

**How Digital Scenography and Images
Affect the Visual Spectacle
in a Site-specific Choreographic Installation**



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ABSTRACT

The aims of the research project were to gain a better understanding of digital scenography, mainly in the field of dance as used by recent choreographers, to create an experimental, improvisatory dance performance. This was eventually entitled *Απεραντοσύνη/ Vastness*, and successfully staged in a non-theatre installation space at the Attic, University of Hertfordshire, on September 16, 2016.

The three main research questions are: Can a narrative, as represented by images in a projected animation, be a chorographic tool? Is it possible to combine projected animation with projected interactive motion generated images successfully for developing improvisatory dance performances in non-theatre spaces? And if so, can this combination also be a chorographic tool?

The thesis of the project is that firstly, despite the apparent lack of historical precedents, it would be possible to combine scripted animations and un-scripted interactively generated graphics successfully in a dance performance project, presenting a decorative and aesthetic enhancement to the visual spectacle of the performance. Secondly, that such use could also be identified as a valuable chorographic tool for the development of improvisatory dance performances in non-theatre spaces.

This dissertation analyses the historical, theoretical and practical processes of developing *Απεραντοσύνη/ Vastness*. It concludes that all of the questions have been given positive answers and these support the thesis.

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INTRODUCTION

This research project arose from my previous experience of visual/digital/interactive arts, set design, and film production. During the three years before the project started, I was also involved in the creation of installations involving experimental performances and projected visuals, either from animations and/or computer-generated imagery. During this time I also became interested in experimental dance productions that used these technologies in relation to body movement. However, I had no experience of either choreography or dancing. So the aims of the research project were to gain a better understanding of digital scenography, mainly in the field of dance as used by recent choreographers, to create an experimental, improvisatory dance performance eventually entitled *Απεραντοσύνη/ Vastness*. This performance was successfully staged in a non-theatre installation space at the Attic, University of Hertfordshire (September 2016), and involved projected visual images, combining scripted animations and un-scripted interactively generated graphics, as well as an experimental musical composition especially written for the piece by the Spanish composer and musician Javier Aparicio.

In relation to the aims, the research project used three types of research method. The first of these was library-based. On the one hand it involved the analysis of historical and theoretical aspects of digital scenography used for dance performances. On the other hand it involved understanding the main philosophical concept (the sublime), and the scientific narrative (the moon's power over the oceans) that would underpin the performance. The second method was creative art practice, to design and select the images relating to the concept and story that would be part of the projected 21 minute animation. The third

method was analytical collaborative working with two improvisatory dancers, Sarah Penn and Helen Ward, to create the choreography, and then working with the Spanish composer Javier Aparicio in relation to the musical score for the performance.

The thesis of the project is that firstly, despite the apparent lack of historical precedents, it would be possible to combine scripted animations and un-scripted interactively generated graphics successfully in a dance performance project, presenting a decorative and aesthetic enhancement to the visual spectacle of the performance. Secondly, that such use could also be identified as a valuable choreographic tool for the development of improvisatory dance performances in non-theatre spaces.

In chapter 1, the literature review briefly explores aspects of the historical roots of digital scenography. It then focuses on analysing a number of works involving digital scenography and mainly dance performance, including works by: Josef Svoboda, Merce Cunningham, Willian Forsythe, Johannes Birringer, Adrien Mondot and Claire Bardainne (Adrien M / Claire B), Paul Sermon, Suzan Kozel, Chunky Moves and Darren Johnston. While each of the works was to have a positive influence on aspects of the practical element of my project, Cunningham, Forsythe and Kozel, emerge out of the discussion as key theoretical and practical sources for my own experimental dance performance *Απεραντοσύνη/ Vastness*, as outlined below.

Choreographer Merce Cunningham's approach to staging performances was based on the unexpected - seeing what happens by chance. In his work *Biped* (1999) Cunningham, along with the two digital artists Paul Kaiser and Shelley Eshkar, only brought together the three strands of the performance - the choreography, the music and the visual décor - at the dress-rehearsal and at the opening of the performance, creating an unfamiliar, immersive

space for the dancers to respond to. Cunningham's approach not only fascinated me, but also challenged me to find out what would happen if I were to adopt it for the development of the experimental *Απεραντοσύνη/ Vastness* performance.

However, *Biped* was produced in a traditional theatre space, which was not the sort of venue I was going to use. Moreover, Cunningham's choreography used strict sequences of steps that the dancers could use in the final unfamiliar situation. As I am not a dancer or choreographer, this was not a model I could use practically, but would need to work with trained contemporary dancers who were used to improvisation, to develop the choreography for *Απεραντοσύνη/ Vastness* in a different way. The chapter therefore identifies the methods of Forsythe and Kozel as the most useful theoretical and practical models for my own purposes regarding choreography, since they were concerned with dancers' improvisatory physical and emotional experiences in response to digital technology, in immersive non-theatre spaces, using elements of narrative to help structure the performances. This is discussed further in chapter 2.

Chapter 2 begins with a brief description of the performance, to contextualize the discussion of the narrative and theoretical aspects of planning and developing the performance in relation to the research presented in chapter 1. However, the chapter is mainly concerned with the decisions made in the process of creating the basic abstract concept behind the performance (human encounter with sublime experience), and the more specific but related storyline relating to the operation of the moon's gravitational force on the ocean tides, and the terrifying tsunamis that may be produced as a result. The central research question addressed in this chapter concerns whether a storyline can be used as a choreographic tool in the development and staging of an experimental dance performance.

Contemporary dance performances do not necessarily have to have a storyline, as can be seen in *Biped*, where Cunningham refused to give details on what his project was “about”. However, as I am not a choreographer I decided that I needed a storyline to support the creation of improvised choreography by the dancers, so that they had a structured concept and narrative, accompanied by associated visual representations from the projected animation images, to help them work and experiment.

As will be seen in this chapter, conceptually, both the storyline and the scripted/un-scripted projected images for the performance, derived not only from the eighteenth-century philosopher Edmund Burke’s ideas about the “sublime”, as an experience of awe and terror prompted by human confrontations with the power of natural forces, but also from the contemporary philosopher Paul Crowther’s idea of the “postmodern sublime”, concerning the awe and terror evoked by the contemporary, incomprehensible and invisible power of digital technology.

Chapter 3 focuses on the technical, technological, practical and experimental parts of the the development and performance of *Απεραντοσύνη/ Vastness*, based on the theories and concept from chapters 1 and 2. This chapter’s analyses of the developmental process not only addresses the research question raised in chapter 2 about the possible use of narrative as represented by projected images as a choreographic tool, but also raises another question regarding the possibility of using animation and interactively generated motion graphics projections together. This question was stimulated by my research into the work of Svoboda, Adrien M / Claire B and Chunky Move who introduced either projected animations with performance or examples of real-time images responding to body movement. So, I wanted to see what would happen by working and experimenting with animation images

and live generated graphics together, and if this would be successful, to see whether this combination could also be a choreographic tool.

The process for developing the performance was entirely experimental. As I am not a choreographer, I was depending on feedback from the two trained contemporary dancers, who were used to improvisation but had no experience with installations or digital scenography. The process began by using images relating to the concept and story and also a variety of different sorts of music for the dancers to respond to. It then moved on to storyboard images to structure the performance, creation of the 21 minute animation sequence, experiments with the interactive graphics alone and in combination with the animation images, and the use of the commissioned music from Javier Aparicio. This musical element of the performance, like the music in Cunningham's *Biped*, at some places went against the projected images and dancers' performance, creating a contrast.

In a similar way to Cunningham's approach to the *Biped* performance, the public show successfully brought together, for the first time, all of the elements – dance, scripted and un-scripted images and music – in an installation space unfamiliar to the dancers, to which they had to respond. As may be seen in the illustrations in chapters 2 and 3, it offered an unfamiliar but exciting visual spectacle for the audience which, as in Birringer's *UKIYO* (2009, 2010), were allowed to move about outside the dance installation space to see the performance from different perspectives. I believe that this outcome may be seen not only to answer all of my research questions, but also to strongly support my aims and initial thesis.

The final chapter of this dissertation summarises the discussions in relation to the main research questions. It then provides a conclusion indicating the fulfilment of the aims of the

project and the validity of the overall thesis, discussing the specific challenges thrown up by the project, and suggesting some pathways for future research.

CHAPTER 1

LITERATURE REVIEW

Introduction

This chapter focuses on the ideas and practices relating to the roots of Digital Scenography and its recent developments that have influenced this research project. It begins by examining some of the historical precedents set for the development of digital scenography by the scenographer Josef Svoboda and his sustained projects from the 1950s onwards.

The second section explores the recent development of digital scenography since 1999, starting with the stage design experiments with the choreographic approaches/discoveries of Svoboda, Merce Cunningham and William Forsythe, who changed the way of thinking, observing and producing a dance performance. Then with reference to Johannes Birringer's writings, I discuss a variety of performances with technology, and the idea of moving in other spaces, explaining the interactive, immersive, networked and derived environments, through examples of works such as the *Hakanai* of Adrien M / Claire B; and Paul Sermon's *Telematic Dreaming* and the phenomenological experience of Suzan Kozel as a dancer. After this I consider the involvement of mixed reality environments through *UKIYO*, a choreographic installation by Birringer. At the end of this section, I focus on two cutting-edge examples of works by Chunky Move and Darren Johnston, as having inspired my thinking about what could be created next. In the final section, I give emphasis to the understanding of performance in other spaces, referring for one more time to the works and theories of Cunningham, Forsythe and Kozel, as main influences on this research, as will be shown in chapters 2 and 3.

The Roots of Digital Scenography

The term “Digital Scenography” relates to the recent and contemporary availability and use of digital technologies, in staging a variety of public performances. As will be seen, however, it has its roots in older avant-garde practices relating to theatre, ballet, as well as experimental installations.

Referring to “Digital Scenography”, there are two different, derived approaches: the “Digital” and the “Scenography”. Whereas, the term of “Scenography” has older roots, the “Digital” is a term that made its revolution from the late 1950s, with the electronic technologies and computers (Schoenherr, 2004).

In the Preface to *Theatre and Performance Design: A Reader in Scenography* (Collins & Nisbet, 2010, p.xxiii), the director and scenographer, the director and scenographer, Pamela Howard OBE notes that a few years ago (almost two decades), the term and the practice of scenography were only familiar in a few parts of Eastern Europe. She continues by explaining that some people were thinking that it was a spelling mistake or a provocative, grand word to be used in set design from the designers. However, this changed and the word has been used by enthusiasts that want to investigate the term of scenography and ultimately use the word as part of our language. Howard also notes that people want to go further by researching and practicing scenography, “taking part in the never-ending evolution of theatre forms” (Collins & Nisbet, 2010, p.xxiii).

According to the editors of the anthology *Theatre and Performance Design: A Reader in Scenography*, Jane Collins a professor of Theatre and Performance, and Andrew Nisbet, a lecturer in Theatre Practice and Theory (2010, p.1), “Scenography” is the central frame of

theatre, dance, opera and performance. They describe it as “stealing, unashamedly”, from visual arts, philosophy, science, linguistics, history, culture, and theatre and performance studies as part of the process of designing and staging a performance event.

As has been noted by Howard (Collins & Nisbet, 2010, p. xxiii), people are exploring scenography in a contextualized, coherent framework – by travelling back to relevant works of performance and theatre for inspiration and creativity, “wondering” what can be created and how it will affect theatre, performers, dance, set design and more generally, the world of arts, science and culture. This is part of this research as well, as it is concerned with what can be created and investigated, bringing scenography into the world of the “Digital Revolution”, and approaching unknown environments through somatic experience.

Whereas the experience might be from an observing point of view (audience), simultaneously someone else (dancer) could be watched as a medium, during her actions/response and performance in unfamiliar environments.

This research focuses on a choreographic installation combining mediated digital technologies, giving emphasis to dance performance. Nevertheless, the research journey started with the historical precedent for digital scenography, and analysing works from the 1930s until the last decade.

A noteworthy historical example for digital scenography, from the 1930s was the work of Czech theatre and film director Emil František Burian, whose work was inspired by two theatrical pioneers, the German Expressionist director Erwin Piscator and the Revolutionary Soviet director Vsevolod Meyerhold (Gieseckam, 2007, p.51). Piscator was known for his theatrical techniques of still and cinematic projection. Whereas, at the same time, according to the online source *Prominent Russians: Vsevolod Meyerhold* (Pigareya, n.d.), Meyerhold

was focusing on the physical theatre based on body movements as a new acting system and method, developed by him.

Burian was experimenting with film and slide projection for his productions, and the first attempt to combine them together (film and projection), was in 1936 with the *Spring Awakening* (fig. 1) of Frank Wedekind (1864 - 1918), a German playwright (Gieseckam, 2007, p.51). The stage design consisted of a transparent scrim in front of the performers while a solid screen was behind them. According to Greg Gieseckam (2007, p.51), a former senior lecturer in Theatre Studies, despite the fact of presenting a live performance combining projection techniques, the performers were more likely to be seen (from the audience's perspective) as performing in a film production (ibid). Gieseckam (2007, p.52) also notes, that the legacy of Burian's scenographical experimentations was taken up by Josef Svoboda who was also using film projections in his choreographic work from the 1950s.



Figure 1: Miroslav, Kouril. *Spring Awakening* (1936)

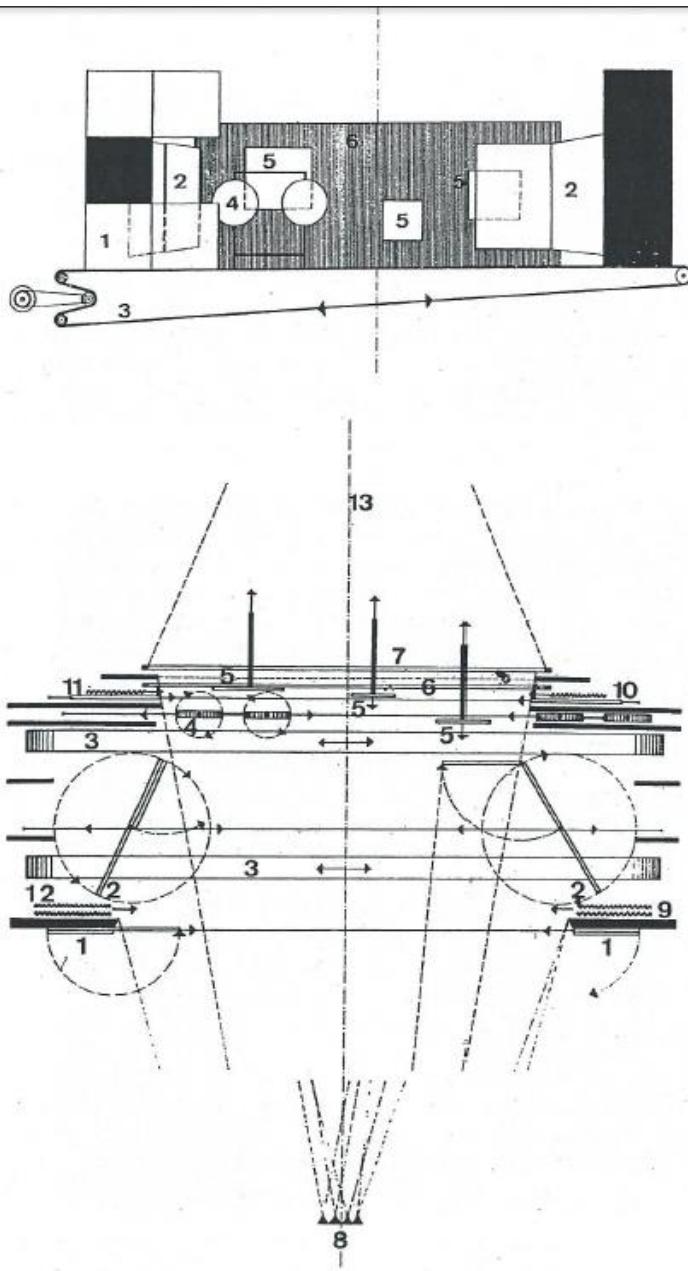


Figure 8a. Laterna Magika as presented at the 1958 Brussels World's Fair, ground-plan and frontal view. 1—projection screens hinged along vertical axis; 2—projection screens hinged and rotatable along vertical axis and movable laterally across width of stage; 3—treadmill; 4—circular projection screens rotatable on vertical axis; 5—projection screens movable downstage from the cinemascope screen; 6—cinemascope screen for frontal, wideangle projection, composed of vertical, elastic strips to allow for passage of live actors; 7—cinemascope screen for rear projection; 8—projection booth with three fully synchronized film projectors and one slide projector, these being synchronized with one film projector (behind all the screens) for rear projection; 9—main curtain; 10—two-sided shutter frame curtain; 11—projection screens, laterally movable; 12—scrim curtain; 13—rear projection.

Figure 2: Josef, Svoboda. *Laterna Magika: ground plan and frontal view (1958)*

Part of the investigation was the exploration of the work of Svoboda, which in my view contributed substantially to the world of digital scenography. Svoboda's work mainly involves a continuing development of interactivity between the performers on stage and the

projected figures coming from filmed action (Giesekam, 2007, p.53). According to Giesekam (2007, p.52-53) he developed the notion of “polyscenicness”, a “many-sided time – space operation” and form of expression which can be observed from different angles while simultaneously can be included as one piece of work. Through this way of thinking, he created Laterna Magika (fig. 2), where he explored the potential of relating film and live performance (Giesekam, 2007, p.53).

Laterna Magika (fig. 3) was the first multimedia theatre combining ballet, film, photography, music, moving screens and projection. It consisted of three film projectors, one slide projector, eight movable screens with the potential of rotation, going downstage, moving to the side, appearing, and disappearing (Burian, 1974, p.85).



Figure 3: Josef, Svoboda. *Laterna Magika* (1958)

According to Jarka Burian (1927 - 2005), a professor and author on modern theatre, Laterna Magika had the potential to produce works, where film was specifically developed for the purposes of each production, instead of using a film which had another purpose before its incorporation with live actors. After the World War II, Svoboda and the director of Laterna Magika, Alfred Radok, produced their first production, taking full advantage of combining film and theatre, “re-creating” the nineteenth-century Czech comedy by Frantisek Samberk.

Svoboda, in 1958, created a film just for the production as it shows in fig. 4, mentioning that “the play of the actors cannot exist without the film, and vice-versa – they become one thing” (cited by Burian, 1974, p.83). One is not the background for the other; instead, there is simultaneity, synthesis and fusion of actors and projection. Regarding the words of Svoboda, about the relation of a projected film and live actors, and also paying attention to a production from 1958, undoubtedly, he created an experience, and maybe a revolution, into the world of performance, film, and theatre.

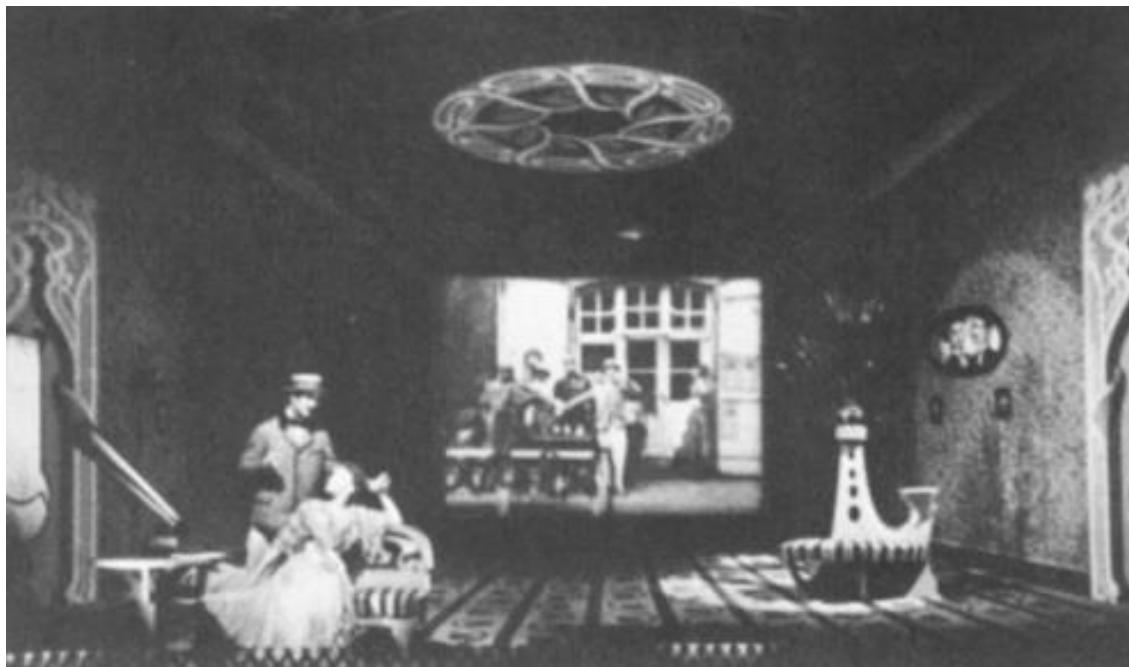


Figure 4: Josef, Svoboda. & Alfred, Radok. *The Eleventh Commandment* (1950)

Jan Grossman, a critic and theatre director, also notes that “LaternaMagika offered the dramatist, film scenarist, poet, and composer a new language: a language that is more intense, sharply contrasting, and rhythmic... capable of absorbing and artistically working over the density and dynamics, the multiplicity and contrariety of the world in which we live.”(cited by Burian, 1974, p.85). Today, in the world we live in, the improvement of technology gives the artist and choreographer the potential to create performances inside and outside theatre, having the comfort to experiment with an excessive amount of

different computer software, hardware and scenery supplies. Of course to be able to produce such performances, you need money, but I believe that someone can start by just experimenting with simple, affordable technologies and materials. Burian (1974, p.86) in his book *The Scenography of Josef Svoboda*, also comments that Laterna Magika had problems such as the demand of having time and money to produce a show incorporating film and live performance. It is remarkable that this was happening in the 1950s when the availability of the technology and the costs were not even close to what we have today, Laterna Magika was able to produce an artefact combining stage design and filmic projection elements.

One example of Svoboda's works was *Polyekran* (fig. 5), which, according to Burian (1974, p.80), it was the one "that contributed to the final form of Laterna Magika. The difference between *Polyekran* and the theatre Laterna Magika, was that *Polyekran* presented a film spectacle outside theatre, without any live actors (Burian, 1974, p.83). Svoboda was experimenting with projected techniques and film, wherein, later he merged these with performance.

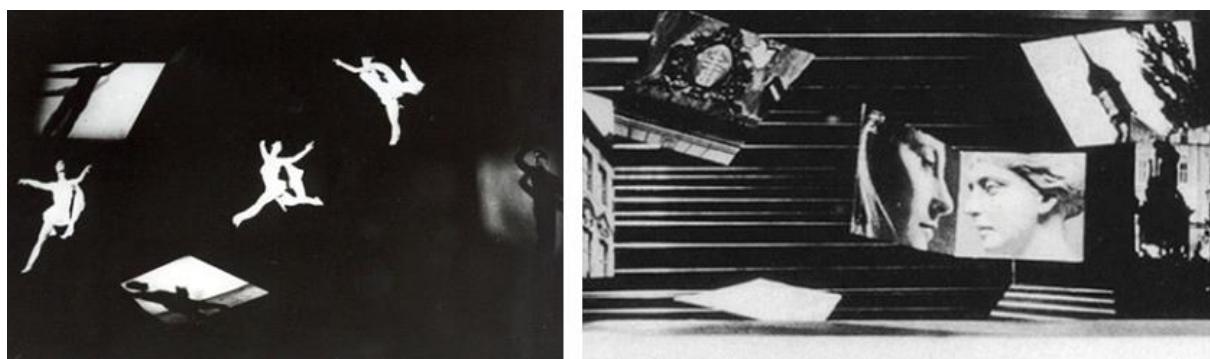


Figure 5: Josef, Svoboda. *Polyekran* (1958)

Polyekran took place at the 1958 Expo in Brussels with the collaboration of Emil Radok (brother of Alfred Radok) as the director and scenario writer of the show. It could be described as a projection form, combining a variety of techniques that were used to project

on eight screening surfaces including different sizes of trapezoid and square shapes. These screens were angled in various ways and they were covered by projected autonomous films and static images (Burian, 1974, p.81). According to Burian (1974, p.81) the surfaces were in front of a black velvet backdrop with eight slide projectors and seven film projectors accompanied by stereophonic sound. It was a ten-minute performance and the purpose of this film spectacle, was to create a space and an atmosphere, giving the opportunity to the spectator to feel the presence of the screen and be part of the project (Burian, 1974, p.81). Svoboda mentioned that the relationship of the projected objects on the screens and the audience, were perhaps surrealistic and not realistic (Burian, 1974, p.81).

André Breton (1896 - 1966) a French writer and poet, and the founder of Surrealism, in his *Manifesto of Surrealism*, concludes that Surrealism claims our “*nonconformism*” so there is “no question of translating it, at the trial of the real world, as evidence for the defense. It could, on the contrary, only serve to justify the complete state of distraction which we hope to achieve...” (Breton, 1924, p.26). He indicates that our prevailing ideas and beliefs stimulate our state of mind where there is no explanation or a rational answer to what we sense, or see, or imagine. This is where, sometimes, we have to let our thoughts to exist as they are in our imagination and dreams, and with that way we will be able to accept the other. This “other”, in this case, is related to the projected images from Svoboda’s eight screens and their association with the spectators, which in the 1950s after the World War II, presented something new to the world/people, probably it was against their expectations, because it was neither a theatre performance, nor a cinema movie or a ballet show. It was something different from their previous experience. The combination of real images of objects and people, in an immersive world, created an exchange of thoughts and maybe feelings, among the displayed images and the spectators, giving life to the space. In the

same way, this modern creation of 1958, in the end, developed a surrealistic atmosphere which exists in a parallel world from reality, to distract people's life and maybe help them forget for a moment the destruction of the war. Indeed Breton (1924, p.27) himself concluded that "Surrealism is the 'invisible ray' which will one day enable us to win out over our opponents." The reason for giving emphasis to what Breton suggested about Surrealism and the relationship to Surrealism I give to the Svoboda's work *Polyekran*, is because both result in presenting a new and unfamiliar world of events to the audience.

