

A DIFFERENT WAY OF SENSING THE WORLD:
LIVE ART AND SYNESTHESIA

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**A DIFFERENT WAY OF SENSING THE WORLD:
LIVE ART AND SYNESTHESIA**

**A PRACTICE BASED RESEARCH PROJECT DEDICATED TO
RESEARCHING THE NOTION OF SYNESTHESIA**

Ruth Flynn

ABSTRACT

Synesthesia can be defined as the cross wiring of the senses where the stimulation of one sense triggers the stimulation of another sense. According to leading scientific researchers all of us are synesthetic, but most of us are unconscious about the sensory fusions in our brain. Through live art practice this study aims to bring an awareness of the senses and sensory fusion to the viewer. Synesthesia has been previously explored in the arts through music, poetry and painting but there is little evidence of synesthesia research through live art practice. Live art has the ability to reveal synesthetic characteristics of perception and can offer new ways of experiencing a stimulation of the senses. The methodological approach to this research is qualitative in nature, utilising interpretive research methodologies and methods. Practice as research is the chosen research method, as it combines creative and reflective practice with interpretative interactions. The findings of this research project will be considered within a phenomenological framework as phenomenology's main concern is with the lived experience. This research project aims to address the following research question: what sensorial stimuli can be used to evoke a perceptual experience in live art performance, and in what ways can live art contribute to existing research in synesthesia through this exploration? This research project can offer an alternative to the scientific experiments in synesthesia and may enrich and compliment previous studies and open new directions for further research.

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Introduction

This research project aims to address the following research question: what sensorial stimuli can be used to evoke a perceptual experience in live art performance, and in what ways can live art contribute to existing research in synesthesia through this exploration?

Synesthesia is a neurological condition that involves the simultaneous activation of two or more of the senses, a stimulus of one sensory mode with sensations which belong to another, seeing a colour upon hearing a sound, for example. In the 1980s leading American neurologist Richard E. Cytowic revived the interest into the study of synesthesia. According to Cytowic (2009) all humans are synesthetic, but are unconscious about the sensory fusions taking place. In scientific terms, a person who experiences synesthesia is referred to as a synesthete.

Although the concept of synesthesia has been explored through the fine arts there is little evidence of synesthetic research through live art. Live art performance is a multi-sensory experience for both the viewer and the artist, which draws on similar aesthetic strategies as those used in fine art practice, but stimulates the senses in very different ways. During the immediacy and 'liveness' of a performance both the artist and the viewer experience an engagement of the senses. The project will utilise the notion of cross-sensory experience in the development of a series of live art performances, and in this way aims to contribute to new understandings of the senses and synesthesia.

Live art

The Tate gallery defines Performance Art as "art in which the medium is the artist's own body and the artwork takes the form of actions performed by the artist" (Tate, 2011). While performance art would be the more generic term, during the 1960's and 1970's it was referred to as body art, due to the performer's focus on the body as the subject of the art.

In Australia, this art form is referred to as 'Time-Based Art'; while in Britain, since the late 1990's, it is known as 'Live Art'. The names of this art form are myriad, but their

meanings are the very same – a form of art wherein the body is both the “subject and object of the work” (Foster *et al*, 2004, p.567). I will use the term live art to refer to all centred, live action, performative art practices within art history since the 1960’s.

Live art peaked in popularity during the 1960s and 1970s. One of the challenges faced by collectors, dealers and museums lay in how to archive this ephemeral art form other than documenting its existence in text, photo and video. In recent years, there has been a renewed interest in live art due to a broader interest in the documentation of ephemeral practices such as live art and theatre. Another reason for this new interest, as Goldberg (2004) suggests, is that the 1960s and 1970s form part of our history and Art museums need to contextualise the art form in the museum. This can be a challenging task considering the ephemeral format of the work; by its very nature live art refused commodification – it existed as a moment in time, rather than a corporeal art piece, and as such it was impermanent.

Live art has been embraced by major art museums with museums such as Tate Modern London, Ludwig Museum, Cologne and MOMA, New York, acquiring performance works. Live art is increasingly becoming an essential element of mainstream museum programming, with dedicated festivals of performance art such as the Dublin Live Art Festival, the Spill Festival of Performance, the Bristol International Festival of Performance and the Fix Festival, Belfast which is the longest running Biannual of Performance Art/Live Art in the UK. Most recently, Tino Seghal’s performance art installation at the Turbine Hall, Tate Modern, has secured him a Turner Prize nomination in April 2013 and this accolade further attests to performance art/live art’s prominence.

The beginnings of live art can be traced back to Paris, 1909, with Marinetti’s Futurist manifesto, published in “La Figaro” calling for a new art form, one that embraced new technology and rejected traditional forms of art and its status within the gallery space. Echoing the need for new art, Dada emerged as a reaction to the horror of the First World War creating art that aimed to destroy traditional values in art. Live art is an extension of conceptual art, where the idea took precedence over the object. Breaking away from traditional painting, live art stepped out of the frame and engaged with

everyday life (Goldberg, 2004). After the catastrophe of World War Two and its disregard for the human body and life, artists developed an art form that was dependent on the physical presence of the body and personal experience. Using the body as a means of expression, it was an art form that was anti-consumerist, radical and defiant towards mainstream art, breaking away from the constraints of the gallery space in how it used the body as the art object, investigating its limits and possibilities (Goldberg, 2004).

