From Singer to Reflective Practitioner: Performing and Composing in a Multimedia Environment

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Declaration

Whilst registered as a candidate for the above degree, I have not been registered for any other research award. The results and conclusions embodied in this thesis are the work of the named candidate and have not been submitted for any other academic award.

Summary

This exegesis comes as result of performing, composing and researching in a multimedia environment over the past few years. I started working on my projects with the following question in my mind: how can I improve my own practice?

Asking this led to identification of the problems related to making a live media performance, as well as prompting discussions about the types of knowledge necessary for producing a work of art that includes more than one medium.

Rather than attempting to draw definitive conclusions regarding topics as broad as live media performance, I summarize and reflect upon the creation process as I experienced it, elucidating my personal contemplations regarding my experience and practice in multimedia environment. The purpose here is to document, contextualize, and clarify the creation of my works and to support the choices that I have made as a composer, performer, designer and researcher within the period of 2006 – 2008.

Based on reflection from three projects, chosen from the many projects I did and from the knowledge that I gained through researching 20th century live media performance, I came to the conclusion that encouraging students to collaborate, experiment and improvise can offer rich educational experiences and valuable artistic outcomes.

Acknowledgment

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Contents

Chapter 1

My Motivation

1.1 Background to the Thesis

I am a musician and an artist. During the ten years of my career as a singer and improviser I have been privileged to perform and record dozens of works by over fifty composers. It has been a pleasure to work with them and it was an inspiration for me to start composing by myself.

Looking back, my educational development had a clear line. I started as a piano player and singer. After many years of studying music in Serbia and Macedonia in a traditional form and composing only for my own voice I felt a need to express myself in a new way. All my knowledge, as well as the techniques I used, were not enough to satisfy the performance aspect of my work. I needed to learn more about music and technology. My curiosity and appetite for knowledge brought me to Holland, where a new chapter of my life started. During the last four years of my studies at the Faculty of Art, Media & Technology, I have had the opportunity to research and learn about 20th century music, contemporary vocal repertoire, music production and new compositional techniques, multimedia performance, video, digital and installation art. Material for analysis has become available to me, which was not the case in my home country of Macedonia. I take advantage of it, trying to grasp as much as I can, diving into this huge field with the curiosity of a child. But this musical journey opens a lot of questions when considering my future direction in art.

That is where my M. Phil. research started.

1.2 Why am I doing this Research?

As the title indicates, this research is about performing and composing in a multimedia environment. I decided to continue my education with this M. Phil. research in order to improve my artistic practice. I wanted to advance in my technical skills, communicate with colleagues from other disciplines, enlarge my network of artists using technology and develop my creativity in a multimedia context, which was completely new for me. My first reaction towards it was excitement about the possibility to cooperate with other artists and use the available equipment for experimenting and training – music studios, video cameras, video projectors, microphones, and high performance computers. I thought that in this kind of environment, I can only be creative and explore all my audiovisual ideas. I was directly inspired with the context I happened to be in: the Faculty of Art, Media and Technology.

This research has developed from the tensions that I felt between the existing standards of the contemporary media performance scene, and the need to improve my own practice in the field of live media performance. Curiosity for using new media and exploring different roles in my case studies is another important motive for me to do this research.

1.3 What are my Expectations?

I hope that my experience as a musician, having passed through both classical and technology-based educational systems and participating in them in different roles – as performer, concept designer, composer, producer and teacher – will be useful for all creative people coming from the conservatory and wanting to work in the field of multimedia performance.

With this exegesis I would also like to make my own contribution to reflective practice and *living theory* (Whitehead, 1998), by exploring improvisation and experimenting in my projects. I will write about how it has enhanced my own identity as performer, composer and designer, and why and how I have been committed to sharing its transformational potential with people I collaborate with. Its claim to originality is that it arrives at a living concept of *knowledge transformation* through multidimensional reflection; as

a singer who is a composer, as a composer who is a researcher, as a student who has been a teacher, as an artist who has lived in an imaginative world creating her works, and as a researcher dealing with institutional policy and educational change. “I am my own informant into different perspectives, and will try through these personae to have a dialogue between several positions and arrive at a concept that is tested and lived from several perspectives.” (Spiro, 2008, p. 29)

1.4 Exegesis Structure

Exegesis is divided into six sections. Chapter 2 focuses on context review, cultural changes and their influence on my work. This part gives some repertoire review as well, which is not comprehensive. It is a personal selection, intended to encourage the reader to explore media performance repertoire in the 20th and 21st century in all of its various forms. Chapter 3 explains my research methods and projects concerns. Chapter 4 is about my case studies, ’*Bukefalus’,* ’*Tribute to Morty*’ and ’*Every. When*’, which were all designed as electro-acoustic pieces with video displays. This section also contains small discussions after every project, regarding the problems that appeared during the working process. Conclusions from reviewing the results are presented in chapter 5 and are in a way a continuation of the small discussions from chapter 4. Final conclusions and issues for further consideration are part of the last section, chapter 6.

The focus of this exegesis and study case is to investigate different problems that arise when making a multimedia piece, as well as to investigate the development of original creative audio-visual work. The main issues of the case studies include:

- a study of the nature of interaction between the players,
- relationships between music and visuals as well between each element of the piece,
- the collaboration between artists from other disciplines and processes of organization.

This exegesis accompanies the major part of the M. Phil. thesis with three original works, contained in the two DVDs attached to the paper.

Chapter 2

Cultural Changes and its Influence on my Creative Process

2.1 Note on Multimedia and defining my Field

When I first began my research I was eager to start reading about *multimedia*, but I did not expect to spend a lot of time finding the relevant literature for my topic. The main issue was the ambiguity of the term *multimedia.* I ended up reading many things about the application of multimedia in different areas including, art, education, and entertainment, and I became aware of its use in contexts far from my interest, such as engineering, mathematics, business, scientific research, advertising, etc.

In order to make it clearer for the reader I need to explain the following: in my case studies, the term *multimedia environment* will be used to refer the performance that includes:

- usage of audio signals – live processed or not,
- visual displays – on canvas or live processed video signal and
- stage settings.

The term *performance* shall refer to the time-based experience on stage. The term *stage* will be used to describe any space in which a performer performs, not only the theater stage. This definition will include action as well, which could be anything: speech, movement, gesture, acting, making music, etc.

The term *multimedia*, in this exegesis will be referring to Wagner's definition of *gesamtkunstwerk* as "art work in which all the single art varieties should combine for their own highest competition".Packer, R. (2001, p. xx) Let's analyse this definition in short.

In 1849, Wagner introduced the concept of the *Gesamtkunstwerk* (Wagner, 1849), or Total Artwork, in an essay called "The Artwork of the Future". [1]It would be difficult to overstate the power of this idea, or its influence.

> "Wagner's description of the *Gesamtkunstwerk* is one of the first attempts in modern art to establish a practical, theoretical system for the comprehensive integration of the arts. Wagner sought the idealized union of all the arts through the totalizing or synthesizing effect of music drama in the unification of music, song, dance, poetry, visual arts, and stagecraft. His drive to embrace the full range of human experience, and to reflect it in his operas, led him to give equal attention to every aspect of the final production. He was convinced that only through this integration could he attain the expressive powers he desired to transform music drama into a vehicle capable of affecting German culture. Despite his reference to the German context at that time, his idea was extended in the last century and embraced by many artists, musicians, and mathematicians. The resulting artistic movements and genres demonstrate as much: the Futurists, Bauhaus, kinetic sculpture, Happenings, video art, electronic theater, etc."(Packer, R. 2001, p. xxi)

2.2 Old and New Technologies

> "I have learned so much from my work with video and sound, and it goes beyond simply what I need to apply within my profession. The real investigation is that of life and being

[1]Das Kunstwerk der Zukunft (German for The Artwork of the Future) is a essay written by Richard Wagner, first published in 1849 in Leipzig, in which he sets out some of his ideals on the topics of art in general and music drama in particular.

> itself; the medium is just a tool in this investigation. Technologies change, but it is always imagination and desire that end up being the real limitation." (Viola, 1992, pp. 32-34)

If we look back into history, we become aware that artists very often tend to use recent technologies in their work. (Malloy, 2003)They are the ones who immediately realize the relation between art and technology, and instead of being afraid of it they perceive it as an extension of reality. It becomes another tool for expressing their creativity. If we just stay within music, and limit ourselves to recent history, we can recognize the effect of technological innovation on the practice of art. For example, "the development of the pianoforte at the turn of the 18th century led to significant stylistic changes in composition of keyboard music."(Hamm, 2003, p. 1 para. 1)

This holds true for the creation of most novel instruments and devices.

The use of *new technologies* and particularly multimedia finds its application in various areas including, but not limited to, advertisements, education, entertainment, engineering, medicine, mathematics, business, scientific research, etc. ("Multimedia", 2009) Therefore it is only natural that composers and artists today are exploring the new possibilities as well.

Because of the fast advances and rapid changes in technology it can be difficult to comprehend the scope and significance of the changes that are taking place. To do so would necessitate another thesis. I would like to point out that what is regarded as new and groundbreaking today, appears as dated in time after historical retrospection. And even if the trends arise from the avant-garde very often, in many cases those forerunners become mere footnotes to those who follow due to the initial focus on the techniques involved rather than the artistic potentials they entail. During this research I witnessed that, in libraries, scholastic journals, and the Internet, writings on music technology often become quickly outdated from a practical standpoint. As Sam Hamm(2003, p. 2, para. 1) points out in his article:

> "Being new and modern becomes blunt history, and does so very quickly. It is a somber lesson in both biological and ideological mortality, that our diligent work today may barely raise eyebrows in the not-so-distant future. Thus, it is important, for our own historical record, that those of us working in multimedia today to capture this moment in time: how we work, how we think, and how we have arrived at where we are. Furthermore, it is vital for us as composers to strive for the humanity of expression in our music so as to communicate our work with a timeless human quality."

2.3 Introducing 20th Century Media Performance

Artists from the 20th century have continued the serious attempt to make the viewers' experience even more intense by integrating traditionally separate disciplines into single works. What can be found in the statements of many modern artists is their consideration for evoking all the viewers' senses with their artwork. "It happened that many of them discussed forms limited to books, paintings on canvas, or music played on traditional instrument, as being old-fashioned and incapable of catching the tempo and demands of contemporary life."(Packer, R. 2001, p. xxxvi) We have to mention Futurist and their manifesto "The Futurist Cinema".(Marinetti, 1909)

For F. T. Marinetti and his followers film was the "supreme art because it embraced all other art forms through the use of [then] new media technology. Only cinema had a 'totalizing' effect on human consciousness".(Packer, R. 2001, p. xx)

Moving forwards just a couple of years, in 1924 there appeared an essay describing the Bauhaus theatre, "Theater, Circus, Variety". In the essay László Moholy-Nagy introduces a so called theater of abstraction.(Packer, R. 2001, p. 16) The essence of the idea was to make a synthesis of space, sound, moving images, and physical motion to provide a complete experience for the audience, as well as extending the focus from the actor and the text into a unified sensory experience.(Packer, R. 2001, p. 18)

Going from Europe to America, we must mention the works of John Cage who was breaking away from traditional forms and mixing artistic disciplines. He presented his new way of composing – indeterminacy and chance operations(Cage, 1961) – as well as his collaborative performing aspirations in the late 1940s, during his residency at Black Mountain College in North Carolina. (Oman, 2010)

His devised theatrical experiments with choreographer Merce Cunningham and artists Robert Rauschenberg and Jasper Johns shifted the borders between the arts. He was particularly attracted to

> "aesthetic methods that opened the door to greater participation of the audience, especially if these methods encouraged a heightened awareness of subjective experience. Cage's use of indeterminacy and chance-related technique shifted responsibility for the outcome of the work away from the artist, and weakened yet another traditional boundary, the divide between artwork and audience."(Packer, R. 2001, p. xxi)

Cage liberated artists after him and we can say that even today his works are encouraging for making non-traditional performance, challenging what was established before as a static and defined form or genre. His work was very important not only for the history of music, but for the history of media performance, and it is defined as one "leading to the emergence of genres such as the Happenings, electronic theater, art performance, and interactive installations."(Packer, R. 2001, p. xxi)

2.3.1 Vocalists Influenced by Technology

Nowadays, many composers, instrumentalists and vocalists worldwide are becoming increasingly interested in the discovery and development of new instrumental sonorities, indicating a growing trend in a major branch of composition and performance. "The novelty of making music with electronic instruments has long worn off. The use of electronics to compose, organise, record, mix, color, stretch, randomize, project, perform and distribute music is now intimately woven into the fabric of modern experience."(Holmes, 2002, p. 1)I consider myself as one who has joined this trend. My first encounter with technology was when using voice signal processing for the first time. Therefore I continued exploring that field in my case studies, along with other aspects of media performance as well. In the following text I shall discuss these aspects, as well as the repertoire for voice and electronics and live media performance and their influence on my work.

Many composers choose to incorporate electronics into the performance as the piece happens (in real time). There are different ways one can implement live electronics into a composition or performance:

- voice can be processed with different effects during the performance,
- some part of the performance can be recorded real-time and then played or looped at other points of the piece. This makes special textural layers as well as rhythmical patterns which could be used as blocks when building a bigger form,
- a computer could be used to interact with and respond to different voice parameters such as pitch, amplitude, etc

For those who prefer improvisation and freedom in expression, live electronics can be a very intuitive tool. This of course depends on the experience of the performer as well as the computer player.

In her thesis "A Singer's Guide to Performing Works with Electronics" Larissa Katherine Montanaro defines the term 'live electronics'(Montanaro, 2004, p. 28, para 2) as referring to works that only include voice processing or looping, mostly because the focus of her work is on the singer. However, in an audio visual (multimedia) environment we can extend that definition and include live video processing as well, rather than just various interactive computer-assisted performance possibilities (gesture controllers, mapping, etc.)

While challenging the performer and composer with enormous possibilities that real-time improvisation gives, this type of work requires special training because of the use of specialized types of equipment. Very often it involves an assistant who will operate the equipment. Luckily, a beginner can easily find hardware that performs relatively simple processing such as : reverb (giving persistence of sound in a particular space after the original sound is removed), filtering (influencing frequency spectrum of the sound), delay (recording an input signal and then playing it back after a period of time), chorus (making a single instrument sound like there are actually several instruments being played) etc. And though hardware changes very fast, this kind of basic sound processing is very often included in the up-to-date machines.

Many singers considered as pioneers in the genre include those kinds of effects in their performances. One of them is Joan La Barbara for whom "Three voices" (the piece that I recorded for one of the case studies) was written. Montanaro (2004, p. 29) cites La Barbara talking about how she used the electronics:

> "This was my first exploration into the realm of live electronics, utilizing commercially available devices designed for electric guitar players (phase shifter, frequency analyze and echo/reverb unit) to further expand and extend my vocalizations. Abruptly changing the settings, I used the equipment as a source of surprise, working with the resulting sounds as an improviser reacts to other musicians."

Another artist, Alex Nowitz, has developed singing techniques which have close analogies to typical processing techniques in digital sampling: for example, manipulations of the source through the application of filters and modulators (variations in the mouth cavity shape and size), transposition or other processes. He records the individual sounds building up a sound library from which the performer can call up any sample.(Nowitz, 2008) I adopted that technique for my pieces *'Bukefalus'* and *'Every. When'*.

2.3.2 Roles of Engagement

Because of the special nature of interactive works, it is sometimes necessary for the performer and composer to work together. In my case I engaged in both of these roles. However, when that is not the case, it is very

helpful if the composer involves performers from the beginning, helping them to understand the concept or even include them in the creation process. For instance, it could happen that the composer is also the designer of the interactive system and maybe even the only person who can run it. This is also the case when the composer is the designer of the software as well, like in the *'Every. When'* project.

Historically musicians are very often engaged as both performers and composers. Examples are not rare and include Bach, Chopin, Messiaen, or more recently Anne La Berge, Pamela Z, and Meredith Monk and John Cage's work as a musician, composer, artist, poet, and philosopher rarely fit within the traditional boundaries of artistic practice .

But composer and performer very often work together as well. Consider Joan La Barbara, who worked with Martin Subotnick and software developer Mark Coniglio to create a program called 'Interactor' which would run various interactive components. This program was designed to provide the possibilities for creating events and musical responses that will be triggered by the performer in real time.(McCabe, 1993, p. 1, para. 3)

'Voci' (Voices), a piece by Pamela Z(2003) is a full-evening, multimedia performance work exploring the sonic, cultural, physical, and artistic worlds of the voice, celebrating the broad range of colours in the singing voice and speaking voice, and examining scientific and cultural phenomena around the voice and its many metaphors. In addition to Pamela Z's dramatic performance work with voice and live electronic processing, Voci features vivid, tall video projections designed by filmmakers Jeanne Finley and John Muse along with lighting design by Elaine Buckholtz.

In the late 1940s, during a residency at Black Mountain College, John Cage developed his provocative "theater of mixed-means" in collaboration with the artists Robert Rauschenberg and Jasper Johns and the choreographer Merce Cunningham. These experiments gave birth to an explosion of performance art in the 1950s and 1960s that introduced all types of actions, artefacts, noises, images, and movement into the performance space, such as in his own electronic theatre work, Variations V from 1965.(Frieling, 2009)

2.4 Performance Art and Individual Influence on my Work

Changes in culture are nowadays influenced by the increasing use of technology in everyday life and by performance practice as well. If we take a closer look at the contemporary performance scene, one can see that most of the works include new visual media, computers, and other sonic resources.(Fitzgerald, 2004, pp. 12-15) Combining this with acoustic sources extends the expressive and sonic possibilities on stage. All this could lead to changes in the nature of the composition or performance, developing new contemporary forms. Time will prove if these forms are going to give shape to a genre that will be followed in the future, or they will be remembered solely as experiments. Regardless of this, "the film and video operas of John Adams, Steve Reich (*Three Tales*[2002], *The Cave*[1995]) or Meredith Monk (*Atlas,* 1991), are challenging the old categorizations."(Fitzgerald, 2004, p. 30) They are moving the musical theatre into a direction directly influenced by today's context, embracing new technical possibilities.