Today, people have disagreements about the relation between the digitally technological elements and dance performance. Nevertheless, there are artists, choreographers, scientists and theoreticians who are interested in discovering, experiencing and reacting to a variety of artefacts, which I discuss in the following sections "The Recent Development of Digital Scenography" and "Performing in Other Spaces".

The Recent Development of Digital Scenography

In 2002 Svoboda's work *Graffiti*, there are combined projection techniques and live performance. Characteristic of this project was the success of presenting image animations on stage and simultaneously watching the six dancers perform, creating an illusionistic atmosphere as it shows in fig. 6 and fig. 7. According to Giesekam (2007, p.67), *Graffiti* was Svoboda's last production before his death in 2002 and it was presented at Laterna Magika. The production involved "a new generation of Czech choreographers", with music by Peter Gabriel, Michael Nyman and Philip Glass and video production from a young filmmaker, Petr Kout (Giesekam, 2007, pp.67-68).



Figure 6: Josef, Svoboda. *Graffiti* (2002)



Figure 7: Josef, Svoboda. *Graffiti* (2002)

Svoboda (Gieseckam, 2007, p.68) designed a system where, in the middle of the theatre, there was a sheet of polycarbonate material, transparent and reflective, placed at an angle of 45 degrees, “cutting” across the width of the stage. The screen reached down to the stage-floor and on top of it, there was a mirror, so when the animation was projecting onto the polycarbonate screen, simultaneously, it was reaching the mirror and then, vertically the floor. This system, allowed Svoboda, to create an atmosphere with the dancers performing

behind the screen, and with the projected videos to be suspended in the mid-air. The video was representing images of figures, abstract visuals, trains, stations and “close-ups of sprayers and tags”, with the dancers interacting with “ghosts” (*ibid.*). According to Giesekam (2007, pp.68-69), the programme notes from the production referred to the urban culture of that period and the “metaphor of the contemporary world.” *Graffiti’s* projections were an inspiration to the scripted visuals that I created for the performance of *Vastness*, which focused more on the idea of projecting animated/scripted images, creating an illusion during the performance between the dancers and their experience.

From the 1950s until 2002, there was a gradual development of the works of Svoboda in performance and stage design. Burian noted that Svoboda in his early works focused on lighting as a key role in his scenographic elements (1974, p.59), and later on continued experimenting “on a three-dimensional use of colour” (1974, p.67) through projection techniques. Svoboda from the early stage of his experiments was mainly interested in creating a space as well as an atmosphere (Burian, 1974, p.59), from the use of lighting, to that of projection and colour. It could be concluded from this, that, no matter what period we live in, we take advantage of the developments of the time, integrating them into our artistic work, with respect and dedication, as well as knowing what other artists have created in past years, to continue the process of discovery.

Taking inspiration from Svoboda, I further continued my research on Merce Cunningham (1919 - 2009), “one of the greatest choreographers of the 20th century” (Vaughan, 2009). David Vaughan (1924 - 2017), the archivist of Cunningham, in his online article, *Merce Cunningham*, describes Cunningham’s journey as a non-stop process of discovery where mainly, he was experimenting with technology, video and film, in relation to the purity and

classical qualities of dance. He was creating choreographies with strong structures, characterised as “organic rather than preconceived”, taking “chance processes” regarding what can be developed through imagination and the new technology (Vaughan, 2009).

In relation to the stage design and its relationships with technology, Cunningham choreographed *Biped* (1999). *Biped* (fig. 8, fig. 9) is a work by Paul Kaiser and Shelley Eshkar two digital artists who had collaborated with Cunningham in several stage works. *Biped* is a performance which includes abstract, projected, animated moving images of virtual dancers using Cunningham’s choreography created by Kaiser and Eshkar, live dancers also using Cunningham’s choreography, and a music composition by the English composer, Gavin Bryars. These images were projected onto a transparent scrim that was in front of the stage/proscenium.

According to Ann Dils (2002), a dance historian, Professor and Chair of the Department of Dance at the University of North Carolina at Charlotte, Kaiser and Eshkar created random dots and lines, that circle or flit across the stage, wherein, the “the most spectacular” visuals, were the virtual dancers.



Figure 8: Paul, Kaiser. Shelley, Eshkar. & Merce, Cunningham. *Biped* (1999)



Figure 9: Paul, Kaiser. Shelley, Eshkar. & Merce, Cunningham. *Biped* (1999)

Svoboda in *Graffiti*, was working with the illusion of a three dimensional environment where the images were at the same level with the dancers, during the performance, whereas, in *Biped*, the images were in front of the dancers. Both of the works with only three years distance of each other were presenting human figures and abstract forms in an illusionistic way. Nevertheless, Cunningham's figures were coming from motion capture (see p.43) instead of a recorded film. This shows that Cunningham was interested in the movement and its structure, the relationship of pre-recorded movement through tracking and what can be created through choreography in real life – which I discuss later in the section of "Performing in Other Spaces". Both of the works were experimenting around the same period (1999 and 2002) with new scenographic elements on stage, and the transition of the audience and the dancers, into an illusionistic, surrealistic digital world.

By contrast, William Forsythe, a choreographer and director, presented another approach to combining technology and performance. Forsythe had served the Ballet of Frankfurt as a choreographer and director for 20 years (William Forsythe, n.d.) and from 2005 – 2015 he established The Forsythe Company, producing a number of significant works in the field of ballet dance. His last work with the Ballet of Frankfurt in 2003, was called *Decreation* (fig. 10).

It used seventeen dancers who performed in separated places on stage, talking to each other or alone, sometimes with phrases or just words. The protagonist role of the stage design of *Decreation* was not about a transparent material where images were projected creating an illusionistic atmosphere as in *Graffiti* and *Biped*. In *Decreation*, there was a live camera recording the body movements and the faces of the performers, with the video projected “onto a small screen at the back on the deep, broad stage” (Siegmund, 2004) – while random sounds were coming from the actual players (Boenisch, 2007, p.19).

The description of *Decreation* by Gerald Siegmund (2004), a German theoretician and critic in dance and performance, refers to some white pieces of cardboard, on which, during the performance, the dancers were leaving their body traces by throwing themselves on them. In addition to the scenographic elements of the performance, there was also a table next to the small screen and also some chairs. The existence of the table and chairs was not unnoticed by the dancers, as they were interacting with the objects by moving them and using them during the show.



Figure 10: William, Forsythe. *Decreation* (2003)

By contrast with *Graffiti* and *Biped*, *Decreation* was presented in a warehouse (Bockenheimer Depot, Frankfurt), where the “stage” had a long distance of depth. Forsythe not only presented a performance with theatrical elements/objects, outside a formal theatre space, but also experimented with live video recording and projection.

The three works may have used different choreographic and improvised structures, but the exciting common idea was the simultaneous implementation of technology and specifically the projection of images. This was despite the fact that both Svoboda and Cunningham were working on transparent materials, taking advantage of the width of the whole stage and the height as well, whereas Forsythe was presenting his work from a distant depth without any “theatrical” scenery (transparent “screens”). However, what unites the artists is that they seemed particularly interested in simple/presentable technological elements and the purity of dance movement.

Technology and Environments

Technology has definitely invaded our life, and also has resolutely become part of theatre and performance. This means that technology has its own place in rehearsal rooms, studios, theatre and other spaces wherein dancers are practicing and performing in collaboration with computer scientists, engineers, digital/interactive artists, stage designers and theoreticians. The interesting “phenomenon” is that everyone seems to be aiming, through experimentation, practice and theory to finally succeed, watch or participate in a scenographic space (theatre or other environments), in a choreographic/interactive installation, or in spaces/studios using telematics or haptic devices.

Johannes Birringer is a Professor at Brunel University, and a media choreographer whose work is concerned with multiple site-specific, cultural performances and installations.

Birringer (2002, p.85), states that technology has challenged the borders and spatial realities of body movement between the human and the machine. In his chapter “Gestural Materialities and the Worn Dispositif” in the book *Digital Movement: Essays in Motion Technology and Performance*, edited by Nicolas Salazar Sutil, a practitioner and researcher in performance, and Sita Popat, a Professor of Performance and Technology, Birringer notes that researchers from a variety of different fields such as dance, scenography, design, interactive media and digital art are investigating methods about performance and its correlation with technology (Birringer in Salazar Sutil & Popat, 2015, p.162).

According to Birringer (2002, p.88), there are four kinds of environments that involve performance and technology: interactive environments, immersive environments, networked environments and derived environments. Today, and according to Birringer (2010, p.1), clearly lists the fifth kind through the choreographic installation *UKIYO*: mixed-environments, which I will discuss later on this section. However, I will introduce each of the four environments separately, to give an idea of what these environments are, referring also to specific examples.

Interactive Environments

Interactive environments or performances use sensory devices like sensor cameras and computer programs for motion tracking, to generate data in real-time. Eric Mullis (2013, p.112-113), an Assistant Professor in Philosophy and dance writer, describes the use of sensory equipment for performing purposes, which generates motion to change the presence of the environment through body movement. This also allows the performers and the audience to experience the interplay of the performers’ bodies and the interactive technology (Mullis, 2013, p.113).

In 2013, Claire Bardainne, a visual artist with background in graphic design and scenography, and Adrien Mondot, a multidisciplinary artist, computer scientist and juggler (both of them, are the art directors of Adrien M / Claire B), created *Hakanai* (fig. 11), a choreographic installation with projected live animations onto a cube, derived from physical movement (Bardainne & Adrien, 2013). Inside the cube there was a dancer, performing and interacting with the projected visuals, which were taking geometric and organic shapes, letters and numbers.

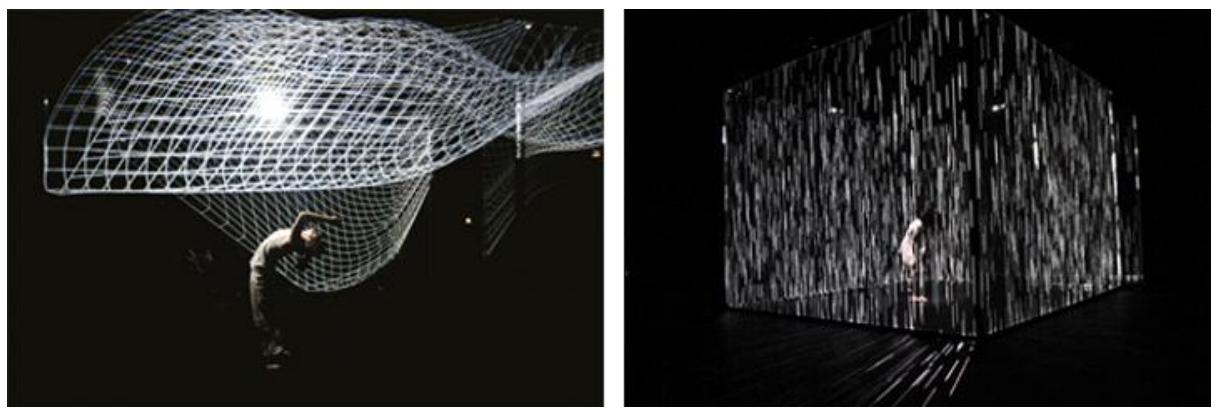


Figure 11: Adrien M / Claire B. *Hakanai* (2013)

According to Bardainne and Mondot (2013), on their website, they refer to the word “Hakanai” which in Japanese means “impermanent, fragile, evanescent, transitory and fleeting”, which concerns reality and dreams, the aspect of human being, its precariousness and its relation with nature. “This symbolic association is the starting point for a dancer who will face images revealing what lies on the brink of imagination and reality” (Bardainne & Mondot, 2013). Based in a strong concept, the artists were also focusing on the relation between dancers/ humans who were about to meet the reality of projected/interactive or un-scripted and “transparent” visual images, alone inside a cube, transferring the performer’s body and mind, into illusion and imagination.

Hakanai is a project which, scenographically and technologically, is related to my practice and experiments. And for the first time in this research, we clearly see the involvement of installation which also works as a choreographic installation; since the performer exists inside the installation, and observes the images, which dynamically move according to her body reactions. It could be said that *Hakanai* is part of an immersive environment as well, because of its three-dimensional approach which surrounds the dancer.

Immersive Environments

Immersive environments can also be based on virtual reality and according to Mullis (2013, p.112) the performer uses goggles (Head Mounted Display), data gloves and body suits to interact with and navigate through the immersive world. Another characteristic about the immersive environments is the inability for the audience to understand and perceive the experience of a performer in VR (Virtual Reality) unless they try it (Mullis, 2013, pp.112-113).

Scott deLahunta (2002, p.105), a dance researcher, also describes virtual reality combining performance, where the audience or/and the users are invited to experience an artwork “within’ a three-dimensional environment created by computer software.” deLahunta (2002, pp.105-106) refers to the Head Mounted Display (HMD) which was developed (in the late 1960s) from the ideas of Ivan Sutherland, an American computer scientist and Internet pioneer.

The HMD, “uses different left and right eye views to create the illusion of 3-D, to the CAVE (Cave Automatic Virtual Environment-1992 which is a three-dimensional environment/room-sized cube (deLahunta, 2002, p.106).The walls of this immersive room are covered by projected images as it shows in fig. 12, and during the navigation inside this

cube, the user is wearing the HMD/headset, using also “wands, data gloves, joysticks, or other input devices” (ANTYCIP SIMULATION, n.d.).

In 2013-2014, I had the opportunity to work with VR CAVE as an intern member, in the ICT Lab (Immersive Creative Technologies) during my Bachelor Degree. ICT Lab (2017) focuses on “the areas of computer vision, computer graphics, virtual/augmented reality and creative technologies, and their application in a wide range of fields.” During this period, I took part in a project to create/design a virtual museum where the user had the ability to move around the CAVE/museum, wearing headsets and holding a joystick. Through this experience, the user was able to select an object from the museum and observe it from all its angles. Through this process, to be able to have full experience of the project, you had to participate wearing the headset and control the environment by holding the joystick to be able to select objects or open doors, and simultaneously walk and move your body and head in different directions. Of course for this to have been successful, having confidence in VR CAVE, and for someone new to the environment, the provision of instructions were necessary. Nevertheless, the experience from an observer outside the CAVE or even inside (without any control on the space) would have been very different.

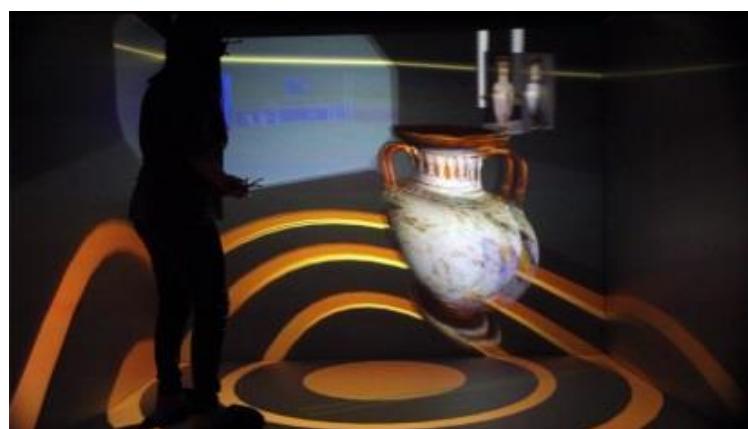


Figure 12: ICT LAB. *Virtual Museum* (2014)

The idea of exploring the immersive virtual environment as a choreographer or dancer following a concept and idea, of course, differs from the experience inside a virtual museum. However, the reason for mentioning this is that, through my experience, the dancers would not have the ability to communicate as performers with the audience, and the audience would not have been able to follow the dancer's performance in an enclosed immersive environment. DeLahunta (2002, p.112) concludes that for better "conditions of choreographic responses to virtual reality", the choreographers and the creative technologists will require more attention to incorporate dance into such environments. So, it could be said that VR headsets might be useful for a dancer to explore her body in a virtual environment (from a computer), which maybe later could be a real set production. But, it would not be very useful to present a dance performance, involving more than one dancer and an audience. I believe, as deLahunta said in 2002, the choreographers and the technologists need to collaborate and pay more attention to such technologies.

Networked Environments

Networked environments are performances which use cameras, microphones, monitors and network to communicate, for example, in two different places like the work of Paul Sermon: *Telematic Dreaming* (fig. 13) from 1994. The reason of introducing *Telematic Dreaming* in the section of "The recent Development of Digital Scenography", is because of its originality. Technically and conceptually it could be a more recent performance work.

Paul Sermon is an interactive media artist who specialises in telematics and telepresence research. *Telematic Dreaming* was a live telematic video installation by Sermon, who created a virtual space using a technology called *telepresence* (Kozel, 2007, p.86). The performer and a member of the audience were performing in a space that was created by

technology. Susan Kozel was the dancer in *Telematic Dreaming*. Kozel is an award-winning performer, phenomenologist, choreographer and writer who focuses on physical experience in combination with digital technologies (Fontaine, 2002).

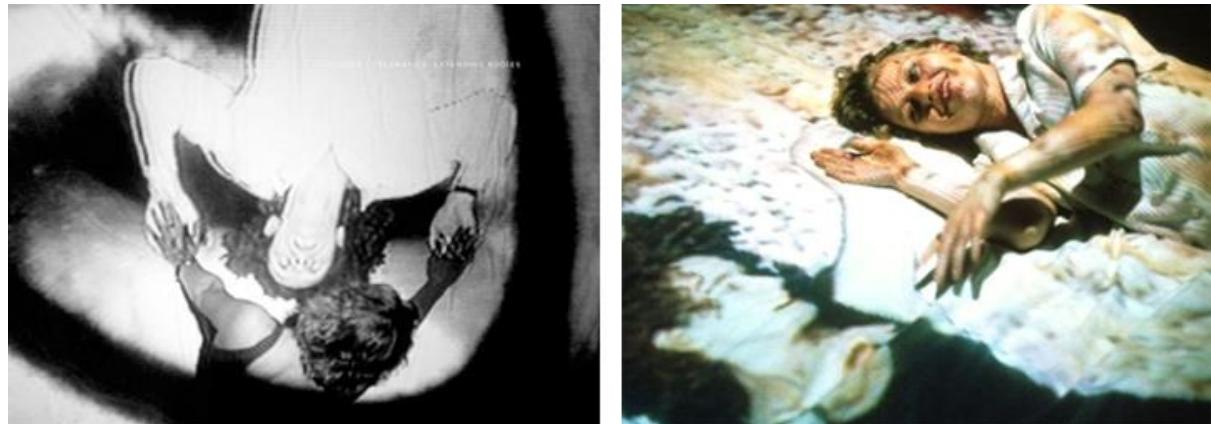


Figure 13: Paul, Sermon. *Telematic Dreaming* (1994)

During the performance, Kozel and the audience member were in different rooms, inaccessible to each other. Each room had one bed, video projectors, monitors and video cameras. Members of the audience were invited to lie on the bed individually and interact with the artist who was in the other room far away from the public. The member of the audience was able to see the image of the artist, projected onto the surface of the bed in their room. Then, the artist in the other room had the ability to interact with the actions of the person by watching both of their movements through a monitor, while also being able to see their own movements through another monitor.

Kozel (2007, p.92) performed in Paul Sermon's installation for four weeks in an exhibition in Amsterdam called *I + the Other: dignity for all*. She described her experience as a dancer and theorist in this virtual space. The interaction between her and the strangers was unpredictable with cautious and hesitant actions. There were moments of sexual violence against her; even when she was in another room without any physical contact, someone

made an uncomfortable gesture by taking out his knife while she was projected onto the bed (Kozel, 2007, pp.96-97). Nevertheless, she also went on to describe her experience with a kind man where after their interplay, he came for a second time just to offer her a rose.

Acting with a stranger through virtual technology without knowing what is coming next, created an environment of emotions, dialogue and exchange of thoughts through improvised body movements. Because she was given the opportunity to see herself during the interaction – Kozel, the performer, was creating different shapes with her own body, and the audience member's bodies.

For the performance, Sermon created a space, which in reality does not exist, but where at the same time the audience and performer were living the moment, observing and communicating in a third-dimensional space full of mixed feelings and energy. Kozel (2007, p.92), for example, apparently experienced the relationship between her “cyber-body and her fleshly body”, concluding that her real body at the end, did not abandon her, while she was travelling in a three-dimensional space.

Derived Environments

Derived environments or performances are characterised by motion capture data and projection techniques to represent images according to live choreography (Mullis, 2013, p.112). DeLahunta (2003) describes motion capture as a “measuring instrument” which calibrates the real world units into internal units, to be used from the computer. In other words, the movement of real bodies can be transformed into data bodies (deLahunta, 2003).

Mullis (2003, p.112) demonstrates his point with an example of a derived performance using motion capture, *Biped* (fig. 8, fig. 9) from Cunningham's collaboration with The OpenEnded Group (Kaiser and Eshkar). According to Birringer (2002, p.89), "optical motion capture enables digital 3-D representation of recording moving bodies", where later the animator-choreographer can extend and change their formation and structure (recorded data from the dancer/s). An example of this is Cunningham's decision to present his work *Biped* on stage, incorporating both the performers and the projected animations using the method of motion capture.

Mixed Environments

While Birringer's essay "Dance and Media Technologies" (2002), theoretically divided the environments for dance into four basic types (2002, p.88), he did allude to the possibility of mixing elements of these environments together (Birringer 2002, p.89). Over the sixteen years since the publication of Birringers' essay, a lot of changes have happened in the world of digital scenography as a result of experimental performances with mixed environments and accompanying theoretical/critical documents. Indeed, Birringer himself has contributed to the changes, through his choreographic installation *UKIYO*, presented for the first time on June 1, 2009, in the Artaud Centre and the revised version of 2010. These raised, for me as a practitioner, some complex ideas and understandings, and also created more questions, which needed to be addressed in the developmental and final practical aspects of this research project (see chapters 2 and 3).



Figure 14: DAP-Lab/dans sans joux. left side: *Rehearsal for UKIYO* (2009), right side: *UKIYO* (2009)

UKIYO explores the potentials of moving in material and immaterial spaces focusing on “three primary dimensions” – of the space where the dancers were performing; the images coming from digital objects and virtual spaces (through projections); the sound coming from recorded and live ambient sounds, mainly, from the dancers’ movements and costumes (Birringer, 2010, pp.1-4). The space had five runways (or *hanamichi* – from the traditional Japanese Kabuki theatre) represented by white strips on a black floor as the main “stage” for the dancers to perform/improvise on (Birringer, 2010). The dancers also had the opportunity to perform outside the strips and communicate with the audience. In addition, the audience was able to move around the space as well as to follow the dancers on “stage”. The space had three suspended screens, each one of which was projecting different images, such as animation, video and virtual worlds from Second Life. The virtual world was a design of the same real live-space of the performance, connected online with avatars. The creation of the virtual world was a collaborative work with Keio University (Tokyo). Mainly it

was an installation of exploring the possibilities of audio-visual spaces and the outcome of the generated data, to create an indirect relationship between presence and plasticity; and between the real/unreal (virtual) world, the dancers and the audience (Birringer, 2010). However, Birringer, (2010, pp.13-14) came to the conclusion that the space was too large, yet it had the positivity of freedom, to breathe moving around the space. He also commented on the position of the audience as an observer and participator, without being immersed in a virtual reality, but still being able to recognize the material space and the projected digital worlds coming from the three screens. Responding to the results of *UKIYO*, Birringer in 2010 went further to recreate *UKIYO*, improving the projected environments, moving the installation into another space, changing the shape of the screen. As it shows in fig. 15, the lighting and the aesthetic approach of the installation differs from the other *UKIYO* performance in 2009.



Figure 15: DAP-Lab/dans sans joux. *UKIYO* (2010)

The reason of giving emphasis to the work *UKIYO*, is to address the different experiments and methods that have been used for the creation of site-specific choreographic installations. Birringer the creator of *UKIYO*, Michèle Leila Danjoux the costume designer

and Oded Ben-Tal the music composer of the performance, along with the rest of the team, challenged the existing dance and stage design ideas, extending the “use” of each scenographic and digital object/element. Birringer, escaped from theatre and the extension of the stage from the large transparent screens, giving another identity to projection, which worked more as an existing and interactive/digital object, along with the audience, the performers and their costumes, which also generated sounds.

By contrast with Birringer, however, there are also contemporary artists and choreographers who are experimenting with projections and lighting using the space differently, and giving the character of something beautiful to watch – which in a way, might characterize as simple and attractive.

“Simple” Digital Scenography Projects

Glow (fig. 16), is another digital/interactive performance which presented by the Australian dance company Chunky Move, at the Hellerau Festspielhaus in 2007, during the CYNETarts Festival (Birringer, 2015, p.177). It was a twenty-seven minutes performance with two dancers, and image projections reacting to their body movements; exploring the beauty of supernatural worlds through logic and lines, and the relationship between the human and the machine (Weiss, 2006). Frieder Weiss (2006), a German software artist and the interactive system designer of *Glow*, in his website, explains that using the video tracking software, Kalypso, the images were generated live, very close to the body movement.

Birringer (2015, p.177), describes the *dispositif* of the performance, as very simple, with an overhead camera on top of the stage, to track the body movement of the dancers, and a projector next to it, which was projecting the visual graphics, “downward onto the body

performer and the floor”, creating mostly black and white contouring silhouettes from the performer, and aesthetic/minimal lines, curves and other polygonal geometries.