As Goldberg (2011, p.15) observes, artists were “Frequently responsive to the political and socially transforming developments that raged around them” and chose performance as a response to cultural and political change. Developing simultaneously across continents, live art emerged as a mode of political action after World War Two and as a response to the need for cultural change. From the Gutai artists in Japan, to artists in the United States and Europe, live art was a reaction against political, social and cultural norms, incorporating responses to civil rights, student and feminist issues. Performance has attracted very diverse artists such as Yves Klein and Joseph Beuys in Europe, Carolee Schneemann and Allan Kaprow in the United States, and Yayoi Kusama and Yoko Ono in Japan.

Live artists create works in which “the audience [is] confronted by the physical presence of the artist in real time”, not dissimilar to other forms of visual art; however, it is “an art form which ceases to exist the moment the performance is over” (Goldberg, 2004, p.15). It is an art form that is raw, live and questions previous artistic ideas of representation. Moving away from the art market, each work encapsulates a specific moment in time, making an art form that is not object-based, but focuses on the performer’s body as the medium through which the piece is made manifest (Honour, 2005). It is temporal, ephemeral and its power lies in its ability to provoke a reaction from its audience. As Heathfield (2004, p.8) states: “Performance has consistently replaced or qualified the material object with a temporal act”, therefore, transcending the limitations of more conventional art forms.

Interpretative paradigm

The research is based in the interpretative paradigm. The findings of the project are created as the research/investigation proceeds. The findings of the research will emerge through practice. Interpretations are based in a specific moment in time and are located within a particular context. They are open to interpretation. “Strategies are not pre-determined, but emerge and operate according to specific demands of action and movement in time” (Bourdieu, 1990, cited in Barrett, 2007, p.4).

Methodology

The project will investigate the research question using an interpretive approach. Interpretive methods depend on a naturalistic process through reflection and analysis of research experiments. Practice as research and phenomenology as approaches will ensure a subjective relationship between the researcher and the research question. These methods will ensure an adequate dialog between the researcher, the research question and the viewer of the live performance. The methodologies will be emergent bringing an awareness and articulation to the interpretations and choices made in order to collaboratively construct a meaningful reality.

The research design can be described as qualitative design: live art process and experimentation infused with analytical and theoretical investigations. Primarily, the project will rely on insightful, responsive and interpretative approaches with visual documentation. The process will include analysis, reflection, critique and creation. More specifically, this research project utilises an arts-based research framework. Arts-based research posits that the artistic process is “the primary way of understanding and examining experience by both researchers and the people that they involve in their studies” (McNiff, 2007, p.29). In the first phases, empirical data will be gathered and documented by the artist-researcher through the artistic process (McNiff, 2007).

The research method identified as most appropriate to the project is practice as research (Kershaw and Nicholson, 2010; Sullivan, 2009; Gray, 2004.). This design can be justified because practice as research is an example of research enquiry grounded in practice (Gray, 2004), in this case live art practice, yet conforms to the methodological requirements of qualitative research in its use of “systematic experimentation” (McNiff,

2007, p.33). Problem-solving tactics become more obvious through the engagement by the artist-researcher with the research problem and through action/reaction and improvisations the research becomes more focused (Sullivan, 2005).

Internationally, practice as research (PaR) has been used since the 1960s in the cognate disciplines of performance studies and theatre. As Kershaw explains, its intention was to “develop methods of creative enquiry that would be recognised as cognate to establish scholarly research procedures and techniques” (Kershaw and Nicholson 2010, p.63). In particular, PaR has gained in popularity since the 1990s with practitioner-researchers in the UK spearheading this trend. The Practice as Research in Performance (PARIP) project at the University of Bristol recognised “the methodological shift in the performance disciplines” (PARIP, 2006). The methodologies and definitions vary in each discipline, but their common characteristic is the use of the creative process as the research method. According to Kershaw (2011, p.64): “Practice as research in the performing arts pursues hybrid enquiries combining creative doing with reflexive being, thus fashioning freshly critical interactions between current epistemologies and ontologies.”

Theoretical framework

The data created by the artistic process will be considered within a phenomenological framework.

Phenomenology is a philosophical movement originating in Germany in the early twentieth century. The leading philosophers in the field were Heidegger, Husserl, Merleau-Ponty, and Sarte (Smith, 2013). It is based on a methodology of reflection and examination of the lived experience, providing a vital connection in our scientific and philosophical understanding of the world. Its main concern is how the world appears to the individuals who encounter it through reflection on various types of experiences including imagination, perception, emotion, thought, desire, action and volition. It can be defined as the “study of phenomena as they present themselves in direct experience” (Fortier, 2002; O’Leary, 2004, p.122; Reeder, 2010). Reflection and examination of the live experience are inherent in the practice as research approach.

Phenomenology is a science that seeks an unbiased truth while unearthing the personal experience through reflection. Phenomenological studies depend on individuals and their experience of a particular phenomenon. According to Reeder, (2010, p.22): “Phenomenology’s method is reflective, in that it prescribes that each of us reflect back upon our own experience, in a sort of reflective introspection of our own life”, and this can be expressed by the individual through an interview, writing, or a painting – any method they use to describe their experience. Through reflection on personal experience, phenomenology elucidates the evidence of a lived experience of the individual rather than the individual themselves. O’Leary (2004, p.123) asserts the value of phenomenology and posits that:

- (1) there are things called phenomena in the social world;
- (2) that these things can be researched;
- and (3) that they are a worthy object of inquiry.

