk playing at Eurosonic Noorderslag Festival, the Netherlands (Photo: Erik Middendorp 2014)

5.4. Reporting outcomes

When the Eurosonic Noorderslag Festival was over I collected the email addresses from the audience. I sent the survey right away after the performance since I wanted to have the most relevant feedback. In total I received 8 responses with highly-developed

answers, full of new insights that enabled me to improve the visual part of the performance.

From the answers I could learn that most of respondents have not seen such a performance before, where the videos and sound are mixed together in front of the audience. Also the theme based on the water circulation was exceptional for them. One of the respondents mentioned that the three screens setup was something that has been used a lot in the past. This comment was very influential for the next phases of the project.

According to the audience the visuals illustrated music 'one to one'. The videos were coherent with the deep, electronic sound. The story was clear; it started with calmness of small creeks to get the viewer interested in the flow of water. As soon as the atmosphere of the music started to rise in progression, the visuals took the viewers on a journey from calmness to the wildness, building up the tension. The visuals were relaxing, somewhat disturbing, supporting the music, helping in imagining and holding the interest of the viewer (while waiting to see how the next visual correlates to the music). There was a balance between the sound and the image.

In response to the question about the projection, I got a lot of creative responses. As explained in the description of the project, I decided to project 3 screens on the flat projection surface. It was mostly caused by the lack of time for building up something more complex and my lack of professional experience with visualization during the live performance. Half of the respondents wrote that they would like to see video mapping on three dimensional objects, what would make the visualization more physical. The triptych idea was good, especially that the video on the sides was mirrored what together with the middle part gave a new visual, hypnotizing experience. Although for two people the visualization was too small and triptych was disturbing the natural flow of water, for one respondent it was difficult to focus on three screens at one time. Another interesting advice (which was implemented in the next performance) was to play with the focus point of the projection. This means switching off the side projections in order to focus on the middle part at the end, to give another dimension to the visualization.

The story of Aquatic System was clear for almost all the respondents, only one person answered that did not get the Aquatic System story. Five people recognized the story about cycle of life that we wanted to show, they wrote about the humanity and their position in nature. The last video with people standing on the cliff was an important asset to the story. Two people recognized the story from dark and cold flowing water to the warm and bright, powerful sea.

The next question was more general since I wanted to know if visual storytelling is an important part of the live performance. Three quarters of the respondents collectively answered yes. The main argument was that image and sound support each other. By listening to the illustrated music the viewer can keep focus, what would not be possible if he/she was sitting down for half an hour just listening to the music. Two from the responses were negative. One of them answered that showing random images can be also successful while another respondent wrote that well written music can "lead" a listener along the story line. The addition of visuals can confuse, contradict and ruin the music. While making research about synchronizing film and music I read that music can destroy the film and vice versa, that is why they have to match (De Valk 2013, 225).

At the end of survey I asked the question where respondents could make suggestions for improvement. One of the most interesting suggestions was to become part of the sound and projection thought our movement or by lightening some specific object on the stage or our desk in order to create a complete visual picture. The other possibility was to be absolutely static and leave everything to the sound and visuals on stage. One of the respondents mentioned that being in front of the audience carries consequences and naturally people would like to see what we were doing on our computers. He/she commented that electronic music is still very abstract for some of people who think that everything is pre-made and nothing is played live.

5.4.1 Tampere Film Festival

Tampere Film Festival is one of the most important short film festivals in Europe. Every year it gathers a lot of international artists and short movie fans. The program consists of International and National Competitions. There is also special program and film

showcasing. Multicast Dynamic – Aquatic System was performed during the special program on 6th of March 2014. The show took place at 9 pm at Yo-talo, Tampere.