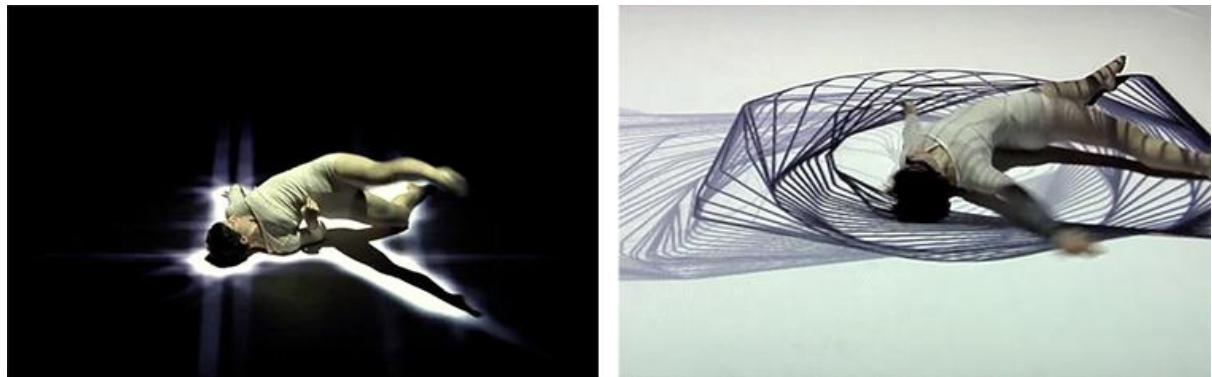


Figure 16: Chunky Move. *Glow* (2007)

Zero Point (fig. 17, fig. 18) is a new performance by Darren Johnston, characterised by its innovative architectural projections, using light mapping and motion sensing technology and the ambient, electronic sounds by the pioneer of experimental music, Tim Hecker (Array (b), n.d.). Johnston is a multi-award winning choreographer, sound and visual artist (Array (a), n.d.). His work involves an exploration and experimentation in dance aesthetics and technology, working in theatres, site specific spaces, galleries and outdoor locations. Having the opportunity to watch live *Zero Point*, on the 26th of May, 2017, at the Barbican theatre, there was a strong atmosphere of hypnotic, almost spiritual geometric, virtual architectural and video projections (Barbican, n.d.). There were nine Japanese dancers trained in contemporary dance and neo-classical ballet. Their movements were based on structured choreography but with some improvisation. These movements, along with the ceremonial atmosphere coming from projected light and geometric shapes, the characteristic soundscapes, and the effect of the smoke on stage, created a mixture of feelings between awe, fear, calmness and surprise.

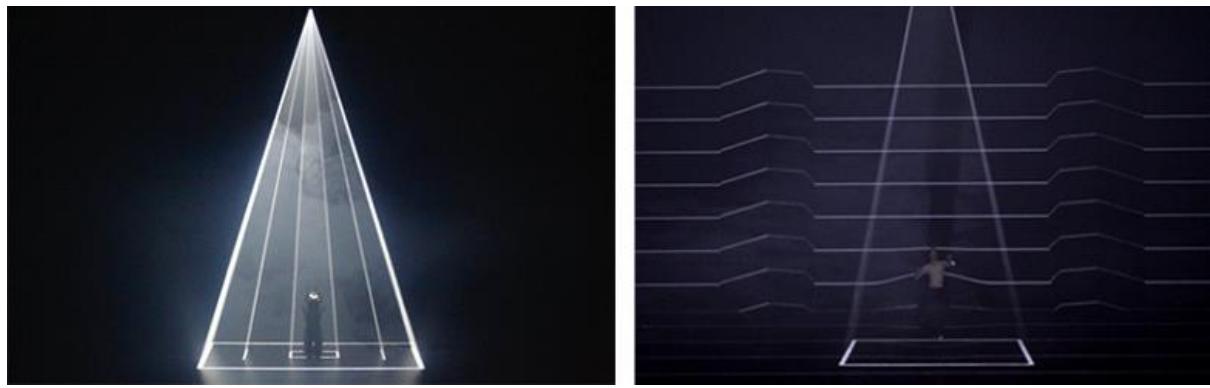


Figure 17: Darren, Johnston. *Zero Point* (2017)



Figure 18: Darren, Johnston. *Zero Point* (2017)

Both *Glow* and *Zero Point* were using motion tracking sensors and projection techniques for their artistic, conceptual approaches, however, with a minimalistic and simple approach.

Both of the works had no scenery props, but they were presenting an illusionistic character through the projectors from an elevated position above the dancers. On the one hand, it could be argued, that *Glow* was almost a two-dimensional performance, followed by the shadows of the dancer who was performing mostly with her full body parallel to the floor.

On the other hand, *Zero Point* created a live virtual shape wherein the geometric forms were coming from light/projection combined with smoke effects, which raised the question of whether it was a material, tactile shape. However, the advanced technological and

technical light mapping techniques had a strong impact on the stage design, the performers and the audience.

Birringer (Salazar Sutil & Popat, 2015, pp.180-182), also mentions that *Glow* relied on the system controller, the Kinect camera (see chapter 3) which responds to the movements of the dancer and according to him, the dancer was able to create her own rules, deciding her next move. Instead of confronting technology, as a new device or medium or a performance partner, for the body to experiment with or, “deform or drift off”, it allowed the performer to be more cautious about how she was moving. It seems like they did not want to “break” any dance techniques or rules – they wanted to keep it safe and simple. This does not necessarily mean that the movement of the dancers and their approach to performance with digital/interactive technology is underrated or not unique. I believe what Birringer means is that the visuals that have been created for the performance, and the approach that the programmer and dancer chose to work with, were simple and easy to be fitted in a performance, from the perspective of having the dancer, for example, adapting to the contouring silhouette of her body, transferring, then, her own body movements to the floor which works more like a mirror, a reflection of herself. Thus, Birringer (2015, p.182) presents the idea behind *Glow* as a performance which, was “blind” to the rules of dance – however, the body was “con-formed” to the use of real-time system, fitting into the visual graphics.

In my research and practice, I experimented with the Kinect camera as well, creating the “un-scripted” visuals for the *Vastness* performance (see chapter 2); however, the approach that I took differed from the idea of *Glow*, which I discuss in chapter 2 section 5, and the conclusion chapter.

To conclude this section, the progress and experiments of technology, dance, and digital environments of scenography since 1999, arguably, are not necessarily clearly classifiable into groups, or types of environments, but I would say that they belong to a multidisciplinary field of studies, trying to express their concerns and questions of the dance movement and the development of the technology. Some people are taking more artistic and conceptual approaches, others are investigating the possibility of a new movement of dance through technological innovations, and others are interested in the stage design. It is a very open field.

The next section focuses more on the understanding of performance with emphasis on the works of Cunningham and Forsythe, *Biped* and *Decreation*, as two of the main influences on my project, and also referring to the phenomenological theory of Kozel.

Performing in other spaces

On one level, performing in other spaces might just relate to the use of spaces, either indoor or outdoor, that are different from the traditional theatre, and in that sense may be unfamiliar to the dancers or to the audience. At another level, however, performing in other spaces may also relate to unfamiliar or unexpected experiences that derive from the staging, choreography and scenography of the performance. The first two sections of this chapter, “The Roots of Digital Scenography” and “The Recent Development of Digital Scenography”, give a variety of examples of this.

Since the introduction of immersive, virtual, interactive, and digital scenographic techniques, the choreographer, the dancer, and the audience experience something else; the “other”. This “other”, could also be a device that receives data from body movement

and generates it into visual graphics or an installation “covered” by projected images onto specific objects or fabrics, creating illusions. In this section, I discuss the position of the dancer in relation to these other spaces, mainly referring to the works of Cunningham, Forsythe and the phenomenological aspects of Kozel’s writing. All three of them experimented with body movement, spaces, and technology, with the final step being the presentation of an artefact in front of an audience or the existence of the dancers in a place with the audience.

Biped, the work of Cunningham, Kaiser, Eshkar and Bryars, as noted in section 2, was a performance, wherein dancers strictly choreographed by Cunningham, performed alongside projected abstracted, animated images of dancers derived from motion capture of the dancers’ movements as dictated by Cunningham, along with a musical accompaniment. Kaiser (1999), in *La Scena Digitale*, an Italian anthology on technology and art, mentioned that the idea was to work separately on the three main strands of the dance: the choreography, the music and the visual décor. The aim was to bring these strands together at the dress rehearsal and at the opening of the performance.

Cunningham was never very explicit about what he intended to do in his projects, and regarding *Biped*, told the visual artists and the musician: “that it was ‘about technology’ and would be like ‘flicking through channels of TV’” (Kaiser, 1999). Kaiser (1999) notes that Kaiser and Eshkar had only five minutes of motion-capture of Cunningham’s choreography, to animate and draw figures for the animation, without losing the basic and real perception of the body movement. *Biped* was a 45 minutes performance using 25 minutes of animation from 15 seconds to 4 minutes for each sequence. The animated images ran discontinuously during the performance and among the live dancers, with the accompanying “poignant music” of Bryars, characterized by its “mixture of string instruments and electronic sound”

(Dils, 2002). As Kaiser (1999) stated, Bryars chose to ignore the little hints that Cunningham gave them, following a continuous piece of music – without a break, creating a beautiful and romantic piece, which in the end, was perfectly related with the dance.

Sanjoy Roy (2008), a dance critic, makes reference to Cunningham's approach to choreography, as based on “people moving” but without the connection of feelings, music or stories. Cunningham's dancers, were likely to look like they were performing in a balletic style, but his methods were completely different. He was interested in line and shape, focusing mostly on “unexpected changes of weight or direction, arms that don't 'go' with legs” (Roy, 2008).

Cunningham apparently loved to integrate the “unforeseen into his work” (Roy, 2008). Hence, perhaps, his decision not to unite the three strands of the performance until the last minute. It is likely therefore, that Cunningham had to make sure that the dancers followed the steps he had taught them, and metaphorically, forgot about the music and the visual images. Yet the dancers also had to recognise the existence of music and images as part of the space and the performance, to complete *Biped*.

The performance, combining the different movements of the dancers and the virtual/projected dancers, with the projected dots and shapes, and finally the rhythmic and melodic sounds of Bryar's music, was equally challenging for the audience. At the beginning of *Biped*, Dils (2002) had wondered if the brilliance of both the digital projections and Cunningham's dancers could possibly match together. By the end of the performance, however, her conclusion was that Cunningham's dancers had been transformed by technology, and simultaneously the portraits of the projected virtual dancers were echoing the perfection that had “already achieved by the human dancers”. In relation to this idea,

one of the stage dancers, Jeannie Steele, mentioned that while she was dancing “with” the projected figure, she felt that she was dancing inside herself (Kaiser, 1999). Moreover, for Dils (2002) the performance was a work of illusion as allusion. The virtual dancers were actually real bodies during the motion capture process, and when their almost abstract, sketchy appearance on stage was connected with the real dancers, there was a transition from reality to materiality and back to reality, wherein, the illusion of the materialistic bodies was not anymore a decoration. Through the work of Cunningham, Kaiser and Eshkar, Dils (2002) also realized the meaning of being a human in the twenty-first century, where the environment continues to grow its “complicated network of the natural, the socio/cultural, and the technological.”

Whereas *Biped* was performed in a theatre stage including only projected images onto a transparent scrim in front of the stage/proscenium, Forsythe’s work, *Decreation*, as mentioned in section 2 “The Recent Development of Digital Scenography”, was staged in a theatre space with a table, some chairs, and a screen which projected live recorded data from the dancers’ movements. Nevertheless, like *Biped*, it provided an unexpected, unfamiliar experience of “otherness”, although by different means.

Forsythe borrowed the name from an opera libretto by the Canadian poet Anna Carson (Boenisch, 2007, p.17). Boenisch (2007, p.17) explains that the opera is based on three autobiographies of historical women who suffered because of love, jealousy and religion resulting in self-destruction. Forsythe focused on “the inside of the definition of moving bodies” as a metaphor for his choreographies. The formation of the bodies in *Decreation* was interplaying with the inner world of the three women, creating spastic body shapes, as it shows in fig. 19, from the inside to the outside world. Instead of facing a beautiful world

of aesthetic bodies, costumes and a stage design of traditional ballet dance, the audience experienced a non-traditional performance with conversations (from the dancers), voices, “de-created” and ugly, abnormal shapes of human figures with uncentred and isolated bodies. In addition to the sounds of the performance, there was a live synthesizer played by the musician/accompanist David Morrow who composed the score for *Decreation*. Boenisch (2007, p.18), concluded that *Decreation* “indeed became an opera sung by moving bodies.”



Figure 19: William, Forsythe. *Decreation* (2003)

According to Curtis L. Carter (2015, p.18), a professor of Philosophy of aesthetics, he refers to the word empathy, relating the experience of the audience with the dancers. He states that, “viewing a performance”, the spectator could be connected to the dancer’s movement, according to the personal and cultural experiences (of the viewer), creating empathy (Carter, 2015, p.18). In *Decreation*, probably, the viewers’ experience, associated with the “affective mode” created by the dancers’ unusual shapes. This “affective mode” could be identified through the “expressive behaviour” of the dancers, which was responding to the viewers’ imagination and perception (Carter, 2015, p.18). The bodies were taking ugly shapes, talking and isolating on stage during the performance; the emotional situation of the audience, could have been related with the dancers’ pain, and

muscle tension, creating sadness, melancholy or discomfort (to the viewers) – resulting to a state of empathy between the dancers and the audience(Carter, 2015, p.18).

Forsythe's work is characterized as “strategies of ‘de-creation’” as his dancers were in a process of “ex-scribing” themselves (Boenisch, 2007, p.15). The dancers were no longer dancing for themselves as individuals but they experienced the process of presenting and presence-ing their bodies (Boenisch, 2007, p.16). Boenisch (2003, p.19), refers to the rehearsals of *Decreation*, when Forsythe asked his dancers to be tied together with ropes in pairs and then start to move, which created one movement for both bodies, following the same physical direction. This gave the sensation of “being moved” without any command, instead “the limbs, muscles and ankles had suddenly developed their own minds” (Boenisch, 2007, p.20). Then, Forsythe asked the dancers to untie themselves and perform again the same movement sequences, creating thus “behaviour without intention” and “indirected actions” (*ibid.*).

The work of Forsythe, mainly during the 20 years at Ballet Frankfurt, was about the response of body movement in different spaces rather than continuing to work on a variety of ballet techniques (Boenisch, 2007, p.23). The dancers had to “forget” how they used to be trained for many years and get lost in a world where bodies were more stretched, and their muscles were more tensed, paying attention to the sense of proprioception; wherein, brain takes control and not the will (Boenisch, 2007, pp.23-25). Thus, *Decreation* and many other works of Forsythe were focused on improvisation and the creation of gestures.

Both Cunningham and Forsythe were experimenting with body movement, going one step further each time, discovering new possibilities for the body to exist in the same environment simultaneously with technology. The dancers, essentially, had to respond to

the terms of each choreographer. On the one hand, if the dancers were working with Cunningham, they were about to create an environment around them in which their body was far away from their inner world, by focusing, mechanically, on each part of their body individually. Then, having learned their steps from Cunningham' instructions, they were able to create sequences by chance, on stage for the first time, in relation to the visual stimuli.

On the other hand, Forsythe was exploring the body movement and its tension, coming through the physical states (Siegmund, 2004), ignoring any sequence of steps. He was into the idea of proprioceptive sensation, with the body being aware of its position in space, creating gestures of persistence and finally, this would have embraced the "ethics" of moving bodies as outlined by Kozel (Boenisch, 2007, p.27).

Kozel (2007, p.70), refers to the embodiment of "ethics" in performance, incorporating bodies and technologies. She indicates that the "ethics is performed in the moment", through the inner and outer world of the performer, following a process of translating, discovering, and having feelings of surprise, anger, fear and sadness. As a phenomenologist, Kozel (2007, p.69) argues that everyone is able to perform in her everyday life and use technology as part of it. But "performance cannot mean everything", since there are people who go to a dance studio, where the environment is connected with technology, and the dancer has to understand technology – then through her body and the presence or the moment, she will create "conceptual and experiential infrastructures" (Kozel, 2007, p.69). She believes in a reflective intention and the decision of the performer "to see/feel/hear" while she is performing, and while she senses the others performing as well (ibid.). For her, this is the key; to be "aware of what we are doing while we are doing it" (ibid.). While Kozel and Forsythe were more into the idea of improvising and creating the ethics of performance

during the specific moment, Cunningham was more interested in creating steps characterized by line and shape, to enable the dancers to create generative sequences when confronted by the unfamiliar images and sounds that were part of the public performance.

Conclusion

This chapter began by outlining some of the significant roots of digital scenography, in the precedents set by the non-digital, multimedia scenographic experiments by Burian and Svoboda between the 1930s and 1950s. It then focused on some of the more recent developments in digital scenography from the late 1990s to 2017, with particular emphasis on theoretical and practical examples that became key inspirations for, or influences on my own practical performance project, *Απεραντοσύνη/ Vastness*, 2016. These include the work of Svoboda, Cunningham, Forsythe, Bardainne and Mondot, Chunky Moves and Johnston, as well as the writings and practices of Birringer and Kozel on performance and technology.

Because I was approaching my research project from a background in the fields of visual/digital/interactive art, set design and film production, but with a new focus on body movement, the research into the history of the theories and practices of digital scenography in dance performance enabled me to have a better understanding of two things. Firstly that dance performance is something that creates tension, pain, and stress to the dancers' bodies, and sometimes feelings (see more in chapter 2 section on "Somatic experience in unknown environments and body movement in the sense of aesthetics"). Secondly, that the incorporation of body movement and technology in a dance performance is a difficult and subtle process. The possibilities and precedents provided by the historical and theoretical research presented in this chapter, as will be seen in chapters 2 and 3, provided the

inspiration and groundwork for planning and developing the practical element of the research project, the experimental dance performance *Απεραντοσύνη/ Vastness*.

CHAPTER 2

ΑΠΕΡΑΝΤΟΣΥΝΗ/ VASTNESS PERFORMANCE PLANNING

Introduction

This chapter analyses some of the key artistic, theoretical, philosophical and conceptual foundations of the project that were important to the planning process. To contextualise these analyses it begins with a brief description of the final performance, focusing on the key characteristics of the work that will be discussed in this chapter and in chapter 3. The discussion then explores the roots of the central concepts behind the storyline of the performance. In relation to the title of the work, *Απεραντοσύνη/ Vastness* focuses particularly on the idea of the “sublime”, mainly according to the theories of the philosopher Edmund Burke from the period of Romanticism, but also referring to its expansion in the twenty-first century, relating to the powerful use of digital technology in dance performance. The chapter then goes on to discuss the choice of stage design and the involvement of somatic experience (dance) in unfamiliar spaces, the desired role of the music in relation to both projected animation and interactive imagery.

Description of *Απεραντοσύνη/ Vastness* Performance

Απεραντοσύνη/ Vastness project was presented for the first time on the 16th of September 2016 in a site specific space at the Attic, in the Forum Hertfordshire, University of Hertfordshire, College Lane Campus. It was a choreographic installation, based on digitally mediated elements of projected images/animation and interactive generated graphics, in association with live performance and experimental music. As it shows in fig 20, its

constructed cylindrical architecture, surrounded by transparent fabric allowed two dancers inside the structure to experience all of the projected, scripted and un-scripted visuals along with a composition of evocative music. The installation/performance invited the audience to be involved as observers and spectators of the strange/natural phenomena of an audio-visual performance, while wandering around the space outside the structure.



Figure 20: Maria, Mitsi. *Απεραντοσύνη/ Vastness* project (2016) Sarah Ward performing

The performance space was encircled by the fabric, and there were four different sections of it, as can be seen in figs 21, 22, 23 and 24; the first quarter of the cylindrical shape was an ensemble of small strips hanging almost next to each other (fig. 21), while a wider size of strips (fig. 22) was placed next to each other. Following the strips, the next quarter was covered completely by a huge piece of organza (fig. 23), while the fourth quarter was composed of suspended strips sequencing the shape of the circle as it shows in fig 24.

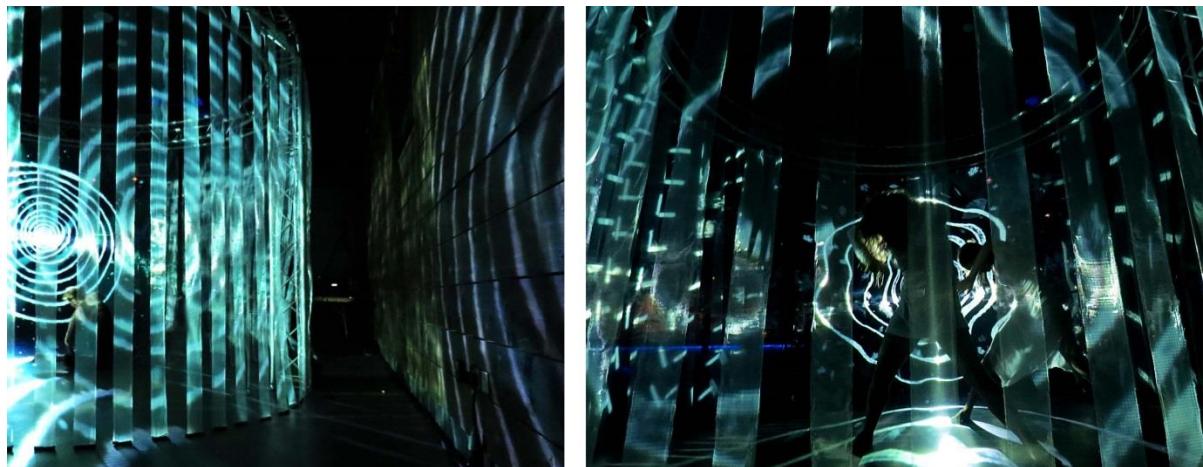


Figure 21: Maria, Mitsi. 'Απεραντοσύνη/ Vastness' project (2016) the first quarter of the circular construction was an ensemble of small strips hanging almost next to each other, Ward and Penn performing during *Vastness*



Figure 22: Maria, Mitsi. 'Απεραντοσύνη/ Vastness' project (2016) the second quarter of the circular construction was a wider size of strips, placed next to each other, left side: Ward and Penn performing before the presentation of *Vastness*, right side: Ward and Penn performing during *Vastness*

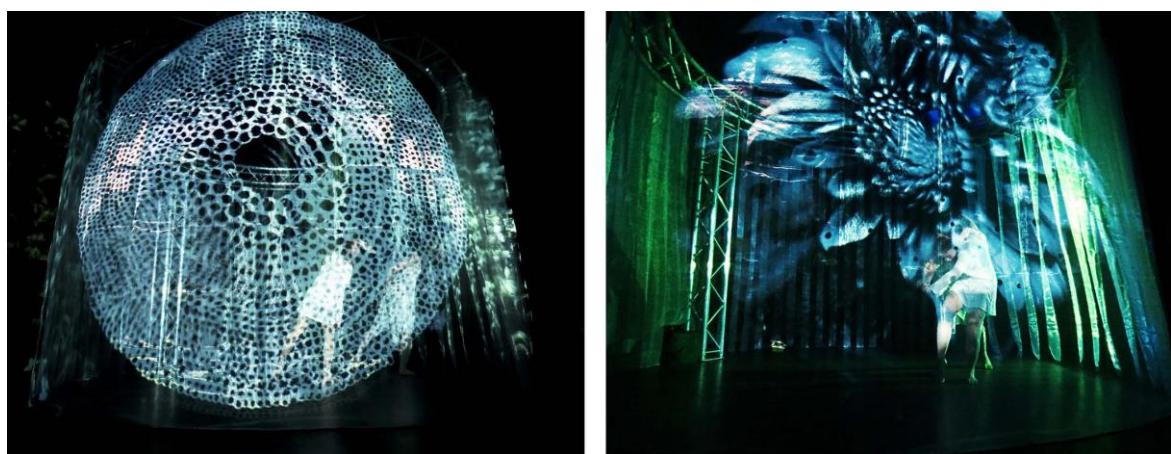


Figure 23: Maria, Mitsi. 'Απεραντοσύνη/ Vastness' project (2016) the third quarter of the circular construction was covered completely by a huge piece of organza, Ward and Penn performing during *Vastness*

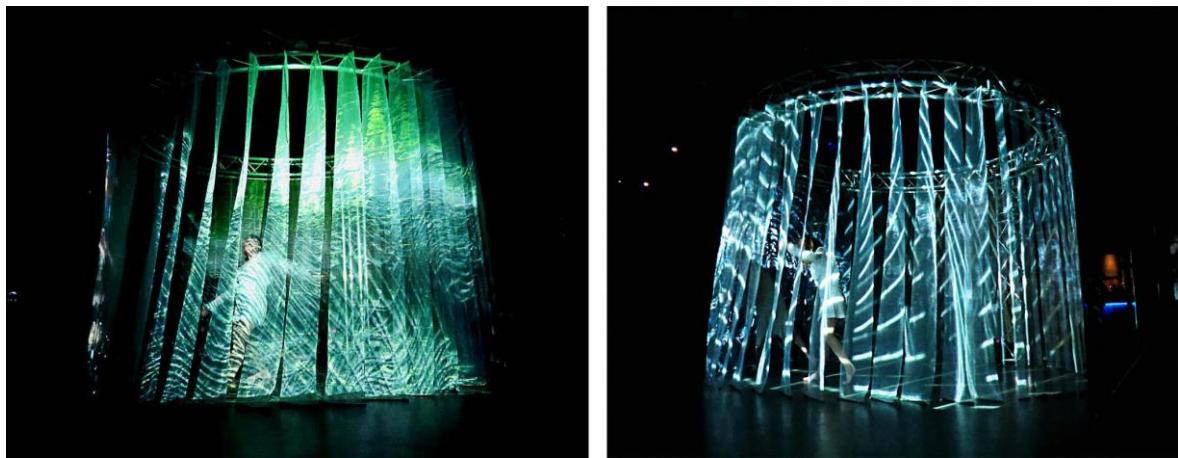


Figure 24: Maria, Mitsi. 'Απεραντοσύνη/ Vastness' project (2016) the fourth quarter of the circular construction was suspended by strips sequencing the shape of the circle, Ward and Penn performing during *Vastness*

Two projectors were focused on the structure. The first projector projected images of a pre-made experimental animation, while the second projector presented interactively generated graphics, which moved and changed according to the actions of the dancers in the space. Based on the darkness of the site specific space, the projected images took protagonist roles amongst the dancers and the music.