The role of Phenomenology is to describe rather than explain, therefore the findings of this project will be interpreted using phenomenological description, a product of phenomenological studies; this involves gathering rich descriptions of a lived experience and making sense of them through reflective writing and critical theory.

Language plays a significant role in Phenomenological description as it is “descriptive and interpretative, and is often rich, poetic and full of metaphor. The produced text is therefore both the phenomenological process and its product.” however phenomenology may often go beyond language to explore a non-linguistic lived experience (O’Leary, 2004, p.124; Reeder, 2010).

Phenomenological description will be used to describe the experience of each performance. In my research of phenomenological description a number of considerations arose that I felt would be most salient in the analysis of my practice experiments.

The performances will be analysed using the following:

- The reality of the body of the performer.
- The bodily responses of the audience.
- Awareness of other people.

- Kinaesthetic awareness.
- The essence of a live experience.
- The role of technology.
- What remained constant.
- Memory and time, past present or future.
- Everyday activity, culture, social interaction including collective action, communication with others.
- Spatial awareness, awareness of other people

The basis by which I could ascertain the success or failure of my work was dependent on whether or not my live art performances met the criteria contained within these questions.

The descriptions of the project will be gathered by measuring the findings by analytic and synthetic means (Di Benedetto, 2010). Through an analytical approach, individual sensorial stimuli such as scent, touch, sound, sight and taste will be identified and examined in the live performance. In addition, this project will also measure the outcome in a synthetic way, considering the new stimuli that are created through sensorial fusion during the live performance.

Chapter one will investigate synesthesia and the senses, examining the history of synesthesia in the arts and in particular looking at the work of Wassily Kandinsky and Paul Klee who have used synesthetic elements in their paintings. It considers how the concept of synaesthesia has been researched in the arts discussing the lack of synesthesia research through live art. It will deliberate the importance of the senses in live art and how an awareness of the senses has the ability to stimulate a synesthetic experience.

Chapter two will explore elements of sensorial stimuli through live art practice. The live performance *Imperfect Pitch* was designed to answer the research question: how does live art affect the sensory experience of the performer and the viewer? This performance explored the synesthetic representation of colour and sound in film demonstrating sound-colour associations within a live art performance. It explored the sense of sound, vision and movement. It was performed in two different locations which demonstrate the importance of space to the experience of a live art event. The second performance *Solitaire* aimed to elicit new sensorial stimulation in the sense of smell and movement of the body. The research question was changed and new question is as follows: what sensorial stimuli can be used to evoke a perceptual experience in live art performance, and in what ways can live art contribute to existing research in synesthesia through this exploration? *Solitaire*, explores the subject of illusion and how the mind can be tricked. Both performances demonstrate the important role of light in the experience of the live act and how when combined with sound can add a new stimuli of rhythm and movement.

Chapter three will discuss the performance of *Bubbles* which was designed to encourage audience participation while also engaging their senses. It will discuss the findings of scientific researcher Van Campen and his suggestions that we all possess synesthesia as children. *Bubbles* presented the participant with a sense of fun evoking a recollection of memories of childhood while also creating a synesthetic experience. It will further demonstrate the importance of space to a live art performance, comparing the same performance at two different locations.

Chapter four discusses the most effective sensorial stimuli of previous performances and describes the design and performance of *The Light Dress*, a final performance that would stimulate the senses and evoke a perceptual experience within the viewer. The research is based on previous experiments of light and sound associations of the colour organ and in film. Combining technology with a live art performance it will demonstrate the ability for the performer and technology to become one and mimic this light and sound association.

CHAPTER 1

Synesthesia and the senses

This chapter will explore synesthesia and how the senses work within our brain. It will explore the history of synesthesia in the arts focusing mainly on the work of artists Wassily Kandinsky and Paul Klee. Although synesthetic experimentation has been explored in painting there is a lack of synesthesia research through live art practice. Live art has the ability to stimulate the senses in a way that other art form cannot, therefore this research proposes that live art has the ability to stimulate a synesthetic experience in the viewer.

Synesthesia

The ability for both synesthetes and non-synesthetes to relate seemingly unrelated things is evident in the use of synesthetic metaphors in daily life; one might describe their feelings when sad as “blue” and “red” can represent anger, for example. Other metaphoric examples include describing the weather as ‘bitterly cold’ or describing a colourful tie as a ‘loud tie’. As evident in these metaphors, they take the form of cross-sensory associations. According to Cytowic (2009) synesthetes and non-synesthetes make associations in similar ways. The metaphor of a ‘loud shirt’ gives the association between pitch and colour. Similarly, colour intensity is also linked to taste and smell as a darker coloured liquid (red wine) is deemed to taste stronger and have a stronger aroma than a light coloured liquid (white wine).