In the musical genre performance art art I want to mention some of the most important American artists, Meredith Monk and Laurie Anderson. Their work represents a very special creative nature of this genre and their aesthetics and their approach has been an important reference for my own work, as represented in *'Bukefalus'* for example (see chapter 4).

2.4.1 Meredith Monk

I had the chance to meet Meredith Monk during my previous research on Authentic Voices from 20th century. She is a New York artist primarily known for her vocal innovations, including a wide range of vocal colouration, which she first developed in her solo performances before forming her own ensemble. She is the pioneer of an entire genre of musical expression, creating works that combine music with movement, image and object, light and sound, in an effort to discover and weave together new modes of perception. She started her solo works in the 1960's and then in the 1970's she formed an ensemble, developing her own vocabulary. From the interview I had with her and the analysis of some of her music, I recognized her way of working, which to me seemed very intuitive. She started with improvisation, i.e. developing music material, and later worked out the form. This was the way that my two performances of *'Bukefalus'* and *'Tribute to Morty'* were developed as well.

Talking about Monk's unique approach to performance, I have to mention her special way of mixing the lyrical approach in building melodies with clear rhythmical patterns. In the process of working, alone or with the group, she uses a form of improvisation until the best solution is found. Methodologically, we can say that this is an action-based way of working, in which rehearsals are cycles that are repeated and reflected upon as steps toward the development of the final form (more details in chapter 4).

Her approach to growth as an artist in the sense of form, aesthetics, and mixing the media comes across as a personal or artistic imperative, rather than merely following trends for the sake of mixing media. She

managed to take the exploration of nuance – an essential factor in creating pieces, particularly when creating longer pieces – onto a whole new level. She did not accept the critics' comments that her singing involves so called 'extended vocal techniques':

> "I don't describe my music in terms of genre, at all. Again, I am very not interested of the idea of genre, because I feel that I actually made my own vocabulary based on my own instrument, so I think what I would say to someone who has never heard my music is that it is the music that I have made for my own voice, from the sounds that I can make for my own voice, the vocabulary that's build up on my own voice. And that it has some kind of freedom that jazz has, but it does not sound like jazz, it has the rhythm and excitement of rock & roll, but does not sound like rock & roll, it has technical rigorousness of classical music but it does not sound like classical music and it has the honesty of folk music but it does not sound like folk music."(Popovska, 2007, pp. 47-48)

Specific references of Monk's music as well as her personal approach toward voice have found their way into works of mine like *'Bukefalus',* and *'Every. When'* (piano quote from Lullaby song[2]). In these two pieces I resonated with her operatic works, developing new textures and improvised sections.

Many of Monk's compositions are wordless, and the language could be viewed as just a texture, which we can compare with the treatment of voice in the piece Three Voices by Morton Feldman. I have used that piece as a base and static musical layer in the performance *'Tribute to Morty'* (chapter 5), thus creating more freedom for the performers' movements and physical discovery of space.

Though many things could be written considering her wide range of use of voice, it is not the topic of this thesis. More information about this issue can be found in an interview I made for my previous research. What is important to be mentioned here are Monk's integration and connections between visual, kinetic and sonic material. Those are present in almost every work done by her and were an inspiration for my projects. For the first time, I had the chance to explore myself in relation to working with six dancers and two video displays on the pieces *'Every. When'*, as well as in *'Bukefalus'* and *'Tribute to Morty'*. The directions are however different in all three pieces, and element such as light, its various effects, and colour limitations are also explored. I worked on how sound, image and space can work together, creating a deep and intimate relation and communication within the piece as well as between art and audience.

2.4.2 Laurie Anderson

Another artist, active for over 30 years, whose work was an important reference for creating my pieces in this on-the-edge genre, is Laurie Anderson. Her influence is mostly in the way of creating and finding ways to use old technologies and media, putting them into a new context, using vocal filters, layers, loops, finding new results. As Thomas A. Fitzgerald(2004, p. 35) notes in his thesis 'New Musical Composition for Live Performance and Interactive Multimedia' that "her approach to performance is in a way transforming the concept of the concert and musical theatre."

Laurie Anderson very often uses video in her performances. In her work 'Halcyon Days: The Nerve Bible' for example, she had three large video screens on stage where she managed to extend the space and change the context and the way that narration is led in the live performance.(Fitzgerald, 2004) Her creation of a link between the auditory process and visual elements, increasing the perception and awareness of the audience (in this piece by the use of lasers) is something present in my case studies as well. This had an impact on the director's vision for the project *'Every. When',* where a special light device was created to make light patterns. This is also elaborated on further on in the text.

In her works of the late 1980's, Anderson very much adopted looping and various techniques used in minimalism(Potter, 2002), which later on become a base for her music direction, still evident today. She managed to develop a highly distilled aesthetic and consistence in her music language. The minimalistic approach influence my work *'Tribute to Morty'* and the final results in the relation music-video will be discussed later as well (chapter 5).

What is noticeable is that the important role of Laurie Anderson is the fact that she is on the edge between classical contemporary music and popular music reaching number two on the UK pop charts 1982 with the song 'O Superman'.("Laurie Anderson", 2010) In a way, her creative process and awareness of the changes in culture with regard to technology make her an important figure in showing a possible way of combining art practice with popular, *avant-garde* or contemporary music. From my own experience, I can say that being on the edge between the genres is not always intentional, moreover one can be led by one's own creativity, knowledge and the nature of the works themselves.

I hope that the research communities will continue to attract such promising composers and performers, as well as theoreticians- particularly those who have radical and innovative approaches to style and method in contemporary music making. Developing relationships with professional performers of the highest

[2]MONK, M. (1981). Lullaby Song. On *Dolmen Music* [CD], Munich: ECM

calibre addresses the need for their integration into research processes, thus ensuring regular and wide dissemination.

Chapter 3

The Research Method

3.1 Research Preparation and my Methods

In seeking the research methods to carry out my research I adopted a reflective practice. Candy(2010, p. 1, para. 20) cites Schon(1983): "The concept of reflective practice provides a link between action research and practice-based research." Schön is concerned with an individual's reflection on his or her own professional practice as different and distinctive from the early forms of action research which were concerned with situations more broadly. I found out that the combination of action research and reflective practice is an approach widely adopted in educational research by educator-researchers who may call this form of research 'practice-led'. I chose this way of working due to an intuited sense that a practitioner's knowledge must be of value to other practitioners. Another reason was the fact that all these approaches are first action oriented and second participatory, involving researchers working with and for the research subject. This perfectly fit with my idea to get involved in the projects in different roles, so that I could have different perspectives and experience on the same topic.

3.1.1 My Definition of Action Research

There are many definitions of action research and it has been called by many other names, including participatory research, collaborative inquiry, emancipatory research, action learning, contextual action research, etc.(O'Brien, 1998, p. 1, para. 3) In a way, they are all variations on a theme. If we want to simplify, we can say that action research is 'learning by doing'. We identify a problem, take action to resolve it, evaluate how successful the efforts were. If not satisfied, we try again.

What separates this type of research from general professional practices or daily problem-solving is the emphasis on academic study. This means that the researcher must provide theoretical support while systematically working on the problem. Very often this requires spending a lot of time refining the methodological tools applicable for special cases, as well as collecting, analyzing, and presenting data on an ongoing, cyclical basis.

According to O'Brien there are several models representing the cyclical nature of the typical action research process:

- the simple model (figure 3.1) developed by Stephen Kemmis (1990) and detailed model adapted by Susman(1983, p. 102). In this simple model, each cycle has four steps: planning, acting, observing, reflecting.
- The second model (figure 3.2), though similar, tends to go into more detail.

In a survey of the literature, I found many debates and even disagreements about the nature and focus of action research, how it is done, who does it, why, and what the outcomes might be. But what is noticeable is that there seems to be general agreement among the community of action researchers, at least in theory, on the notion that action research is based on certain principles: the need for improving the practice, the right of each individual to show how and why they have given extra attention to their learning in order to improve their work, and the deep need for growth in our personal and professional lives.(McNiff, 2002)

Primarily the focus is on turning the people involved into researchers too; people learn best, and more willingly apply what they have learned, when they do it themselves. This also has a social dimension: the research takes place in real-world situations, and aims at solving real problems. In my case, though research takes place at the Faculty and in home studios, the final performance was tested on stage with a live audience.

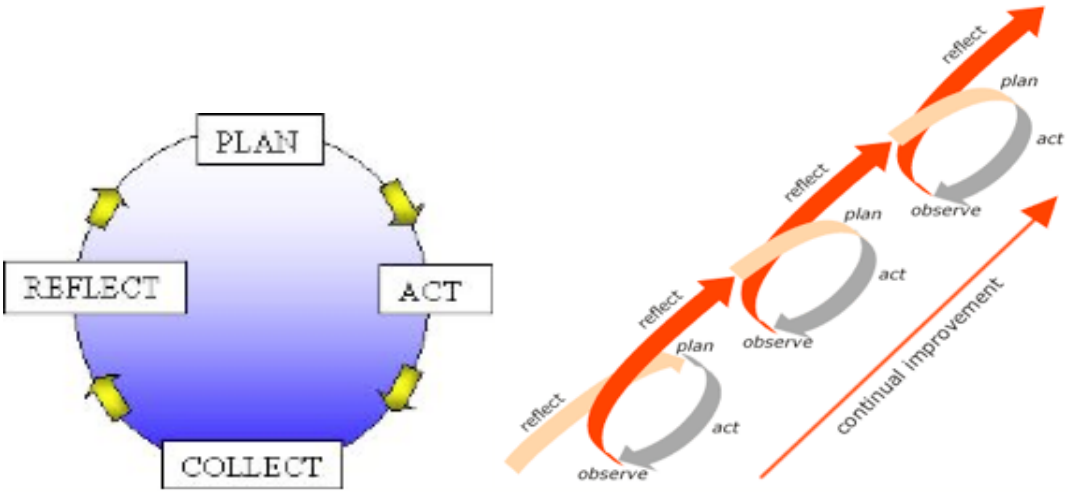

Figure 3.1: Simple cycle model (Gerald, 1983)

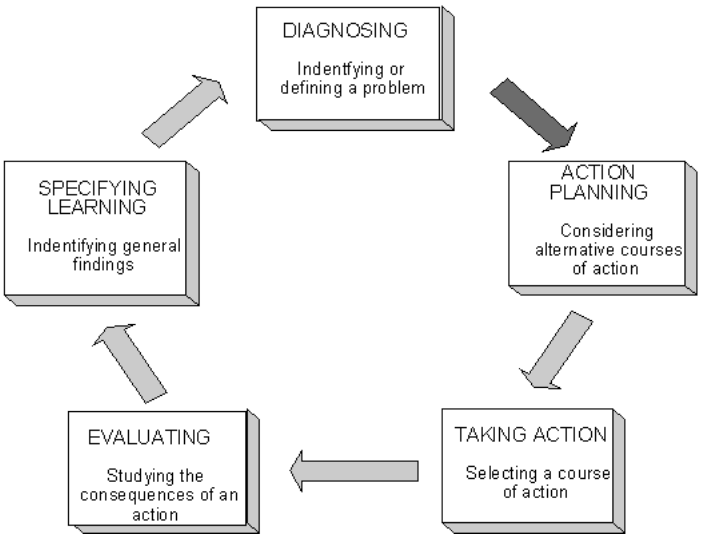

Figure 3.2: Detailed action model (Yasmeen, 2008)

3.2 Researching Practice or Practicing Research: A Possible Trap?

"Practice based research is an original investigation undertaken in order to gain new knowledge partly by means of practice and outcomes of that practice. Claims of originality and contribution to knowledge may be demonstrated through creative outcomes which may include artifacts such as images, music, designs, models, digital media or other outcomes such as performances and exhbitions."(Candy, 2006, p. 1, para. 2)

In order for artists not to fall in a trap of "starting researching practice and ending up with practicing research" it is important to make a clear distinction between *practice-based research* and *pure practice*. Practitioners often say that they do 'research' as a part of their everyday practice. This is understandable, because records and writing about creative practitioners show that searching for new understandings and exploring new techniques to express ideas are indeed part of everyday practice. However, this type of research is mostly led towards the individual's particular goals in that particular period of work, rather than trying and exploring things to be added to shared knowledge in a more general sense. Scrivener argues that the critical difference is that practice- based research aims at generating culturally novel apprehensions that are not just novel to the creator or individual observers of an artefact; and it is this that distinguishes the researcher from the practitioner.(Scrivener, 2002, p. 1, para. 9) In order to make an even bigger distinction between personal practitioner research and practice based research, we can say that the difference lies in the form and outcomes of generated knowledge as well. The results of practice-based research are coming from the process that is structured by the examination rules in the university and are then shared with the outside world. In order to achieve advances in knowledge of the kind referred to above, the everyday research process, common to professional practice, has to be defined and executed in a manner that is commonly agreed upon. "The research component of the practice-based research is, in most respects, similar to any definition of research, a key element of which is the transferability of the understandings reached as a result of the research process."(Candy, 2006, p. 2)

3.3 Relating Methods with my Practice

3.3.1 My Case and Change of Discourse

In the first months I did fall into the trap. I started with my projects led by the main question of any action researcher, namely, 'how can I improve my practice?', thinking only about my artistic practice. What happened, however, was that I started getting far from my main research question of 'what are the concerns when making a piece that includes more than one medium?', or 'what does one have to know when making a multimedia piece?'. Facing the problems during the ongoing projects and at the same time trying to solve them was often difficult. I needed time to document them, reflect upon them and go to another cycle having in mind the outcomes of the previous cycle (rehearsal, in my case). I started thinking about how to continue working with more structure. In the ocean of information that could be analyzed, it was still difficult to find the main assessment criteria. I ended up with clusters of problems that I could not relate completely to the research question, though intuitively I did feel that almost all of them were important and I wanted to keep them somehow. Therefore, at one stage of my research, instead of narrowing my question down, I started to make it bigger. In the moment of being completely stuck I actually realized that my problem was not having a defined method from the very beginning, and that during the first few months I was actually practicing research instead of researching practice. Instead of just doing a repertoire survey and working on projects, I had started searching for methods in artistic practice that could be applicable in my case as well.

The situation changed drastically when I started writing things down. Having things in your mind and having it on paper really made the difference in my case. The process of writing became composing. I came to the conclusion that I first needed to deliver my ideas, and during the process of being involved every day, I started connecting things and devising the theme introduction (thesis introduction), transition sections (methodology for example), culmination (main projects-case studies), resolving (result analysis) and coda (conclusion).

However, when a composer who has a non-linear mind and creative potential for free associations (such as myself) has to create something, the process can become chaotic if there are no restrictions. That's why I needed restrictions in writing or at least a direction to follow and try to stick with as much as possible.

I started by identifying important tasks and planned every rehearsal according to parameters that the theory of practice-based research suggests, such as:

- making a model of how to create, perform or realize a creative artefact, act or outcome (in my case design performances as study cases by participating in different roles),
- making a time frame for the works to be created, performed, realized. (I had the exact date for the public performances, which represented a restriction in itself),
- defining the roles of the people in the creative process (which was not always possible),

- thinking about the environments/space and tools required to achieve the output (we had the performance space in mind, though some parts of the equipment were only available on the day of the performance),
- thinking about the expected outcomes of the research process, as well as thinking about the relationship of the practice outcomes to the argument of the thesis (this was the most difficult task in my case because of the trap that I fell into at the beginning, and because assessment criteria arose and became clearer during the process itself, only making sense near the end of the process).
- finding information about methods, tools, resources, support, collaboration (research in research situation),
- finding methods for collecting data and analyzing the collected data (assessment criteria that I developed during the process),

Although from the current perspective, the things written above look like a very obvious way to lead the project, this was not the case during the process itself. I entered the new environment relatively unprepared, simply driven by the challenge of doing something new. In the end I managed to finish the projects, document them and reflect on them, adding something to both the live media performance scene (repertoire) and art education. The above points could also provide useful information in other practice-based research projects.

3.4 Matters to be considered

In my experience in multimedia environments and from the information that I gained in researching live media performance from the 20th century, it is my strong belief that encouraging a student to collaborate, experiment and improvise can offer rich educational experiences and valuable artistic outcomes. In attempt to address this issues I will outline and discuss several collaborative projects, exploring different design approaches, compositional approaches and collaborations where players are interdependent.

In order to evaluate my projects I will take into consideration following:

- compositional concerns (compositional and pre-compositional processes for interactive live performance),
- logistic concerns (equipment, rehearsal),
- design concerns (concerning the process of designing the performance systems),
- collaborative concerns (concerning efficiency, coherence of interaction, playing roles, improvisation and developing intuition and awareness).

3.4.1 Justifying Choices

In order to better illustrate how I proceeded with my research I will present three case studies. Although all the projects are situationally unique (though similar in being action research practice), there are distinctive elements in all of them. In all three projects I was involved in different roles, as a performer, composer or designer, and in all of them collaboration played an important role. I made particular choices, sometimes blending the roles of each of the participants. That was a way to get better insight and see the problems from different perspectives.

The main idea was to start all the projects with improvisation and to allow freedom for all participants to express themselves. I wanted to involve them from the very beginning of the process and consider their ideas and suggestions. It was desirable to be influenced by the multimedia context itself and by each other's input.

All projects have three things in common:

- video content and collaboration with video artists,
- live signal processing of audio and video (elements of interaction),
- open process of designing media performance (kind of experimental theater form).

The process or rehearsals are to be documented and analyzed (chapter 5 and 6).

Once we agreed on an initial form, we could start searching for the meaning and continue developing the piece, leaving the form open for further changes. Reflecting and developing improvisations led us to the final work.

I did not choose a traditional scientific approach to my practitioner research with its measurable data and traditional methods, because I am not a scientist. I am an artist and as such my (embodied and tacit) knowledge gives me control over what and how I carry out my research, whilst gratefully accepting suggestions for creative research methodologies. I combine the methods of action research or reflective practice with improvisation. In order to research this further I offer data gathered from:

- Interpretations of digital photographs made of the rehearsals,
- Interpretations of videos recorded during the rehearsals,
- Observations carried out by my colleagues in the discussions after,
- My own reflections on bad and good practice recorded/written in my reflective diary.