Conceptual foundation of the project: the sublime and its relation with body experience

Conceptually the project was initially inspired by the gravitational force of the moon upon the ocean waves and earth, the cycle of human life, natural phenomena and generally by the term “sublime” as defined by the eighteenth-century theorist and philosopher Edmund Burke (1729 - 1797). The term “sublime” is also related to our century, but it could be said that now it has also taken on another meaning as discussed by the professor of philosophy specializing in visual aesthetics, Paul Crowther (1989, pp.73-75), relating to the powerful use of incomprehensible and invisible digital technology. Crowther (1989, p.75) argues that the “sublime” can be created in the studio of an artist, as well as in a laboratory and cites Jean-François Lyotard (1924 - 1998), a French philosopher, who identifies a contemporary

experience of the sublime through digital data, “which, in themselves, may not be physically vast or destructive but, rather, overwhelm us by their complexity” (Crowther, 1989, p.74). Thus, Crowther (1989, pp.74-75) concludes that the “de-materialization” of the body experience with the “modern techno-scientific culture” led to a sensible and genuine postmodernism wherein the inconceivable “realm” becomes the “rational endeavour itself”. So the embodied human endeavours to be part of the impact of the science and technology, which , on the one hand is imaginatively impossible to understand, but simultaneously is impossible to ignore because of the revolution of “modern materials”, which are part of our life. In relation to dance/body reaction to technology, their definition changes from being “simple” materials to a complex, de-materialised “web of data” Crowther, 1989, pp.73-75). As will be seen, while the title of my project, *Απεραντοσύνη/Vastness*, is derived from one of the material causes of sublime experiences as defined by Burke, the performance/installation also engages implicitly with Crowther’s notion of the “modern sublime”, through its use of digital technology.

According to the online publication *British Art and the Sublime* by by Christine Riding, the head of art and curator of the Queen’s House at Royal Museums Greenwich, and Nigel Llewellyn, an art historian (2013), historically the word (sublime) has been a way of “expressing the unknowable” by transcending its definition. It is part of the “philosophical aesthetics and literary criticism” relating the work of writers, poets, musicians and artists who were looking for something that travels beyond. Riding and Llewellyn describe the sublime as a state of mind, an emotion and a judgemental response to art or nature. The origin of the word derives from the two Latin terms, *sub* and *limen*. The preposition *sub*

means something that is below or up to, while the noun *limen* is related with the words limit, boundary and threshold (Riding & Llewellyn, 2013).

As mentioned by Riding and Llewellyn (2013), the Irishman Edmund Burke (1729 - 1797) is one of the well-known theoreticians and philosophers who have talked about the idea of the sublime as being surrounded by complexity and power. Burke's *A Philosophical Enquiry into the Origin of Our Ideas of the Sublime and Beautiful* published in 1757 refers to seven aspects of the idea of sublime and its connection with natural phenomena and the natural world:

"Darkness – constrains the sense of sight (primary among the five senses)

Obscurity – confuses judgement

Privation (or deprivation) – since pain is more powerful than pleasure

Vastness – is beyond comprehension

Magnificence – in the face of which we are in awe

Loudness – overwhelms us

Suddenness – shocks our sensibilities to the point of disablement"

In the *Philosophical Enquiry* (1957) Burke studies the experience of sublime and beauty, from formal to material to efficient causes (Ryan, 2001, pp.268-269). For example in Part I he examines the passions of fear and love as the formal causes of the experiences of the sublime and the beautiful, while in Parts II and III he continues with defining the objects created from the emotions of sublimity and beauty (Ryan, 2001). Such objects are the vastness, the magnificence, the obscurity and the suddenness, which produce the feelings of sublimity and awe. The last part refers to the "efficient cause" creating specific changes to the body in terms of nervous or psychological reactions. In Burke's view, analogous

properties of the mind and nerves affect the body, without having a particular reason for a specific reaction of the body.

Generally, Burke presents the sublime as an exploration of “the question of how we make sense of our experience” (Ryan, 2001, p.265). In relation to this, Ryan’s article (2001, p.266) in *The Journal of the History of Ideas*, refers to the sense of the subject and the exaltation, the transcendence and the overpowering of mind, as the physical and mental reaction of the subject to nature.

According to Burke’s theories of the sublime, he relates subjects with Englishmen and members of the Parliament who experience cultures which are strange to them, recognizing their moral responsibilities to those civilizations. In the face of the vastness, the complication and the obscurity of those cultures, the experience of the sublime will eventually lead them to make decisions according to their judgment skills and to the diverse customs and ethics of those people (Binney, 2013, p.647). It could be argued, however, that the same subjects can be parallelized with dancers or any other human being who is familiar with specific objects, culture, and knowledge and experience the sublime, as an experience of what Burke called “self-annihilation” (Ryan, 2001, p. 268).

Annihilation, in a simple explanation could be the passage of moving forward into an unknown world, where the human being does not have the ability to measure a certain circumstance. Binney (2013, p.649) refers to the idea of the association between us and God, mentioning Burke’s proposition that we are deprived from perceiving the magnitude of God. Because the power of God is limitless, our imagination fails to become aware of His boundaries and limits. Thus, the subjects are “annihilated before him” and ultimately, they become insignificant in their own “finitude” (Binney, 2013, p.649). Where the subjects

sense their “minuteness” from the vastness of the object, this is the sublime experience: “when the imagination fails to grasp the dimensions and scope of the external object” (Binney, 2013, p.649).

Under normal conditions we feel comfortable when we observe a familiar object because it provides us with uniformity and steadiness. But, when this consistency is disrupted, then we have a sublime experience. Ryan (2001, p. 274) explains Burke’s argument that the sublime is bigger than us, as related to experiences of natural forces, where the mind cannot reach out and control them. She continues by identifying the greatness of nature as something which can cause a powerful response: astonishment (Ryan, 2001, p.270). Astonishment according to Burke’s *Philosophical Enquiry* “is that state of the soul, in which all its motions are suspended, with some degree of horror” (cited by Ryan, 2001, p.270).

This project has investigated, through artistic interpretation, the experience of human beings in relation to the unknown and unpredictable phenomena of nature, and its magnificence. In this case, two dancers take the position of the subjects. They are familiar with body tension, and their own physiology and techniques – generally they are also aware of a particular culture of movement, which allows them to function physiologically and psychologically to the outside world. This outside world could be a stage theatre, a rehearsal room, a specific space, outside in the streets or in natural surroundings. Since the sublime is connected with words such as magnitude, vastness and obscurity, we as humans cannot perceive the majesty and the limitlessness of nature. Through this imaginative and artistic journey, the dancers enacted a confrontation with the sublimity of nature, encountering a diversity of phenomena including the domination of technology in our century (the modern sublime), through the digital scripted/un-scripted images in the circular structure. The

structure was intended to correlate broadly with the moon, the earth and the cycle of our life.

My first attempt to structure the performance was to associate the motion of ocean waves with human movements, where in a parallel world, the dancers are the waves and the space is the earth. Having this idea in my mind, the perception of dancing through observation, experience and living among the ocean waves became a bigger concern regarding how the human senses the waves, which are part of a more powerful sensation. Studying the way that the waves are moving became more complicated in relation to how the subjects (the dancers) will react to them (waves). Based on the gravitational force of the moon, the sun and the earth, the balance and movement of the waves are disrupted. Tides are the biggest ocean waves and according to Gilman's (n.d.) online source *Oceans in Motion: Waves and Tides*, the moon has the bigger effect upon the waves as it is closer to earth. The website *The Ocean's Tides Explained* (MoonConnection, n.d.), indicates that the acceleration of the water is changing towards the moon while the earth is spinning on its own axis. The ocean water is at equal levels but it bulges while the moon is rotating around our planet by causing low and high tides. At the same time, when the water bulges on the one side of the earth, the same event happens to its opposite side as it shows in fig 25. This occurs because of the centrifugal force of the earth and moon. During a New Moon or a Full Moon the water is bulging at a higher level as the sun, the earth and the moon appearing at the same direction/line (fig. 26) (MoonConnection, n.d.). This phenomenon is called *syzygy* and originated from the Greek language meaning "yoked together". On the other side, when the sun is 90 degrees apart from the moon, the high tides are changing to lower tides (fig. 26). This means that the moon is already on its first or third row of its cycle, referring to the First

Quarter and the Third Quarter. Higher and lower tides occur twice a day (usually). Gilman (n.d.) explains that even if there are so many factors for the tides to be predicted, sometimes they cannot be perfectly foreseen by the astronomical calculations.

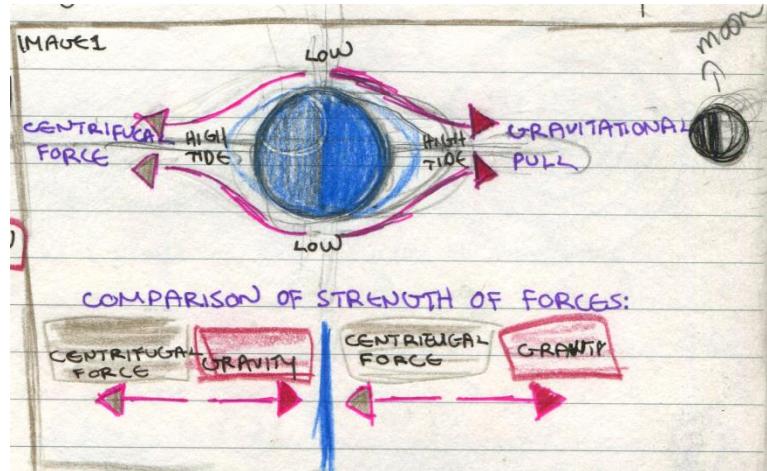


Figure 25: Maria, Mitsi. Sketch: *Gravitational force of the Moon* (2016)

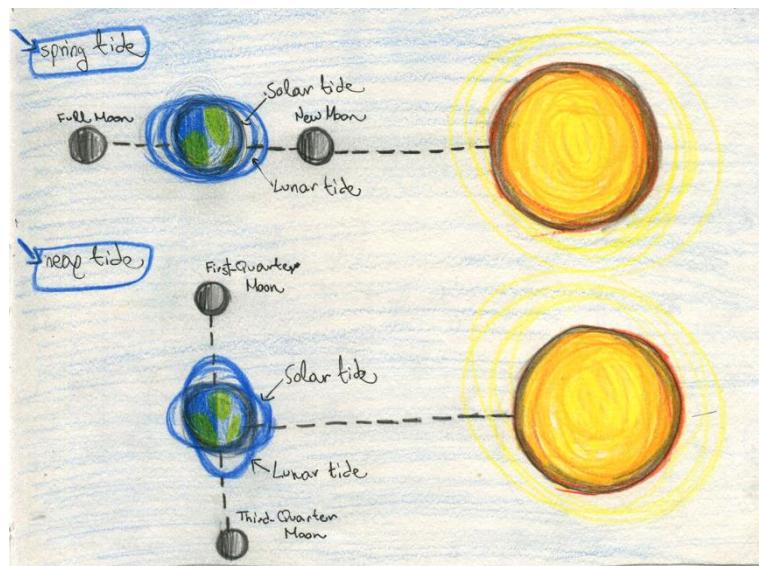


Figure 26: Maria, Mitsi. Sketch: *Moon, Sun and Earth* (2016)

Humans will travel trying to go beyond everything as a matter of curiosity wanting more each time. But nature is above us and sometimes there are things that we cannot perceive, understand, explain or realize. Burke argues that if the sublime is safe, helpful and accessible to our needs, it will “never be sublime”, for the sublime comes from “domination and destruction” (cited by Ryan, 2001, p.274). Ocean waves travel from tranquility to

agitation, chaos and loudness, where their motional situation comes from a powerful source beyond earth and beyond of what our eyes can see. Observing the calm, blue rhythmic waves of the sea, it will probably bring serenity and peacefulness to the subject. If the waves, however, become rhythmically faster progressively, with opposite directions and enormous sizes as it shows in fig 27 during *Vastness* performance, then terror and fear will follow. For Burke, terror is a “major cause of the sublime” which is associated either with something dreadful or it is acting upon the subject as something which is unpleasant and terrible (cited by Ryan, 2001, p.275).

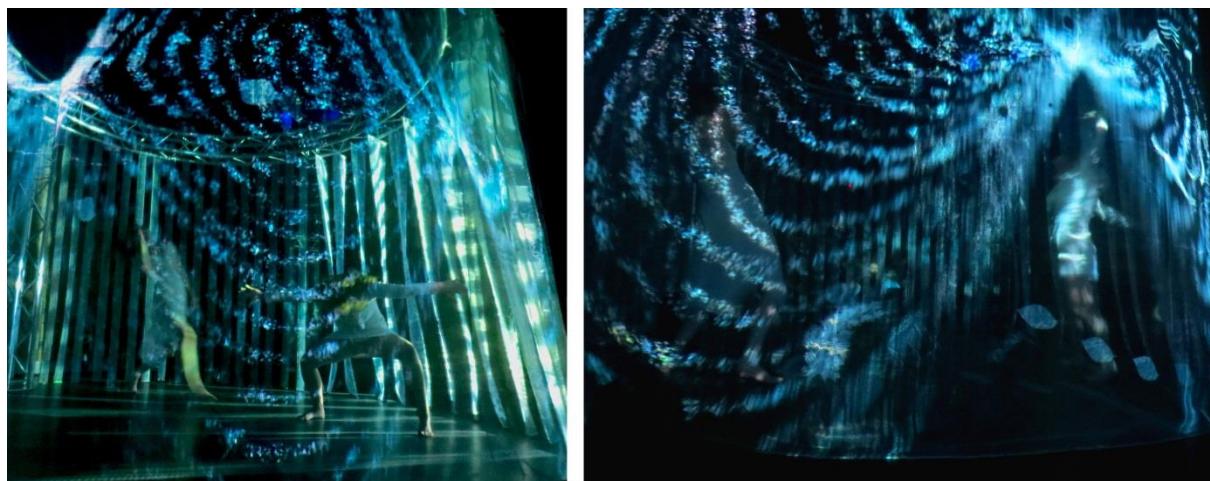


Figure 27: Maria, Mitsi. ‘Απεραντοσύνη/ Vastness’ project (2016) images of waves become rhythmically faster with enormous sizes, bringing terror and fears to the dancers/humans, Ward and Penn performing during *Vastness*

Shusterman (2005, p. 327), an American philosopher specializing in aesthetics, embodiment, culture, and generally in social and human sciences, in his “Somaesthetics and Burke’s Sublime” in the *British Journal of Aesthetics*, refers to Burke’s argument about the association of body and mind where somatic interference is changing our state of mind: “The bodily organs suffer first, and the mind through the organs”. Things like the tsunami, cause terror to people and thus it affects the body producing this mental situation of dangerousness and fear. Tsunamis are dangerous and they create an emotional situation of

fear and physical turmoil which destroys parts of our world, involving human lives.

Sometimes you have the chance or luck to survive from a tsunami. Seismic sea waves or tsunamis are caused due to earthquakes under the ocean and they travel tremendously fast in open water, causing catastrophes in shallows by reaching a substantial height (of water). Burke's conclusion about the experience of terror was that "the nearer [tragedy] approaches reality, and the further it removes us from all idea of fiction, the more perfect is its power" (Ryan, 2001, p.276). The subject becomes a witness of a tragedy, an event; the most of the sublime, the reality and the confrontation to the power of nature is dominating us. Through this loudness and vastness of events, there is another side which is related with delight and according to Burke it is "a sort of tranquility shadowed with horror" (cited by Shusterman, 2005, p.329). This sort of calmness will come from living through terror, fear, danger, soothing our pain and bringing pleasure to ourselves. Burke describes it as a "*passion of awe and astonishment*" (cited by Shusterman, 2005, p.329). It is that moment of the soul, "in which all of its motions are suspended, with some degree of horror" (Ryan, 2001, p. 270) and where there is no threat, it will be transformed into a "delightful horror" (Binney, 2013, p.251).

Through the exploration of natural phenomena through the moon and the unpredictable behaviour of ocean waves, the dancers will be asked to face and confront the unexpected from nature, which brings terror and fear. Thus the dancers will need to survive and preserve themselves through their passions of danger and pain. Since the two dancers will meet new or unknown experiences through their bodies, it will bring pain as they will experience a very different approach to what they are familiar with. The pain will come through the endeavor of "surviving" into other directions of somatic tension. Burke argues

that pain and danger are the most powerful passions and thus because the experience will be engaged with such passions, when the pleasure comes it will be that pleasure of the sublime – not just the positive pleasure coming from a beautiful object (cited by Shusterman, 2005, p.329).

The consequence of the experience of beautiful and sublime will lead to an imagination which the subject or the dancers will sense during the collective impressions from the outside world. Burke acknowledges that the imagination can be a combination of different activities but he focuses on “the primacy of sensation” (cited by Ryan, 2001, p.271-272). Thus, the imagination coming from pure sensation will expand the sensory impression, before any procedure of the rational mind (Ryan, 2001, p.272). Binney (2013, p.647) adds that when people react to a specific experience they use reason because of their customs and manners refining their own critique. Nevertheless, he continues explaining that from an aesthetic perspective “the sublime exists before this reasoning activity” (Binney, 2013, p.647). Referring to Burke’s sublime in relation to taste, Binney (2013, p.647) suggests that taste first begins with sense, then the imagination comes and then as a third act, it will end with sympathy. Later the reasoning function will define a specific conclusion according to the experience, the interests and the manners about the object.

Through this journey the dancers will face the unknowable and the unthinkable that goes beyond apprehension: the sense of conflicting forces derived from terror and calm; the profoundness of nature and the sea’s unseen depths; the behaviour of ocean waves; the rise and fall of sea levels caused by the gravitational forces of the moon, earth and sun. The journey will be a cycle from full moon to full moon: the first acquaintance with the environment, the two human beings, the ocean, the beginning of life and the continuation

of this journey. In the middle a meeting with the terrible power of nature and need for self-preservation will overwhelm the experience of the dancers. The dancers will travel in five phases as outlined below:

- 1. Full Moon:** Bright light ► High tides (intensive/calming shapes, serenity, awe, wonderment)
- 2. First Quarter:** Semi-low light ► Low tides (calming shapes, relaxation, happiness, suddenness, unknowable)
- 3. New Moon:** Low light ► High tides (intensive shapes, fear, anger, terror, panic, uncertainty)
- 4. Last Quarter:** Semi-low light ► Low tides (calming shapes, relaxation, serenity, curiosity)
- 5. Full Moon:** Intensive light ► High tides (intensive shapes, serenity, awe, surprise, strength)

From the beginning the dancers will face the force of nature, a feeling of uncertainty and the inability to control everything – they will face the digital images, the interactively generated visuals, the music, the tangible elements of the installation and later the audience. Through this complex environment they will bring another perspective of moving their bodies, in relation to what they see, feel, touch, hear, and how far they can go through their senses, the limits of their imaginations, their sympathy between themselves and the outside objects, and their judgmental skills.

Stage design/idea

This research focused on a performance in a site specific environment combining a circular structure, which in the end is an installation in a space (fig. 28). At the beginning of the

research I knew that the results of this project would be manifested in a non-traditional manner. A traditional show would have been a dance performance in theatre with lighting, stage design and the audience sitting in front of the proscenium watching probably a one or two hours show. But I was interested in the movement of the body reacting to unfamiliar spaces, and then how the experience of the body will change or not change in an immersive/atmospheric environment where the only light comes from the projections onto the installation.



Figure 28: Maria, Mitsi. ‘Απεραντοσύνη/ Vastness’ project (2016) the cylindrical structure/installation, Ward and Penn performing during *Vastness*

The idea of the circular structure did not just come from the cycle of the moon, the earth and the movement of waves but it also came because I was looking for something that it is not presentable only in front or it hides the body from behind. It was a mixture of combining the concept of sublime, moon, waves and life with the idea of performing around in a three-dimensional structure, surrounded by a mobile audience. And the question was how this

could affect the response of the dancers performing inside a circular structure, where their bodies can be seen from multiple perspectives.

Another key element of this project is the digital images, another component to be investigated during the performance. However, it is not only about scenography and performance. The reaction and experience of the dancers will also derive from and be defined by the visuals, which are one of the main elements to be experimented with. The dancers will be called to perform according to what they see and to what can be created through interaction. By means of this, the visuals were separated into scripted images in a 21 minutes animation, and un-scripted interactively generated graphics, which change according to the dancers' movements during the performance. The one is potentially complementary to the other, although it is also a challenge for the dancers' minds and bodies to adapt to, and to experience both of them at the same time.

Having only the animation or the generative graphics is something that has happened before in the work of Svoboda and Cunningham. Inspired by them, I want to bring both worlds together at the same time, maybe giving an advantage to the dancers to react on what they see, and to create a reflection of their movement through the generative visuals. The dancers need to be aware that they need to move, as there are some images which are following them during this journey, like their own shadow in a more abstract manner – but also to be aware that in case they get lost in this world they can always come back to or continue their journey through the scripted images, which unfold a story, the vastness of nature, where moon is changing and waves are either calm or loud.

Having both scripted and un-scripted visuals, and their projection onto a fabric material, creating the illusion of transparency, it would be a new experience for the dancers. I knew

from the beginning that I was interested to experiment with transparent fabric. It would not have been my first time of working with fabric but it would be the first time to experiment with a more three-dimensional artifact where the dancers are performing neither in front nor behind. Thus, I came up with the idea of binding the circular structure surrounding the installation with transparent fabric where each quarter of it, would have symbolized each quarter of the moon: full moon, first quarter, new moon, and last quarter as it shows in fig 29, from my first sketches and ideas.

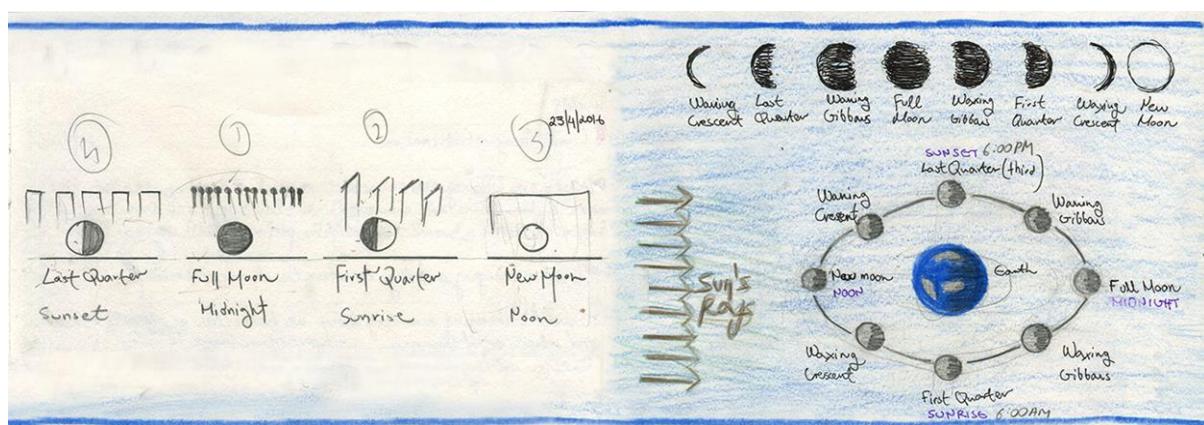


Figure 29: Maria, Mitsi. Sketch: *Phases of Moon* (2016) left side: the idea of binding the circular structure surrounding the installation with transparent fabric where each quarter of it, symbolizes each quarter of the moon, right side: the diagram of the position of the moon, during its orbit around earth – the sun lights half of the moon

The transparent fabric will permit the dancers and the audience a window view from the inside to the outside world and vice-versa. The scripted and un-scripted images will be projected onto the transparent fabric and since the fabric will be around the structure – it means that when for example the animation will be projected onto the first quarter of the installation, then the same image will be a reflection on the third quarter of the installation. Since the light passes through the transparent fabric, it will reach the parallel side of the structure as it shows in fig 30, and according to where the dancers are; the images will be projected on their bodies.



Figure 30: Maria, Mitsi. ‘Απεραντοσύνη/ *Vastness*’ project (2016) the projected image of the third quarter of the installation (left image) is reflected on the first quarter of the installation, and vice-versa (right image)

The same could be possibly said for the audience, as the light will continue passing through the whole space, appearing between the dancers, the real but transparent images and the audience. This verisimilitude, as it shows in fig 31, will be like a source of inconceivable astonishment, a reality where curiosity, awe, loudness and terror become part of it. It will become more real when the dancers will “find out” that it is (“real-unreal” transparent images) actually a material that you can touch, as it shows in fig 32, before (rehearsal) and during the *Απεραντοσύνη/ Vastness* performance. It is an illusion of this transparent world full of projected images coming from the universe, the moon, the waves and generally nature where, if you manage to transcend the self and rational mind, you will realize that it is a tangible world but at the same time it goes beyond, since you can see through it.

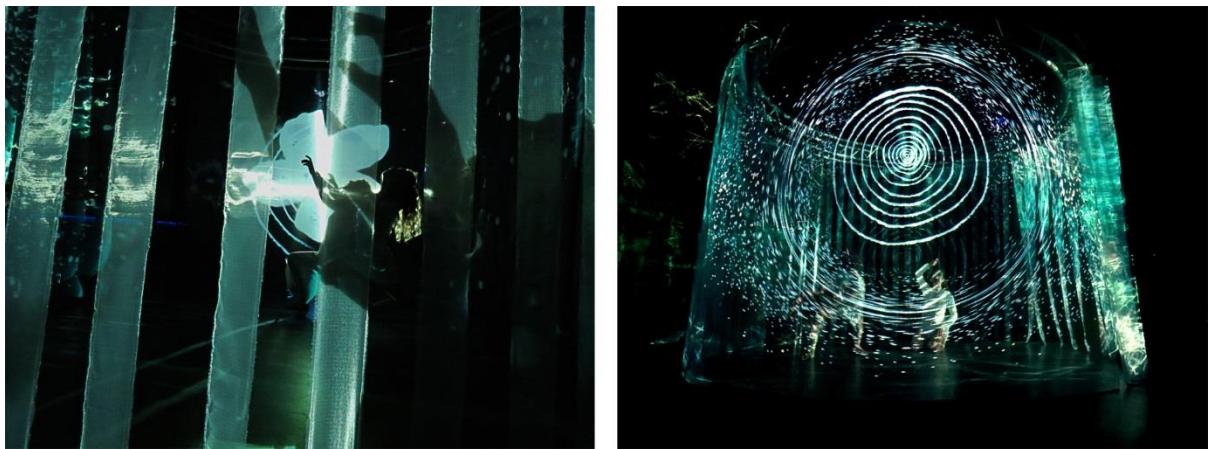


Figure 31: Maria, Mitsi. 'Απεραντοσύνη/ Vastness' project (2016) Ward and Penn performing during *Vastness*, reacting to the loudness of the projected images



Figure 32: Maria, Mitsi. 'Απεραντοσύνη/ Vastness' project (2016) left image: Penn responds to the transparent fabric during the rehearsal, Ward and Penn respond to the existing transparent fabric, showing its existence during *Vastness* performance

Somatic experience in unknown environments and body movement in the sense of aesthetics

This research focuses on dance performance. Generally, everyone is capable of moving their body in expressing feelings, or reacting to a specific environment according to atmosphere, music, people, colours, spaces, and the personal memories and images. Apparently, whatever is around us, will cause a sense of motion to our body and our mind.