Based on collected feedback I started to brainstorm about the visual part of the performance. As before, all my ideas were consulted with Samuel van Dijk. My main focus was on the screens. I wanted to create three dimensional object which could be video mapped. I did not want to repeat the triptych (three screens next to each other). After creating a lot of sketches and testing different kinds of fabric (to select the best one for projection), the idea was to use seven screens with different width as on the picture 15. These screens are easy to carry and store. On the picture 14 the process of screens creation can be seen. On the left side of the picture, the cardboard tubes are prepared for the fabric fitting. For the screens I used nylon fabric which did the best during the testing. It did not absorb the projected light, which allowed displaying numerous details, very important in our performance. There were three different screen sizes: 4 x 20 cm, 2 x 50 cm and 1 x 70 cm. All of them were 250 cm high. The total size of projection surface was 300 cm x 250 cm.
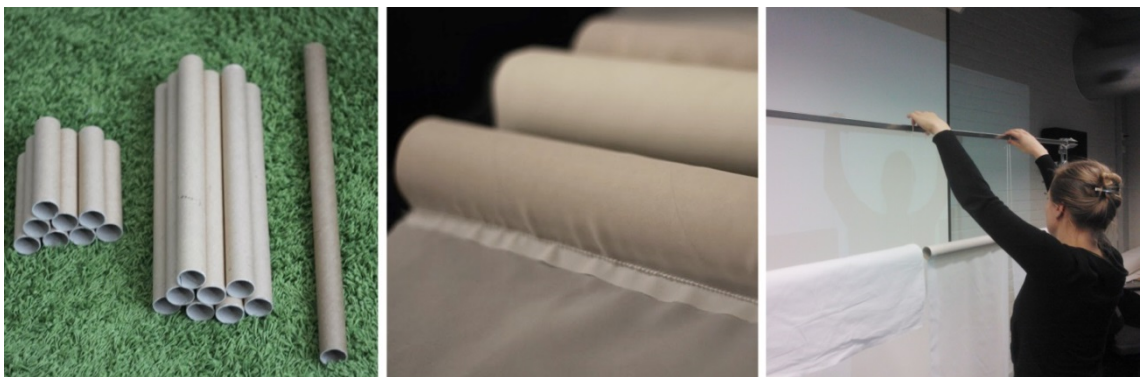
PICTURE 14. Preparation of projection screens

All the screens were attached to the metal rod by nylon twines. The rod was attached through the grip heads to two C-stands supported by the sand bags (protection from falling). This kind of setup was used during the performance at Yo-talo.
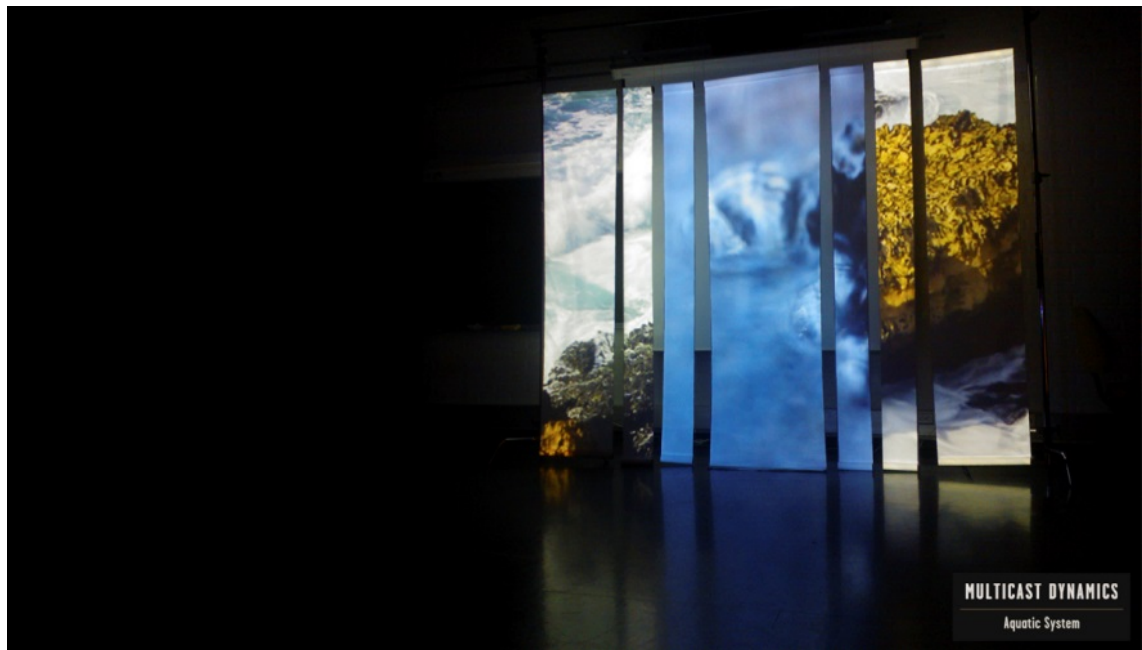
PICTURE 15. The final setup of projection screens

Following the advice of survey respondents, Samuel van Dijk and I agreed that we will change the performance setup (Appendix 2). We wanted to keep the music and visuals as the one organism by setting it up and leaving on stage, while we remained among the audience. By this move, the art work was the centre of attention and we could show to the audience what we were doing. Since the audience was around us, they could see the mixing process. The problem of not seeing the screens (as during Eurosonic Noorderslag Festival) was solved since we were facing them.