The word synesthesia is derived from the ancient Greek words, with *syn* meaning together and *aesthesia* meaning perception; it is essentially a joining of the senses (Cytowic and Eagleman, 2009; Ward, 2006; Berman, 1999; Harrison and Cohen, 1994). Psychological studies such as “*Synesthesia and Cortical Connectivity*” (2008) at Trinity College, Dublin, explain synesthesia as a condition that occurs when an individual experiences the simultaneous activation of two or more of the senses, as in the crossing or pairing of two or more of the senses (cross-modal associations). This sensory pairing takes myriad forms and can be divided into two categories:

Two sensory synesthesia

Two-sensory synesthesia can be characterised according to the following:

- Coloured – Hearing (Chromaesthesia): colour is seen upon hearing a sound, i.e. seeing the colour red when hearing the note C sharp;
- Colouref – Olfaction: colour is evoked through the experience of a smell i.e. the smell of lavender may be experienced as orange;
- Tactile – Gustation: taste is experienced as a shape, i.e. something sweet may be seen as a triangle;
- Coloured – Gustation: colour is perceived from taste, i.e. something sour may be experienced as blue.

Multiple sensory synesthesia

According to Synesthesia (2012) multiple sensory synesthesia can be characterised as follows:

- Coloured – Numbers: numbers or dates to colours, i.e. 1= white, 5 = red; thus, thinking about a date, the 15th, for example, would be visualised as white/red;
- Coloured – Letters: letters as colours, every letter of the alphabet has a specific colour; words of speech are experienced as blends of colours;
- Coloured – Graphemes: the experience of colour upon hearing words. The colour of the word depends on the first letter of the word;
- Shaped – Numbers: numbers as shapes, i.e. 2 might be a square.

According to Cytowic (2009) it is believed that one in twenty-three people have synesthesia. The synesthete's perceptions are consistent and unique to each individual. For example, if B minor is seen as dark blue in colour, it will always be seen as that colour. The colour experienced is unique to each individual, while one may see B minor as dark blue the other may perceive it as orange (Berman, 1999). The characteristics of synesthesia are: involuntary and automatic; spacially extended; durable (constant over time); and, generic, highly memorable, and loaded with affect (Cytowic, 2009). Brang and Ramachandran's (2011) evidence of a synesthetic experience from hallucinogenic drugs or in those who have suffered brain trauma suggests that we all possess the neural mechanisms that trigger synesthesia in the brain but for most of us they are concealed.

For years, synesthesia was dismissed and attributed to an over-active imagination or an example of attention-seeking. Adding to these perceptions is the fact that synesthesia is unique to each individual and even when given the same stimulus no two synesthetes experience the same sensations. Cytowic (2009) is spearheading the study of synesthesia, and has published many books on the subject with studies on the subject concluding that synesthesia is part of the human experience.

The work of Crétien Van Campen (1999, p.393) challenges Cytowic's position that "artistic experiments were historically interesting but not relevant for the present study of synesthesia" arguing instead that the artistic experiments of Scriabin and Kandinsky "have revealed important synesthetic aspects of perception". Van Campen (1999) proposes that artists and scientists have previously crossed disciplines to explore new research potentials within their own fields. This crossing of the boundaries is also referred to as perceptual phenomena. The argument that both art and science can share and learn from each other is supported by Stephen Di Benedetto's (2010, p.ix) work on theatre and the senses: "In many ways, artists have intuitively been using concepts that science is only now beginning to explain. It is knowledge of the world as expressed through material art objects."

Arts-based methods and synesthesia

According to Baron-Cohen and Harrison (1994), synesthesia has a prominent history in music, literature and art and may have a role in "artistic creativity". Novelist Vladimir Nabokov, composers Olivier Messiaen and Alexander Scriabin, and painters Wassily Kandinsky and David Hockney are examples of artists who have used synesthetic elements in their work; however, it should be noted that the use of these elements is more organic in their work, reflecting their way of seeing the world as opposed to the use of these elements as artistic devices. The artists who have used the concept of synesthesia as an artistic device, and are most relevant to this research project as a result, are Kandinsky and Klee. Kandinsky and Klee approached their work in different ways, but they had the same desire to fuse music and art. Kandinsky interjected the study of harmony and dissonance into his paintings while Klee focused on abstraction based on historical music modalities. Both artists merged sensory modality to create works which replaced traditional art objects with abstraction. It is this merging of

sensory modality which this research project will adapt through live art practice, engaging the artist and the viewer through sensory stimuli.

Wassily Kandinsky (1866 – 1944)

It is believed that Kandinsky had “two sensory synesthesia”; he saw musical notes as colours and colours as musical notes. Ward (2006) recounts how, as a child, when mixing colours in his paint box, Kandinsky heard a strange hissing noise, signifying the link between sound and colour. Later, he became an accomplished cellist and described the cello as the bluest of instruments. Kandinsky’s first synesthetic experience occurred at a staging of Wagner’s opera *Lohengrin*, in Moscow: “I saw all my colours in spirit, before my eyes. Wild almost crazy lines were sketched in front of me” (Ward, 2006).

From 1911 onwards, Kandinsky used his synesthesia in his paintings and attempted, through vision, to create “the painterly equivalent of a symphony that would stimulate not just the eyes but the ears as well” (Ward, 2006). Di Benedetto (2010) observes that most interpretations and analyses of artistic compositions have focused on hearing and sight, primarily; however, the proximity of the viewer to the performers, as evident in live art practice, has yet to be fully utilised.

Kandinsky delved into abstraction, replacing the figures and forms of his earlier works with precise geometric shapes or stabs of colour. In his eyes, these were “musical notes and chords that would sing together” (Ward, 2006). Essentially, Kandinsky depicted shapes and forms with musical tones and depicted musical tones with block colours and geometric patterning as can be seen in his painting below.