In *Somaesthetics and Dance*, Carter (2015, p.6) refers to the words of the American modern dancer and choreographer Martha Graham (1894 – 1991) on the independence of dance as

an art: "Dance is an absolute. It is not knowledge about something, but is knowledge in itself... It is independent of service to an idea, but is of such highly organized activity that it can produce an idea." She talks about dance and the notion of being aware that not all of us can produce body movement as an art form. That knowledge and experience of producing an idea, referred to by Graham, will come through discipline, awareness, muscle tension and pain, principles, and generally the formal qualities of dance.

A performer's body goes through a lot of pain and "unnatural tension" of the muscles to be able to bring her body to a very different state to that of an ordinary person. For example, in ballet dance the performers are aiming to bring their bodies to a strong, balanced posture and technique (En.wikipedia.org, 2018), whereas the audience who have not received such training, can only observe the performing bodies from the outside. Carter (2015, p.16) suggests that "the dancer's moving image" is received optically by the spectator but this image of the performer could also be responded imaginatively in "the viewer's own muscles, tendons, and joints."

Shusterman (2005, p.325) refers to somaesthetics, extending Burke's profound perception about the explanations of aesthetic responses and also the "somatic understanding and performance" which can "provide valuable means for enhancing our aesthetic response." The process of producing art, according to Shusterman (2005, p.325) and the creation of aesthetic experience is the structure, the conditions and the functions of our body. The sense of rhythm and balance, and the position of our body in a space depend also to the "muscular capacities" (Shusterman, 2005, p.325). Later on, Shusterman (2005, p.325) also refers to the emotion and the cognition of the content which both bring "strong appeal" to the recognition and understanding of art.

The two dancers are following an approach which at the beginning is unfamiliar according to their own experience and knowledge. The reaction to narrative and interactive graphics, the response to structures outside theatre, the rhythm and melody of the music and later the awareness of the audience in space are different parts of the process until the ultimate creation of the performance art form. Unconsciously the body will start moving around a new environment and space, reacting to the diverse phenomena whereas later, the body will start being more familiar with the actual atmosphere. Thus, kinaesthetically the body will start processing in an unconscious way followed later by a more conscious behaviour, where through repetition and continuation, it will increase the awareness of moving and living in an unknown environment. For example the dancers will start working with scripted images following a specific rhythm and later they will experience their first time with the interactively generated graphics. Having the experience of both scripted/un-scripted images they will start being aware of their body reacting to the digital visuals. Later, they will follow another experience with the story, the music, the awareness of dancing around and inside a circular structure which is covered by transparent fabric, and then the sense of being in an environment with the audience.

Usually there is choreography to be presented to the audience whether it comes from emotions, inner thoughts, imagination, concerns, rhythms, memories, atmospheres, cultures, music, sounds, and experience and so on. Each culture of dance has its own variations, techniques, structure, and character. Moving forward through the years, artists, choreographers, dancers, scientists and anthropologists are not particularly looking but I would say they are more seeking, wondering and problematizing about this experience of the “new” world – where technology surrounds and overwhelms our lives. We cannot

ignore the presence of the digital media and the exploration of new ideas, questions which probably inspire fear in us, discovering or continuing someone else's work. For example Svoboda was experimenting with projections onto different shaped screens involving dance, film and rotating objects during a performance. Later we see Cunningham working on motion capture, experimental sound and dance techniques where each individual practice becomes one balanced work during the performance. Cunningham had to prepare the dancers to perform outside their comfortable zone, but at the same time it was a movement coming from experienced bodies with skills, strength and knowledge of specific dance culture. There is Sermon's work *Telematic Dreaming*, in which movement is not coming from choreography but from improvisation, through unpredictable facts coming from the reaction of the audience and through telecommunication, as the performer is in another room responding back to them. Forsythe also brought a revolution to the ballet dance with the complexities between bodies, time, sequence and balance, where he later experiments with architectural and multimedia/performance installations.

Having these inspirations from artists such as Svoboda, Cunningham, Sermon and Forsythe, I wanted to experiment further with the digitally mediated elements of technology and the possibility of performing outside theatre. Creating an installation which involves images, technology, music and dance can be included into the world of scenography. Each one of them is a scenographic element. Once we see these elements together, it might bring different results to the outside world and the performers.

In May 2016 I found two female dancers who were interested to take part in the experiments and the final show in September 2016. Helen Penn studied contemporary dance in Trinity Laban Conservatoire of Music and Dance, London and she trained for eight

months in contemporary and tap dance at Peridance Capezio Centre, New York. She is a choreographer and performer who experiments with different forms in Art, Philosophy, Science and nature. Sarah Ward holds a Bachelor of Arts Degree with 1st Class Honours in Dance Studies and she trained for six months at Peridance Capezio Centre, New York. She worked in various programmes especially as a dancer in theatres, films and TV shows. Sarah's skills involve contemporary dance, tap dance, contact improvisation and ballet.

Both Penn and Ward were willing to experiment with the interactively generated visuals, and abstract or figurative shapes, the music, the narrative form of the project and finally perform in a circular structure. I knew from the beginning that this would have been a first time experience for the dancers, but it was part of the process to bring performers into an unfamiliar situation and see what it would happen. It is true that it would have been a challenge for me to combine a dancer who has worked with digital visuals and interaction with someone who did not have the same experience, because then, for me, it would not have been so completely experimental. The uncomfortable sense of the body in a digital world covered by transparent images, performing in a circular shape, and having the music as well, was part of the experimental process. Equally, it was part of the experimental process and for the dancers to become sympathetic to the concept of a world of sublimity through the moon and its gravitational forces upon the ocean waves and the cycle of life. Consequently, at this point I was interested to know how the dancers would respond when step by step, they discover each part of the experimental project, until "the end".

Music

From one side we have the scripted and un-scripted images and later on we have the music. I wanted the music to follow a narrative form instead of being generated by the movement.

Having the complex visuals – the generative graphics, and the animation and the story, it would have been very confusing for all of us to experiment with generated music as well. From the technical perspective regarding the experiments and the artistic side of the project, it would not have helped me, and the dancers, or the musician to go further with the music by means of working with interactive music. We were already working in a chaos trying to discover, behave and react to the diversity of elements of this project. I wanted the music to be an element which brings harmony, rhythm, melody and balance throughout the performance. My purpose was to bring music closer to the story and the rhythm of the animation. Subsequently, the dancers had to respond to the images of the animation as one part, to the interactively generated graphics as another part, to the story as one more part, and to the structure and the music. Later all elements were integrated into each other. While, each element could have been used as an individual artifact, they became complementary to each other.

Undoubtedly, the music has its own role in the project even if it is not using any generated sounds. During the experiments with different kind of styles and diverse approaches of experimental sounds and lyrical melodies I came up with how I wanted to proceed with the music. I entered into an online collaboration with a music composer from Spain, Javier Aparicio. Aparicio (Rey Juan Carlos University, Madrid, Spain and University of Barcelona), is a visual artist, musician and set designer who has collaborated with dancers and participated in different festivals worldwide (Alfabody, n.d.). He is working on real-time music composition and the embodiment in performance through wearable devices. In April, 2016 I had the opportunity to watch him perform at the International METABODY Forum: "Performance Architectures, Wearables and Gestures Of Participation" held by

Johannes Birringer at the Artaud Performance Centre, Brunel University London (Dab-Lab, 2016). The festival with Jaime del Val as the coordinator was based on a diversity of embodied expression through a variety of concepts combining interaction, architecture, digital and physical aspects and performances in site specific locations, indoors and outdoors (Dab-Lab, 2016). Aparicio wrote and composed a 21 minutes soundtrack giving an identity of experimental, electronic, ethereal, eerie and mysterious approach, combining piano sounds on specific parts. The fig 33, shows the studio of Aparicio in Spain, the place where he wrote and composed the music of *Vastness*.



Figure 33: Javier, Aparicio. *Javier Aparicio's Studio* (2016) Web. 24 Aug. 2016 <http://alfabody.net/projects/>
Aparicio was able to observe the movement of the dancers from rehearsal videos and considering the scenario, the stylistic approach and the storyboards I sent him – he was working with me online during the whole process of the experiments until we managed to conclude the final music composition.

In its final form, the music sometimes went against the visual images and the movement from the performers, creating juxtaposition between objects and elements. For example on the 3rd phase of the moon part of the story, during the prevalence of tsunami, the music was calming while the projected visual images and the body movement from the dancers were intensive as it shows in fig 34. In this way I was exploring the reactions of the dancers who

were reacting to the rigorous visuals and plot of the story, but the music was following an opposite approach of tranquillity. By these means, the music was not an influence upon the dancers which exceeded that of the projected images, but it did raise the question of how the dancers would react to the counter positioning of calmness and agitation.



Figure 34: Maria, Mitsi. 'Απεραντοσύνη/ Vastness' project (2016) Ward and Penn performing during *Vastness* and the prevalence of tsunami in the 3rd part of the story/3rd phase of the moon

In the 2nd and 4th part of the story, the music presents an idea of having a lyrical movement like the fig 35 and fig 36, instead of chaotic rhythm of shapes and motion. At these points the music changes from experimental to lyrical bringing awe and harmony. It could be said that the musical piece overall has moments of silence, sublimity, chaos, illusion, brightness and a touch of swirling, hypnotic, adventurous character, where the dancers are called either to respond to the rhythms or go against them.

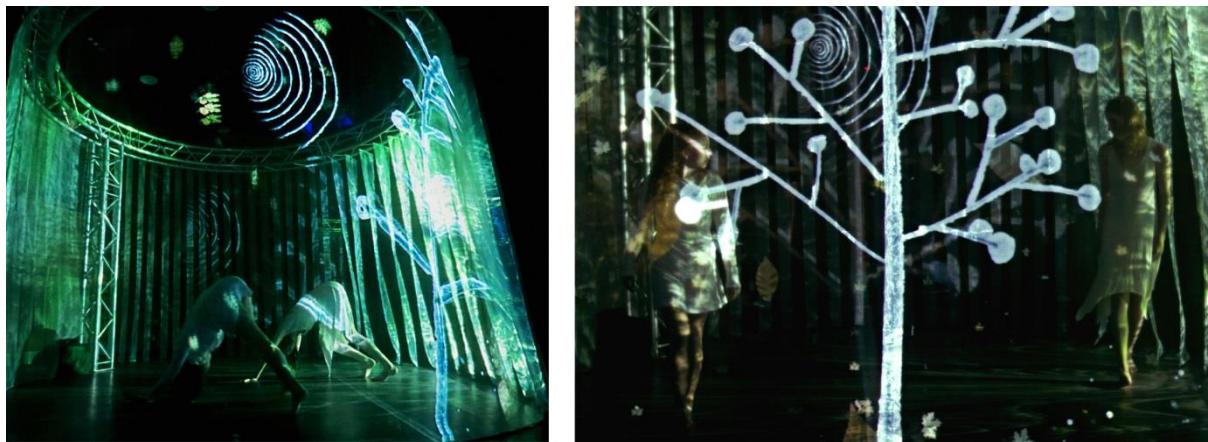


Figure 35: Maria, Mitsi. 'Απεραντοσύνη/ Vastness' project (2016) Ward and Penn performing during *Vastness* in a more lyrical and harmonic movement, in the 2nd part of the story/2nd phase of the moon



Figure 36: Maria, Mitsi. 'Απεραντοσύνη/ Vastness' project (2016) Ward and Penn performing during *Vastness* in a more lyrical and harmonic movement, in the 4th part of the story/4th phase of the moon

Conclusion

This chapter began with a brief description of the artistic product of my research project, the choreographic installation *Απεραντοσύνη/ Vastness* (September 2016). This was an improvisatory dance performance in a site specific environment, combining a circular structure hung with transparent fabric, in which the bodies of the dancers and projected imagery could be viewed from all inside the structure sides by a mobile audience. Simultaneously, the dancers had to encounter and respond to digitally mediated elements from images/animation and interactive generated graphics, which were projected onto the fabric and the dancers' bodies, in association with experimental music, which, as in Cunningham's *Biped*, did not necessarily match with the most vigorous moments of the

dance performance. The chapter then focused on explaining some of the key philosophical, conceptual, artistic and theoretical foundations of the project that were important for the research and planning process, and the reasons behind certain technical and technological choices.

Contemporary dance performances do not necessarily have to have a storyline – a prime example of this being Cunningham's *Biped* (see chapter 1), and his general refusal to be specific regarding what his pieces were “about”. But, unlike Cunningham, I am not a choreographer, and would be using dancer-collaborators to create the improvised choreography and therefore needed to provide the dancers with at least: a broad concept, basic narrative and some potentially useful projected images to work on, at a conceptual level, an approach which relates to that of Forsythe, although he is a choreographer. This became one of the main means to help structure the performance, while allowing space for the dancers to improvise.

At the most general level the storyline of the performance was about human experience of the “sublime”, particularly as defined by Edmund Burke in relation to the awe and terror evoked by experience of the power of nature. Indeed, the title of the performance came from Burke, as did the more specific, naturalistic elements of the storyline and some of the visuals, concerning the power and vastness of the ocean in relation to the invisible, gravitational power of the moon over the tides. The use of animation and interactively generated graphics projection, however, also referred to Paul Crowther's idea of the “postmodern sublime”, in relation to what he argues is the awe and terror evoked by the contemporary, incomprehensible and invisible power of digital technology.

In this chapter I have also identified a number of factors that informed the theorisation of the stage design. For example, I was inspired by Forsythe's work to create a choreographic installation in a non-theatre space. The circular structure of the installation had some relation to the cycle of the moon in the storyline, but, more importantly would enable the audience to move right round the installation to view the performance from any angle on the same level as the performers - an idea partly developed from Birringer's *UKIYO* (2009). The idea of using transparent material hung from the structure was to create an immersive environment for the dancers, in order for them to interact, both with each other and with the reflected digital imagery. This immersive environment would be crucial to the performance as the two dancers were asked to improvise in relation to the storyline and projected images.

The choice of having both animation and real-time generated graphics projections to create this illusionary performance environment was the result of a question raised during the research about whether this combination of technologies was possible. The question was prompted by the research into the history and practices of digital scenography - for example in the work of Svoboda, Cunningham, Sermon, as well as Mondot and Bardainne - which indicated that while both technologies have been widely used recently by digital scenographers, they had not been commonly used together. How this was successfully achieved by this project will be discussed in chapter 3.

In planning the improvisatory aspect of the performance in the installation space, I drew on a number of recent practices and theorisations relating to digital scenography and improvisatory dance performance, particularly Shusterman (2015) as well as those of Kozel (2007) about the relevance of somatic experience, particularly for improvisational dancers.

To make the performance completely experimental, I chose two trained contemporary dancers with no experience of digital scenography or choreographic installations. Part of the process was to bring them into an unfamiliar situation and see what would happen. The idea was that they would use their trained bodies to respond emotionally and aesthetically to the storyline and digital visuals within the installation space. Through this imaginative and artistic journey, the dancers would enact a confrontation with the sublimity of nature, encountering a diversity of phenomena including the domination of technology in our century (the postmodern sublime), through the digital scripted/un-scripted images along with a composition of evocative music, in the constructed cylindrical architecture: a choreographic installation.

The theoretical planning exercises constituted one large step towards the development and creation of the performance. Nevertheless, they still had to be integrated into the technical and practical side of it. The next chapter examines the processes and experimental methodology of the development of the technological and technical elements of the performance. It includes explanations of the practical tests used to achieve the implementation of the performance on time, having in mind what sources were available and what problems I might confront.

CHAPTER 3

EXPERIMENTAL METHODS DURING THE DEVELOPMENT OF THE PROJECT

Introduction

The development of the artistic concept, including the philosophical theories of the sublime and sensation, and the idea of implementing body performance into scenography, the preliminary planning stage (see chapter 2) amounted to one large step towards the realization of the performance. The creation of digital images/generated graphics, the connection with an installation and the questions these raised, however, created a whole world where theory finally had to be integrated into the technical side as well. This chapter focuses on the technological and technical elements of the performance development, which differed a lot from the development of the concept and idea. The reason for this is that, the process used experimental methodologies as practical tests, to establish what would, or would not be possible to achieve, in relation to the dancers, the time-scale and the resources available, to develop and present the performance on time. Here, the freedom of following an artistic concept was confronted with the technical and developmental problems that the project might have.

Nevertheless, as will be seen, the experimental process of collaborating with the dancers in the development of the scenario, animation, and interactively generated imagery, positively answered the research question raised in chapter 2 about the possibility of using a narrative and concept represented through animated imagery. Moreover, the process also positively answered my other two research questions: Is it possible to combine projected animation with projected interactive motion generated images successfully for developing

improvisatory dance performances in non-theatre spaces? And if so, can this combination also be a choreographic tool?

Making the first steps into the possible implementations of the concept and idea of this project, in February 2016, I made my first attempt (for this project) to work with projection mapping and transparent fabrics as a way to create a world that in reality does not exist. Through the transparent fabrics, the projected images create an illusion between reality and fantasy. Since I wanted to move on from my previous work with flat surfaces, I created a small three-dimensional installation (fig. 37) using layers of transparent fabric and creating a shape of a cube. Then, I created visuals representing shapes of waves and I projected them onto the “transparent” cube.

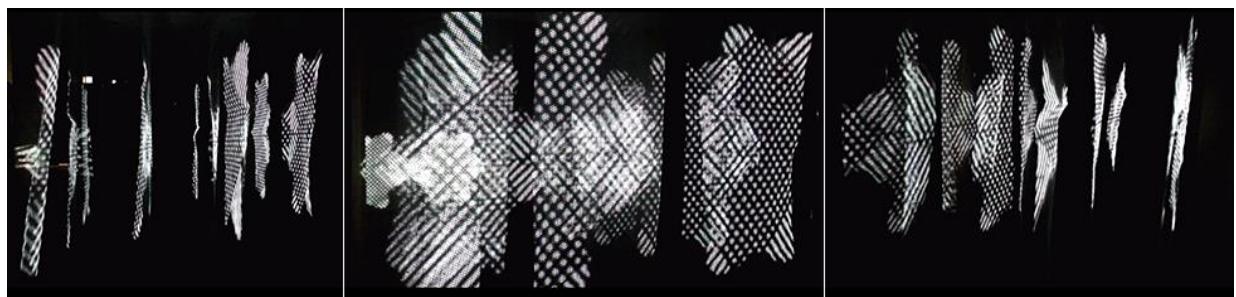


Figure 37: Maria, Mitsi. *Structured waves* (black and white) – projection mapping (2016)

Experimenting with projection, structures and visuals I came up with a few new ideas, creating a main brainstorm, through which, later I was able to separate the ideas into successive brainstorms. The first brainstorm was focused on the performance, followed up by another brainstorm which related to the theories of ocean waves and to further ideas about implementing them visually and conceptually into the performance. But, because the project was concerned with diverse elements, I then moved further to create small brainstorms about: the dancers; the sound; the construction/structure; the visual images;

the sublime; the technology, the space; the interaction and the spectators. These elements are discussed in the sections below.

Projection mapping, performance and interactive technologies

During the period of testing technology devices, with visuals and projection I focused also, on other experiments with the dancers (table. 1). The first six experiments started with projection mapping techniques as it shows in fig 38, interactive technologies, three-dimensional structures and transparent fabrics. The next four experiments focused on the movement of the dancers with the technology, the music, the visuals and the structure. From February 2016 to May 2016, I had the time to evaluate my experiments with technology focusing on how the results will affect the project. Focusing on the dancers, the idea was to work on each element every time, discovering new senses and reactions of their bodies to new materials and then add the previous material to the new element of the next experiment. For example, if the first day of the experiments was focusing on scripted/projected visuals, then I was trying to work with experimental, lyrical and classical music separately, to perceive the reactions from the performers. Referring to lyrical and classical music, I experimented with the pieces: *Atlantico* by Roberto Cacciapaglia and *Piano Sonata No. 14 in C-Sharp Minor, 'Moonlight': I. Adagio sostenuto - Earl Wild* by Ludwig van Beethoven. And then another day I would have worked with scripted visuals with experimental music: *Bike - Textures - Mix II*, *Vuelta a Itaca I*, *Vuelta a Itaca III* and *Vuelta a Itaca IV* by Javier Aparicio/Alfabody, and then with the interactively generated graphics. With this process I was taking responses from the dancers each time we tried new/unknown things, and then noting how the responses to their first experience changed and developed on the second, third and fourth time they worked with the same elements.

Titles that I gave to each experiment from February 2016 – September 2016:
Structured waves (black and white) – Layers of transparent fabric, Projection Mapping
Cube – Projection Mapping
Transparent Cube – Projection Mapping
3D objects – Projection Mapping
Cylinder – Projection Mapping
Two images, two projectors – Projection Mapping
Body + Projection – Improvisation with projection and images then sound
Interaction + Body + Projection – Improvisation with projection, generative images and sound
Interaction + Body + Projection + Story + Sound + Circle – Improvisation and first attempt to choreograph involving the scenario, music and the generative images, surrounded by a circle (using chairs)
Interaction + Animation + Body + Projection + Story + Sound + Circle + Costumes – Improvisation and first attempt to choreograph involving the scenario, music and the generative images, surrounded by a circle (marking the floor), experiment with costumes

Table 1: Experiments with technology, images and performance

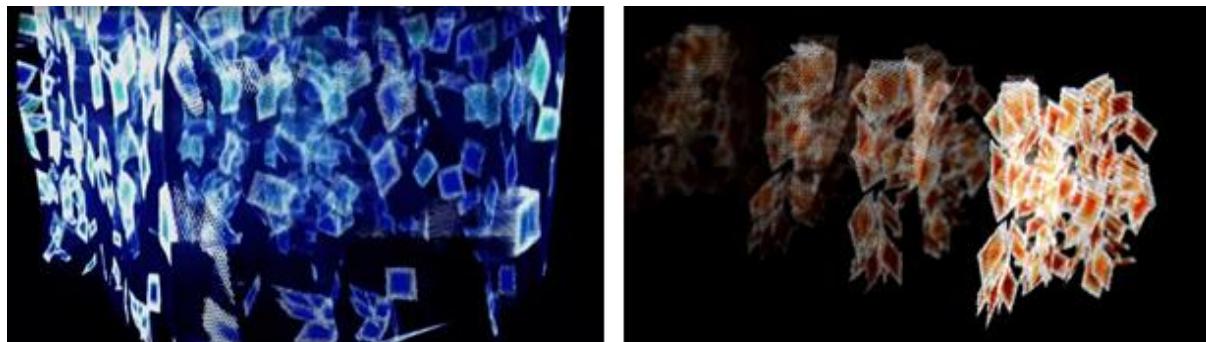


Figure 38: Maria, Mitsi. *Cube – projection mapping experiments* (2016)

After working with hardware technologies such as the ArduinoBoard, the I-PAC board and the sensor Kinect (version 2), in April 2016, I decided to continue with the Kinect from Microsoft. The first two boards gave me the opportunity to experiment, creating small scripts of coding and controlling specific lights and graphics. Nevertheless, after the idea of involving body interaction and the creation of graphics using the VVVV software, I focused on the Kinect.

The Kinect (8bitjoystick, 2009) is a motion sensor from Microsoft, which has been used for the video game console Xbox. It is based on a camera which enables the user to interact with the computer. Spending the last two/three years working with the first version of the Kinect, I had the opportunity to experiment with the second version, which it came out in 2013 (O'Brien, 2013) and in 2014 was released for Windows. The new Kinect V2 (Microsoft, n.d.), is able to track six skeletons or bodies with 25 joints, as it shows in fig 39, while the old one was able to track only two skeletons with 20 joints per person. Simultaneously, according to Microsoft's online website, the tracking has been improved and it is more accurate. This can be seen in fig 40. While the dancers were experimenting with the second version of Kinect, their body movement was reflected onto the wall simultaneously. In addition to this, the ability to detect a movement coming from a body in the dark was an advantage for my project, as the dancers, in the end, were performing in darkness, giving attention to the projected images.