One of the important details was covering the laptop logo with the black tape. After checking the video footage and photographs from the Eurosonic Noorderslag Festival, the logo was too bright and could disturb the audience. Other novelty was a stage plan (Appendix 2) and photos from the first performance added to our press kit.

After the performance, I collected another 8 surveys from the audience, mainly via Facebook page of the event. Their responses were very constructive and similar to the ones received from Eurosonic Noorderslag Festival. Because of that I only highlight the most important parts. The respondents appreciated the idea of 7 screens, which created more dynamics, mystery and liveliness, also because of the gentle movements of the fabric in the wind. One person mentioned that would be nice to see graphical elements that move between the screens, regardless of the played video. This was an interesting suggestion worth to be implemented in the future. All of the respondents noticed that

there was a balance between music and projection. The visuals were relaxing, integrated into the music and meaningful. It was described as an art and suggested to be played at the art exhibitions. One person had a very interesting idea for improvement which was shortening the performance and playing it at the venue that suits it better, where are no additional sources of light. The light which were surrounding the stage in Yo-talo were a bit distracting. Another respondent would like to see more of our interaction with the audience while for others the stage setup of Aquatic System was something new, something which allowed focusing on the projection and sound.

5.4.2   DobleCLICK Festival

The 5th edition of the dobleCLICK Festival was held in Vic from 1st till 4th of April 2014. It is the European Interuniversity festival which gives opportunity to the talented students to share their knowledge in the audiovisual field during so-called Click Shows. It is also a great place to network with people interested in digital production and build new relationships for the future works.

During this Festival two important things happened. Together with Samuel van Dijk, we were invited to teach students from Vic University, Academy of Popculture and TAMK about the project Multicast Dynamics - Aquatic System. Before leaving to Vic we had to prepare the lecture / workshop about it. Our main focus was on practical part of the performance which could be helpful for everyone who is interested in similar projects. The Multicast Dynamic - Aquatic System workshop was given on Wednesday, 2nd of April 2014 to the group of about 20 people. During the workshop we showed all the equipment used during the performance and we explained shortly about the software. After the presentation most of the teachers and students were active with asking questions about our idea, tools and software used. Giving the lecture was a great opportunity to go through all the creation process and check if other can understand what we were doing.

At the same day we played the Aquatic System performance at La Jazz Cava bar, which started around 10 pm. La Jazz Cava is a public space, where everyone can enter and see the show. We arrived to the place already at 6 pm for the sound check and setting up the installation. This time we had a slightly different setting than in Yo-talo, because we

could not take with us C-stands, grip heads and metal rod. We had to rent stands and video projector from the Vic University. Instead of the metal rod we borrowed the long wooden plank from the bar owner. On the picture 16 the stage setup can be seen. The projection screens were a bit shorter (about 2 m high) because of the low ceiling. On the left side of the picture Samuel van Dijk does the sound check while on the right side I check the visuals.

The bar interior was great for this kind of performance. The art work became a strong focus point, caused by the length of the room. The bar walls were built of stone, which intensified the mystical atmosphere of the whole show.

Since I played this performance before, my experience and self-esteem were much stronger. I had no fear of experimentation with video. Further, I was more confident in using MIDI controller mapped to more option in Resolume Arena 4.

PICTURE 16. Sound and visuals check in La Jazz Cava in Vic, Spain

Just as in previous festivals, I sent survey to the participants of the performance. I informed about the survey during the lecture given before the performance, via WhatsApp group (all students participating in that festival were connected via WhatsApp on their phones) and via Facebook DobleCLICK page. Unfortunately, despite several reminders I received only 4 replies. From the short answers I can highlight that although the visuals followed the music and were in balance with it, these 4 respondents would like to shorten the whole performance. The respondents liked the idea of symmetrical projection and 7 screens. For one of the respondent it was interesting to see how we were working since we were sitting among the audience.

6   CONCLUSIONS AND DISCUSSION

The main objective of this thesis was to get to know the production process of music visualization, using video as the main tool. At the same time, to learn the profession by creating visualization of the Multicast Dynamics - Aquatic System performance. By implementing the artistic research I systematically could reflect on my learning process. Placement in the disciplinary and historical context, experimentation with the tools and dynamic group situation (surveys) have allowed me for better understanding of the music visualization and for applying gained experience into project improvements.

The Multicast Dynamics – Aquatic System project has been carefully documented since the beginning of its creation. Everything was done in order to learn as much as possible within the process and then share the knowledge with people interested in using video as music visualization tool. The first possibility of sharing my knowledge was during the dobleCLICK Festival, where I taught students about visualization methods used in the Aquatic System project. Even if the creation process (described in the subsection 5.3) was full of uncertainty, I strongly believed that intensive learning is an asset to my personal development.