3.4.2 Why Improvisation?

In his book "Creative Music Making" Cahn(2005, p. 35) cites Nachmaninovich(1990) "Mastery comes from practice; practice comes from playfully compulsive experimentation and from a sense of wonder. In practice, work is play, intrinsically rewarding..."

As part of the composers and performance community, I faced different approaches to creating works: I met an artists who wants to be in control with a well-defined score and with the complete performance in mind well ahead, and an artists who relies on the creativity of the people involved and wants to create a piece on the spot, by using improvisation as a method. I belong to the second one group. In my practice until now, this way of working happens to be the one that works best for me.

Improvisation is a broad and complex topic that places unique demands on its practitioners and the tools they use. I find improvisation extremely challenging as a way to compose and perform, since it requires high concentration, a state of awareness, and intuitive knowledge, in order to stimulate our imagination. As the American film maker Jonas Mekas said:

> "Improvisation is, I repeat, the highest form of concentration, of awareness, of intuitive knowledge, when the imagination begins to dismiss the pre-arranged, the contrived mental structures, and goes directly to the depths of the matter. This is the true meaning of improvisation, and it is not a method at all, it is, rather, a state of being necessary for any inspired creation. It is an ability that every true artist develops by a constant and life-long inner vigilance, by the cultivation – yes! – of his senses."(Aurand, 1988)

One of the central figures in post-war electronic art, music composer/improviser Pauline Oliveros points out that "the improvising musician has to let go of each moment and also simultaneously understand the implications of any moment of the music in progress as it emerges into being."(Oliveros, 1999, para. 11)

However, this kind of 'in-the-moment' creation process requires a flexible instrument and knowledge of the instrument's potential. We can apply this in different cases, no matter whether the instrument is acoustic, electronic, computational, video (or some combination), because each type offers a number of challenges and possibilities.

As noted in the previous chapter, if we look at the scene today we can observe that a lot of artists are taking a wide approach on improvisation that envelops instrument design, composition, and performance. This is not new of course. If we look back into history we can see many similar examples. One of the greatest French organist-composers of the twentieth century, Tournemire, influenced Messiaen as an improviser. Tournemire stressed the spiritual aspects of improvisation in his organ method. While technique was important, Tournemire believed that it was only a means to an end. Improvisation was essentially concerned with beauty, emotion, poetry, and a richness of imagination. Tournemire compared the art of improvisation to "an illumination that brightened the soul of an artist."(Sholl, n.d. p. 2, para. 5) Technique disappears when the improviser's thought is noble and his emotion genuine. The improviser, according to him, is driven by a mysterious force that allows him to find beauty without resorting to mechanical formulas.

3.4.3 Why Video?

> "Similar to the Florentine Camerata's creation of the opera from music and theater, the future for multi-media art-creating a fluid interchange between music, image, story, performers, and ever-evolving technology-opens up all sorts of new territory."(Carrick, 2005, para. 3)

Whether it be through narratives, formal experimentation, short humorous tapes, or large scale meditations, video art at the end of the twentieth century has assumed a position of legitimacy, even prominence, in the art world.(Rush, 1999, pp. 78-115) Its seemingly endless possibilities and relative affordability make it increasingly attractive to young artists who have been raised in an era of media saturation.

I began working with video two years ago, starting with the project *'Bukefalus'*, a work for a narrator, two actors, one video display, and live electronics. Working on this piece gave me the chance to further develop ideas and techniques of audio-visual integration in different ways. Though I had some experiences with composing music for animation and documentaries, working with live video processing opened up many new possibilities that could be discovered by experimentation. The parameters I considered in the projects included exploring the balance and the dominance of visuals or audio in the piece by emphasizing one or the other; making counterpoint between the elements (music/video/text), and arranging ideas across each of the three media. The relation between the space in the performance and video-space was as well encountered. Chapter 4 discusses in detail how things proceeded in practice, including problems with synchronization and rehearsing.

My inspiration to use video, however, came from Bill Viola's works, and as he said: "I happen to use video because I live in the last part of the twenty century, and the medium of video (or television) is clearly the most relevant visual form in contemporary life."(Viola, 1995, p. 152)

3.4.4 Why Interaction ?

In their book "Multimedia from Wagner till Virtual Reality", Randal Packer and Ken Jordan define interaction as a "reciprocal exchange between the viewer and the artwork, the ability to manipulate media and objects intuitively and with immediacy".(Packer, R. 2001, p. xxxv)

For the purposes of this thesis, when discussing interaction I will refer not to the viewer but to the participants in the project, and how their relation to each other in this multimedia environment differs from the more traditional contexts. This includes the multifunctional role of the computer in interactive processes.

Many composers believe that interactive music is the perfect vehicle for truly integrated music. Guy Garnett(2001, p. 32, para. 2) offers that:

> "just as opera around 1600 was a response to the reawakening of interest in the philosophy and art of the ancient world, a response favorably disposed toward the growing secularization of the arts and sciences while reacting against the re-confining of expression brought about by the counter-reformation, interactive computer music takes the fullest advantage of the ideas and technologies of today and unites them with a vision of what they could be."

Of course, music – either digital or acoustic, dependent or independent of technology – is by default interactive. But, talking about interactive music I will be referring to works where performers can trigger compositional responses from the computer. For creative performers, interactive music could be the best solution, yet on the other hand it is very demanding, because of the special rehearsal time needed with or without computer assistant/artist. Alternatively performers have more freedom because they don't necessarily have to follow the time line and coordinate with tape (pre-recorded material) for example.

Many of today's interactive works are being written with the assistance of a software package called *MAX/MSP*.(Mathews, 1980) It has been thoroughly developed and is now possibly the most popular interactive software in use. MSP stands for Max Signal Processing and is the software that can run adjacent to MAX. As the name suggests, it functions as a signal processor – much like the ones being used by live electronics composers. MAX can receive data from limitless sources, including but not limited to the performer, video cameras, and any number of sensors (e.g. pressure sensors, light sensors, etc.). In turn, it can also control multimedia aspects of the performance such as lighting or video. It is therefore one of the most accessible and flexible software options for interactive music today. Interactive music of this type can also contribute greatly to the theatrical possibilities of a piece. Two of my case study projects involved the use of this program.

Chapter 4

Making a Multimedia Piece: From Scratch to Performance

4.1 Three Projects from my own Practice described and discussed

In this chapter I present my three projects: *'Bukefalus'*, *'Tribute to Morty*', and '*Every. When'*. As previously stated, these were all designed as electroacoustic pieces with video displays. I shall take a closer look at how the pieces were developed, discuss their cross-disciplinary character, and good and bad practices involved in them. Finally, I shall focus my attention on how things go in practice when one is composing and designing an interactive piece using improvisation and different media. In all three projects I have been involved in different roles, as a performer, composer or designer, and in all of them collaboration played important role. I made particular choices, sometimes blending my roles and the roles of the participants. The following section provides a summary of the working process and attempts to explain my actions therein.

4.2 *'Bukefalus'*

'Bukefalus' – for voice, narrator, actor, photographer, prerecorded sounds, live audio and video processing, eight channel speaker system. Duration 11 minutes.

'Bukefalus' is multi-channel, interactive live electronic work for six performers. The piece was developed as audiovisual improvisation. It explores the sonic and expressive capabilities of a performer with electronic instruments and video display. By using a wide range of interaction between humans and computer and signal processing techniques, composed instruments involve extensive acoustic sound sources including found objects, flutes, percussion, and environmental sounds. *'Bukefalus'* is a manifestation of the relationships that emerge from interaction with and through these new instruments and video display (figure 4.1). In this part, I will discuss the conceptual, aesthetic, and technical concerns encountered in the ongoing realization of this improvisational live performance piece.

4.2.1 Process

I designed a series of six small improvisational works in 2006 – 2007 to explore new directions between performance and multimedia. The attempt was to place non-idiomatic performance in the larger context of the audio-visual universe that was expanding during the course of the twentieth century. The works are designed for a group of people (hereafter: ensemble) that was specially formed to realize them. In the series of five rehearsals at the Faculty of Art, Media and Technology in Hilversum as well as at my small studio at home, the ensemble explored their creativity by setting up a framework or structure for experimenting with ideas, images, concepts, themes, or specific stimuli that included music, text, objects, paintings or movement. These rehearsals were recorded. The process of creating a piece will be discussed here.

4.2.2 People involved and Inspiration

In my creation process till now I always use what is available for me in that moment, in the sense of equipment or collaboration with people that were around me. For my M. Phil. projects the same applied.

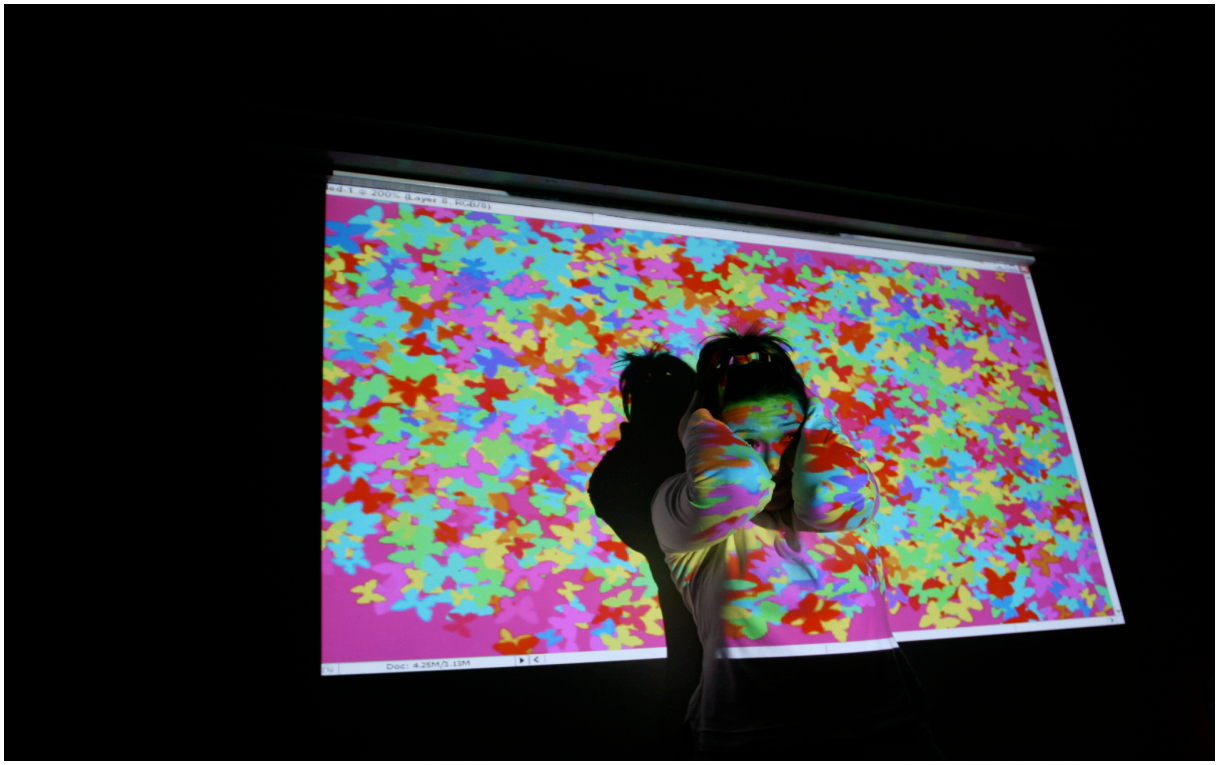

Figure 4.1: Photo from a 'Bukefalus' rehearsal

I invited five of my colleagues (then EMMA[1] students) to join: Christian Chierego, Maral Karaee, Alexander Rojas, David Hartono and Klaas Jan Govaart.

4.2.3 Factory and Andy Warhol

The inspiration to form this group came after we all watched movie 'Factory Girl'.(Hickenlooper, 2006) The idea of creating something like Factory – Studio that Andy Warhol had in New York from 1962 – 1968 came to our mind as well. Factory was a place where musicians and artists used to meet, collaborate, design things, and have parties. Prominent names such as Lou Reed, Bob Dylan, Truman Capote, Mick Jagger, and Salvador Dali were visitors of the Factory studio.(Hickenlooper, 2006) However, without any pretense to make it big or fancy, we had the much more modest idea of creating a playground where we can be creative and where we can cooperate. We used to call our small two-house-studio (which was sometimes a room in one house, or a kitchen in another) the "EMMA ghetto". This was all possible thanks to the Faculty of Art, Media and Technology by providing us with equipment (video projectors, cameras, microphones) and space. Besides the three projects we did together, a large amount of various artworks is left behind (photos, recordings, paintings, videos, ...).

4.2.4 Names and Profiles

Christian Chierego is a Chilean video artist and motion graphic designer, having experience as a VJ, audiovisual director and journalist. In his work he mixes personal video footage and animation, inspired by a special obsession with nature, human performance, and organic creatures. More often than not the resulting creations contain a complex, multi-layered atmosphere, with a goal to provide emotional experiences for the audience. This project was his debut as a VJ in the Netherlands and our first project together.

Maral Karaee is a 3D visual artist from Iran. With her strong interest in symbolism, visual literacy, history and mythology, her input in this project was precious. This project was her performance debut.

David Hartono is a digital media designer and a self-taught visual artist from Indonesia. In this project he was dedicated to creating a strong design concept and implement it in various digital media like Flash applications, Adobe Illustrator, and Adobe Photoshop. At the end however his role was transformed into that of a photographer. During the design process he was sketching, using the above mentioned programs. This project was his performance debut.

[1]EMMA-European Master Media in Arts, one year specialized program of study at the Utrecht school of Arts, in new media development and production with a strong vocational outlook.

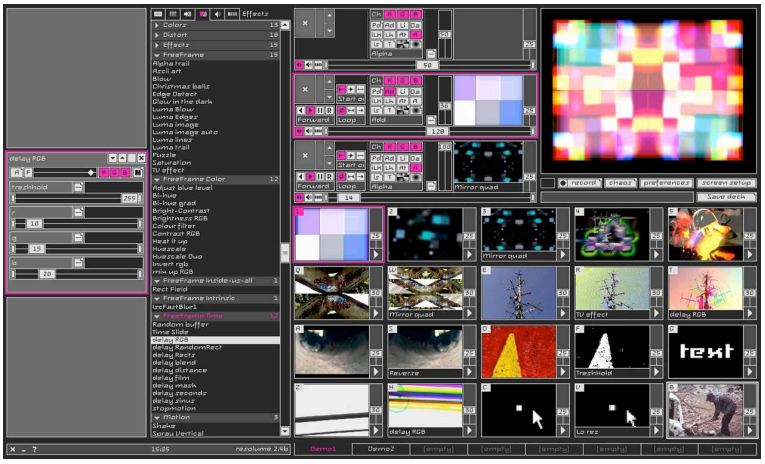

Figure 4.2: Resolume screenshot

Alex Rojas is a producer, writer, and documentary film maker from Costa Rica. Skilled in all aspects of video production and technical direction for documentaries and television, his comments about visuals were helpful, and his written text was used as the final script for the performance. This project was his performance debut.

4.2.5 Initial Ideas – Technology Involvement

One of the initial ideas was to use a computer application called Resolume(Koning, E. de, 2002) for visual materials and Max/MSP for live audio signal processing. I wanted to explore ways of articulation and developing vocabulary between live and prerecorded visual material in relation to real time singing or spoken voice, as well as live signal processing. Another goal was to explore the nature of interaction, both in physical space and in the space on the screen. Communicating these artistic goals with the ensemble helped me in making decisions concerning the creative process and the use of technology. Most importantly, the idea was to create new multimedia piece combining the rich creative potential of this unusual ensemble.

4.2.6 Resolume – Software for Live Video Processing

I chose Resolume because of its capacity for live video improvisation, and because all video effects, transitions, scratching, etc. Its possibilities for quick improvisation and adjustment of all the parameters just by using a keyboard or MIDI-device was of great support for the interaction flow. Another advantage was that we could easily switch videos and apply effects just by pressing keys on the keyboard, and during work in progress we could reverse video playback easily, paused or adjust speed, discuss, and proceed. We also actively used its ability to interactively change a video loop by adjusting the *in* and *out* points of our prerecorded clips .

I decided on a number of limitations regarding colours, textures, timing, delay, and filters, for both the audio and visual sides of the production. I also considered the limitation that video software has on its own. Resolume is explained in the following excerpt from the program instruction manual:

> Resolume is an instrument for live video performances. Completely build to quickly improvise your videos to the music. Play up to three layers of video, with up to six effects. Play video forward, backward, adjust the speed or scratch it by hand. You can freely improvise without ever stopping the video. (figure 4.2)

During the work in progress, we used the program's built-in audio features and its audio analyzer. Resolume can do full 18 band FFT audio analysis to make various parameters bounce to the music.(figure 4.3) Audio analysis can be used to drive effect parameters or automatically scratch a video to the beat. The full audio analysis data is also available for scripting in flash files. This enables building advanced audio visualizations in Flash.

4.2.7 Max/MSP Software for Live Audio Processing

Max/MSP is an interactive graphical programming environment for music, audio, and media. I decided to cooperate with Klaas Jan Govaart, a sound designer who uses this program for his artistic expression. For

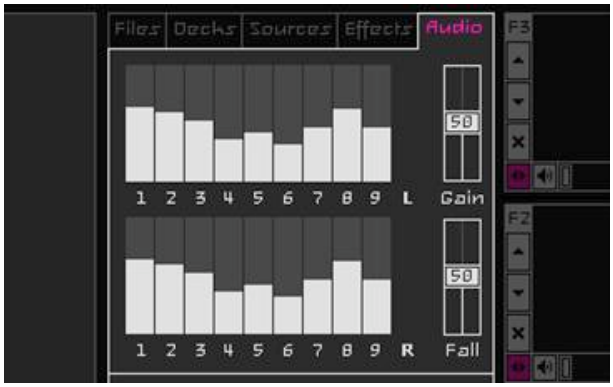

Figure 4.3: FFT audio analysis, Resolume screenshot

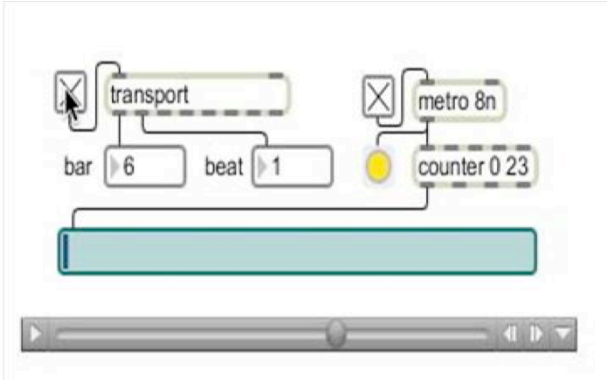

Figure 4.4: Max/MSP time object, screenshot

me this was the first time I had used real-time signal processing in both my performance and during the composition process as well. The possibilities of this program extended my idea about time, interactivity and control. Features such as timing objects that delay, quantize, and measure time intervals, as well as performing time-based filtering were also used as some borders for composing.