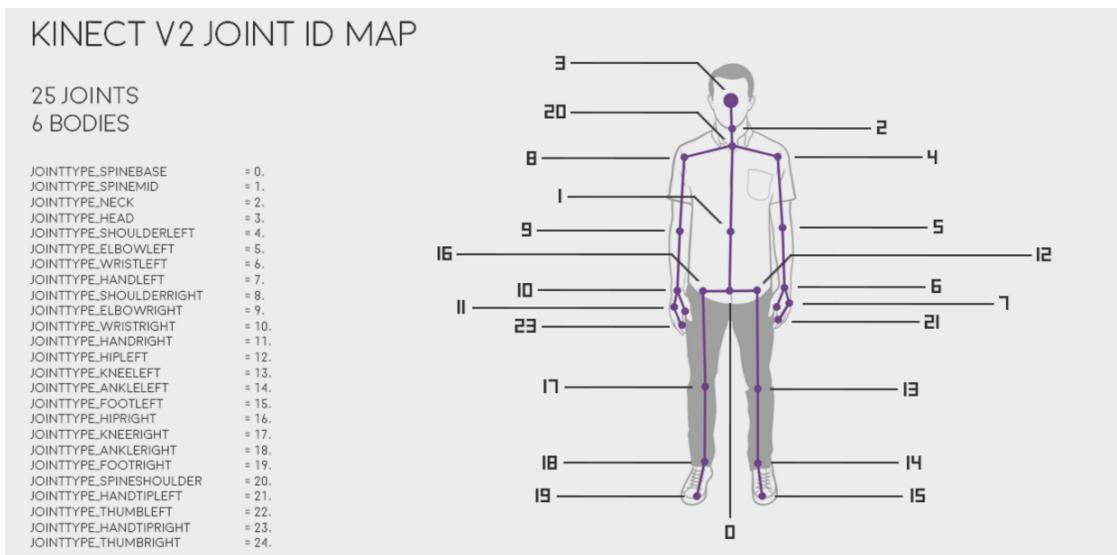


Figure 39: VVVV Group. *Kinect v2Joint Map* (2016) Web. 6 Jan 2016 <https://vvvv.org/documentation/kinect>



Figure 40: Maria, Mitsi. *Experiments: Skeleton VVVV/Kinect v2 (2016)* Ward – left side, Penn – right side

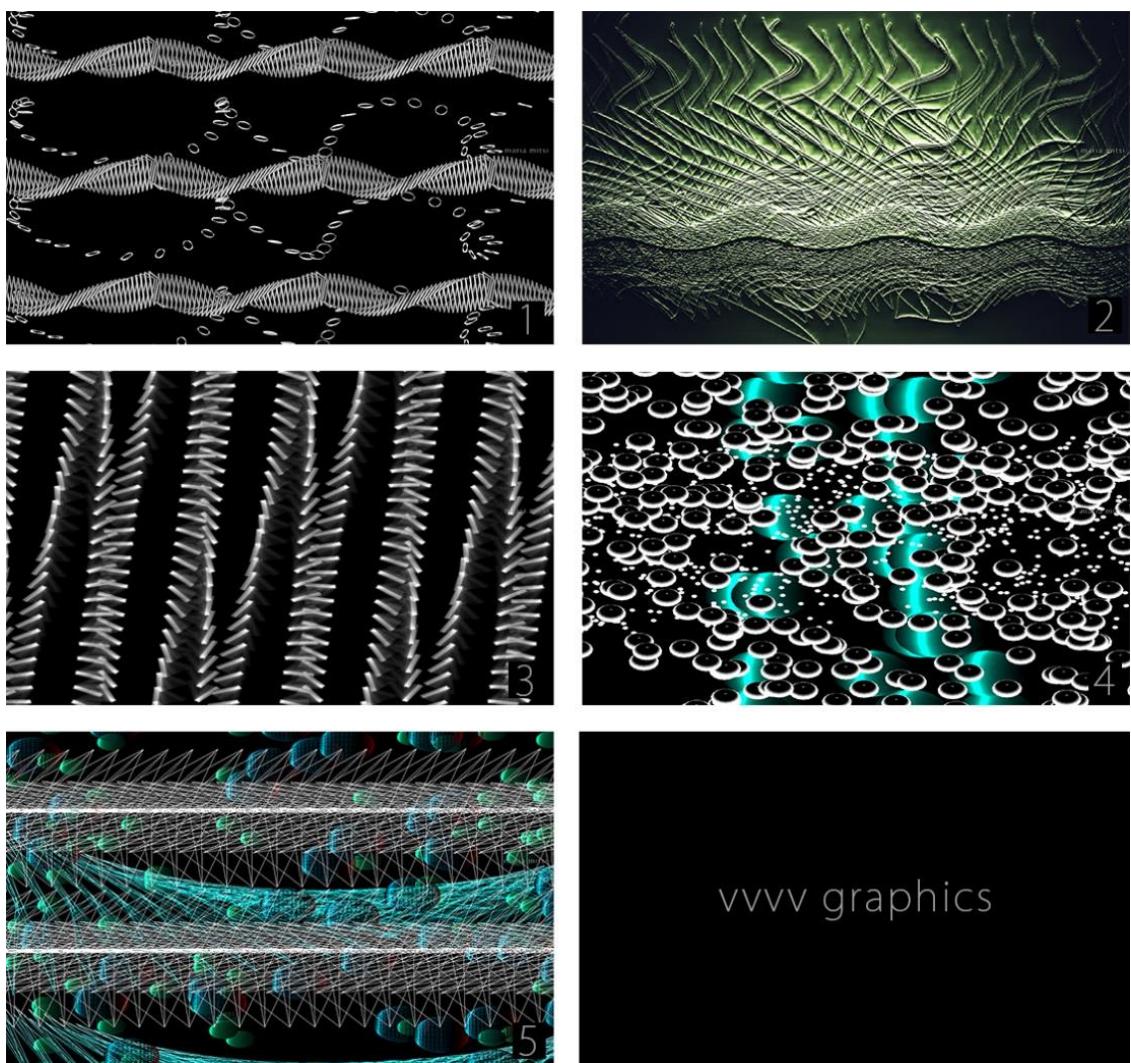


Figure 41: Maria, Mitsi. *Graphics representing each phase of the scenario (2016)* created in VVVV software

Combining the Kinect with the VVVV software I created five different visuals as seen in fig 41, which represent each phase of the script. VVVV “is a hybrid visual/ textual live-programming environment for easy prototyping and development. It is designed to facilitate the handling of large media environments with physical interfaces, real-time motion graphics, audio and video that can interact with many users simultaneously” (VVVV Group (a), 2014).

Opening the VVVV software, the first thing that someone will see it is a blank gray window which is called “patch”. In this patch the users can create links through different nodes which include programming scripts. “VVVV uses graphical objects for programming instead of textual programming interface” (VVVV Group (b), 2014). By creating links through nodes, it gives you the ability to develop structures, sending data from one node to another and in that way it generates or outputs data such as particles, sounds, effects, numbers and algorithms. Integrating the camera sensor with the VVVV software, I used certain patches, one of which recognizes the sensor when it is connected with the computer, and then another patch able to detect the skeleton of a human body as can be seen in fig 42. Then through the skeleton patch I connected my patch with the graphics as it shows in fig 43 and 44, informing the patch that when the right wrist of the dancer goes up, the specific shape will get bigger on the Y coordinate. Then the two patches are connected with the camera sensor. By these means, I created the interactive part of my project.

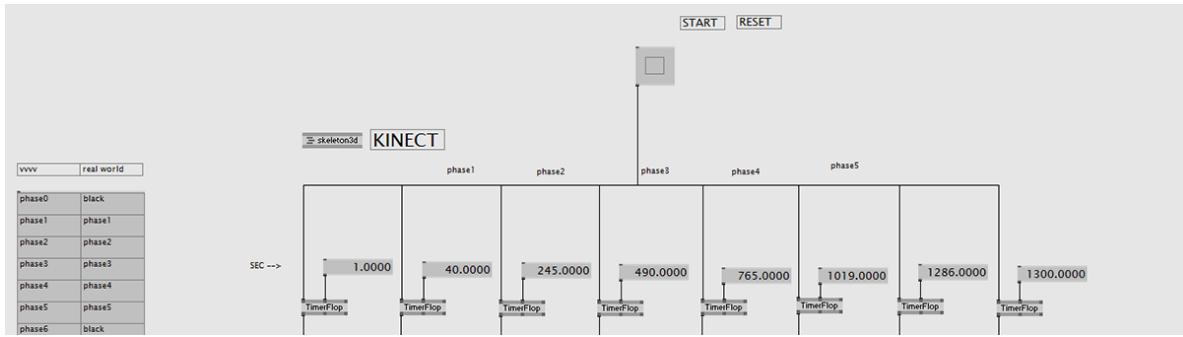


Figure 42: Maria, Mitsi. *Working with VVVV software* (2016) this patch contains a link between Kinect, the 5 phases of graphics and the skeleton together

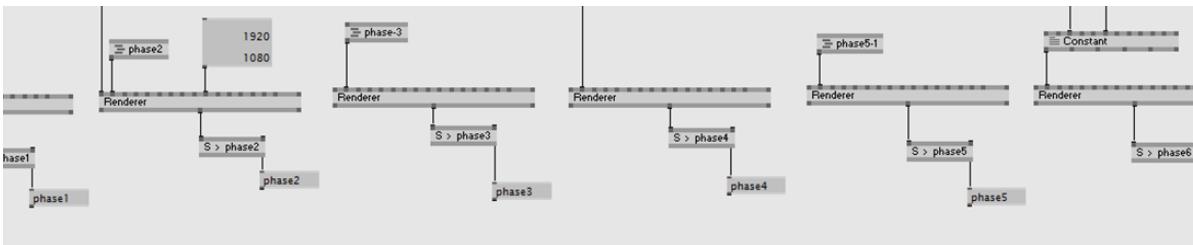


Figure 43: Maria, Mitsi. *Working with VVVV software* (2016) VVVV patch showing the five phases

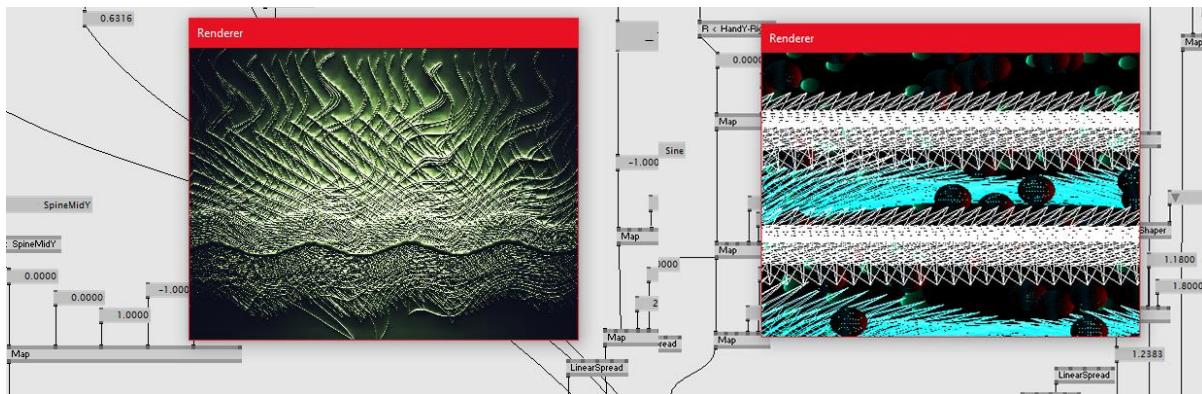


Figure 44: Maria, Mitsi. *Working with VVVV software* (2016) VVVV patches showing part of the creation of the graphics through VVVV - two of the five phases

In the early stages of the experiments, however, the motion sensor was not used. I started by projecting only the visuals corresponding with the five phases of the performance, representing the ideas of motion waves and sublimity as seen in fig 45. These were projected on a wall, so that the performer could observe the images and try to improvise through movement, shapes, rhythm and vision. The first experiment was done with Ward only. Through the visuals I created using the VVVV software as it shows in fig 46, she tried to be part of them and adapt her body into the shape and motion of the graphics. At first, she

experimented only with the scripted visuals and herself, while later she improvised with sound and images as seen in fig 47.

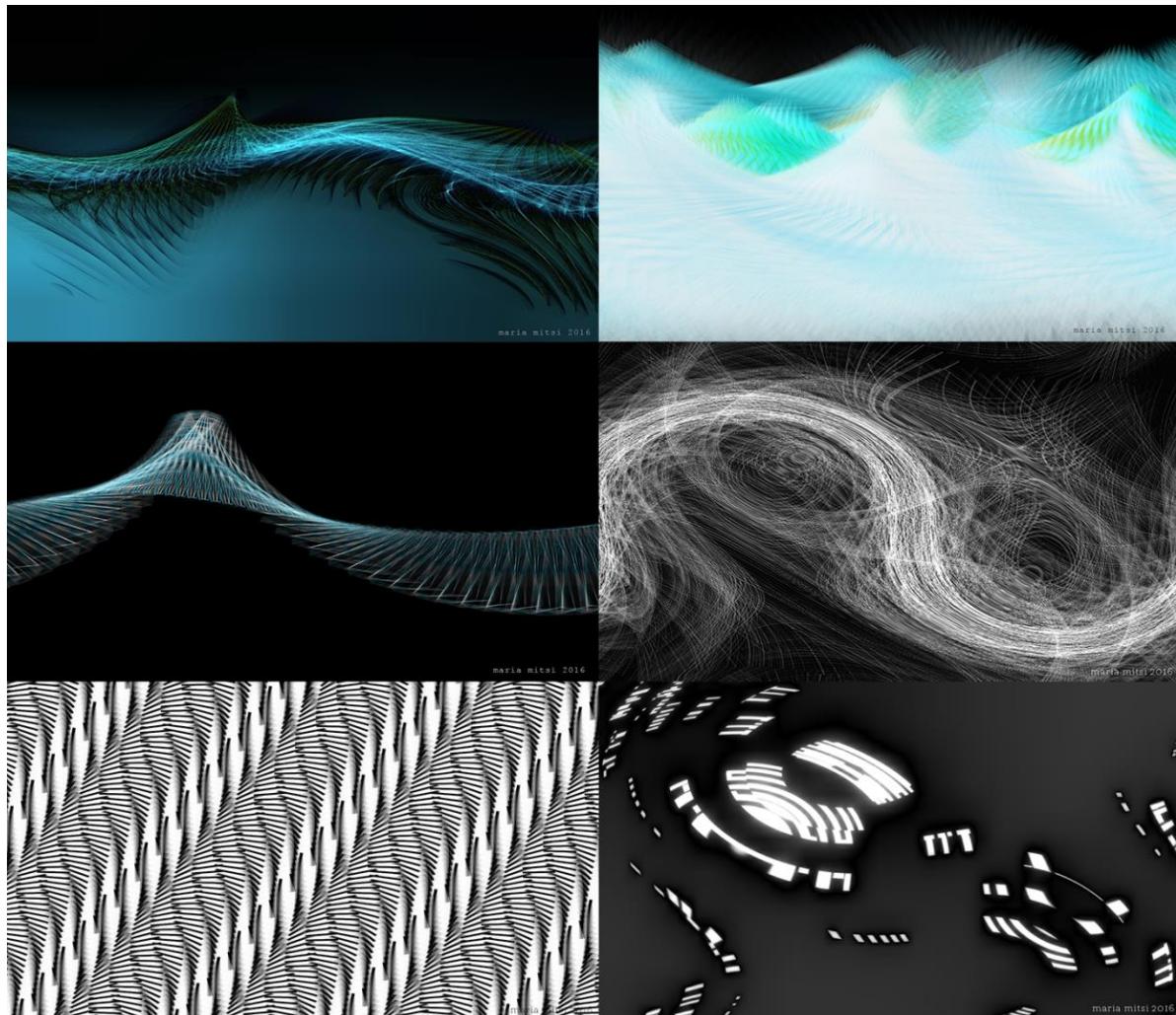


Figure 45: Maria, Mitsi. *Working with VVVV software* (2016) creation of motion graphics representing ocean waves

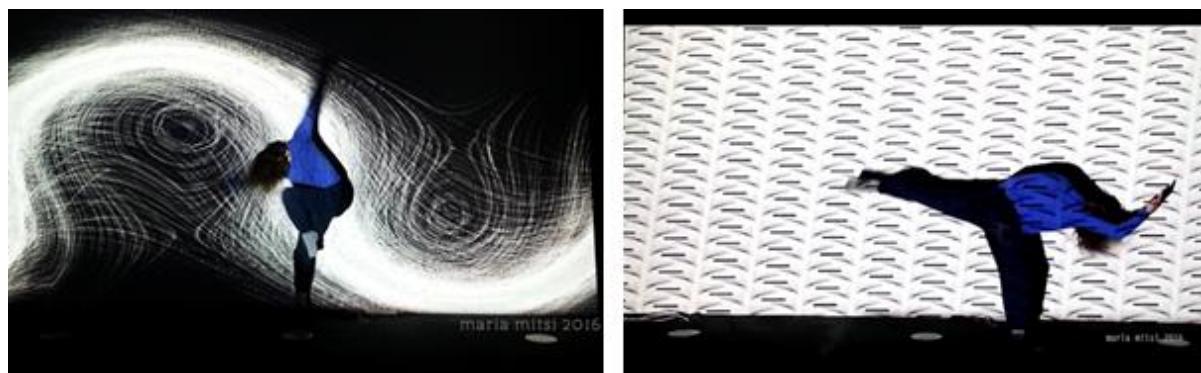


Figure 46: Maria, Mitsi. *Experiments with Ward* (2016) adapting her body into the shape and motion of the graphics



Figure 47: Maria, Mitsi. *Experiments with Ward* (2016) adapting her body into the moving images of real waves

Throughout the first experiment, some of the graphics were not really working for Ward, especially when the movement was not intensive enough. For example, when one of the visuals was repeating itself with the same count of rhythm, Ward was losing her body sense since; she did not know how to move differently in the space. I could see her doing the same spasmodic movements, which led to the domination of the specific animated image. She preferred to experiment with graphics that had rigorous and clear, freer movement of shapes because it helped her to react not necessarily with the same rhythm of the graphics. It was more like the performer was a continuation of the scripted visuals, a partner and an equal complement.

During the testing I wanted to receive a reaction by projecting real waves (fig. 47) from a video that I recorded, instead of the created graphics. How would the movement of the dancer possibly change when reacting to real images from nature in comparison with the digitally, abstract, surreal, geometric graphics? She got interested as the images of real

waves were familiar images. In a sense, it was a memory coming back, and her consciousness of what she was dealing with was therefore clear. In relation to this, while she felt more familiar and connected with the recorded ocean waves, the rhythm of these images was still dominating her body movement through the lyrical rhythm of the waves.

The performer was also able to work with graphics accompanied by ambient, natural and experimental sounds and then more classical and lyrical music. While she was performing with lyrical/classical music she got distracted as she was giving attention mainly to the music. But when she was improvising with the same images accompanied by ambient/experimental sounds, she mentioned that she was able to concentrate more on the images and the sound together.

The next experiment was the attempt to improvise with the interactively generated graphics through the camera of the sensor (Kinect). While I was working with VVVV and the camera sensor, I created eight graphics which had a better response from Ward than those used in the previous experiment. Based on these eight graphics, I gave movement, for example, to a shape to move on the Y coordinate while the left hand of the dancer was moving up and down. With this way of thinking I started working with hands, head and then legs. Ward and Penn tried to work separately as can be seen in fig 48, with the interactive technology and then together as it shows in fig 49. While they were in this new interactive environment, I had to leave the dancers alone exploring their body movements through the interactive visuals. After this, I moved forward explaining to them what the logic behind the technology is and how I work with it. Having had this conversation with them, they managed to adapt themselves better to the environment and get more familiar with the technologies.

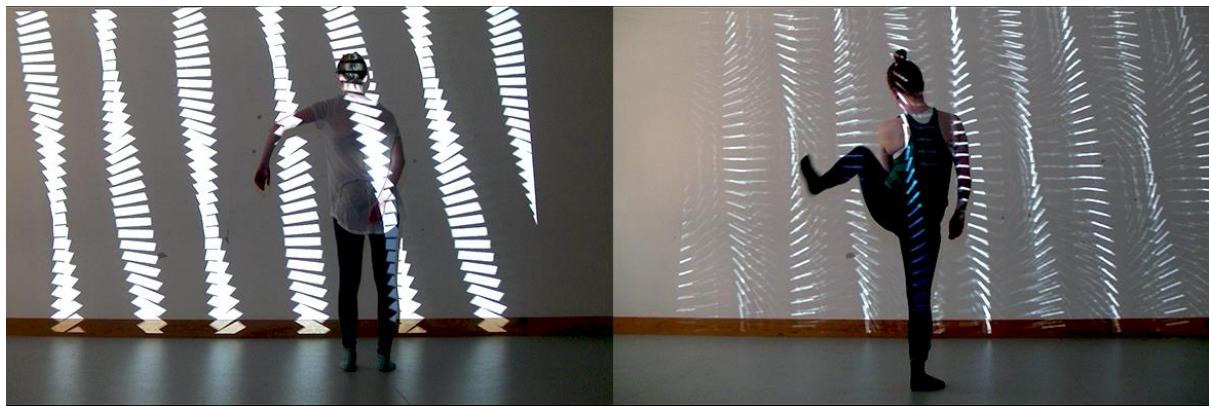


Figure 48: Maria, Mitsi. *Experiments* (2016) First attempt to experiment with Ward and Penn (separately) on live tracking movement

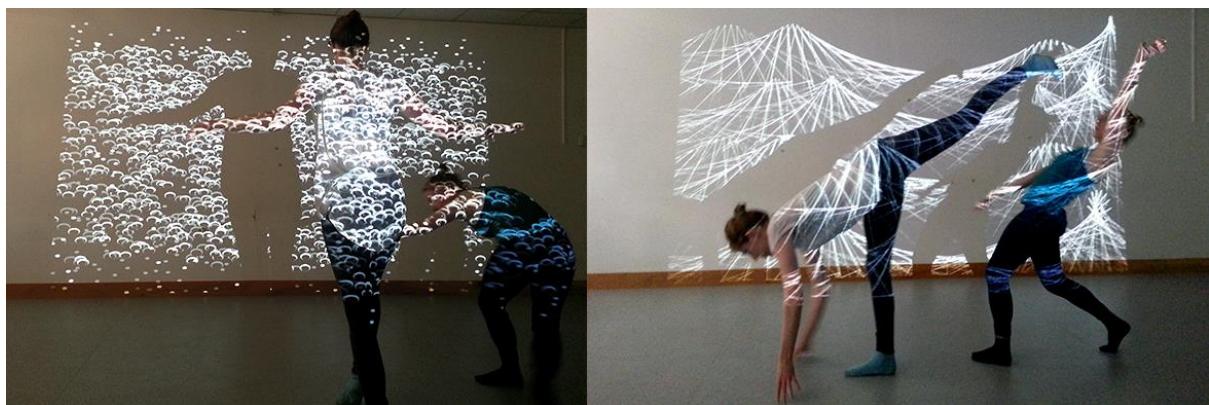


Figure 49 : Maria, Mitsi. *Experiments* (2016) First attempt to experiment with Ward and Penn (together) on live tracking movement

Their first experience with tracking was positive, but they mentioned that they wanted to see more response to their movement in the images. One of the main reasons for this realization came from the lack of joining parts of the legs with the digitally derived visuals from the sensor and the software. As it was the first time of testing the interactive visuals with the dancers, I had created the graphics to respond mainly to the hands, the head and then the legs. So, it was part of the process and the experiments to see how the dancers would react or what they would actually understand and sense. This resulted in the realization that the dancers were actually aware of their bodies inside the immersive environment and of how their bodies reacted to the visuals. They felt that their legs were

not there – they “forgot” their legs as the movement was based mainly on the upper part of their bodies.

During the experiments, I was working on the script as well, so that later on in the process we tried to implement the first and second phase of the performance, and work it out with music, interaction and projected images. Moving from experimentation and improvisation to unknown visuals and music, we started giving an identity to the project, as we were one more step closer to what the performance was about, and to where all these hours of work were leading us. At the same time I was working online (London - Madrid) with Aparicio, having the first samples of the music for the first and second phase of the scenario. Aparicio was following the storyboards, the time sequence and the scenario with some comments from me, and at the same time he was able to watch some videoed rehearsals.

Continuing with the third experiment with the dancers and Aparicio coming from Spain to watch our rehearsal, we added one more element of experimentation, the opportunity of moving around a circle, as the research was focusing on a three-dimensional and circular approach. We took a lot of chairs from the rehearsal room and created a circle, as can be seen in fig 50, measuring the distance of the radius as it would be in the actual space. The dancers started to work on the narrative of the performance inside this circular shape, having the music in the background. In this period, the scenario was ready, as well as the animation of three phases of the scenario, the final samples of the music and some final tests from the generated live visuals. Step by step the dancers started improvising inside the circular shape, then integrating the music with the story. This helped the dancers to understand the limits inside the space, come closer to what the project was about, and how this circular shape would be transformed into a freed and transparent shape full of life

through the animated images as seen in fig 51 and 52, and the un-scripted visuals. Their practice focused on structured improvisation and choreography, having also in mind the way that motion tracking works as it shows in fig 53, knowing that there are limits on specific movements of their body through the camera sensor.



Figure 50: Maria, Mitsi. *Experiments* (2016) Ward and Penn trying to perform in a circle, phase 2



Figure 51: Maria, Mitsi. *Experiments* (2016) Ward and Penn practicing with the animation, phase 2



Figure 52: Maria, Mitsi. 'Απεραντοσύνη/ Vastness' performance (2016) Ward and Penn performing during Vastness, phase 2

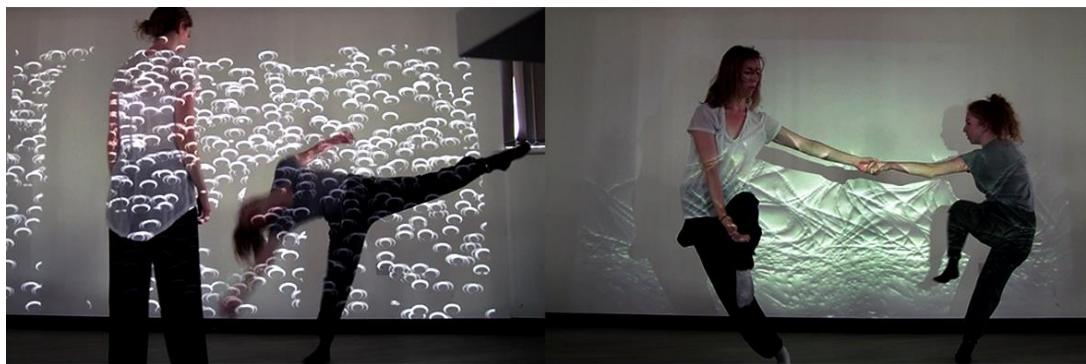


Figure 53: Maria, Mitsi. *Experiments* (2016) Experiments with Ward and Penn on live tracking movement

This time the dancers concentrated on the experience of performing in a circular structure , but afterwards we went on to work with the interactive images coming from the sensor. The graphics had the potential to response more accurately to their movement by adding the ability of tracking the leg, spine and belly. Spending an extensive amount of time in front of the sensor by myself and observing the old rehearsals, I managed to improve or change the

previous graphics from the VVVV software. Comparing the previous results, there was a sustained improvement from the live visuals and the dancers' reactions. The movement from the visuals was smoother and more accurate in relation to what the dancers were performing. But, there were moments of losing the tracking from the sensor. For example if both of them were performing on the floor, since the sensor had been placed on a chair it could not track the movement from someone who was below its range and performing with her full body on the floor as it shows in fig 56.