Fig. 1 Kandinsky, W. (1911) *Lyrical*

Paul Klee (1879 – 1940)

A contemporary of Kandinsky, Klee began working at the Bauhaus in the 1920. Both artists worked closely together with a combined ambition to unify the arts. The works of both artists are very similar in style and as suggested by Ione (2004), the works could easily be confused by the untrained eye. Earlier writings on both artists suggest that Klee, like Kandinsky, also had “two sensory synesthesia”; however, more recent publications refer to the fact that he did not actually have synesthesia, but rather used synesthetic ideas in his work (Van Campen, 2009).

Klee grew up in a musical family and was himself a violinist; music was an influence on his life and his work (Heyrman, 2005; Ione, 2004). In his paintings, Klee worked with patterns, forms and interlacing lines to allude to music and rhythm. Klee himself referred to his paintings as a form of “psychic improvisation” (Heyrman, 2005). Klee’s approach to his work was based on theories of colour combined with music enabling him to devise a systematic order of colours in his work which critics often compare to the organisation of musical notes (Quantum Books, 2003). For example, in Klee’s *Abstract Trio*, 1923, the painting represents three instruments or three voices. The interlacing of form and lines alludes to the rhythm of music and it exudes an almost musical quality. Klee pays little attention to form and structure, but instead the figures are composed of lines which form an almost rhythmic interaction with one another.

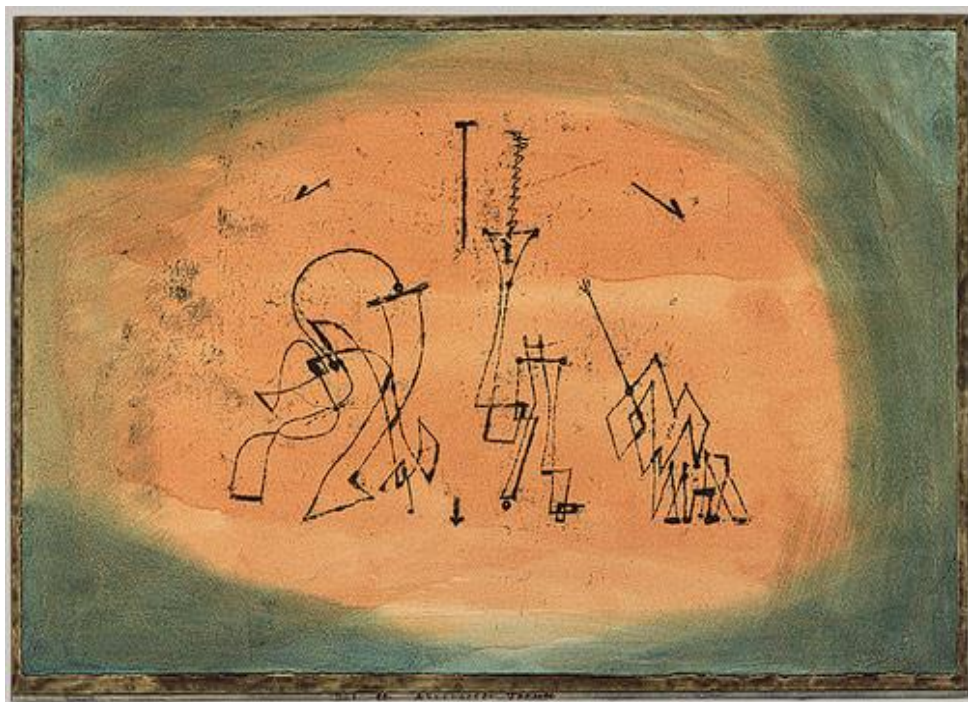


Fig. 2 Klee, P. (1923) *Abstract Trio*

Live art and synesthesia research

As discussed above, the concept of synesthesia has been researched in the arts; however, there is little, if any, evidence of synesthesia research through live art. Live art is a relatively new discipline and practice, which was traditionally associated with socio-political issues of such as feminism and civil rights. After its peak in the 1960s and 1970s, live art waned in popularity until its recent renewal in the 1990s. Contemporary live art focuses on a myriad of concepts and socio-political issues such as mental health and social engagement.

Live art attempts to mediate the space between the live performance and the viewer's perception as Heathfield (2004, p.8) states "The artwork is alive". Live art is ephemeral while also engaging the senses – it cannot exist without them – it stimulates the senses and is an example of cross-sensory mapping, where the stimulation of one sensory organ gets channelled through more than one cognitive pathway. Live art is a presentation of a live experience to the viewer through consideration of sensory stimuli, these may include the setting, visual images, objects and sound which are incorporated in the performance to provide a multi sensory perceptual experience exciting the viewer's senses. Artists have also incorporated taste, touch and smell with audience involvement and participation. During a live performance the viewer's experience can be referred to as relative synesthesia, a cross-modal experience of more than one sense.