Interactivity, which is of course an important aspect of my work, is also enabled through Max so that the sound designer could design interfaces visually by integrating the produced interfaces into the program itself. For example, it controls the timing and transport of the timing example above.(figure 4.4)

Control as a feature of Max/MSP was very handy for my piece, particularly because of the freedom that every player was given in the process of making it. We could automate some parameters in the rehearsals, improvise during real time voice processing, or play with spatialisations (from stereo to 8.1 multichannel).

4.2.8 Limitations and Borders

Bukefalus as a project evolved after a period of exploration of Resolume and Max/MSP. In the initial period of exploration and meeting with the ensemble, I introduced them to a number of possible directions that we could follow. Some of these entailed making a balance between texture and rhythm in music as well as in visuals. We recorded varying video material on different locations, both in and outdoors. During the rehearsals, we built the structured improvisation and defined interaction as well as the relation between the visuals and sounds (voice colour and texture versus visual elements of colour and pattern changes). I played with different types of video transitions, such as cut, dissolve or crossfade, in order to blend musical elements with lighting and dynamic levels (for example making sudden cuts and blackouts in relation with sudden music transition).

4.3 Discussion

4.3.1 Communication with the Group

By learning to communicate with people from completely different parts of the world (Iran, Chile, Indonesia, Costa Rica, Macedonia), by discovering each others expertise (all of us come from different

disciplines – music, art, video, animation, documentaries) and ultimately making artifacts, we underwent incredible life and art experiences. We listen to each other very intensely and support each other, and from that atmosphere of listening and support, the structure and character of each piece emerges. For all of us, in a way, this experience was a school within a school. It was the ideal atmosphere for creative work; an opportunity for discovering another discipline by facing it on a daily basis, and learning by being intentionally involved or just by being in a media surrounding without lessons or the pressure of studying in the traditional sense. Everyone was free to adopt from the other what he was interested in. During the periods in which we worked on the project intensively, we had many discussions about art, the design process, and communication. At the time we were unaware of how important that would be in our future work, as well as how natural our flow of interaction really was.

Due to the high state of awareness we managed to achieve during the projects, there was a shared sense of an invisible leader guiding the process. What was actually happening was what often happened in improvising groups. It's a situation in which, when one is involved and concentrated on an activity, one feels the flow of the process. And if something goes 'wrong', one instantly becomes even more involved by adding something or excluding oneself. By actually making a decision, in that moment one becomes a leader. Switching the leaderships from one to another, just by being deeply involved and focusing on what you are doing, requires intensive listening, high concentration and devotion in that specific moment.

4.3.2 How I worked with the Sound Designer

Klaas Jan Govaart is a sound designer and programmer – a laptop-performer, as he calls himself. I provided him with source material I composed. Some of the material he processed further, some of it was used during the performance "as is". In the performance itself, besides fixed sound textures, my narrative and singing was processed live and distributed over a multichannel sound system. The processing consisted mainly of ring modulation and granular delays. All this was controlled in a simple Max patch containing a few sound file players with level controls and controls for live processing. "The function of the live processing was to accentuate certain words and phrases and at some point in the performance, it was used to create a dense abstract sound texture out of the voice." (K. J. Govaart, personal communication, October 23, 2008)

Unlike the other members of this project, Klaas Jan Govaart and I had three rehearsals and a lot of improvisation time. His role in this project was clear to both me and himself, (see correspondence by e-mail in appendix E), because I managed to give him a clear idea of what moods the sound should help to create for the different scenes. His role was that of a musician improvising on given textures.

We had three clear sections in the piece, centered around three scene settings, and instead of a score there was a loose timeline. During rehearsals Klaas Jan Govaart also provided sounds from his own library and matched them with the respective mood.

According to him, there was no composer role in this piece, only a director and performers. He thought that I was not micromanaging, but letting everybody do what he/she is good at. In my opinion, however, my role was blended, so that I was performer, creator of the concept, provider of sound material, and a composer as well. Why? Because I composed my sound library, I was involved in the process of shaping and choosing sounds made by the sound designer, and finally developed a timeline for the music as well for its performance. In that sense, I was macro-managing in terms of form, but also micromanaging in the process of choosing sound textures and timbres for defining the musical mood.

4.3.3 Rehearsals

Carefully following and documenting the work in progress, each rehearsal explored different aspects of being in a multimedia environment, based on the reflections that we had from the previous meetings. We had successes and failures at almost every rehearsal. For example, the first meeting was successful in developing the kind of screenplay or text that we kept for the final performance with minimal changes. However, at the same rehearsal, improvisational music elements were not easy to integrate and to keep coherence with the rest of the structure. The music of the first rehearsal was kind of a library-hybrid of concrete sounds (such as children sleeping, toys, small cars, ice skates) mixed with live singing and talking. Most of the time we had two speakers, limiting the spatialisations despite our goal to use eight speakers for the final performance. The fact that we rehearsed in relatively small rooms (6m x 6m) but performed in a church with ten seconds reverb also appeared to be a constraint. For the second rehearsal, we focused on musical elements, such as dynamics, balancing the voice colour, performing the text, and improvisation. We restricted the visual elements only to realtime editing of prerecorded material, without any live video input. We paid attention to the lighting as well, with different small lamps and light balls, playing with the sensation that light can produce. Design of the light was mostly in the range of primary colours, red, blue and yellow, including the neutrals, black and white. Usage of varied lighting and sound almost made a new context in which video projections were experienced differently. During the process, I became aware that sonic and visual elements could together form a new kind of sensory stimulation which could

provoke strong sense of intimacy. Experimentation produced new and unusual colour mixes in almost every rehearsal, which then became a reference for the musical work itself.

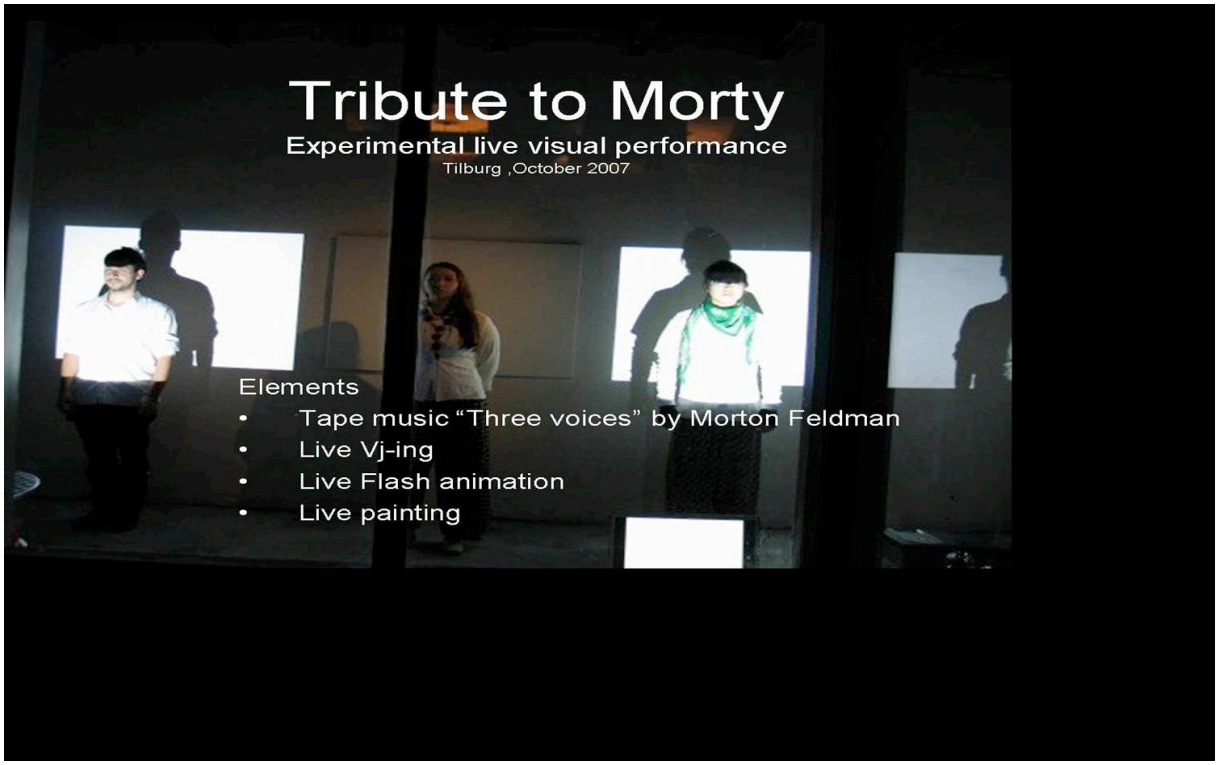

Figure 4.5: Performance photo of 'Tribute to Morty'

4.4 *'Tribute to Morty'*

'Tribute to Morty' is an experimental, live, audiovisual performance for three performers. The piece is developed as visual improvisation, exploring the relation between a static element (in this case a twenty minute excerpt from Morton Feldman's piece 'Three Voices') and live action on the stage. Limited with neutral colours like black and white, the attention of the performers was focused on creating textures and patterns which could function in counterpoint to this minimalistic piece of music.

4.4.1 Limitations/Borders and Involvement

This project was commissioned for a performance in GifGrond in Tilburg, a 'Podium for Experimental Music and Art', in October of 2007. The whole production took two months, a period in which I gave the freedom to the players to develop their own visual story limited only by the twenty minute duration of the decidedly minimal music, the use of two colours (black and white), and the size of the projection screen: 120 x 90 cm. At the rehearsals we were exploring simple visualizations of the sound by working with the synchronization of acoustic and visual parameters. We reacted to musical parameters such as dynamics, articulation, tempo, and contrasts (high or low, metrical and free, pulsed and non-pulsed). I was involved in all phases: studio recording, conceptualization, designing (audio and visual), production, and documentation.

4.4.2 Initial Idea

I remember that when my singing teacher Jannie Pranger showed me the score of 'Three Voices'(Feldman, 1989) a year and a half ago, I got scared. I had my reasons. First of all I had never sung such a long and demanding score before. I was afraid that I could never match the beauty of Joan La Barbara's 1982 recording of the piece. The rhythmic and melodic complexity made me feel insecure. The level of required vocal techniques and self-discipline for studying was something that I had doubts over being able to achieve. Last but not least, there was some risk in working – also for the first time – with producer Rik 't Jong, who had never before worked on a contemporary piece like this. However, over the following six months, I went through each step of the production process e.g. preparation, research, production and post-production, and everything went well; I finished on time, and obtained my Master Degree in 2006. The project was therefore a valuable and appropriate precursor to the development of the piece at hand.

4.4.3 Decision making

To wit, 'Three Voices' was in fact the inspiration for my M. Phil. case study, the *'Tribute to Morty'* project. It involved stage design, choosing participants and defining their roles, and performing. I wanted to design a multimedia performance where I could use 'Three Voices' as a background layer, as a tape piece, though not singing it live. This was my first decision because, originally, 'Three Voices' was made as a tape piece with two speakers and one voice singing the third part live. Only that way I could take a new role for myself on stage. This was the first time I did not sing as usual, but painted live. We agreed to use a separate video display for each of us: Chierego was using the VJ program *Resolume* to project his motion graphics, Hartono was projecting *Flash* animation with realtime processing, and I used acrylic colours on canvas.

By exploring the role of visual performer I aimed to extend my borders as a performer. This was also a new role for Hartono, for the first time using *Flash* in a live performance setting.

4.5 Discussion

Working with people that you have known for some time was a clear advantage. In spite of our effective cooperation, the nature of this project was different from previous experiences and I was aware that my position as a kind of a project leader, manager and organizer had certain demands. First, I needed to motivate my colleagues, which I did by arranging the stage where we could perform our piece, as well as trying to stay in touch with everybody on a regular basis during the project(communicating by email, phone, or meeting at school and at my house). The fact that we lived close to each other was also an advantage, as we could meet often to discuss the process. The goal was clear: exploring the visualization of sound by working with synchronization of acoustic and visual parameters.

4.5.1 Exploring New Fields – Design

Exploring the role of designer was yet another challenge. I had to think about the relation between the music and video displays, the stage picture, and try to express some principles of stage design such as:

- use of space in the good way,
- visually managed to appeal to the audience and
- translate and express the concept of the performance.

I did not have much experience with that and for the first time I wanted to see the extent to which I was capable of doing it in this period of my artistic practice . For the first time in my work, I explored other senses than aural and visual, and those were olfactory and somatic (smell and bodily touch) by painting live. The strong smell of acrylic paint during the rehearsals was impossible to ignore, but at the performance things were completely different. What happened was that our performance took place in a half isolated room with windows, so the audience was in the other room watching us behind the glass. The speakers were also in the audience room. For the actual performance we had isolated elements, sound and audience in one room, performers in another, trying to listen to the music coming from the other room in order to do the action. Because of the decision to do the performance behind the glass, we lost coherence between the elements that at the rehearsal we had successfully managed to establish. At the moment of the performance I thought it was a good idea, but from this perspective I think it was a mistake which changed the picture of the whole performance, breaking it up into a sound installation in one room and a kind of action/happening in the other.

Decisions regarding the use of space happened to be very important, and should have been considered more carefully. What I did not know at that time was that designing the stage picture perhaps needed the same amount of preparation as composing the piece itself, because it is effectively a discipline on its own. It needed knowledge and experience, because any change in space matters and any wrong decision could influence the work itself in almost the same way as an instrumentalist playing out of tune.

4.5.2 Importance of Meaning

Another neglected aspect of the performance was its *meaning* in terms of the kind of message it is to convey to the audience. When one creates artwork, by having in mind that one is creating an interface for the audience's experience, one must also think about the meaning much more deeply than simply visualizing the sound (at least in the case of *'Tribute to Morty'*). Of course, at the moment of creating the piece, I thought sufficient attention had been given to that aspect. But when analyzing the results afterwards and reading about interaction design, I found some useful information considered to be the basics of that discipline that could apply to designing multimedia works as well:

> "Designing an interface for any audience experience, whether technological, physical, or conceptual, begins with the creation of the meaning and the development of an appropriate type of interactivity. These decisions influence further decisions about the type and style of sensorial media needed to present the experience to the audience in an appropriate and supportive way."(Shedroff, 1994, p.15)

4.5.3 Importance of Lighting

The idea was that video, in the form of motion graphics for this project, formed visual commentaries that enhanced the music, sometimes in half light and at other times in a fully visible light. I wanted to alter the viewer's perception on three screens, having in mind that at the performance I will also have a spot light on the canvas. Unfortunately that did not happen, so my canvas was lit only by the video projectors which were next to it. As a result, it lost the connection with the other video displays, forming an empty space on the wall which I now regret. By losing the middle display due to incorrect lighting, the idea of three displays on the wall and the virtual space that they should suggest was compromised.

The conclusion was and is that the importance of light on stage and the different functions that light can have could aid greatly in designing a performance. Light can support or even create the environment in which action takes place. Playing with the various functions that light has, one can illuminate what occurs on the stage, setting the mood of a scene with colours, using it to suggest time, etc.

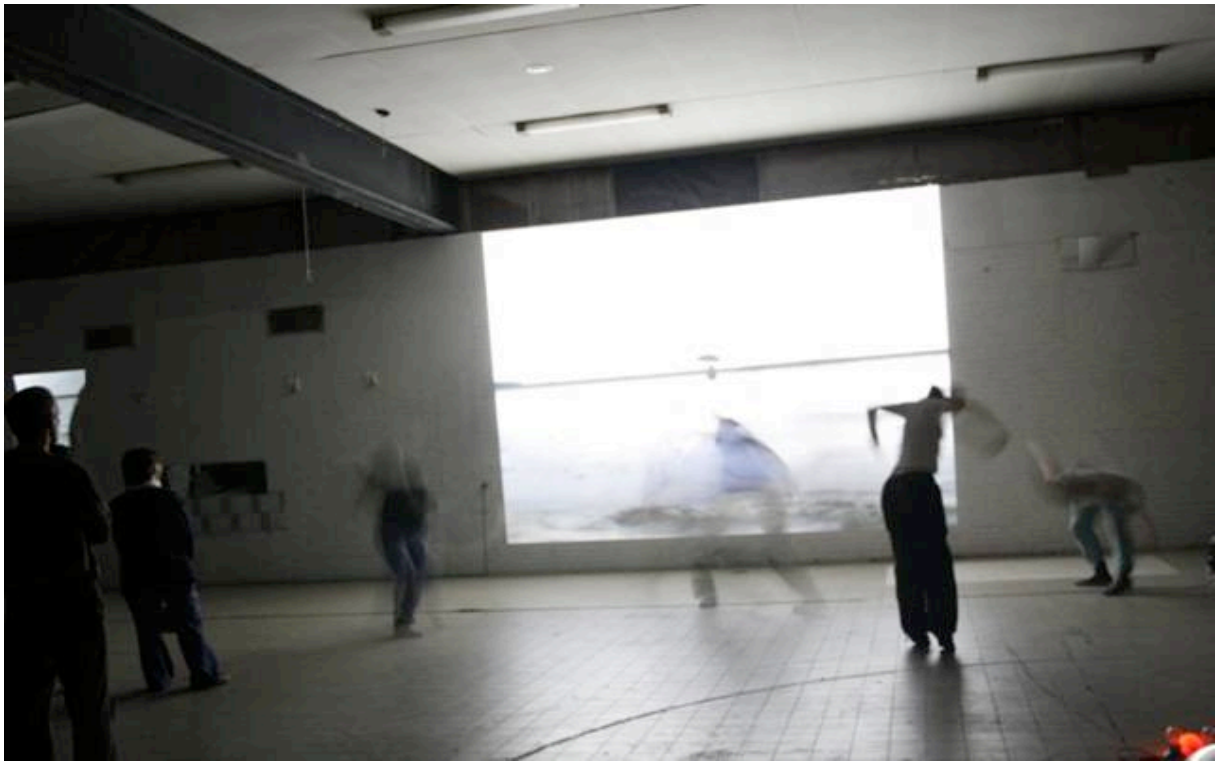

Figure 4.6: Performance photo of 'Every. When'

4.6 *'Every. When'*

'Every. When' was made as an immersive live media experience which involves performers and viewers in a trans-disciplinary journey, inspired by actual dreams about Christian Chierego (hereafter: the director). It represents an intimate visual trip, based on dreams and nightmares that relatives, friends and acquaintances had had about the director. *'Every. When'* is developed as an environment of sound, visuals and live action where everything happens in real-time. The objective was to create an immersive experience for the viewer, who becomes an inhabitant of a dream world and is invited to trigger and interact with the performance. According to the director, "it is a multi-sensorial research about the unconscious, new media language, and identity".