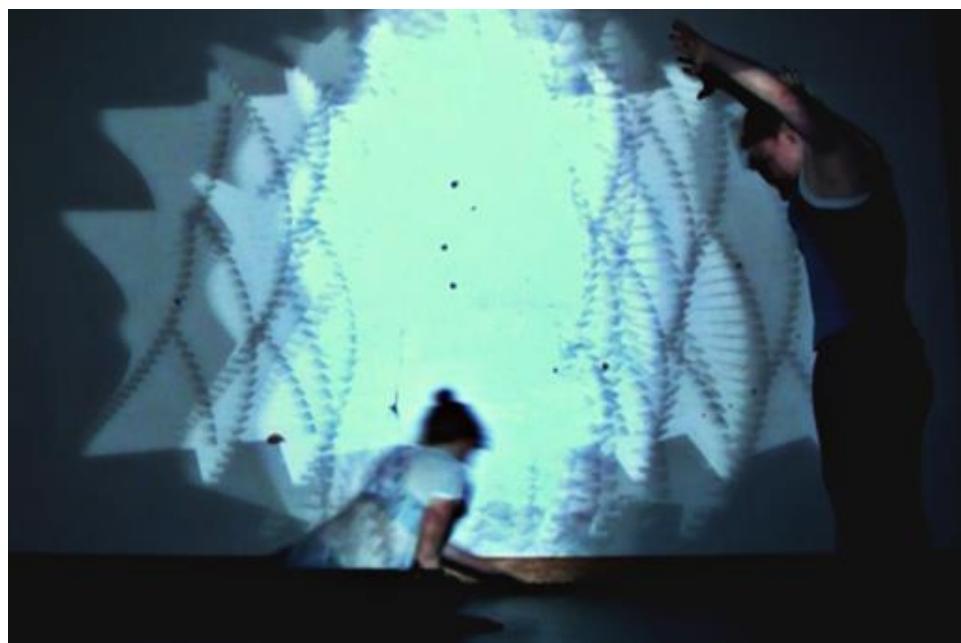


Figure 54: Maria, Mitsi. *Experiments* (2016) Ward is performing on the floor, while Penn interacts with the graphics from the Kinect

During these tests, I showed them my progress on my experimental animation, for the first, second and fifth part of the story to get them more engaged with the idea of the project's involvement with juxtaposed elements of interactively generated graphics and scripted images. The dancers would have to follow the story, and focus on the scripted images, but would also need to think about how the freedom of their body movements in response to these would/could change, in relation to the simultaneous presence of the interactively generated images reflecting their body images.

From the first day, when I had the first chat with the dancers about being involved in this project, we immediately started working together online and later having meetings for the experimentations. There were times that I had to travel around central London to do our meetings, and also bring the dancers to different rooms each time for the experiments. It was very difficult to find a specific day when all of us were free to do the rehearsals, and to ensure being able to be reached at the same place and time. Despite this, we were talking through emails and texts or phone to continue with the project and be ready for the next experiment. I was sending the dancers videos of the rehearsals so they could study their movement and see their reaction to the experiments. They were also studying the scenario, the movement of how the waves are reacting to natural phenomena and they were practicing more on their movement. Each time I was working with them face to face, at the end of each experiment I did a short interview about the experience they had of each period. This helped me to see how they thought, felt and sensed their bodies through the whole process.

There was also a time that, they both managed to travel from London and go to a beach near London, facing nature itself, and its magnificence. In their view, the waves helped them to memorise their experience and sense themselves through the wind, the water, the sand and the endless sensation of the ocean reaching the horizon. Coming from simple, abstract, geometric, complicated shapes of visuals representing the movement of ocean waves is one thing. Later, the experience of changing the motion of the waves through the tracking process was one more experience. Then, being able to watch videos of how the waves are moving and through the fact that they finally met the nature of waves – was a continuing

process of impressions, from primary senses to sensory impressions, reaching the mind and the imagination.

The fourth experiment took place on the 12th of September, only four days before the actual performance. In this experiment I added the animation sequence as it shows in fig 36, and the dancers tried different costumes for the performance. First, I drew a circle on the floor so the dancers will feel more the existence of the construction, without exceeding the boundaries of the structure in their movement. Second, we came prepared with different costumes, so the dancers could perform wearing them and decide which ones were most suitable for the concept, the project and themselves as performers. Third, we started experimenting for one more time with the un-scripted visuals as can be seen in fig 55 and 56, which were now more responsive to the dancers and the concept, since the last time.

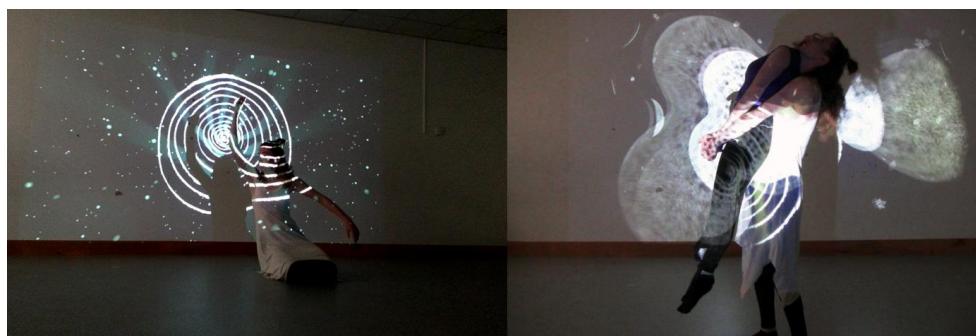


Figure 55: Maria, Mitsi. *Experiments* (2016) Working with Ward and Penn on the animation and scenario



Figure 56: Maria, Mitsi. *Experiments* (2016) Experiments with Ward and Penn on live tracking movement

After all, the dancers were now familiar with the way that the sensor responded to their bodies, and they knew what to do and what not to do. The generated images were the final step of development, and I had to rework more on the five visuals, to represent each phase of the scenario. The main attention was given to the scripted visuals matching the storytelling, but following an artistic approach “against” the demanding technicality of the un-scripted visuals. This last time, the dancers would contend with both the scripted and un-scripted visuals.

Implementation of scenography, animation and generative images

Being inspired by the power of the moon over the ocean waves, and having established the scenario for the project, I then considered the visual presentation and how the dancers would react to it. The scenario provided freedom to the dancers to improvise and further choreograph the piece, having had the experience of experimenting with the digitally derived visual elements from the technology. The story also gave a clue as to how the dancers should enact their imaginative journey of living in a world where imaginations of and responses to natural phenomena dominate the dancers’ existence in the performing space. It was also a way of understanding how and why the images change during the performance, and the way the dancers are aware of what was happening. When the experiments started, however, the dancers did not have the scenario in the first place, as it was initially a process of getting experience on how their bodies would move and react in a world where images would be part of the performance.

Since the ocean waves change shape mostly according to the gravitational force of the moon and its position, and the interaction with wind, proximity of sea floor, coastline and ocean currents – it gave me the main idea of how I wanted to continue with the creation of

the scenario. During a new moon or a full moon, the tides are higher by creating intensive shapes of waves, while when there is a half-moon (first quarter and last quarter), it effectuates lower tides leading to calm waves (Gilman, n.d.). The story is based on a plot diagram as it shows in table 2, from exposition to climax and then resolution.

5 PHASES				
EXPOSITION	RISING ACTION	CLIMAX	FALLING ACTION	RESOLUTION
FULL MOON	FIRST QUARTER	NEW MOON	LAST QUARTER	FULL MOON

Table 2: *Plot diagram of the story*, from full moon to full moon

The story begins with the sun going down and the moon rising while the performer/human is exploring a “new - unknown” world. She meets another human/performer, having her first contact, physically, optically and emotionally. Together in a full moon, they travel through a number of natural phenomena, discovering aspects of their body movement representing the experiences of danger, fear, happiness, surprise and suddenness. Their body movements represent responses to imagined phenomena relating to the story. Each exploration is related immediately to how the moon is changing, which influences the waves and the light, moving from darkness to brightness, from tranquillity to agitation and back. During the first quarter of the moon, the humans/performers get more familiar with each other, the waves, the images and nature, living together in a peaceful environment. Since, the new moon is coming the light is reducing more and more. Darkness is coming and an unpredictable natural phenomenon arrives to render them lost, separated and without control. This phenomenon could be parallelised with a tsunami, which leads the dancers, the waves and the characters (symbols) of the story/animation, to unexpected behaviour. The dancers, the waves and other elements of the story, perform/move alone, fighting to survive. Later on, the dancers face a source of light (new moon). Step by step, they try to

find themselves living among/between/beneath ocean waves and generally within the natural world. Dancers/humans, waves and nature become one as they are influenced by the intense source of light. The waves and dancers perform together as one: they do not follow each other but they perform simultaneously. There is a moment of mystery, awe and serenity as the moon is getting bigger and bigger with the sun at the same time, reaching the sky. It is a magnificent moment where the dancers are looking at this source of light, feeling strength and awe, approaching the floor, (bottom of the ocean, earth or their beds). Hopefully this ending would raise for the audience the question posed by Charles Sala: "The question now is: does the day's end, mean the end of life or a spark of hope?" (Charles Sala, 1994)

Development of scripted imagery/animation

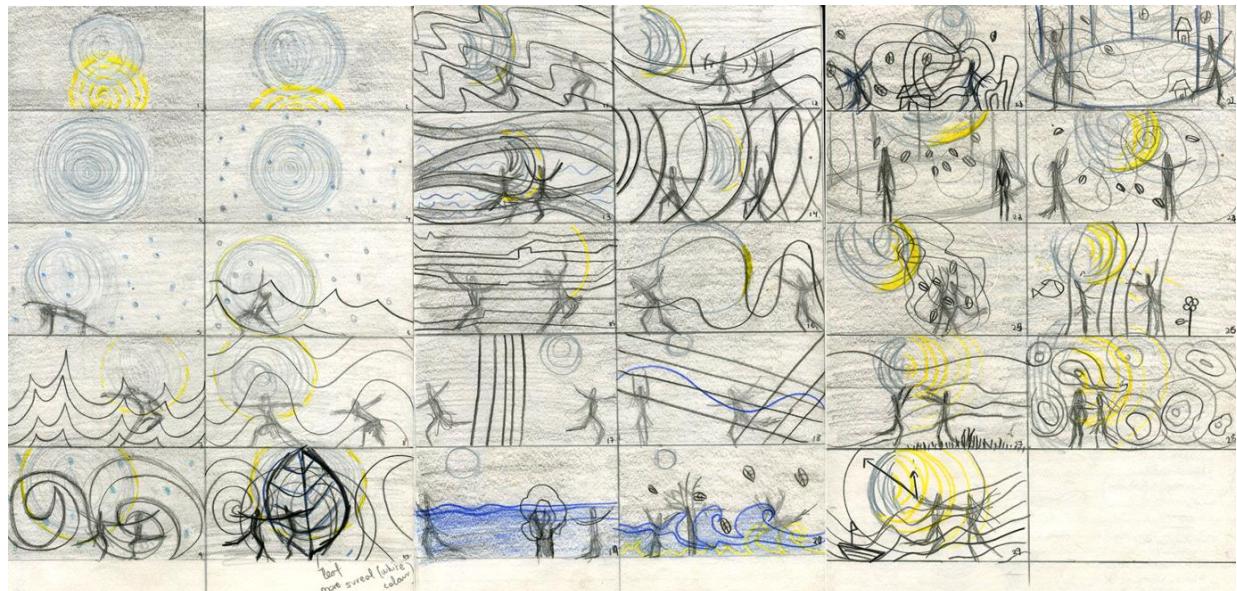


Figure 57: Maria, Mitsi. *Storyboard of 'Απεραντοσύνη/ Vastness'* (2016)

It was fundamental to the project that the nature of the scripted, animated images would have an important effect not only on the dancers' interpretation of the narrative, but

eventually on the audience's response to the performance. Having made the storyboards as seen in fig 57, and based on the story, I created an experimental animation of 21 minutes.

Working on the animation, I came up with different experimentations: sketching, scanning, stop motion animation, visual effects through software and going outside in nature looking for different leaves and flowers. I used computer software such as Adobe Photoshop, Premiere Pro and After Effects, in combination with drawing skills and sketching. I was looking for something that comes from nature, my own way of using pencils and then the implementation of technology. Following my storyboards and the story, first I drew small images as it shows in fig 58 that led to the bigger idea of each part of the scenario. These exercises helped me create a specific sequence of images with the right timing, based on the music as well as leading to a balanced result in the performance. Connecting the brightness and darkness of the moon I created a series of symbolic visual representations of the moon, as can be seen in fig 59.



Figure 58: Maria, Mitsi. *From 1st to 5th phase* (2016) representations of each moon phase for the scenario

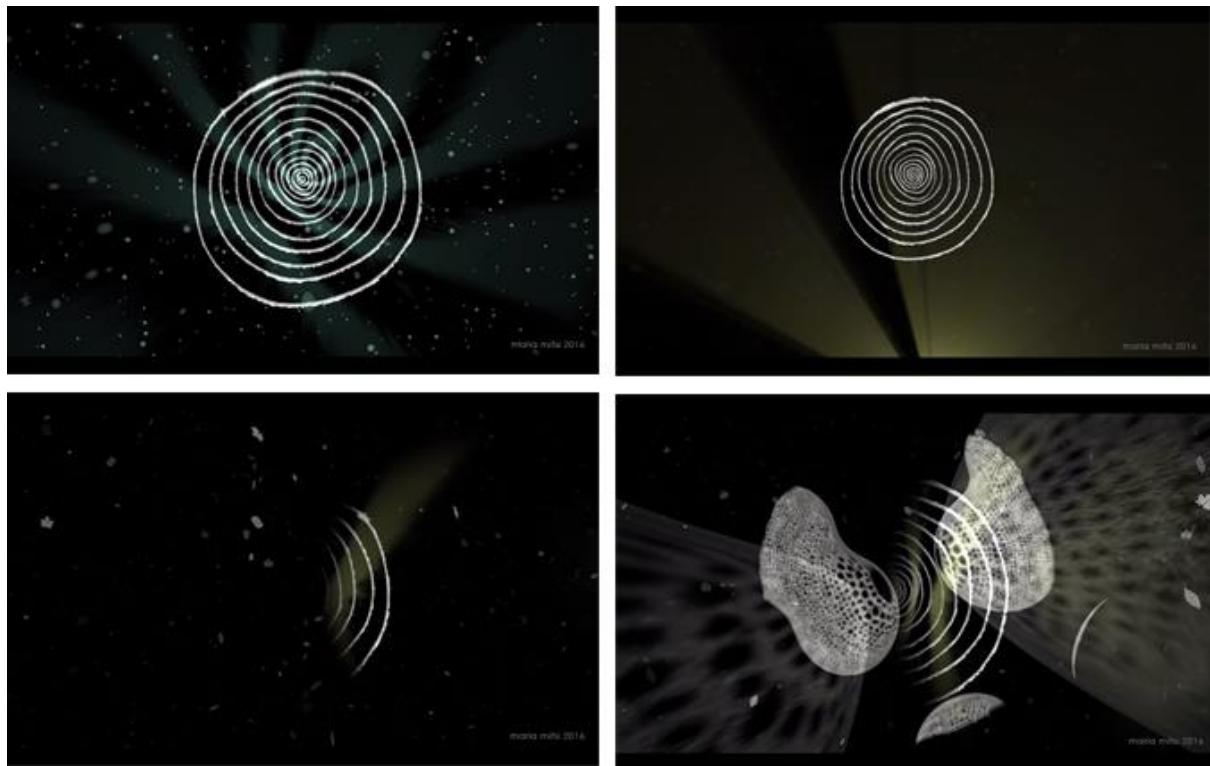


Figure 59: Maria, Mitsi. ‘Απεραντοσύνη/ Vastness’ Animation (2016) symbolic representations of the moon

The style of these images was influenced by the twentieth-century artistic movements of Op Art and Surrealism, combining elements of illusionistic naturalism and abstraction. My work was partly inspired by the English painter Bridget Riley (born 24 April 1931), one of the foremost artists of Op Art. According to the online website Tate (n.d.), Op Art developed in the 1960s using geometric forms which usually have black and white abstract patterns, creating optical effects. The use of such patterning is most obvious in the third image in figure 60, which represents a kind of structureless visual “noise” relating to the imagined noise and chaos of the storyboarded “tsunami” event. All of the five images however, also owe something to the visual impact on me of the powerful wave-like patterning in Riley’s painting, *Fall* (fig. 61).

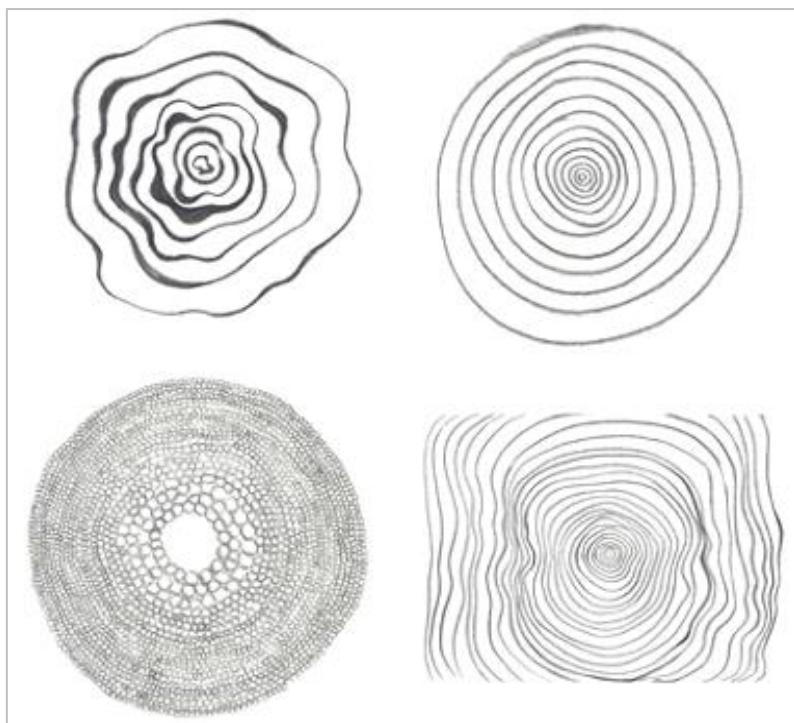


Figure 60: Maria, Mitsi. *Sketches from 'Απεραντοσύνη/ Vastness' animation* (2016)

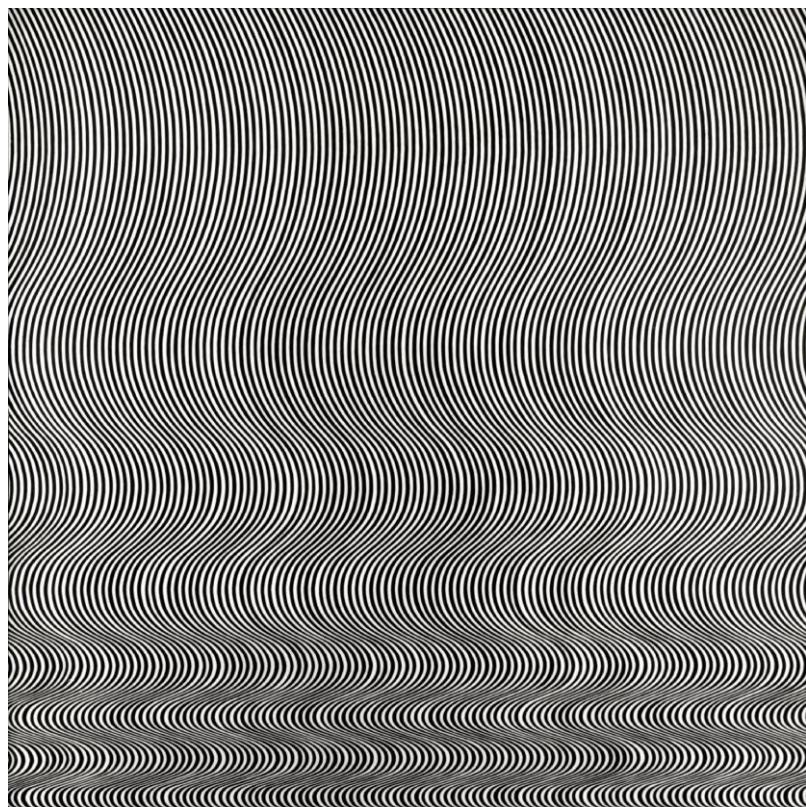


Figure 61: Bridget, Riley. *Fall* (1963) Web. 6 Jan 2016
<http://www.tate.org.uk/art/artworks/riley-fall-t00616>

Another key influence on the style of the imagery for the animation came from the Catalan-Spanish Surrealist painter Salvador Dali (1904 - 1989). Surrealism was a cultural movement in the twentieth-century, where poets and artists were charmed by the unexpected, and the operation of “chance”, relating to the psychological unconscious and dreams (Tate, n.d.). Such ideas effectively formed a subtext to the scenario and scenographic development for this project, in which it would not be made clear in the performance, whether the events were to be understood as imaginary or real. As a conceptual model for some of the imagery, Dali’s 1952 painting, *Galatea of the Spheres* (fig. 64), appears to represent the operation of the universe, including phases of planets, in a way that is simultaneously fragmentary, abstract and naturalistic.

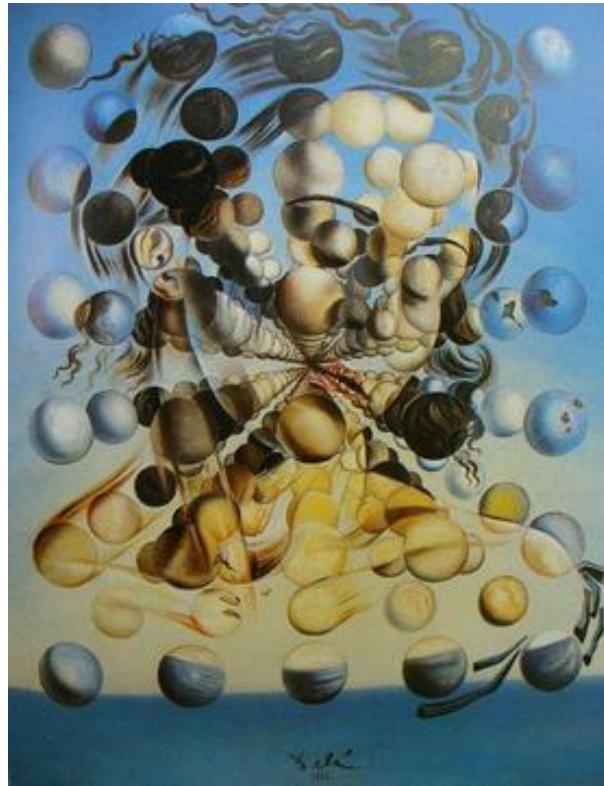


Figure 62: Salvador, Dali. *Galatea of the Spheres* (1952) Tue. 6 Mar 2018
https://en.wikipedia.org/wiki/Galatea_of_the_Spheres



Figure 63: Maria, Mitsi. *Stills from the experimental animation 'Απεραντοσύνη/ Vastness'* (2016)

In the animation, this influence is mainly to be seen in the juxtaposition of the abstract and figurative images, as well as the “chance” encounters of these, with the abstract generative images. In relation to this, later on in the animation development process, I focused on introducing contrasting, naturalistic images of green and flowering plants (and fish) as seen in fig 63, amongst the more abstract images, in order to give both the dancers and the

audience some clues to the narrative of the performance. Through different techniques and experiments, I created recognisable images of plants for my animation (fig. 64 & fig. 65). For example, for the realistic images in fig 64, I travelled around where I live, and in a forest near my neighbourhood in the UK, I found some flowers and green plants that helped me to create my animation. Once I had the plants that I was interested in, I scanned all of them and then edited the plant images through Adobe Photoshop. Afterwards, I drew different trees in my sketchbook and then scanned these and made the necessary changes through Adobe Photoshop to give a sketchy look (fig. 65).



Figure 64: Maria, Mitsi. *Plants from 'Απεραντοσύνη/ Vastness' animation* (2016)

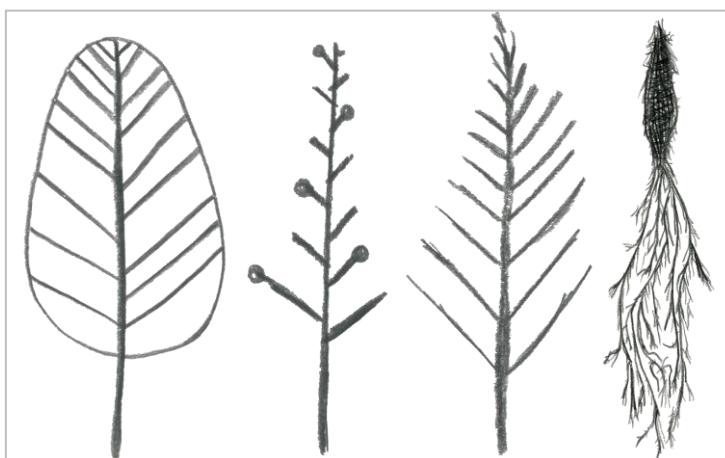


Figure 65: Maria, Mitsi. *Sketches: leaves and root for the animation* (2016)

Methodology of the installation structure

After the first sketches of the design and idea of the structure, I wanted to create the first prototype in a 3D software environment (fig. 66). This could have helped me to show my idea to people who are working with architecture and stage design, so they could advise me how, technically, to build and hang the circular structure. However, during my research for the space for the performance, I visited The Forum Hertfordshire, which is a multi-functional venue, located on the College Lane Campus of the University of Hertfordshire. I knew of the existence of the Attic. This is one of the venue's rooms, which most of the time is used as a night-club room. But, I was fascinated by the idea of using a night club room and transforming it into a site specific space for the performance of *Vastness*.