Heathfield (2004, p.11) states that "The physical entry of the artist's body into the artwork is a transgressive gesture". Live art practice stimulates more than one sense as it blurs the boundaries "between subject and object, life and art" (Heathfield, 2004 p.11). The live performance also links the viewer to the artist, evoking a cross-sensory experience within the viewer. Breaking down the barriers of traditional art, live art prompts the viewer to engage with the live performance often recalling specific personal memories referring to sight, touch, taste, sound and scent. Although synesthesia is a neurological condition that cannot simply be experienced at will by a non-synesthete, the effect of this type of response in a live art context aims to mimic a synesthetic experience. Mimicry and catharsis are key concepts in the processes of theatre and performance. According to Di Benedetto (2010, p.170) "Theatre's live qualities affect mimesis, and as a result of multi-sensory stimulation, our involvement and attention

with mimetic representation process the experience as lived”. It is through an engagement with a sensory experience in performance that a synesthetic experience can be evoked (Van Campen, 2009).

The senses

Cytowic states that in daily life “we do not experience sensory events in isolation because each sense receives correlated input from other senses about the same object or event. Unnoticed by the perceiver, each sense modality is highly influenced by other senses” (Cytowic, 2011, p.105). “Many persons are not aware of their synesthetic potential, simply because they use only a portion of their senses” (Van Campen, 2009, p.7). Traditionally, sensory research has been addressed in the discipline of neuroscience and, specifically, through the concept of synaesthesia. This research aims to explore what sensorial stimuli can be evoked in a live art performance.

All humans experience life through their senses, the classification of which can be dated back to Aristotle (384BC – 322BC). Along with the standard five senses – sight, hearing, smell, touch and taste – humans experience other stimuli such as pain, temperature, pressure and balance. According to Sherman (2013) “Sensations themselves are fleeting: they linger in the memory for just seconds (sometimes less than a second) unless they engage neural networks beyond the primary sensory cortices. Perception is the process by which the brain makes sense of these incoming data, mixing memory, emotion, and cognition into the experience” (Sherman, 2013). Adding to Sherman’s point, Di Benedetto explains that “Perception, consciousness, and attention are the component means by which we understand and interpret stimuli” (Di Benedetto, 2010, p.5). The senses are responsible for our awareness of the world around us and through the stimulation of the senses we become conscious of our environment. We are rarely aware of all of our perceptions; similarly synesthetes are not usually aware of all of their perceptions (Di Benedetto, 2010; Sherman, 2013; Van Campen, 2009; Zamora, 2014).

Scientists frequently refer to the brain as plastic. According to Miller this is because of the brain’s “ability to change” (Miller, 2013). The factors responsible for change in our brain functions are education, knowledge, culture, experience and memory. “Although

the brain's sensory systems are wired from before birth, they continually evolve through interaction with the environment" (Sherman, 2013). Therefore as Di Benedetto suggests if the brain can change due to sensorial experience, it is possible that a live performance could change our understanding and awareness of our environment. If the artist has an understanding of the mechanism of sensorial stimuli, a live event can be designed using this knowledge to "create an in-between state of experience and awareness" (Di Benedetto, 2010, p.1). If, during a live performance the artist can bring a conscious awareness of the senses to the viewer, the experience of the live act will then be enhanced for the viewer. If the brain is plastic and can be changed by sensory stimuli, then a live performance that stimulates the brain has the ability to change it.

During a live art performance the audience perception of the event is an understanding of what we consciously experience happening in front of us, combined with an unconscious understanding of the event. Neuroscientists confirm that the conscious brain can only be conscious of one thing at a time. Di Benedetto (2010) believes this is the reason we are prepared to accept fiction as real during a performance. It can be argued then that the use of sensorial stimuli can make it possible for the artist to make a mimetic experience seem real to the viewer. On what makes a successful performance Di Benedetto (2010) adds that "The success of a theatrical performance relies on the subjective response of its attendants. In what may be referred to as a 'traditional' perceptual experience, the interactions between spectator and performers are modulated by our conscious reception of everyday experience that creates a personal understanding of the characters and the situation in which they are involved" (Di Benedetto, 2010, p. ix). Even though an artistic performance happens in a constructed space the stimulation of the senses through the interaction between the artist and the audience combined with the immediacy of the event, make it possible for the viewer to perceive the live act just as they would any other life experience (Alrutz et al, 2012; Banes and Lepecki, 2007; Scaruffi, 2006).

However our unique personal experiences inform how we interpret different types of stimuli during a live performance. These experiences are formed by our learned development and our cultural environment. For example, in Marina Abramovic's performance of *Lips of Thomas* (one of her performances in *Seven Easy Pieces* at the Guggenheim, New York, 2005), the artist broke a glass with her hand during the

performance, cut the outline of a star into her stomach with a razor blade, whipped herself and finally, lay down of a block of ice. For a viewer familiar with Abramovic's work they may possibly analyse the performance from an understanding of live art while a viewer unfamiliar with the subject may become distressed by the live act. As Di Benedetto (2010, p.7) explains, "This does not mean that we are not experiencing the same stimulation, merely that we are modifying the input differently according to our own cultural or environmental conditioning". As a result, a viewer who has studied live art practice might interpret the live performance very differently to a viewer who may have little or no knowledge of the subject (Guggenheim, 2014).