4.6.1 My Involvement

Contrasted with the two other projects studied here, my engagement was officially concerned with only the music. I was asked to compose the music and make a library of sounds, according to the instruction of the

director. I also had to select a sound designer to help us with the live performance. The first one that came to mind was Klaas Jan Govaart from project *'Bukefalus'* who ended up joining us.

Despite my official role as a composer, in this project I become aware of many non-compositional issues that live media performance brings. I had enough time to make notes and reflect after the rehearsals, while suggestions and remarks kept my musical and research activities going. As a result this project provided greater opportunities for research than the other two. The project had a time line of five months, and was bound to the criteria for the director's graduate project at the Faculty of Art, Media, and Technology (Utrecht School of Arts).

4.6.2 Process

I began making music based on the director's written instruction; a sort of score. My task was to create sounds that would be as close as possible to his description. He initially wanted me to perform live using my voice with real-time processors, so that I could be a performer and very much a sound source. During the first month we worked while having that idea in mind. Unfortunately, we had to change the strategy, because I was invited to perform at a concert abroad happening on the same date as the *'Every. When'* premiere.

My new assignment became composing a library of sound that could be triggered in the performance by laptop artist Govaart using Max/Msp. Therefore I started making music at home and bringing it to the rehearsals. Because the performance was built with improvisation and experimentation at every rehearsal (involving dancers, light, video, sound), the score was continually changing. This means that I was trying to follow the director's idea of changing the music many times before settling on a final version. This was the first time for me to work with non-linear narratives. Instead of a solid structure, I was making a library of sounds that could suggest different moods. I created drones, layers, rhythmic patterns, and recorded concrete sounds. These were designed to be easy to adopt and trigger in live situations, according to on-screen actions and the movement of the dancers.

In my studio I used *Logic Pro* and *Pro Tools* for composing, but at the rehearsals we would load the sounds into Max/MSP and work on them together with the sound designer and director. During the process we experimented with different programming possibilities, changing the patches and adopting them for every rehearsal. Starting out, we all experienced difficulties translating the sounds from the director's score into composition ideas, and then again into the sound designer's final product. This was a big issue; as Klaas Jan Govaart reflected, "we were trying to sail a ship having three captains".

4.6.3 Translating the Director's Vision into Sound

Through research on the visual language of dreams in immersive multimedia environments, the director wanted to tackle questions about identity and representation, and to explore the relationships between the unconscious mind, social space, and subjectivity. This project was a chance for me to work for the first time in an environment that allows all the participants to experiment with sensory stimuli, including image, sound and dance, and to further explore the connection with an audience's response to it. We even had rehearsals with an audience (students from KMT). In his reflection the director wrote: "For me it was a challenge to create a new system of codes, a new language which can connect different people across time and light, by giving them a chance to explore and live a 'day dream' in a social and crossed media space and to translate dreams and the unconscious into a new media present experience."(C. Chierego, personal communication, July 15, 2008)

For a musician, translating this idea into sound was as well challenging, and personally I found the textual score that the director provides us with, a very helpful tool, helped by his relatively clear explanation of what types of sound he desired (see appendix D). As is discussed below, the sound designer had a very different kind of experience regarding the challenges posed by the director.

However, the general impression was that through this cross disciplinary process the director wanted all the players to have the chance to increase their technical and conceptual knowledge, and to learn what devices and experiences can be used in triggering emotions and non-rational reactions in audiences.

I can conclude that by being part of a multimedia project one does not learn only about one's own discipline but becomes a witness of the many parameters involved in making such a piece. As these influence one's own work as well as that of everyone involved, it is easy to see how other problems can arise. Making all the parts work together well will lead towards a good performance. It is comparable to an orchestra, in which every separate instrument section is complete and stable before becoming one with the rest, or as in opera and music theater/musical productions, where because of the number of people involved and the nature of the work, separate rehearsals are necessary and which have been the regular way of working throughout the ages.

4.7 Discussion

4.7.1 Freedom vs. Control

In this project I had a chance to observe the working process not only between the sound designer, the director, and myself, but I was also present at some of the rehearsals and meetings with the other participants (the choreographer, dancers, the producers). The outcomes of those meetings influenced my work as a composer as well, because changes made in one part of such a big production influence other parts of the work as well, e.g. changes in timing or the structure of the piece). Since I had never worked with dancers before, I wanted to see the process and find out how some of the decisions are made. The director had a score for the dancers as well, but also gave the players their freedom within their respective parts. I observed them improvising, exploring the space, the relations between themselves, the relation with the video screen and light installation, and how they interacted with the music.

I realized that when making a media performance by using improvisation as a tool, one is faced with changes all the time. In this case unpredictable situations occurred along with numerous trials and errors. But there were also opportunities to make good decisions, by repeating the scenes many times over, with different variations adding to or reducing the overall level of information). The freedom allowed to the players did not result in chaos, but was in fact greatly inspiring. The process could be described as the constant creation of small music/dance/video etudes, which were recorded and watched later on for us to listen and reflect on. That way, the outcomes of the reflections were actually preparations and new starting points for each following rehearsal until the final performance.

Music- wise, the process of working in a group compared to the process of working solo in the studio was very different. The flexibility offered by the Max/Msp software offers gave us the opportunity to work very intuitively and shape the sound according to each scene. The fact that the director had his own ideas about the sound was good because we could all work together according to the textual score, and suggest things until we came to the most satisfying solution.

4.7.2 Roles Definition

Contrastingly, the biggest problem we faced was that the roles were not clearly defined. Because this was the first collaborative project on the director's part, he did not have a clear idea about the roles a composer or sound designer could play in such a project. Consequently, what happened was that I felt like I was a composer using the expertise of a sound designer to improve the quality of the sound, made according to the score given by the director. The sound designer did not have that in mind when he joined the project, and was left frustrated throughout the process. Constrained in his artistic freedom, he felt that he could not apply his own aesthetic. Though not as he had expected, Klaas Jan Govaart committed himself to the project to the extent that he did not want to quit. In his reflection he wrote:

> "Director CC found it hard to focus on the big picture and started micromanaging the sounds and the composition. So instead of having a director and two cooperating musicians and performers, we had one performer taking the role of a composer and the other executing her ideas, and a director trying to take too much control of the music and sound. Besides that, one of the performers was frustrated because he felt less and less freedom to play and create what he likes, being subjected to excessive control by the director and the performer turned composer." (K.J. Govaart, personal communication, October 23, 2008)

The importance of defining roles was negligibly attended to in this project. Everyone learned that this should be the starting point for the type of project with centred leadership. In this case, the director or designer of the project should be aware of this. Bad practice from this project shows that next to improvisation in our creative part we were improvising our roles as well, and that influenced the working process.

Chapter 5

Interpretation of Results and Analysis

In chapter two of this thesis I introduced the multimedia environment as a place where a creative person can explore different kinds of concepts, such as interactive composition, interface design, and multi-disciplinarity. In chapter three I presented an explication of my methods, and in chapter four I took a closer look at how my projects were developed and how working with real time audiovisual improvisation shaped the nature of the pieces themselves. In this chapter I shall attempt to apply my findings to the creation of live multimedia performance in general.

This chapter has been divided into four sections: compositional concerns, logistic concerns, communication concerns, and design concerns.

5.1 Compositional Concerns

Composing a piece that includes interactive media brings together different kinds of issues, which makes the composer aware of the difference from making an idiomatic piece. There are similarities, however, some of which, though not directly the topic of this thesis, are related to only this specific genre. I will try to point them out :

5.1.1 Balance

The issue of balance in a composition could be addressed to different kinds of structures. Balance between the instruments in an arrangement is common for any kind of composition, and is not particular to interactive music. But precise control of balance between the live performer and the interactive component is a crucial part of the composition process. It is important for the composer to define the interactive element in his piece and make the functions of those parts understandable, as an equal partner, with or as accompaniment to, the live performance aspect of the work. Keeping this in mind we can go back to the simple definition of interactivity. Hamm(2003, p. 2, para. 3) cites Garnett addressing the function and role of live performers and computers within a composition: “Interaction has two aspects: either the performer’s actions affect the computer’s output, or the computer’s actions affect the performer’s output.”

Lippe (2002, cited by Hamm, 2003, p. 2) talks about roles that a computer can be given:

> “Fortunately, a composer can assign a variety of roles to a computer in an interactive music environment. The computer can be given the role of instrument, performer, conductor, and/or composer. These roles can exist simultaneously and/or change continually, and it is not necessary to conceive of this continuum horizontally.”

All these definitions can in a way be just a suggestion to composers new to interactive music and enhance their creativity further.

In my projects the computer had a role of a performer. As the laptop artist Klaas Jan Govaart wrote in his reflection:

> “I was part of A. Popovskas project *’Bukefalus’* as a laptop-performer. She provided me with source material that inspired her. Some of this material I processed further, some of it was just used during performance "as it is". Besides these fixed media textures, Aleksandras narrative and singing was processed live and distributed over a multi channel sound system. The processing consisted mainly of ring modulation and granular delays. All this was controlled in a simple max patch. A few sound file players with level controls, and controls for the live processing. The function of the live processing was to accentuate certain words

and phrases and at some point in the performance it was used to create a dense abstract sound texture out of the voice." (K.J. Govaart, personal communication, October 23, 2008)

5.1.2 Computer as a Performer

The computer performer's freedom can be defined in many different ways, because of the varying nature of interactive work that includes technology in live performance. It could include triggering prerecorded sounds, the following of a timeline or stopwatch, reading a graphic score, etc. In his paper "Computers and Live Performance: Interactive, or Interference?" Sam Hamm(2003, p. 3) talks about three types of computer autonomy:

- (solo) performance, instrument-improvisation and free creation are at the same time the goal and the role of a performer,
- score-following: the freedom of the computer player is limited to the computer's programming,
- operator: where the performer is 'responsible for the output of the computer and ensuring that the computer does the right things at the right times'.

This could be useful for the composer of interactive piece to know, because it could help him in giving precise function to the computer player. In my case studies I have combined some of these modes. In *'Bukefalus*', the laptop performer was improvising with prerecorded sounds as well as controlling my voice by real-time processing. In *'Every. When'* he performed alongside the other players, but also following a 'loose' time line rather than a stopwatch.

5.1.3 Deciding the Role of Interaction in a Composition

How one is going to use technology in his work depends on his own creativity, technical skills, others operating the machine, etc. In the previous section, I mentioned Hamm's suggestion of using computer as a performance instrument, a score-follower, or a project operator. If we consider only these three options, one can realize that each of them opens a number of possibilities for choosing the nature of interaction. The computer's role in my project was mostly the manipulation of prerecorded sounds (and graphic libraries) along with audio (and video) real-time signal processing.

Depending on the compositional process of each composer, the time spent in pre-production or making a plan for the pieces varies. Bad practice, in the case of *'Every. When',* shows that a lot of time can be wasted searching for the best ways to interact. This, combined with the director's confusion about what is the relation, role or function of the composer and sound designer, unequivocally leads to miscommunication and misunderstanding .

In my observation, if the composer works on extensive pre-planning when composing an interactive composition, he will be avoiding many problems later on in the process. Deciding on the nature of the interaction in the very early phase is essential in the pre-production period. Clear ideas on incorporating interactive elements in the piece open many compositional directions, an observation comparable to non-idiomatic composition, where one makes similar initial or large-scale decisions regarding the composition.

5.1.4 Computer Player Skills and Aesthetic Differences

Talking about improvised interactive work is like talking about a special case where the performer is free to treat the composition within limitations such as his own musicality, technical skills or musical parameters such as tempo, phrasing, form, etc. This freedom is very important, especially when the person behind the computer is creative and willing to express himself and let himself be influenced by the other players as well. In *'Bukefalus',* the performer Klaas Jan Govaart was directly manipulating a computer as part of the performance, treating the computer as a solo instrument. I must emphasize that performing this way assumes a certain amount of skills that the performer has to have. This is particularly important for the composer of the piece and one should be aware of this fact before creating such a work or choosing the players for executing the piece.

Another important consideration is that, like in any improvisation, even in a non-idiomatic one, the players bring a range of preconceptions and influences to their playing. This fact is in some cases an advantage, particularly when a young composer gets the chance to play with experienced players. But this could also be an obstacle, when aesthetic parameters of composer and player are not matched and the player is struggling with his preconception and the composer's expectations. It is then that we get a conflict, as demonstrated in *'Every. When'*. Therefore, aesthetic differences became an issue and affected the atmosphere at the rehearsals. We solved them however, by letting the director have the final word.

5.1.5 Notation and Score

Because of the different nature of mixed media pieces, making a score could be considered a special matter. Too much or too little information may create problems during the performance of the work. Hamm(2003, p. 5, para. 3) proposes a solution that is often effective, and this is to construct two scores: a performance score, which gives the performer only the information necessary to perform the work, and a master score, which unifies and catalogs all information used in the work. This is in a way similar to traditional scoring, with instrumental parts and a general score.

In appendix B, I put forward a possible solution which is a four level description. This proposal comes as a result of my previous research (as referenced by Bosma, 2008) about documenting electro-acoustic music, which represents, in a way, a sort of theoretical preparation for this M. Phil. research.

5.2 Logistic and technical Concerns

Logistic issues in live interactive performances are very important and should be considered from the very beginning of the project. Performance involving the use of technology always carries risks and many things can go wrong, starting from small issues like cable problems, to the bigger ones like computer crashes or software malfunctions. Because of all that, the composer of a piece involving technology must think beforehand and have a back-up plan. It is his responsibility to consider the technical issues properly in advance.

I will point out a few technical matters that a composer, designer or performer may sometimes neglect: sound control on stage, use and position of microphones, performance space, spatialisation, and rehearsal issues.

5.2.1 Space/ Microphones/ Speakers

When we have a piece of work in which a computer is producing the sounds/music to which the performer responds, it is necessary to be able to hear the output. For that the space where a performance takes place should also be taken into consideration. In the project *'Bukefalus',* the Nikolai church was definitely an instrument itself. If the performance is happening on stage it is important to have a monitor system or headphones. Having all this during rehearsals as well will be the ideal situation for any ensemble, and will certainly reduce the stress on stage when playing a piece in front of an audience.

Another important thing related to equipment is that, when a microphone is used to amplify the sound of the performer or goes directly into a computer or processing device, the amount of signal from the monitoring system back into the microphone should be minimized. Otherwise, there can be audio feedback, which is not welcome. However, it is of course acceptable if the feedback is written in the score and used as an effect.

Performance space is something that is important not only from the stage design aesthetic and functionality that each element could have, but from a technical point of view as well. Very often, pieces require complicated connections that should work together, so one can start the design process with simple cable positions. As Sam Hamm(2003, p. 4, para. 2) suggests:

> "sound reinforcement/monitoring, communication and audio between the performer and the computer, and even the simple matter of getting all of the necessary cables run throughout the space and it's important securing them in a manner that does not leave them vulnerable nor endanger the audience or performer."

In complicated pieces, the technical set up can even influence the stage design itself and help the final decision making process (for example with *'Every. When'* and *'Tribute to Morty'*). However, it is often very important to make the technical set up obvious and clear for the audience as well, so that they can focus on the music itself rather than being overwhelmed with technical information. Exceptions to this are the projects where technology itself is in the spotlight.

The aforementioned technical issues are very often neglected until the day of the performance, and unfortunately, I neglected them as well. But if these issues are considered in time, then technical problems can be reduced to a minimum, and could even be included in the creative activities of the project from the very beginning. They could even help in making some decisions, such as position of the players on stage, microphone types, stage design, etc.

The way a speaker system is placed in the performance space is an element heavily emphasized in electro-acoustic music, as examples in the early history of electronic music show.(Varèse, 1958) We can go back even further to when people were interested in sound diffusion, making choral music for cathedrals. Composers who want to use multi-speaker set-ups must consider the space itself, the way speakers interact

with the space, how many microphones are used, and how they are connected to the entire system.

In the case of *'Bukefalus'* and *'Every. When'*, rehearsals were performed in 2.0 stereo system while performances were done with eight speakers. Although we knew about this from the beginning, allowing the sound designer to count on these changes, the results were nonetheless surprising.*'Bukefalus'* was performed in the church with natural reverb of ten seconds. That caused us a lot of problems: the fast musical passages were 'lost' in space; the spoken words and some vocal textures were not completely audible. From the other hand, all drone– sounds worked very well, as well as the ambient musical layers (street sounds, water sounds, etc.).

5.2.2 Flexibility of Genre and Rehearsals

Due to the flexibility of the genre of interactive music, it is possible to manage many different settings.