By creating visualizations to the Aquatic System performance I learned a lot, not only about the technical aspects of preparation for the show, but also about myself. Initially, my participation in the show seemed to me not realistic because of my small experience. However, I did not give up and decided to devote completely to the vision of creating visuals and experiencing VJing. The beginning was very difficult, without knowledge of the video mixing software and hardware. I had to learn them in order to think about the concept and methods of visualization. During the implementation process, I received a lot of support from Samuel van Dijk, who has a large experience in live performances and excellent technical knowledge.

The theoretical part gave me a solid understanding of how to use the video during live performances. Starting from the general descriptions of sound visualization, I describe the methods of video manipulation and I am ending on the concept of Live Cinema. The latter combines all the knowledge contained in the previous chapters, cause in order to perform Live Cinema the theoretical and technical knowledge is required. Multicast

Dynamics – Aquatic System is the camera-based cinema where narration is intended to trigger audience to think and focus on something. This and other aspects were inspected after each performance through the online surveys. These surveys have given me a very constructive feedback, so that I could improve visualization.

According to the respondents of the survey, there was coherence between the edited image (videos) and sound. Through the live editing they enforced the soundtrack and became equal. Visuals were extremely important and together with sound they told the story. Most of the respondents recognized the story from dark to light, from cold to warm. Only a few could understand the metaphorical meaning which was a story about life, the beginning of existence, the place of people in nature. In this matter, the result of the survey was very satisfying.

The biggest improvement (in the visualization) was the design of the projection surface. Based on the feedback, I created seven big screens in order to add another dimension to the projection. Due to the available resources and the fact that the screens had to be easy to transport, I decided to use the nylon fabric which could be easily folded. Screens appealed to the audience, and introduced a new and interesting spatial effect. Another important improvement was change of our position in relation to the projection. One of the respondents mentioned the same problem as Correia, that audience who is non-specialist does not know what artists are doing behind their laptops and they often think that audio and video were pre-recorded (Correia 2013, 55). This influenced the decision to set our table among the viewers. Firstly, through this action we wanted to focus their attention on the music and projection. Secondly, the audience could see what we were doing on our laptops.

Although the majority of respondents liked the performance, a few people were critical towards one feature of it - length. About one fourth of all respondents answered that the performance should be shortened because of the loss of concentration and thus loss of the storyline. Originally, the Aquatic System performance was about 45 minutes long. During the Eurosonic Noorderslag Festival that time was shortened and could not be tested. After the show in Yo-talo, where we got the opportunity to play the full length of the performance, this issue appeared. There is also a good side to this experience, especially during the first performance. Because music and videos were mixed live, there was no problem with the adaptation to a given time.

There are already future plans for Multicast Dynamic - Aquatic System. I definitely will continue with creating visualization and improving them. The next step will be adding graphical elements in order to connect all the screens without depending on the played video. This move might have another value as well; it might bring back the attention of viewers who lost their concentration. In order to create that element, I am experimenting with video synthesizer as an external source of image. Another solution is the digital camera input. I would like to use oils, paints and alcohol recorded live as another source of video. It might be interesting for the audience to see how these substances mix together. One of the inspirations is Liquid Light Lab which deals with the projection of obtained in this way images (Pavlovsky 2014). The effect of their experimentation with different kinds of chemicals is visible on the picture 17.


PICTURE 17. Liquid Light Lab tutorial by Pavlovsky S. (Pavlovsky 2014)

Taking into account the opinions that our performance could be played at gallery or contemporary art museum, we are planning to create an art installation. At this point, we are in the phase of brainstorming. So far, we are thinking about projection on five oval shapes (picture 18) and selection of sounds, controlled by the viewers through the MIDI controller. The spectators would be able to create their own audio visual stories.

The tracks composed by Multicast Dynamics for Aquatic System are going to be released. Denovali Records from Germany will release and promote two LP's (one