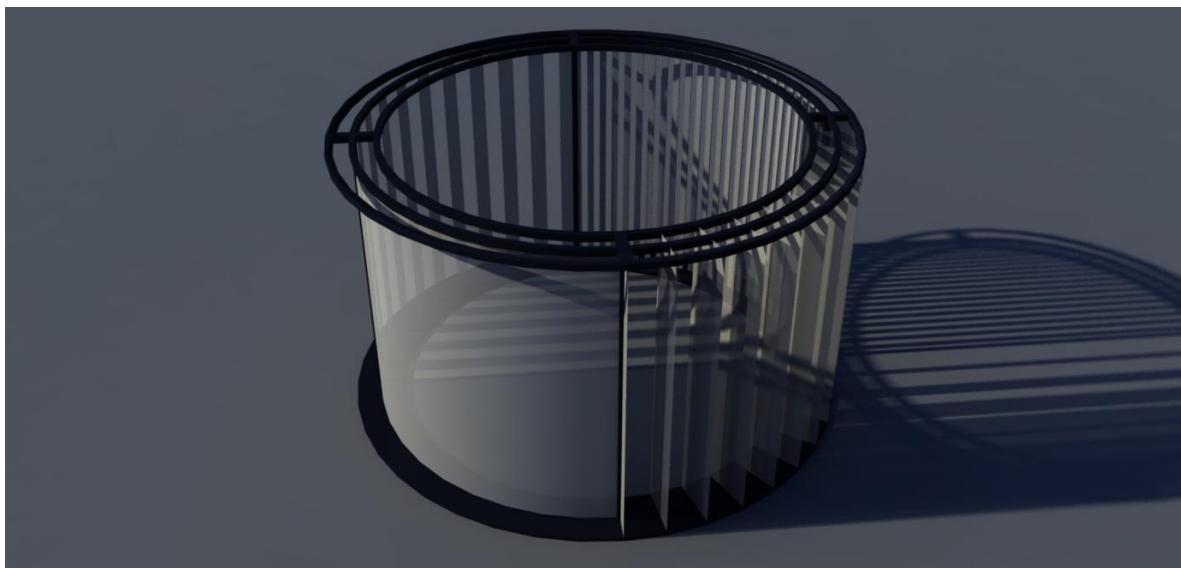


Figure 66: Maria, Mitsi. *Creation of the structure using the Autodesk Maya software* (2016)

After a conversation with a technician from the School of the Creative Arts (Hertfordshire University), he introduced me to another technician who used to work for The Forum. Exchanging thoughts on how the structure could be developed in the Attic, he told me about an existing circular structure then in a storeroom, that was actually designed to be fixed to the ceiling either in the Attic or the Auditorium (another room at the venue). This

circular structure had been designed mostly for lighting purposes but I wanted the structure to be part of the artifact/installation. I managed to talk with the responsible team of the venue and I found out that the measurements of the circular structure were appropriate for the structure of the performance, and that they would be able to carry the circular structure from the basement to the Attic just for the performance.

Nevertheless, the creation of this circular structure was still a challenge as it was not easy to create a cylindrical shape with the fabric hanging around the surface of the circular bar.

Spending hours of experimenting and talking with people, we managed to agree with a plan according to the budget and the time. The next step was to do another prototype, creating a maquette (scale model – fig. 67), to test the idea, and visualize how the construction would look.

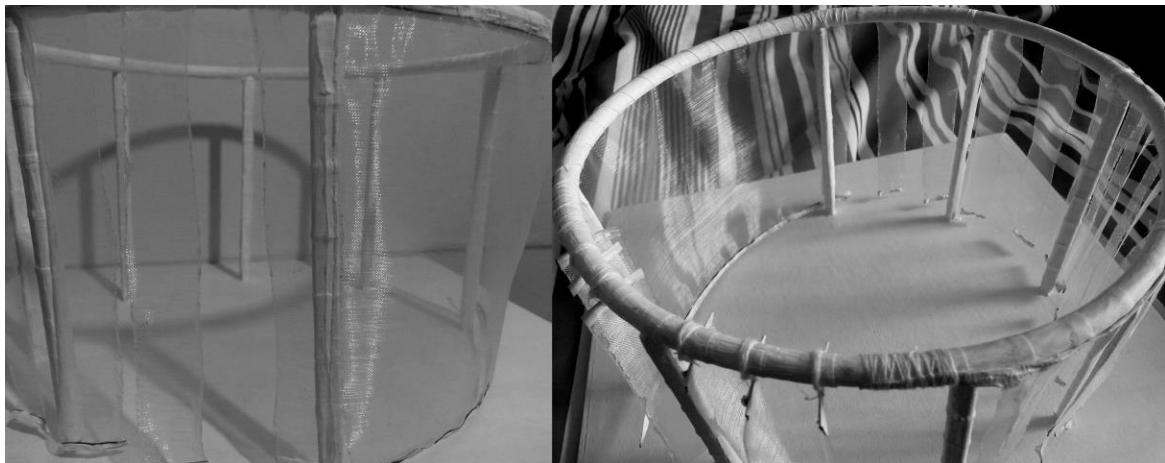


Figure 67: Maria, *Mitsi*. *Creation of the maquette* (scale model) (2016)

Then, according to the actual measurements of the structure as it shows in fig 68, which were 4 meters height and 4 meters diameter, and of the space, I calculated the proportional ratio of the final construction to a smaller version. The reason for re-calculating the measurements of the structure was the idea of creating one more maquette, to avoid possible mistakes during the development of the structure, and to explore thoughts of how

to build the actual structure, and be able to share my ideas with people from the venue, the dancers, the cinematographer (to record the performance), and the technical support team.

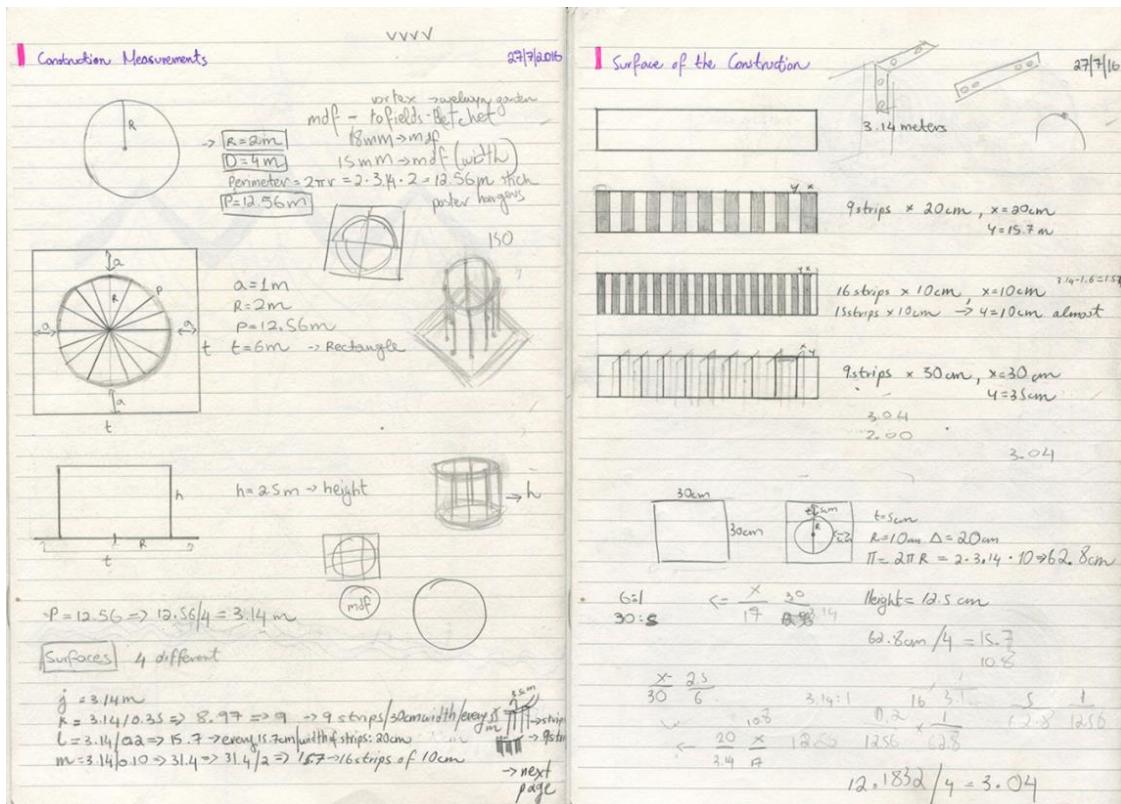


Figure 68: Maria, Mitsi. *Mathematical calculations for the structure and the fabric* (2016)

The construction was not the only element to be measured. The fabric was another challenge to be calculated accurately (fig. 68). Based on the perimeter of the circle, I divided the top view of the construction by four. This led me to find out the actual size of the fabric needed, and to continue with the strips as there were going to be four different sizes.

After the measurements of the construction and the creation of the prototypes, I ordered my fabric (fig. 69) which later I found a way to hang on the structure and stabilize it on the floor. At the same time I created a low quality prototype, showing where the projectors will be in the space along with the two computers, the structure and the speakers. To achieve the result of projecting two different sorts of images onto the surface of the cylindrical

shape, meant that the two projectors - one for the animation and the other one for the generated interactively generated images – needed to be in different locations.



Figure 69: Maria, Mitsi. *Organza – transparent fabric for the structure* (2016)

Costumes of the performers

The performers Penn and Ward were wearing two different costumes, completely white as can be seen in fig 70. The idea was to wear something ethereal, to follow the dancers' movement on stage. The costumes were simple, without really indicating exactly where they came from – which century, what planet and what space - this it was not clear. The white "colour" was a way of giving another character to each dress as a "screen" for the visual images coming live from the projectors during the performance. It also gave freedom to the dancers, the ability to let their bodies move through the costumes. The costumes were complementary to the general nature of the concept and each element of the choreographic installation, giving a final touch to the aesthetic perspective of the performance project.



Figure 70: Sarah, Ward. & Helen, Penn. Costumes (2016)

Conclusion

In this chapter, I have charted the way that theory had to be integrated into the technical/technological and practical side of the project. The chapter has focused on the technical, technological, practical and experimental parts of the development and performance of *Απεραντοσύνη/ Vastness*, based on the theories and concepts presented in chapters 1 and 2.

The process involved a challenging number of different and often simultaneous activities. Some of these were carried out by me alone, such as: recruiting the dancers; finding rehearsal spaces; finding the performance venue; designing the installation for a low budget production and ordering the materials necessary for its construction; creating the 21 minute

animation; collaborating with University of Hertfordshire technicians; and finding a suitable composer of experimental music to work with. However, the activities specifically relating to the experimental development of the structure and choreography of the performance in relation to the use of digital scenography, involved close collaborations both with the chosen dancers Helen Ward and Sarah Penn, and with the chosen composer Javier Aparicio.

The chapter's analysis of the developmental process positively addresses the research question raised in chapter 2 about the possible use of narrative as represented by projected images as a choreographic tool. It also raised another question, regarding the possibility of using animation and interactively generated motion graphics projections together. This question was initially prompted by my research into the work of Svoboda, Adrien M / Claire B and Chunky Moves, who introduced either projected animations with performance or examples of real-time images responding to body movement. In response to these examples, I wanted to see what would happen, by experimenting with animation images and live generated graphics together, and if this was successful, to see whether the combination could also be a choreographic tool. The analysis of the process in this chapter and the illustrations of the experiments strongly suggest that it can.

CONCLUSION

Introduction

The aims of this project were to gain a better understanding of digital scenography, mainly in the field of dance as used by recent choreographers, to create an experimental, improvisatory dance performance eventually entitled *Απεραντοσύνη/ Vastness*. This performance was staged in a non-theatre installation space at the Attic, University of Hertfordshire (2016), and involved projected visual images, combining scripted animations and un-scripted interactively generated graphics, as well as an experimental musical composition especially written for the piece. The thesis of the project has been that, despite the lack of historical precedents, that firstly it is possible to combine scripted animations and un-scripted interactively generated graphics successfully in a dance performance project, presenting a decorative and aesthetic enhancement to the performance. Secondly, that such use can also be identified as a valuable choreographic tool for the development of improvisatory dance performances in non-theatre spaces. This chapter summarises and concludes on the findings of the research relating to the aims, thesis and main research questions of the project, reflects on the challenges raised by the project, and suggests areas for future research.

Summary

Chapter 1 briefly explored aspects of the historical roots of digital scenography, then focused on analysing a number of projects involving digital scenography and, mainly dance performance, including the work of Svoboda, Cunningham, Forsythe, Birringer, Adrien M / Claire B, Sermon, Kozel, Chunky Moves and Johnston. Each one of these works positively

influenced aspects of the realization of the experimental performance *Απεραντοσύνη / Vastness*. However, as I was interested to the idea of experimentation, the elements of this research that appeared to be most significant as key sources for the practice of this project, are the work and theories of Cunningham, Forsythe and Kozel. What particularly interested me was that the three of them were experimenting with body movement in unfamiliar spaces surrounded by the presence of technology.

Cunningham was concerned with the idea of creating sequences by chance and then “seeing what happens”. In *Biped*, which I analysed in chapter 1, Cunningham’s approach to binding the three strands of dance – the choreography, the music and the visual décor – was only done at the dress-rehearsal or at the opening of the performance. Despite the fact that Cunningham had a strict, technical style in his approach to choreography, in the performance the dancers, nevertheless, had experienced for the first time the combination of the music and the projected images of *Biped* together, in a transparent and illusionistic digital world, and had to choose by chance, what sequence of movements their bodies would follow. This prompted me to adopt a similar “find out what happens” strategy in the development and staging of my experimental performance.

In *Decreation* Forsythe, initiator of the contemporary dance installation and thus a major influence on my choice of producing an installation environment, took a completely different approach from Cunningham. Forsythe was concerned with exploring body movement and its tensions, ignoring any sequence of steps. Instead, his choreography focused on the idea of letting the dancers’ bodies become aware of their positions in space, creating gestures and improvising in relation to a storyline. Forsythe was also interested in the relationship between the emotional inner and physical outer world of the dancer’s body

movement, through improvisatory experiences in non-theatre spaces. Similarly, Kozel also referred to the potential emotional relationships between improvisatory performers' bodies and technologies, in specific moments of a performance, given particular situation. This is an idea that I returned to in Chapter 2 in the section on "Somatic experience in unknown environments and body movements in the sense of aesthetics", and which became important to aspects of the choreography.

Chapter 2 began with a brief description of the performance, to contextualize the narrative and theoretical aspects of planning the performance, in relation to the research presented in chapter 1. The chapter was mainly concerned with the process of creating the basic abstract concept behind the performance (human encounter with sublime experience), and the more specific storyline, relating to the operation of the moon's gravitational force on the ocean tides, and the terrifying tsunamis that may be produced as a result. Conceptually, both the storyline and the scripted/un-scripted projected images, derived not only from Burke's philosophical ideas about the "sublime", but also from Crowther's idea of the "postmodern sublime", concerning the awe and terror evoked by the contemporary, incomprehensible and invisible power of digital technology.

While contemporary dance does not necessarily have to involve a clear narrative, as has been seen in Cunningham's *Biped* (chapter 1), I decided it was necessary for my performance. My background is in visual/digital/interactive arts, set design and film production, not in choreography, and therefore I felt I needed a narrative structure with visual reminders to help the dancers to improvise, and to provide them with an idea of how I think conceptually and artistically. So, partly similar to the way that Forsythe asked his dancers to move with ropes and sense their bodies during the development of the

narrative-based *Decreation* performance - as mentioned in chapter 1, I chose to work through a conceptual narrative and a sequence of images as a potential choreographic tool to help the dancers to get the point of what the performance was about, and also to give them the essential motivation to start moving with purpose, and then “see what happens”.

In relation to the uses of digital imagery, I had noted in chapter 1 regarding the works of Svoboda, Adrien M / Claire B and Chunky Moves, that they either used projected animations with performance or examples of real-time images responding to body movement, not both together. So in chapter 2, I raised the question of whether projected animation images and interactively generated graphics could be used successfully together in a dance performance.

Chapter 3 focused on the process and resulting realizations relating to integrating the theoretical and practical elements of developing and staging the performance, and the experimental methods used to do so. The process involved a very challenging number of different and often simultaneous activities, some of these were carried out by me alone. However, the activities specifically relating to the experimental development of the structure and choreography of the performance in relation to the use of digital scenography, involved close collaborations both with the chosen dancers Sarah Ward and Helen Penn, and with the chosen composer Javier Aparicio.

The process for developing the performance was entirely experimental. Not being a choreographer I was dependent to some extent on feedback from the two trained contemporary dancers, who were used to improvisation but had no experience with installations or digital scenography. The process began by using images relating to the concept and story and also a variety of different sorts of music for the dancers to respond

to. It then moved on to storyboard images to structure the performance, creation of the 21 minute animation sequence, use of the commissioned music from Aparicio, and experiments with the interactive graphics.

By the dress rehearsal and final performance, a number of things had become clear. One of these was that the concept/story, as represented in the naturalistic and more abstract images in the animation, provided a strong structure for the performance, answering the question raised in chapter 2 about whether a narrative supported by imagery could be a choreographic tool. Another realization was that the simultaneous use of the animation images with those of the interactive graphics was not only possible, but that they were both supportive of the improvisational dance performance in different ways. Once the dancers had become more familiar with working with the digital technology, the interactive graphics could offer a stimulus to further improvisation, while the animation images, which were also a stimulus to improvisation as well as being a reminder of the story, provided a way of bringing them back on track in the performance, if they got “lost” in their responses to the interactive graphics. So the animation images operated as guidance rather than “control” over the improvisatory dance performance.

Findings

While inspired by Cunningham’s strategy in *Biped*, of only bringing all of the elements of the performance together in the dress rehearsal or/and performance, the very experimental nature of the development of *Απεραντοσύνη/ Vastness* required some rehearsal of the dancers with elements of the music and digital technologies. Yet, the venue and installation space were unfamiliar to the dancers, and this was combined with the fullest attempt to bind together the music and both the scripted and un-scripted images at the same time at

the dress rehearsal and final performance, which can be seen as having a similar purpose, and impact on the performers and performance, to that of Cunningham's strategy in *Biped*.

In my view, the research project has fulfilled its initial aims, in that the preliminary research into the historical roots and recent uses of digital scenography, particularly the work of Cunningham, Forsythe, Kozel and Birringer, enabled me to develop a greater understanding of this area of practice, to successfully develop and produce the experimental dance performance *Απερανστοσύνη/ Vastness*, 2016. In addition, it may be seen to have answered the main research questions posed by the research, as given above.

In relation to the initial thesis, the research findings strongly suggest that, not only is it possible to successfully combine animation imagery with images derived from interactive motion sensor graphics, but also that they can be used together as a choreographic tool in combination with the storyline, to produce a successful improvisatory performance in a non-theatre space.

The balanced result from the combination of the projected animation images and the interactively generated graphics dramatically affected the visual spectacle of the performance within the non-theatre space. Before the start of the performance the audience could see the installation, formed by the suspended transparent fabric, in a space with four sources of spotlights. When the lights were turned off for the performance to begin, the projected images were the only source of light. This enhanced the shape of the installation and the dancers gave an extra element of life to its shape, by touching the fabric, performing within the cylindrical shape, and interacting with the projected images. Because of the darkness and the projection of the images onto the transparent fabric, it gave the spectacle a distinctive sense of illusion and surrealism, both through the abstract

images from the interactively generated graphics, and the animation's images of natural phenomena from the story, such as trees and flowers, the moon and the ocean. The installation space became a separate environment, within which the dancers' bodies in their white, ethereal costumes could be seen fully or partly, depending on their positions in relation to the angle of the projections.

On entering the unfamiliar venue, the audience was curious, feeling fear and discomfort and not knowing what to expect. But during the show, the audience's experience seemed to be of overwhelming happiness and calmness. When the performance ended, the audience was asked to express what they had felt as observers and participants in the performance. The words used were: "hypnotized", "inspired", "enlightened", "satisfied" and "excited". There were also some who mentioned experiencing states of "epiphany", and "relief". I strongly believe that these positive responses from the audience came not just because the installation was decorative or aesthetic, but also came from the structure of the performance, in which the story helped to bind all the complex elements together, successfully giving balance to the whole visual spectacle.

Challenges

Reviewing the period of the research and practice, I faced a variety of technical problems with the technology, working with the interactively generated graphics and the projection mapping techniques. For example, when I had to create each interactive visual for the five phases of the story and focus individually on each part of the body, sometimes getting the response of the receiving data from the body to work correctly was very difficult. Later, when I had to focus more on the projection mapping I had to calculate the space and the position of the structure, to be able to project the images onto the installation at the right

angle. That was very challenging, as I had only two days to build the installation with the projectors – so the planning process had to be almost perfect.

Of course, the installation could have been developed using better materials, for example, to adjust the fabric on the floor differently, but according to the time and money, I had to find practical solutions for each problem I was dealing with. In theory, the audience should have had the potential to move around the cylindrical installation in the non-theatre space, an idea derived from Birringer's approach in *UKIYO*. However, there was a part of the installation that mobile spectators could not reach. This happened because of the dimensions of the space. If the space had been larger by another three or four metres, it would have given much better results to the project for aesthetic reasons, and from the perspective of the audience's experience. But in fact, when I invited the audience to move around the installation during the performance, only two people managed to change their initial position and take a look from another perspective. While at least these two had some of the planned experience, the rest of the audience were not affected by the problem. From the perspective of working with dancers having no experience in digital scenography, it was not a problem either, but it was definitely a risk that I accepted to take, to see what we could create together through the process of experimentation.

Suggestions for future research

Having finished with the experiments and the presentation of *Απεραντοσύνη/ Vastness*, I can see some aspects of the project that could be considered for improvement though additional research and practice. For example, although possible audience responses were considered at the planning and developmental stages the research did not focus efficiently on the experience of the audience regarding the final visual spectacle.

According to Carter, (2015, p.17), the audience's perceptions and experiences of a dance performance are likely to be very different from those of the dancers involved in it. In relation to this, Carter (2015, p.17) refers to Rudolf Arnheim (1904 – 2007) a German art and film theorist, author and perceptual psychologist. Arnheim (cited by Carter, 2015, p.17) notes that dancers create through the "kinesthetic sensations using the muscles, tendons, joints," whereas the audience perceives a "strictly visual work of art". According to Carter, however, observation could also prompt an emotional state wherein the viewer creates empathy between the dancer's performance and their own personal, psychological and physiological world. "Empathy" has been used by Carter (2015, p.17) to indicate the possible result of the audience connecting kinaesthetically with the dancers, through their "personal and cultural associations". By identifying with the dancer's experience, for example, the pain caused by muscle tension, could be understood as an "imaginative participation enabling the spectator to find significance in the work and to integrate the work into other life experiences" (Carter, 2015, p.17). It might be interesting for future researchers to find a reliable way of testing Carter's theory.

Another possibility is that the choreographic tool of combining projected animation images and interactively generated graphics could be used by choreographers with dancers who are experienced with immersive environments, as a means of enriching digital scenography in the world of dance movement. Finally, another approach that could be investigated, is the implementation of adding sound sensors as an experimental tool, as a means to enhance the ongoing process of exploration in dance performance within non-theatre spaces.

Since the 1950s the world of digital scenography and dance has continued an onward development, resulting in new ideas to explore and investigate. I believe that digital

scenography still has a long journey ahead, as the technology improves day by day, bringing more questions about what can be created through the experience of body movement in unfamiliar places.

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Figure 39: VVVV Group. *Kinect v2Joint Map* (2016) Web. 6 Jan 2016

<https://vvvv.org/documentation/kinect>

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Figure 48: Maria, Mitsi. *Experiments* (2016) First attempt to experiment with Ward and Penn (separately) on live tracking movement

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Figure 50: Maria, Mitsi. *Experiments* (2016) Ward and Penn trying to perform in a circle, phase 2

Figure 51: Maria, Mitsi. *Experiments* (2016) Ward and Penn practicing with the animation, phase 2

Figure 52: Maria, Mitsi. ‘Απεραντοσύνη / Vastness’ performance (2016) Ward and Penn performing during Vastness, phase 2

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Figure 54: Maria, Mitsi. *Experiments* (2016) Ward is performing on the floor, while Penn interacts with the graphics from the Kinect

Figure 55: Maria, Mitsi. *Experiments* (2016) Working with Ward and Penn on the animation and scenario

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Figure 60: Maria, Mitsi. *Sketches from 'Απεραντοσύνη/ Vastness' animation* (2016)

Figure 61: Bridget, Riley. *Fall* (1963) Web. 6 Jan 2016
<http://www.tate.org.uk/art/artworks/riley-fall-t00616>

Figure 62: Salvador, Dali. *Galatea of the Spheres* (1952) Tue. 6 Mar 2018
https://en.wikipedia.org/wiki/Galatea_of_the_Spheres

Figure 63: Maria, Mitsi. *Stills from the experimental animation 'Απεραντοσύνη/ Vastness'* (2016)

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APPENDICES

Απεραντοσύνη/ Vastness Performance:

Conceived and Developed by Maria Mitsi

Performers: Sarah Ward and Helen Penn

Music/Sound-track: Javier Aparicio

Video/Documentation: Freddie Gerrard Abbott

Photography: Maria Mitsi

Online Documentation:

<https://vimeo.com/191508033>

Online Soundtrack:

<http://alfabody.net/projects/vastness/>

Venue: The Forum – THE ATTIC, 16th of September 2016, 8pm

Choreographic Installation
16 September 2016
at Attic\TheForum
8 p.m.

ΑΠΕΡΑΝΤΟΣΥΝΗ WASTNESS

CONCEIVED AND
DEVELOPED BY
MARIA MITSI

PERFORMERS
SARAH WARD
HELEN PENN
MUSIC BY
JAVIER APARICIO

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Hertfordshire **UH** School of
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Figure 71: Mitsi, Maria. *Poster – ‘Απεραντοσύνη/ Vastness’* (2016)