One of the specific issues for composers making a piece that includes more than one medium is rehearsing the work. Very often, the final system design is available only for the performance itself (e. g. *'Every. When'*). Due to its complexity or because of the need to adjust the agendas of a number of people involved, rehearsing all things together is often impossible. The director often has to make separate rehearsals; drawing a picture of his piece in his head and making separate parts work properly. That way pieces can be glued together in the last rehearsal or even during the performance itself. However, having separate rehearsals is comparable to making a music theater piece or opera, so in that sense we can draw a line that connects the nature of multimedia work with the preparation of opera for example (this could be a topic for another research). I would like to emphasize here that, like in any performance situation, lack of rehearsals is something that puts additional pressure on the performer, especially if his performance includes the use of some controllers while no time has been reserved for practice. This is comparable to the traditional instrument player not having enough time to practice his instrument. Therefore the composer should think about this as well when making the project schedule.

After all, despite the technical concerns, the unique adaptive capabilities that working with interactive media provide could often allow for adjustments in these kinds of possible situations. And if the separate parts of the piece are working well, the final ideal rehearsal would be used mostly for testing of the level and balance between the parties, assuring that everything is connected properly.

5.3 Design Concerns

5.3.1 Interaction and Meaning

During the *'Tribute to Morty'* project I had a chance to try some concepts already used in the field of interaction design, such as the social and the affective aspects.(Sharp, 2007, pp. 135-207) I wanted the audience to have a multi-sensorial experience and test that in the performance. I did not succeed completely, as explained in the previous chapter. As I realized after the performance, however, when treating the performance as an interface for communication one can start with the basics of interaction design:

> "An interface to any experience, whether technological, physical, or conceptual, must have a message and a reason for communicating it and begin with the creation of meaning and the development of appropriate types of interactivity. These decisions drive the use of sensorial media to present the experience to the audience in an appropriate and supportive way."(Shedroff, 1994, p. 15)

Among many items to consider in the research process, it so happened that I was neglecting the importance of meaning in relation with the audience, and the meaning of the things we were doing on stage.

It is important to keep in mind that communication problems and a system of transferring meaning into a language of art is something that theoreticians of theater discovered a long time ago.(Elam, 2002, pp. 28-78) Such knowledge should be useful in designing a multimedia piece. For example, everything one does on stage has a meaning in itself. Words in regular communication and words on stage are two different things. The change of one single gesture carries some kind of meaning for the audience. In order to develop awareness of this phenomenon, research and practice are needed. Having such awareness allows the performer/composer or designer to carefully reduce all unnecessary information on stage and focus on the most important points. It is also important to think about the choices you made after every rehearsal, try to justify them, decide are they going to be considered in the further process.

Since I did not always have a clear idea from the start about what I wanted to communicate as a general message, I can identify a number of concerns when looking back at performances from a year ago. I would certainly change some things and spend time making a clearer concept in relation with the message I wanted to communicate.

When talking with the audience after the performance of *'Tribute to Morty'*, I discovered that while the audio-visual experience was present, some people did not figure out what the project was all about. We were indeed 'playing' with the new tools much more and so lost the chance to communicate with the audience on a more meaningful level, creating and transferring some kind of message.

However, having in mind McLuhan's motto that "the medium is the message", and the fact that we decided to use technology in our performance, this partly justifies our choices. Though not a successful interface for communication with audience members, I can ultimately consider the project as successful in terms of execution and communication between the players and the organization of rehearsals.

5.3.2 Designing your Performance-System

Bahn and Trueman(2001, cited by Ciufo, T. 2007, p. 1, para. 2) provide us with a definition of composed instruments, explaining: "we consider our entire systems, from physical instruments, sensor interfaces, interactive computer music environments to spherical speaker arrays, to be both extended instruments and non-linear compositions: composed instruments."

I would like to extend this definition into designing performance systems, and add elements such as video displays, human relations, text, etc.

From the current perspective I see our work in *'Bukefalus',* as well as in *'Tribute to Morty'*, as explorations of performance design and the realization of composed audio-visual instruments, entailing the challenges for improvisation in the context that we create. During our meetings, all the players were somehow involved in designing the performance systems with a range of audio-visual possibilities, made to be navigated or explored in the context of improvisational performance. Playing in a group poses new challenges, and after every rehearsal our systems were changing. Continuously playing together over time, both the instruments and the improvisers faced a lot of changes and needs to adapt, responding to the characteristic peculiarities that made our performance system unique. In the text below I shall discuss our performance systems, and explain the ways in which we used these systems to explore interactive multimedia performances.

5.3.3 Real-Time Access and Database Narratives

What made our systems flexible, music and video wise, was:

- real-time access to a variety of prerecorded sounds (instrumental, electronic, and natural sounds) and
- visuals (realistic or graphic footage).

Moving between such worlds freely is one of the highlights in creating a multimedia performance system. Real-time access to a very often complex world of sounds and graphics not restricted to prerecorded materials but using the transformational power of the interfaces and creative power of the people who use them, can provide the audio-visual performance with richness, novelty and aesthetic quality.

The possibility of real-time access to any part of the composition (from big sections to the smallest details), opens up the possibility for the composer, designer and performer to get into non-linear narratives and gives him the chance to play with both form and content. This in turn opens more possibilities for developing a new vocabulary, new aesthetics and new ways of perception.

It also shows how much the culture itself and the forms of expression are influenced by the language of technology, and how database logic is applied in music technology. As Lev Manovich(2001, p. 226) said: "In general, creating a work in new media can be understood as the construction of an interface to a database.".

5.3.4 Instrument Design

The performance system that we used in all three projects includes custom hardware and software, (P.C., Macintosh, Max/Msp and Resolume) and a range of stage objects that form an integrated live performance system (chairs, candles, tables, canvas, video projectors). An important design criterion for this system was the ability to adjust it to various conditions in order to use it in a variety of performance situations, including solo and ensemble improvisations. In *'Bukefalus'*, this system was designed around a specific sound source (sound library), but also by using microphones as input devices. The sound library contained various sound sources, including found objects, small percussion instruments, as well as any sounding object or instrument that I found interesting or useful in a musical and timbral sense. The use of this huge palette of sound sources enriched the flexibility of the system, enabling the sound designer to interact with, and respond to, a wide range of performance situations.

In *'Every. When',* the system was designed around a video and sound library, which was implemented according to the movements of the dancers. The output sound is spatialised by using either a two (in the

rehearsal situation) or eight speaker projection system (in the performance). The software design, realized in Max/MSP, evolved throughout the working process.

The basic idea was to use this composed instrument in the context of solo vocal improvisation, with duration from ten to twenty minutes. For *'Bukefalus'*, my primary focus as a singer in a collaborative context, was to extend my use of this system, and to learn how to work with and respond to the improvisational approach of the other players involved . Very often we changed the software/hardware configuration, though keeping the original stage design with one video display, three people on stage and voice as live input. The audio signal processing (mainly consisting of ring modulation and granular delays) helped us to achieve a wide range of available sound transformations, which were in turn a source of inspiration for the video artist.

An important part of the whole system design is the video/light and the space itself. How video is used depends of course on the imagination of the artist wanting to have it in the performance. In our projects, we built our video material using prerecorded material (shot both in and outdoors), various footage, as well as real-time live camera during the performance (*'Every. When'*). I must point out that introducing the video at a rehearsal needs to be done with particular attention. Otherwise, it can be distracting and could influence the dynamics and the course of the ongoing rehearsal. This should also be considered when scheduling the time for rehearsal. Because the groups were smaller in the projects *'Bukefalus'* and *'Tribute to Morty'*, it was not difficult to arrange this, but in the project *'Every. When'*, the whole video setup (two video projectors and live cameras) was only possible to rehearse only once-on the day of the performance. The results were such, that after the performance almost everyone felt like the whole idea had been put into a new context. The performance space was five times bigger than the rehearsal space, so stage decisions were changed on the spot, and the general performance picture got augmented. Fortunately, the new context was inspiring in this case, but it may have been frustrating in another situation, had the participants not been flexible.

I can conclude that using video as an equal element of the performance requires players to spend time practicing and creating their relationship to the video. Even if there is no interaction, adaptation to the space where video is present requires time as well.

Stage lighting is the last element I would like to address here. In my projects I felt that I wanted to work with light, but I was not aware how little I knew about it. Thinking about it after the fact, I became aware of the extent to which stage lighting design is as a field on its own, how many possibilities it provides, and how much you can suggest with it. Light in my project was used mostly to illuminate certain actions, to focus on them, or as a trigger a particular scene. Today however, knowing what I know now, I will certainly pay more attention to and work with existing stage design methods/principles (e.g. single source methods, toning and blending, background lighting, etc.). This remains something to be explored in the future.

5.4 Communication and Collaboration Concerns

There are many communication issues to be considered, but I will focus here on the communication between players. Communication with the audience, referring to the ability of the artist to clearly send a message, is another factor I have briefly touched in the text above as an element of design. Topics such as the relation of the work to the audience from a communication standpoint were not the subject of this research.

5.4.1 Via Communication to Collaboration

When making a piece in a multimedia environment, where *improvisation* and *collaboration* are involved, one must take care to clearly address the issues of the work itself as well as explaining the roles of the participants involved.

Like the terms *media* and *multimedia*, *communication* and collaboration could perhaps be misunderstood and treated as synonyms – which they are most certainly not. *Communication* is not *collaboration* and does not necessarily mean that *communication* can lead to successful collaboration. This can of course be the case, as in my case studies where I had the chance to live with the future ensemble members as neighbors, using that coincidence as an opportunity to develop good communication first before deciding to start a *collaboration*. On the other hand, the decision to collaborate with the project's sound designer (Klaas Jan Govaart) was based not on good communication from before but on the notion of his expertise. This is a very common case in the academic/art school environment, where students commonly seek profiles that they need in order to execute their projects. In a *'real life'* situation, *collaboration* could take shape that way as well, but could be provoked by experiencing someone's work in a public presentation (e.g. stage, Internet) and getting the feeling that 'you are speaking the same language'. Such a perception could mean that the artist's aesthetics fit your own criteria, but could also mean that the artist has successfully communicated his ideas. This leads us to the conclusion that, not only good communication

between people, but also ideas communicated effectively via artwork can provoke collaboration. One may never know who his audience is.

An issue as crucial as communication could prompt other research in this context. However, by working in *multimedia environments* one becomes aware of the importance of *communication* by default. Beginning from the agenda development, to translations of ideas into art form, to the ability to expressing ideas, etc., *communication* is necessarily involved.

At this point I would also like to mention something which played a very important role in improving communication in my projects. Without any knowledge of communication theory, I was intuitively trying to apply the knowledge I gained during my years of improvisation with other musicians, including the importance of expression, listening, responding and interacting. Being able to express your ideas, to listen carefully to what others have to say or do, and then to add something to the context needs training and a high level of concentration similar to that required in improvisation. My conclusion in this aspect is that teaching improvisation in schools could not only improve musical skills, but could improve communication in general as well.

Regardless of the issues mentioned above, many things can go wrong in practice which may not be related to the project itself at all but with personal differences between people. These include language, culture, personality, and age difference to mention a few. In my projects we had people from seven countries involved (Iran, Costa Rica, Italy, Chile, Macedonia, Holland, Indonesia), people with significant age differences (from twenty to forty years old), and people from eight different disciplines (music, programming, design, video, animation, production, photography, and dance). Nevertheless, having clear goals from the beginning, respecting everyone's input, and being enthusiastic and motivated as well as planning efficiently can certainly make the process enjoyable and the final result positive.

5.4.2 Problems of Translation

Concerning communication in my projects I would like to point out that the translation of ideas from one medium or discipline into another was also an issue. How do we find a common vocabulary? During the projects I had this translation issue in various directions: in the project *'Every. When'* I had to translate the director's ideas (expressed via the textual score and visuals) into sounds, and then the sound designer had to translate my sounds into his sounds once more. In the 'Tribute to Morty' project I had to find a way to translate my ideas into words for the video artists, so that they could in turn translate them into visuals. In the project *'Bukefalus*', we had to translate sound (my musical ideas) into different sound (new musical ideas made with MAX/Msp).

How did we do it? There appears to be no real secret or rule regarding this process; it involves nothing but experimentation. With every new project experience, the artist develops a better understanding of what and how he wants to communicate with colleagues or audiences. With every new project he becomes more familiar with the requirements of the production itself, and his ability to visualize or verbalize his intention or concept improves. In the long term this was made evident in my own case as well as those of the people I worked with (see participant's reflections in appendix E).

Working in a multidisciplinary environment helps students and artists to start understanding the language of other profiles as well. Combining them in their work, freely experimenting or using them intuitively comes from experience only. An art school which provides opportunities for collaboration with other profiles is a great place to learn about translating ideas, if only through observation as in the case of *'Every. When'*.

5.5 Summary

This section will draw together, in one place, the most important lessons learnt from these multimedia performances .

- In my observation, if the composer works on extensive pre-planning when composing an interactive composition, he will be avoiding many problems later on in the process. Deciding on the nature of the interaction in the very early phase is essential in the pre-production period.
- Talking about improvised interactive work is like talking about a special case where the performer is free to treat the composition within limitations like his own musicality, technical skills or musical parameters such as tempo, phrasing, form, etc. Treating the computer as a solo instrument and performing this way assumes a certain amount of skills that the performer has to have. This is particularly important for the composer of the piece and one should be aware of this fact before creating such a work or choosing the players for executing the piece.
- Aesthetic differences could be an issue and could affect the atmosphere at the rehearsals. We solved them however, by letting the director have the final word.

- Notation and score issues. In the Appendix B, I put the possible solution which is a four level description. This proposal comes as a result of my previous research about documenting electro-acoustic music, which represents, in a way, a sort of theoretical preparation for this M. Phil. research.

- Technical issues are very often neglected until the day of the performance. But if these are considered in time, the technical problems can be reduced to a minimum, and could be included in the creative activities of the project from the very beginning. They could even help in making some decisions.

- The director (or project leader) often has to have separate rehearsals. That way pieces can be 'glued' together in the last rehearsal or even during the performance itself. However, having separate rehearsals is comparable to making a music theater piece or opera, so in that sense we can draw a line that connects the nature of multimedia work with the preparation of opera for example (this could be a topic for another research).

- Like in any performance situation, lack of rehearsals is something that puts additional pressure on the performer, especially if his performance includes the use of some controllers though there is no time to practice. This is comparable to the traditional instrument player not having enough time to practice his instrument. Therefore the composer should think about this as well when making the project schedule.

- It is important to keep in mind that communication problems and a system of transferring meaning into a language of art is something that theoreticians of theater discovered a long time ago. Such knowledge should be useful in designing a multimedia piece.

- The possibility of real-time access to any part of the composition (from big sections to the smallest details), opens up the possibility for the composer, designer, performer to get into non-linear narratives and gives him the chance to play with both form and content. This in turn opens more possibilities for developing a new vocabulary, new aesthetics and new ways of perception.

- Using video as an equal element of the performance requires players to spend time practicing and creating their relationship to the video. Even if there is no interaction, adaptation to the space where video is present requires time as well.

- When making a piece in a multimedia environment, where *improvisation* and *collaboration* are involved, one must take care to clearly address the issues of the work itself as well as explaining the roles of the participants involved.

- Teaching improvisation in schools could not only improve musical skills, but could improve communication in general as well.

- Not only good communication between people in the project, but also ideas communicated effectively via artwork can provoke collaboration. One may never know who his audience is.

- Working in a multidisciplinary environment helps students and artists to start understanding the language of other profiles as well. Combining them in their work, freely experimenting or using them intuitively comes from experience only.

- Encouraging students to collaborate, experiment and improvise can offer rich educational experiences and valuable artistic outcomes.

Chapter 6

Conclusion

6.1 Knowledge Transformation through Exploration of my three Roles as Performer, Composer, and Designer

Is it possible to set rules about how one learns to create a multimedia piece? The answer to this question is rather complex due to the range of possibilities and new tools emerging all the time. However, if one wants to 'upgrade' his traditional way of composing, performing or designing, technical studies are predictably necessary. The composer will have to spend time learning new software, designing interactive systems, and creating computer programs (or working with specialists who can introduce and teach new possibilities). Focusing sufficiently on the preparation phase will define and clarify a lot of technical details, saving a lot of time in the compositional process later on.

In my experience, after experimenting with the tools available, it seems best for the composer/performer to remain focused on studies that will improve the work he or she wants to create (see article in Appendix A). Making the musical goal clear can be the first step. On the other hand there is no single correct choice to be made, and no right or wrong answers. As long as composers and performers continuously work on self-awareness and research relevant techniques, processes, and literature, they will likely be led towards more desirable musical expression, with results being evident in the music itself .

Hopefully my thesis can serve as a starting point for the discussion and consideration of some of the basic concepts and problems in making a multi-media performance piece, which could then provoke further dialog regarding the methods and means of achieving musical expression via interaction, immersion, and non-linearity, described by theoreticians of multimedia as basic concepts in this field.

This is really not a conclusion as much as it is a beginning. There remains much for all of us to learn and share about the issues surrounding the creation of multimedia pieces. I expect new forms of knowledge to grow considerably as we experiment and create. This seems to be the key towards a better understanding of communication, and so I hope this thesis can serve as a starting point for the next phase of development of programs related to live multimedia performance.

6.2 Getting lost during Research?

I decided to continue my education in the form of this M. Phil. research in order to improve my artistic practice. Despite my previous musical background I faced many problems and misunderstandings related to the use of equipment, communication, and collaboration with artists from other disciplines, as well as a lack of knowledge concerning specific media. So I ended up in a situation of practising research, parallel with the process of researching my practice. Instead of making my topic smaller I was making my researcher bigger. Therefore is very important to keep in mind that in the sea of information it's very easy to get lost, wanting to encounter as much as possible yet loosing track of which information is most relevant to your topic.

When I first started my M. Phil. two years ago I did not feel like a practitioner researcher. Despite the encouragement from teachers I felt a bit out of my own experience, as everyone else seemed to know much more about multimedia than I did. But I continued working, with a need to address and talk about the problems I was facing in my participation with multimedia projects at the time. Gratefully, the people I worked with actively supported me in these aspects.