album with two vinyl records) and CD. The album includes tracks: Oriva, Unitila, Valta, Amphibi (new), Sinua, Nebulous, Vaihe (new), Tie, Vascular and Hiernamaals. All tracks will be available for sale during upcoming spring (April / May 2015) in these formats as well as in digital MP3.
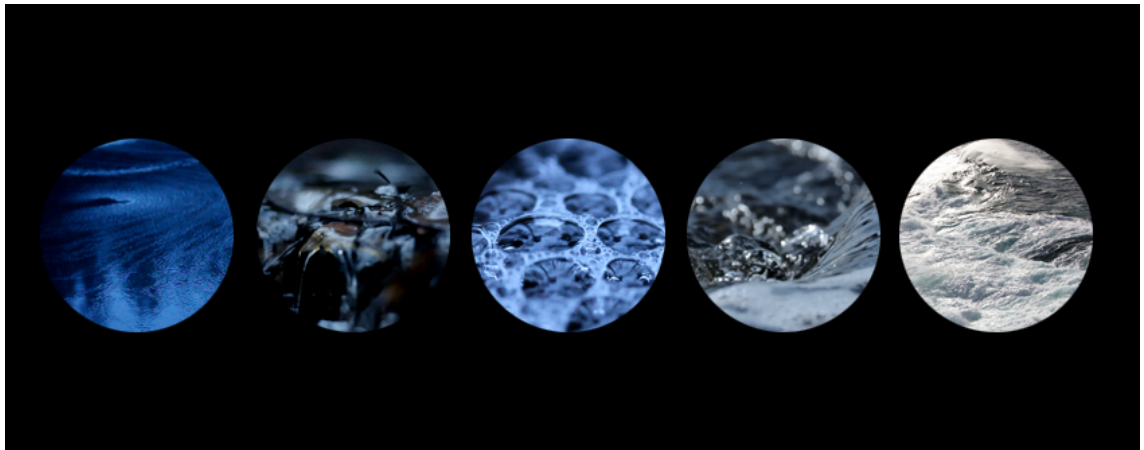
PICTURE 18. Multicast Dynamics - Aquatic System installation idea

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APPENDICES

Appendix 1. The Aquatic System Rider

Multicast Dynamics - Aquatic System // Audiovisual Performance

TECHNICAL AND HOSPITALITY RIDER

Residence	Travel	Booking Request
Tampere - Finland	2 persons	info@chaindata.nl

INFORMATION

Aquatic System is an audiovisual live-performance by Samuel van Dijk as
Multicast Dynamics in cooperation with visual artist Emilia Ewa Kwiatkowska.
Recordings of various types of water are manipulated live by the artists using sound and video to create an intense audiovisual story.

Field recordings from various types of water together with subsonic frequencies, melancholic pads and pulsating electronic rhythms are forming the sonic infrastructure, while the visuals illustrate the story through a series of highly atmospheric and almost tangible images. From frozen lakes, forest creeks, rotating super cells to finally arrive at the all-imposing ocean.

Aquatic System is a unique cinematic experience about the time and space of nature and its fascinating shapes and sounds.

PRESS KIT

http://www.chaindata.nl/mv/Aquatic_System_Presskit.zip
https://vimeo.com/89236068

LINKS

http://www.chaindata.nl
http://www.emirella.blogspot.com

TECHNICAL REQUIREMENTS

1 x   High quality professional 4- channel PA mixer - preferably Allen & Heath / Mackie (other options please contact)
2 x   DI box (1/4" plug)
2 x   High quality professional monitor speakers, positioned left and right from the artist, and controllable via mixer on stage
1 x   Video projector with minimal resolution of 1280 x 720 pixels
6 x   European Power sockets (220<-240 Volt)
1 x   Solid shockproof table/riser (minimum 1x2x1m) with sufficient space for all equipment
2 x   Solid chairs

- At least one qualified engineer with knowledge of the actual sound system and projector must be present during sound check and performance.
- In order to set up the best show possible: photographs, videos or visits to the available space are essential.

SOUND & VISUAL CHECK

- The artists will need 40 minutes for setting up the gear
- The sound & visual check will take 20 minutes
- Both the monitor speakers and PA system have to be in use for the sound check
- The projection beamer has to be switched on during the visual check

HOSPITALITY REQUIREMENTS

- A live performance of minimum 25 minutes
- The best airline available if possible when flying
- 1 piece of luggage (20kg) to check in per artist and 1 piece of hand luggage per artist
- Preferably no early departure after the venue (before 11AM)
- Please make reservations for taxis (airport/accommodation/venue) so the artists don't have to explain/pay
- A healthy meal buy-out per artist
- Proper and easy backstage at the venue
- Some cooled drinks backstage and on stage (water, beers, soft drinks)
- Hotel or equivalent: comfortable room with Wi-Fi (preferably no street side)
- Please try to arrange accommodation as close to the venue as possible

OTHER

- No recording or filming of the artist's performance is allowed unless the artist gives explicit permission
- DVI or VGA connection cable from the projection beamer to the stage
- Access to the projection beamer's settings by remote control

CONTACT

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Appendix 2. The Aquatic System's stage plan and set-up