We respond to all types of stimuli as if it were happening in the present, but this might not always be the case, the stimuli we experience could evoke in us a memory or imagination of the sensation. If, for instance we see a performer taking a bite from a lemon our brains will register the sour taste, not because we actually taste the lemon but from previous experience our brain remembers how a lemon would taste. Di Benedetto (2010, p.13) states "An actor performs an action that an attendant either witnesses or is part of, and then the attendant has an embodied response". During a live performance it is possible for the performer to make a connection with the viewer allowing the viewer to respond to what is happening to the performer just as if it were happening to the viewer (Di Benedetto, 2010). We are able to respond to what we see like it is happening to us. For example visually seeing facial expressions make us react, we feel empathy when encountering a sad expression and smile back in response to a smile. This visual activates our own emotions, similarly when we watch a live performance our brains have the same response. Referring back to Abramovic cutting the star shape into her stomach, we are aware of the physical pain that the artist is enduring.

Our senses are continuously being stimulated and are extremely receptive to signals such as a faint unfamiliar odour or sound. Because of this the brain has to filter and select what stimuli warrant attention and what can be ignored. If this did not happen we would be constantly bombarded with sensation. The brain selects what senses we receive and has the ability to block others such as the sound of your own breathing or the sensation of blinking (Di Benedetto, 2010; Sherman, 2013).

According to neuroscientist Mark Changizi, neurological research has confirmed that the brain can see one-tenth of a second into the future, and so has the ability to predict a situation one-tenth of a second before it happens. As Halverson explains, “When light hits our retina, it takes about one-tenth of a second for our brain to translate that signal into perception” (Halverson, 2014). This delay is what makes the brain predict images of what it thinks will happen one-tenth of a second before it actually does. This ability for prediction is based on memory stored by the brain. We can tell the weight of an orange before picking it up, how it will feel peeling the skin and how it will taste in the mouth. However our predictions are not always right. If for some reason our predictions do not match our expectations this causes the brain to become more alert to reassess the situation and to process and identify the change. Di Benedetto (2010, p.46) observes a similar process of change: “Adaptation is an important function of the senses; our bodies need to respond when encountering changes in the world. Thus when change occurs, the brain pays attention.” Di Benedetto (2010) suggests that this is can be a useful tool in performance, when an unexpected or new element is added the viewer will become more alert. In relation to the studio work at the core of this project for example, during the performance for *Imperfect Pitch* at Soma Contemporary Gallery (2013) I added a new element of my voice speaking over the violin at random intervals and then singing and holding the note at the end. The purpose of this was to disrupt the sound of the music by adding an unexpected element to the performance that would cause the viewer to become more alert.

In live art practice the artist uses the body as a tool for artistic expression, the brush and the canvas are replaced by the artist’s body. Live art utilizes sensorial stimuli to create a mimetic experience that can evoke an emotional response from the viewer. Since the senses are all closely related and we are constantly experiencing more than one sense at a time, the challenge facing the artist in bringing an awareness of the senses to the viewer is to be able to highlight the viewer’s attention to only one sensorial stimulus (Banes and Lepecki, 2007; Di Benedetto, 2010).

As previously mentioned the most dominant of all our senses is sight, “The brain devotes more space to processing and storing visual information than all other senses combined” (Sherman, 2013). This information is very important to inform a live art performance. As Di Benedetto proposes, “By stimulating sight through performance, we

invigorate the rest of the information that we receive from all of our senses” (Di Benedetto, 2010, p.31).

Van Campen (2009) details how we generally relate sensory perceptions to external senses; sight to our eyes and sound to our ears. Synesthesia is an experience within the body and is not related to an external sense organ.

“Synesthesia is not grounded in an external sense organ. It is not an ordinary sense function. Synesthesia operates in the area between the senses. Its etymology – *syn*: together; *esthesia*: perceiving – refers to this function. The sense of synesthesia is not observable at the exterior human body, but lies beneath the senses. It remains hidden in most people who do not have synesthetic perceptions. But in some it stands up, and they perceive synesthesia consciously” (Van Campen, 2009, p.7).

Di Benedetto proposes that art has the ability to influence our brains. Stimulation of the senses changes the brain by our lived experiences. The brain responds to pleasurable stimuli, if an experience of live art is pleasurable to the viewer, then it has the ability to influence the brain. “Recent brain studies have proven that our memories of events activate the same parts of the brain that the actual experience did – to remember is to relive, and therefore it is experience. How we interpret these experiences gives the experiences meaning” (Di Benedetto, 2010, p.22).

Synesthesia research for performance

Research into synesthesia has found that synesthetic associations occur in everyday life and are experienced by both synesthetes and non-synesthetes. A typical example of this according to Cytowic (2009) can be seen in the metaphoric association between pitch and colour in ‘loud shirt’. Ward (2004) implies that research has also suggested colour-emotion associations in people who do not have synesthesia. People are inclined to associate red with anger, blue with sadness, and yellow with happiness and so on. Likewise, round forms tend to suggest a positive emotion whereas angular forms tend to suggest a negative emotion (Ward, 2004, p.763). Cytowic refers to Dr Lawrence Mark’s research determining the relation between “pitch, lightness, size and loudness” (2011, p.103) experienced by both synesthetes and non synesthetes. For instance:

“loud tones are brighter than soft tones, that high tones are louder, brighter, and smaller than low tones, and that low tones are both larger and darker than high ones. Melodic intervals also map to bright-dark values: lighter stimuli are said to go with ascending melodic intervals and darker stimuli with descending ones, whereas larger melodic intervals produce more extreme (lighter or darker) choices than closer intervals” (Cytowic, 2011, p.104).