From this perspective I think I started an action cycle with the first rehearsal for my initial project, '*Bukefalus'*, which I now recognize as the beginning of the action research process. Working on this project gave me the necessary confidence to recognize that my previous experience and personal values, which are so important to me, can help me influence the creative flow in the group, showing emotional literacy by precisely identifying and communicating our feelings and translating them into art. The people I worked

with in this project became my colleagues in two other project as well, fulfilling different roles in each case. The VJ in one project became the director in another, a performer in one became a concept designer in the other, the composer became researcher, etc. The rationale of the team was to encourage interaction and develop communication skills through group creative activity. Working together for almost two years we:

- developed interpersonal skills,
- we shared information,
- learned how to commit to the project goals, and
- finished our cooperation feeling satisfied on all accounts.

Challenges that we met related to trust issues, communication, deadlines, and other mentioned previously. We realized many factors that were important in team work such as:

- having clear guidelines
- being open for information exchange
- making communication with each other good as that with the leader (director or designer)
- the importance of everyones contribution and commitment.

6.3 Call for Experimentation and Improvisation

For several years I have been working with improvisation as a technique, treating it as a form that depends on the mastery of a particular set of skills that can sometimes follow a particular aesthetic. I call for the inclusion of improvisation in study programs as a supremely useful tool, to become part of composition and performance courses. My experiences with, and passion for, improvisation have led me to look at it as a form that has an integrity and coherence as essential to the development of a musician or artist as the traditional study of music or art.

> Improvisation is all about human relationship. It is about listening, responding, connecting, and about generosity. When a group of free improvisers gets together and plays a coherent and interesting piece of music without a prior plan or template, it is like watching separate beings become integrated into a single nervous system and become, for a time, whole. It is a partnership, with each other and with the audience, in the deepest sense of the word. Mysteriously, I even get this feeling when I am playing or hearing a solo improvisation. (Nachmanovich, 2007, para. 3)

The context of multimedia is greatly influential to the creative person, providing opportunities to try different things, to experiment with new tools and new forms, to build new relations with people, and to learn to communicate in new ways. One learns how to listen better, how to look at things differently, and how to deal with different perspectives; therefore an empirical approach may be an effective method for involving musicians and artists into multidisciplinary processes. Learning by being involved.

The Faculty of Art, Media, and Technology and Portsmouth University encouraged me to take an experimental approach and try things, without always having a clear method or concept of how to do it (at the beginning). Experimenting gave good results in my case. The process of working was mostly enjoyable, and the outcomes were presented in public with a nice response. That is why I call for experimentation in art schools, giving the chance to the students to test new things, and help them in reflecting upon the process. With every project I realized that in order to have better understanding, translating or formulating your own idea in the first place, the most important roles are: the knowledge, the ability to understand, the experience and skills. My experience shows that through a systematic approach to experimentation one will be able to provide consistent results in number of different situations.

6.4 For further Consideration (Educational Issues)

> "Pupils are not disciplinary, the world neither, what about the knowledge?" – François Audigier(Hedtke, 2006, p. 1)

The use of computers and technology in live music performance is becoming very prevalent nowadays. Compared to traditional performance, a lot of new challenges and problems are noticeable and these have to be taken into consideration. Once we start to use mixed media in live performance – to interpret gestures, generate sound or images – we realize that we have created new relationships between everyone

involved, with traditional roles often becoming blurred. From a historical perspective, this problem is extremely recent, involving only the last few decades of musical practice (preceded by thousands of years of music-making by conventional acoustic means). The combination of different media in our work as performers, composers or designers, allows many new possibilities for interaction. However, what often happens is that in between the compromises and the rewards of making a piece that includes more than one medium, participants new to the genre are often left to repeat the struggles of others.

Research in composing and performing mixed media works is rapidly expanding in the contemporary global context of the arts, science, education, communication, information economies, and creative industries. But working in audiovisual environments brings with it problems and points at gaps which a classically educated musician could have had in other domains as well (see history of performance in XX century, stage design, interaction, immersion, etc.) So it seems that it does not suffice just to work with an artist from a different field; this is just a beginning, an introduction to another world of expression. We need more structured lessons for advanced students interested in multimedia, mixed lessons perhaps combining all academies of art.

In Macedonian universities, educational knowledge is legitimated mainly as conceptual rather than as living forms of knowledge which are integrated in educational enquiries of the kind. After being in Holland for several years and having had the opportunity to do this research, I can tell that things are rather different here. However, encouraging artists to become practitioner researchers will not transform the educational knowledge-base of universities on its own. As Whitehead(1993, pp. 55-60) notes, "such a transformation involves an engagement with the fundamental issues of power and validity." The development of educational knowledge, if it is to engage directly with improving the world, needs to be seen as actively constructing our lives as educational researchers, teachers and teacher educators, from the living base of our values, competences and understanding in educative relationships.

We must be aware of the fact that is no longer possible to produce an educated, professionally trained person with a clear vocation in just a few years. Because of the complex way of living and the vast amount of information facing us in modern times, it has become quite challenging to structure information into knowledge. M. Milicevic's(2005, para. 1) philosophy of teaching is an example to be considered:

> "Teaching, for me, has two fundamental challenges: it has to provide a base of specialized knowledge; and, more importantly, to provide connections between these specialties and other disciplines. My courses aim not to train students by giving them bare information for the mastery of a narrow specialized goal, but to educate them in a set of guidelines that they may use throughout their lives while becoming competent artists and thinkers. My courses are courses of means, not ends.

I experienced the Faculty of Art, Media & Technology and University of Portsmouth as an environment that provided me with facilities enabling my projects to be realized. Perhaps this kind of interdisciplinary-oriented school represents the future of the educational system: environments for experimenting, places where individuals can be introduced to the process of learning. Perhaps no more than that.

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Appendix A

Composer, Performer, Designer

Article

To be a composer/performer/designer today requires some technical inquirer for the creation of new work. Because of the technology involved, making a piece is no longer limited to writing a musical score, with all its specific rules that have existed for centuries. This could mean that techniques of sound and performance design reach beyond the techniques of writing an idiomatic piece. The use of new digital technologies opens a huge field of possibilities for an artist, considering details like controlling the sound itself, choices of instruments, and ways of interacting. This also includes extending possibilities of how to present the sound in space, e.g. by offering new concepts, the possibility of musical and virtual space, sensors, etc. composers/performers/designers today have many more tools for exploring their creativity. Depending on the skills they have developed and the media involved, artist can choose different ways for making their piece, ranging from focusing on concepts and techniques, or on the performance and its interpretation, to a focus on feelings and emotions. They can decide how much freedom they want to give the performer via either a defined or an open score, or by choices of interaction or improvisation.

One should be aware, however, of the whole range of concerns surrounding the concept and practice of making a multimedia piece:

1. The work itself is influenced by the choice of an interaction system
2. Scoring the piece very often requires the following:
    - global description of the piece
    - technical rider – detailed settings
    - the musical work itself
    - composition process (notes, rehearsal remarks, etc.)
3. Control - The process is influenced by decisions about the freedom allowed for players, with three basic variations:
    - experiment (with limited freedom and small direction)
    - defined score (where composer-performer-designer is in control)
    - improvisation (total freedom for the players)
4. Collaboration/communication is directly related to the amount of experience participants have working with each other
5. Role definition is crucial for a successful project, and could be:
    - hierarchical
    - one man leading
    - Without defined roles (very often an example of bad practice)

Because of the different nature of mixed media pieces, creating a score could be considered a special matter. Too much or too little information may create problems during the performance of the work. HammHamm (2003) proposes a solution that is often effective, and this is to construct two scores: a performance score, which gives the performer only the information necessary to perform the work, and a master score, which unifies and catalogues all information utilized in the work. This is in a way similar to traditional scoring, with separate instrumental parts and a general score. In Appendix B I will delve further into this problem, by

proposing a possible solution in the form of a four level description. This proposal comes as a result of my project about documenting electro commissioned by NEAR[1], which was in a way a theoretical preparation for my M. Phil. research.

[1]NEAR (center for Dutch electroacoustic music) is a small department of the non-profit music information center and publishing house of Dutch contemporary art music Donemus.

Appendix B

Documentation of Electro-Acoustic Music

From General report (article)

Authors: Aleksandra Popovska, Caglayan Yildiz, Erik van Hengstum, Jaap Westerop, Leo van der Veen, Rik 't Jong (2007)

Notation and Score Electroacoustic music is a far more complex than the common musical language. It uses ever-expanding techniques on the level of composition, production, performance and documentation. Because of its dynamic ever-expanding nature there are no common agreements on how to do it. Since the language of interactive pieces has a constantly evolving quality, the documentation also has to follow those qualities. The composer himself has to make decisions about documentation, compositional processes, the creation process with all phases, the performance itself, etc. The complexity arises not only because the techniques and materials used are usually innovative, but also because they commonly involve improvisation, intuitive gestures, and a flexible use of hardware and software involved.

Importance of Documenting Technical Specification Documenting the technical setup for a piece in a proper and sufficient way is very important. In order to achieve this one can follow the system of four level description:

1. global description,
2. technical rider,
3. detailed settings,
4. waveform synthesis (if applied).

The global description consists of the basic structure of the piece. A short and compact overview of the piece will be given without getting in details. Information concerning the global description includes for example the number of players, the role of improvisation, the use of amplification, instruments, sounds, samples, length of the piece, and variability in parameters.

Technical rider: the specific and exact setup of the technical setup should be notated properly. Detailed information on type, brand and series of instruments, microphones, PA systems, hardware, software, processors and effects that have been used are written down. A rooting connection scheme can be very helpful to visualize the setup. Example could look like this:

Detailed setting: to create the specific sound that is desired, one should know how to build it. It is therefore important to notate every single setting of the equipment used. If this is done properly it is possible to reproduce the sound of the original piece. Settings to be notated include microphone placement, EQ settings, amplification, rooting & patching, processors and effects with parameters like length, depth, modulation, threshold, gain, attack, release, etc. Its not uncommon that during the performance settings change. One should notate these changes through a sort of score. By using a time based overview, the performers can see at what moment they have to apply the change of settings.

Waveform synthesis: lots of pieces in electroacoustic music and performances are based on real-time waveform synthesis. Use of software and hardware to create waveform synthesis is very common. With the unsure remaining availability of software and hardware, the best way to obtain the creation of the sound is

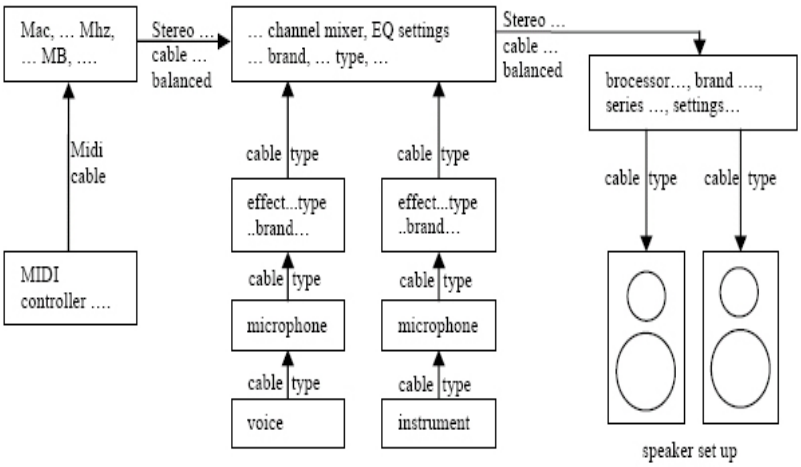


Figure B.1: Rooting scheme

to describe the process of waveform synthesis step by step. By doing this, the sounds used in the piece can be recreated later, perhaps even with different software and hardware. An example of notating the sound creation details could look like this:

The issue of imprecision and uncertainty in notation is a direct reflection of the relative youth of the genre. Over time, a more standardized practice of notation will likely develop from the successes and failures of current and past efforts.

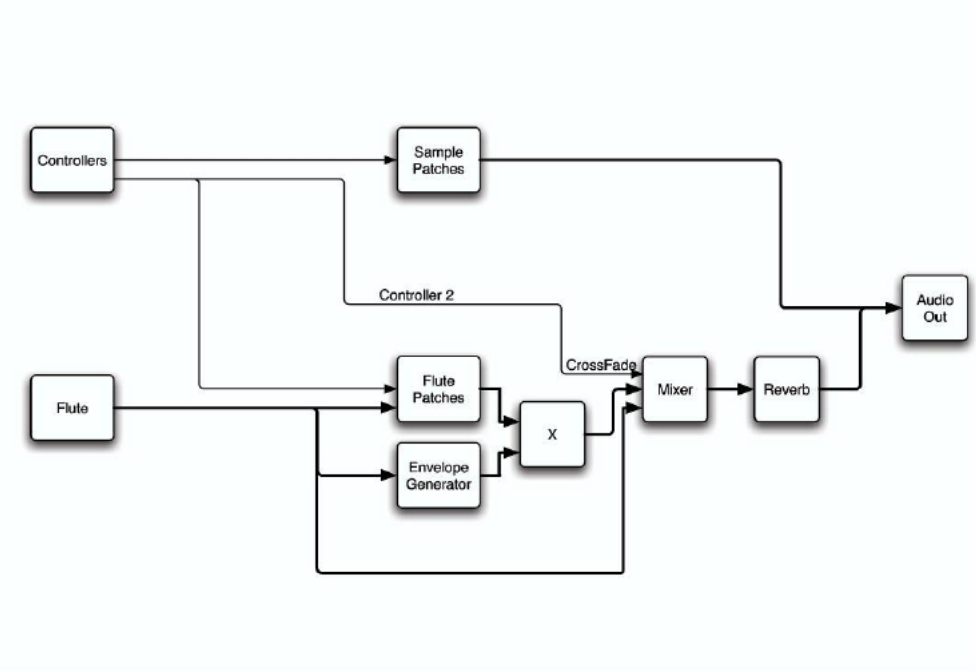


Figure B.2: Wave form example 1

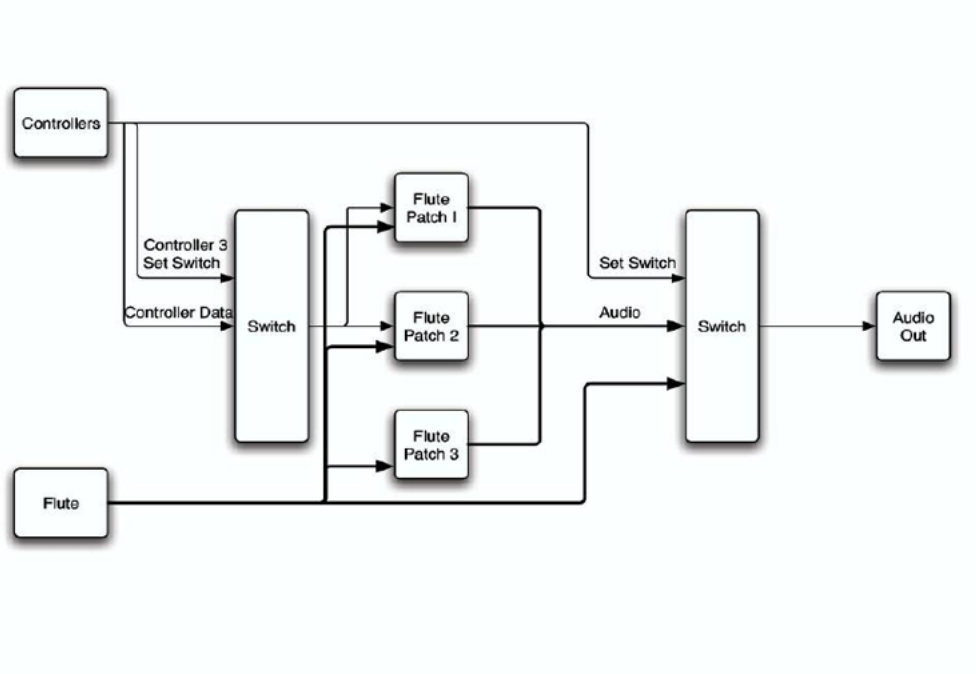


Figure B.3: Wave form example 3

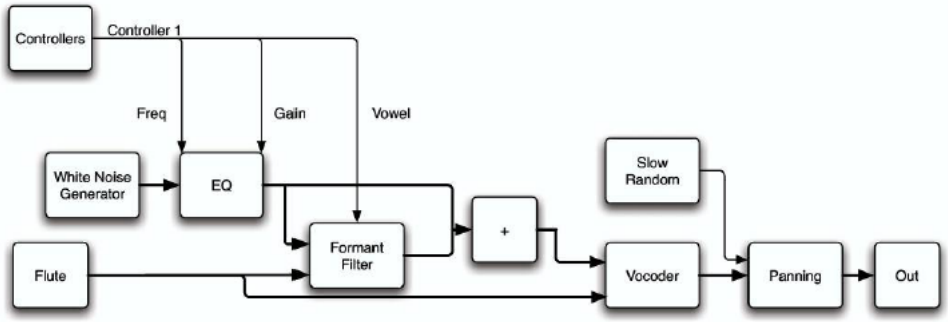


Figure B.4: Wave form example 3

Appendix C

Performers and Dates of Performances of Original Works

1. ***'Bukefalus'*** – for voice, narrator, actor, photographer, prerecorded sounds, live audio signal processing and live video processing, eight channel speaker system.

   - performed and recorded on February 24th 2007 at the Nikolai kerk, Utrecht,
   - performed by Aleksandra Popovska-voice, Maral Karaee-actor, Alexander Rojas Paraheles – narrator, David Hartono – photography, Christian Chierego – live video, Klaas Jan Govaart – Max/Msp, Tomas Koopmans – sound engineer, Elizabet van der Kooij – sound production assistance,

2. ***'Every. When'*** – for six dancers, two video projectors, light installation, prerecorded sounds, live signal processing, live video processing, eight channel speaker system.

   - performed and recorded on June 29th 2007 at the experimental art center AMD, Amsterdam,
   - performed by Gabriella Tarcha-dancer, Lucy May – dancer, Elita Cannata – dancer, Valeria Cosi – dancer, Angela Herenda – dancer, Geert Pacelli – dancer, Klaas Jan Govaart – Max/Msp; production crew: Christian Chierego – director, Julia Visser – producer, Sanne Wiltnik – producer, Wieteke Kamer – producer, Aleksandra Popovska – composer, Eugenia Demeglio – choreographer advisor, Bart Polle – technician, Erika Kiessner – hardware builder, David Hartono – web and graphic designer.

3. ***'Tribute to Morty'*** – for three performer, tape music and three video screens, live Resolume application and live Flash application.

   - performed and recorded on October 6th 2007 at GifGrond, platform for experimental music in Tilburg.
   - performed by David Hartono – Flash developer, Christian Chierego – motion graphics, Aleksandra Popovska – live painting.

Appendix D

Textual Scores for Project *'Every. When'*

Live media performance about dreams
structure

start

darkness

movements into the dark, performers run in darkness, between people, touching people, like small creatures, carrying different light sources, lights ball (4), matches, magic lanterns, lights attached onto body, etc.

starting of trance

in one corner of the space will be a net made of small circular pieces of mirror, like a mobile. this mirrors are double side and rotate.
beamer project onto the mirror-net.
the reflection of this image goes deconstructed all over the place, like shooting stars. the image projected is a time-lapse register of myself sleeping.

start of the light egg.
the light egg is an structure with several lamps attached. these lights are turning on and off based on an electronic circuit. the machine makes a sound, like a repetitive snap every on-off.
if you stand in front of the light egg you get your shadow moving around the space in circles.

*there is a photo camera taking pictures with shutter in 13 seconds. pictures are projected real time.

--performer in front of the machine, like the first fire.

shadows and movement, composition with objects' shadows.
screening and shadows, screen as a cage of the human shadow.

--visions without camera
get people blind by closing their eyes with a piece of fabric.
some people are not able to see, the rest could see them being blind.

starting to dream

1--- following the trance, we come into a rail road passing, from the point of view of the cab.
repetitive landscape, repetitive traveling sound

spiders or bugs crawling in an empty room, over the mattress.

-2-- new home, solitude
the roof is leaking. recipients on the floor

hugs,
people hugging slow motion
performer hug people

I welcome you to my new home

--3- passage, transformation (water)
woman floating with umbrella in the lake
woman sleeping on the edge of the lake

performer and water

---4 epiphany (butterflies)
girl in a white night dress and butterflies flying around
she is under white sheets, very shiny light

camera dances with butterflies

"something" should fly on location

wake up (alarm clock)

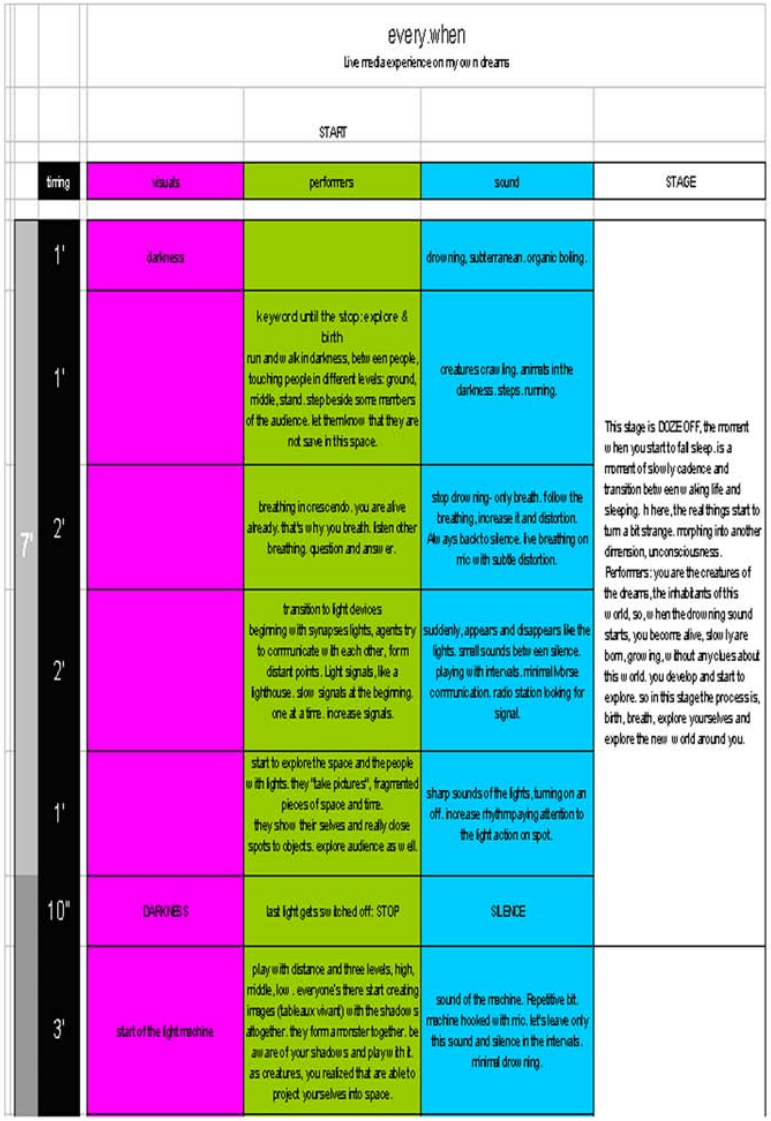
when we realize that we are immerse in a dream, it starts to disappear
Butterflies disappear as shooting stars,
everything started to shift and distortion,
everything is confuse, repetitive and non connected

wake up (alarm clock)

lights on, real world
again
end

chierego_2007

Figure D.1: First textual score



every.when

live media experience on my own dreams

START

	timing	visuals	performers	sound	STAGE
7'	1'	darkness		drowning, subterranean. organic boiling.	This stage is DOZE OFF, the moment when you start to fall sleep. is a moment of slowly cadence and transition between waking life and sleeping. h here, the real things start to turn a bit strange. morphing into another dimension, unconsciousness. Performers: you are the creatures of the dreams, the inhabitants of this world, so, when the drowning sound starts, you become alive, slowly are born, growing, without any clues about this world. you develop and start to explore. so in this stage the process is, birth, breath, explore yourselves and explore the new world around you.
	1'		keyword until the stop: explore & birth run and walk in darkness, between people, touching people in different levels: ground, middle, stand. step beside some members of the audience. let them know that they are not save in this space.	creatures crawling. animals in the darkness. steps. running.	
	2'		breathing in crescendo. you are alive already. that's why you breath. listen other breathing. question and answer.	stop drowning- only breath. follow the breathing, increase it and distortion. Always back to silence. live breathing on mic with subtle distortion.	
	2'		transition to light devices beginning with synapses lights, agents try to communicate with each other, form distant points. Light signals, like a lighthouse. slow signals at the beginning. one at a time. increase signals.	suddenly, appears and disappears like the lights. small sounds between silence. playing with intervals. minimal Morse communication. radio station looking for signal.	
	1'		start to explore the space and the people with lights. they "take pictures", fragmented pieces of space and time. they show their selves and really close spots to objects. explore audience as well.	sharp sounds of the lights, turning on an off. increase rhythm paying attention to the light action on spot.	
	10"	DARKNESS	last light gets switched off: STOP	SILENCE	
	3'	start of the light machine	play with distance and three levels, high, middle, low . everyone's there start creating images (tableaux vivant) with the shadows altogether. they form a monster together. be aware of your shadows and play with it. as creatures, you realized that are able to project yourselves into space.	sound of the machine. Repetitive bit. machine hooked with mic. let's leave only this sound and silence in the intervals. minimal drowning.	

Figure D.2: Second textual score part one

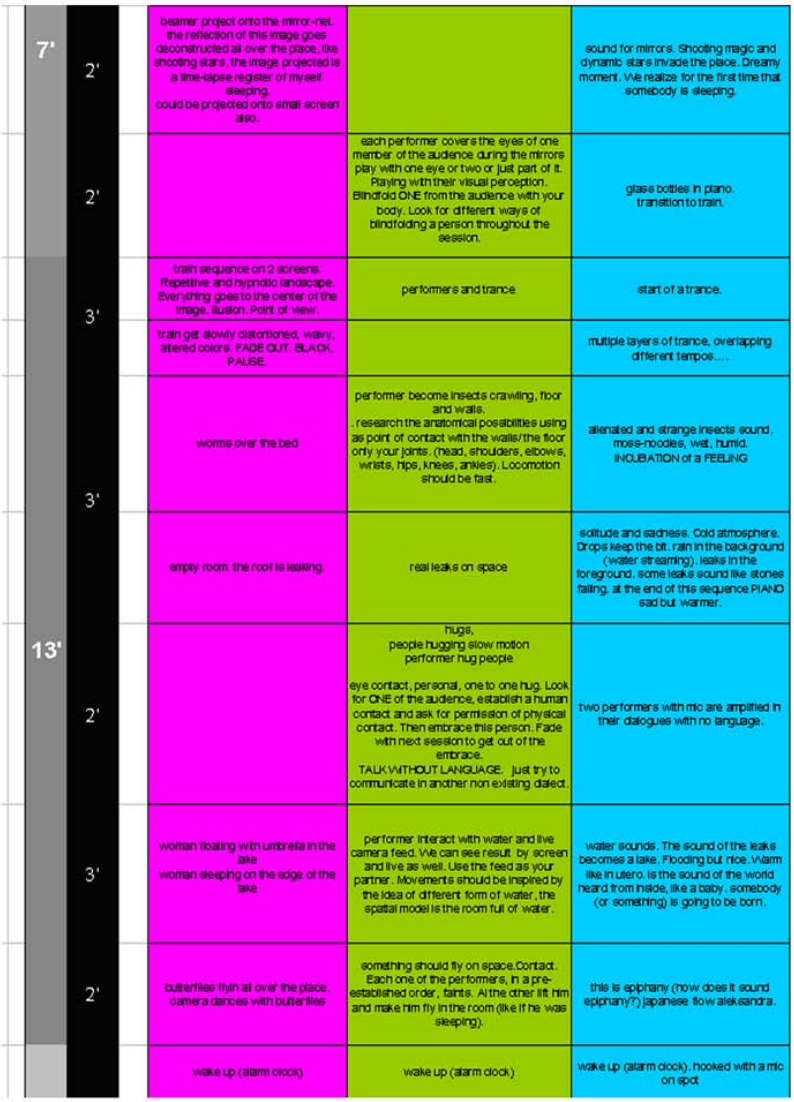


Figure D.3: Second textual score part two

Appendix E

Participant Reflection after the Projects

Participant Reflection after Project *'Bukefalus'*

Alex Rojas Parajeles (actor/writer):

As I mentioned before, for me the work in a multidisciplinary environment is not a problem at all, it just implies a serious learning challenge. It demands that you focus your energy in the abilities and faculties of others involved with the project, and mostly with your own creative trip. For me it was like this in project Bukefalus. I never performed a main role in a play before, nor in the fantastic setting of an old church, nor in a foreign language! The larger problem for me was to perform in a play that contains a complex mixture of technological devices, live action happenings, and contemporary sound as well as visual narratives. The balance between every dramatic aspect was achieved through a set of good decisions taken from the beginning of the rehearsals. For instance, to embody my character (a sort of god-above/cosmic-narrator) in absolute freedom, I came the idea of interpreting this textual, distant voice in Orson Wells' elegant style of speech. Every one loved the idea, the director took advantage of it, and it streamlined the general characterization for me. I would like to add that in this project, the approach to its technical aspects were outstanding and totally new for me in such a performance display.

The young performing group was driven not only by their own affinities but also by what everyone was intending to say, allowing sufficient room in the rehearsals to make the project's main idea grow. The composer captured lots of expressive ideas at these brain-storming sessions. She portrayed broadly the feeling of the whole play and the specific orientation she wanted for my character, which was very helpful to me. She started encouraging my imagination, telling me old stories of the ancient Macedonians and everything concerning Alexander the Great. Through the high flight of imagination she introduced me to the mythical historical role of the ever fantastic Bukefalus image. By fascinating me first, she obtained the initial drawing of the character. Afterwords she completed the depiction by placing it in our everyday western cultural context. "

Participant Reflection after Project *'Bukefalus'* and *'Every. When'*

Klaas Jan Govaart, sound designer:

We intended to work the same way. Both Popovska and myself would be performing during the piece. Popovska – voice, Govaart – lap-top. Chierego was the director. Popovska and I would both be supplying sound material for me to trigger and process during the performance, while Popovska would also sing and be processed live. But during the development/production of the piece this changed, as it occurred that Popovska could not be there at the day of the performance. Then things changed and got somewhat troublesome, because now all of a sudden Popovska felt her role was that of the composer, and I would in a way be executing her composition instead of us interacting, improvising and performing together. This was not really what I agreed to and I found it hard to adapt to the new situation. In a way I felt that if she could not be there during the performance, she should step back and let me perform alone (or bring in another person). Unfortunately, at that time none of use realized these things so much, so we didn't communicate about it clearly.

Also, director Chierego found it hard to focus on the big picture and started micromanaging the sound/music. So, instead of no composer, but a director and two equal

musicians/performers, we now had a performer taking the role of a composer and having the other performer execute her ideas; a director trying to take too much control of the music and sound; another performer frustrated because he feels less and less freedom to play and create what he likes, because of the director and the 'composer' trying to take too much control.

This was not fun and the process was not very productive. If I had know this would happen I would have not participated. But, we didn't really realize the shifting roles and the director was new to directing so we all just went with it. Luckily, the piece came out pretty nice anyway, but it was much more frustrating and less fun then *'Bukefalus'*.

Technically the performance was done as follows. All sound was 'pre-cooked', except for a few scenes that used quasi random/algorithmic synthetic sounds.

I would just play with the dancers by starting and stopping sounds, moving them in the four channel speakers, and playing with the parameters of sound effects and synthesized sound.

For *'Every. When'*, I was not planning on working with a composers who's ideas need translation. Because it implies I cannot do what I find subjectively and/or aesthetically pleasing. I find this less pleasing, because now I have to somehow find what the composer finds pleasing, whether I like it or not. Also, no matter how verbal the composer is about it, I can still only guess what he/she really is after, so it is a lot of trial and error. That still wouldn't have been a problem if it wasn't for the director also having an opinion of the music and sound at the macro and micro level.

Communication with the director and the composer in the project *'Bukefalus'* was fine. No real composer, but director/performer in one. Very mature leadership and not micromanagement. Gives me room to do what I like artistically/aesthetically. For *'Every. When'* communication was frustrating. Lack of experience in all three parties and therefore not realizing that we were trying to 'sailing a ship having three captains'.

Participant Reflection after Project *'Tribute to Morty'*

David Hartono, flash developer (e-mail)

Having an idea, samples, and already made musical piece as an 'artistic brief', it is important to deconstruct the musical piece back into the raw original idea, strip the medium and re-analyze what could have been inspiration that the artist (Morton Feldman) had. By having an extract of idea and inspiration from the sample and musical piece, I slowly stitched the extraction together with the director's idea of the piece into a visual piece, implementing my own visual style in the idea and generating many moodboards that can relate. This mixture brings me to the creation of the final visual piece in the form of visual elements that can be animated and triggered on the fly during a live performance. The biggest problem for me is the concept of different art profiles itself; it is a journey to the mountain to achieve the state of serendipity in the relevant context. How to be able to expose each art profile but also to make sure that we combine in a nice way, creating a unique sensation of combination. I feel in a way that we are a collection of good CD's, trying to find a good DJ to play us. The role given was pretty much clear, but it is also important to blur my own role. During these two projects I was allowed to do that, and make room for improvisation to create even more interesting blends and gradients in the project. Communication is really essential and it's been in the spotlight in these projects. Although the crew was quite small, we had some periods when communication was a bit difficult, especially because we are talking in different artistic idioms. What happened was a negotiation and compromise of idea, technique, and the whole concept of the piece, in order to make a balance between all artists. Mostly it was a mix and match problem with different pieces that we already made. We all have our own mental perception and projection toward each piece and how they should combine. In this case our expectations of each other matched about 60%, so we had to discover the remainder when finally all our pieces were realized during rehearsal. Fine-tuning, improvisation and communication played important roles for us to complete the puzzle in the rehearsal. I had an affection for the content, which was Morton Feldman. To translate a musical piece to a moving visual piece has always been a challenge, yet great results can be achieved – such as the Diabolus in Musica performance which combines live orchestra with a silent black and white movie. The terms 'music' and 'moving visuals' mean that both have rhythm and plots that can simply be connected. In the case of the Morton Feldman the piece, however, its many improvisations and indeterminate concepts require lots of effort and thinking to express and translate. Furthermore, the elements and the movement could not be simply synchronized as it would create a lot of mismatch. I prefer to use the music simply as a moodboard, and to position myself inside the Morton Feldman piece and create a

completely new visual piece liberated from strict adherence to any musical component. I like that I have freedom in this project, total liberation.

Appendix F

DVDs Content

DVD 1 Performances

1. Performance *'Bukefalus'*
2. Performance *'Tribute to Morty'*
3. Performance '*Every. When'* (Highlights)

DVD 2 Rehearsals and Photos

1. Project 'Bukefalus' – First rehearsal
2. Project '*Bukefalus'* – Exploring improvisation, light objects, video projection
3. Project '*Bukefalus'* – Exploring the stage – Improvisation, interaction and light
4. Project '*Bukefalus'* – Exploring interaction – Video and light objects
5. Project *'Bukefalus'* – Editing experiments – Questions
6. Project *'Every. When'* – Working with the dancers – Dance pizzicato
7. Project *'Every. When'* – Working with the dancers – Talking without language
8. Project *'Every. When'* – Working with the dancers – Dancers as insects
9. Project *'Every. When'* – Exploring interaction – Interaction with screen 1
10. Project '*Every. When'* – Exploring interaction – Interaction with screen 2
11. Project '*Every. When*' – Working with the light – Strobe light
12. Project *'Every. When'* – Working with the light – Real time live camera feed
13. Pictures *'Every. When'* 1
14. Pictures *'Every. When'* 2
15. Pictures *'Bukefalus'*
16. Pictures *'Tribute to Morty*