Colour

An interesting finding in Cytowic's (2011) research into synesthesia leads him to conclude that the most common representation of synesthesia is colour, where people experience colours for letters, numbers, months of the year and days of the week. He concludes that, on a subconscious level, colour is an element that the brain effortlessly interrelates to (Cytowic, 2011). Adding to Cytowic's (2011) theory, Van Campen (2009) indicates that coloured weekdays, are the most common type of synesthesia and is the type most studied by scientists while colour-sound association is the form most explored by artists. In addition, Cytowic (2011) suggests that colour hearing – sound to sight synesthesia it may be present in all humans from birth.

I was particularly interested in the way colour sound associations have been explored in film throughout the century. In the 1930s, German artist Oskar Fischinger began to explore his synaesthesia through film by combining a synchronised soundtrack to a series of hand-painted film frames of geometric shapes. Walt Disney later employed Fischinger to work on the 1940s animated film *Fantasia* in which Fischinger animated Bach's *Toccata* and *Fugue in D minor*. Palmer (2010) explains that when we watch a movie our sense of vision is more dominant than our sense of sound. In an exception to this rule, Disney's *Fantasia* (1940) was based on the sight to sound association and it is believed to be as close a representation of synesthesia experience to a non synesthete (Cytowic, 2011). Other considerations of synaesthesia in film are linked to the film *Three Colours Blue* (1993) by Polish director Krzysztof Kieślowski, which shows the main character of the film experiencing synesthesia after a head trauma (Pieperhoff, 2007). Other examples of a synesthetic experience in film are: the ending scene of *Close Encounters of The Third Kind* (1977) and the opening scene of *2001 A Space Odyssey* (1968), music composed by Gyorgy Ligeti who had coloured hearing synesthesia (Cytowic, 2011). A study of film by Dr. Jamie Ward in 2004 found that animations based on synesthetic experience were more enjoyable to watch than when based on non-synesthetic experiences. All of the films mentioned use colour and light responding to sound to represent synesthesia. I decided to explore this light and sound combination for my first research experiment (Palmer, 2010).

This chapter has examined synesthesia and the working of the senses within our brain. It has explored the history of synesthetic experiments within the arts and has highlighted the lack of synesthetic research in live art practice. Live art can trigger a sensorial stimulation within the viewer, thus has the capability to stimulate a synesthetic experience.

CHAPTER 2

Imperfect Pitch and Solitaire

This chapter will explore how the senses can be stimulated through live art practice. It will discuss two live performances, *Imperfect Pitch* and *Solitaire*. Each performance will focus on stimulating different senses within a live art performance. Both performances reveal the important role of light in the experience of the live act and how when combined with sound can add a new stimuli.

Imperfect Pitch

Imperfect Pitch was a performance created with the intention of presenting my research into synesthesia at Waterford Institute of Technology's Research Day. My first working question was how does live art affect the sensory experience of the performer and the viewer?

The audience experience was a crucial factor when deciding what to present. The performance was to accompany my poster which outlined and briefly explained my research into synesthesia. It would be performed in front of an audience that possibly may not be familiar with or have any experience of live art performance; this factor could prove as an advantage for me during my performance. As Di Benedetto (2010) points out when we encounter change our senses need to adjust to this unfamiliar situation causing the brain to become more focused (Di Benedetto, 2010). Therefore, presenting a live art performance to an audience who may have very little or no knowledge of live art, will cause them to become more alert to the new stimuli being created by the performance. In addition, the new stimuli created by the performance will remain in their memory as a new experience. My intention was to create a live art performance that would be accessible to all and presented in a non threatening way in a safe environment.

Research

In Fortier's (2002) writing on theory in theatre he asserts that a theatrical performance more often stimulates the viewer's sense of sight and sound rather than touch, taste and smell (Fortier, 2002). With this theory in mind, the performance was designed to

investigate the possibility of demonstrating sound-colour associations within a live art performance. The intention was to explore a synesthetic experience of colour and sound, referencing representations of synesthesia in films such as the vibrant colour scheme of Disney's *Fantasia* (1940) and *Close Encounters of the Third Kind* (1977) and also the personal experience of synesthesia in the movie *Three Colours Blue* (1993); specifically the way in which the colour blue shone on the actresses' face each time she had a synesthetic experience. Referring to Di Benedetto's (2010) writing on how an awareness of the senses can enhance the experience of a performance I decided to assimilate this theory to the performance. He suggests that manipulating the sense of sight can direct a viewer's attention to an intended place. If after a period of darkness on stage a section of the stage is illuminated the audience's attention will be drawn towards the light "because our visual system seeks out light, and they will have an emotional response as a result of that trigger" (Alrtuz et al, 2012, p.104).

Performance design

The research was to use sound sensitive lights which would react to an accompanying sound. Using four LED spotlights, red, blue, yellow and green, that react to sound, I collaborated with fellow MA music student Rowan Sherlock playing violin. Di Benedetto (2010) affirms that unfamiliarity causes our brains to become more alert.

"As we encounter the unfamiliar melodies, our brains begin to go haywire, searching frantically for some sense within the unfamiliar. Our sense of well-being has been violated, so we must struggle to find an explanation for the new stimuli" (Di Benedetto, 2010. P.131).

The intention is for the music from the violin to contribute to the sense of the unfamiliar. The melodies played will range from happy, sad, fast, slow, unsettling, basically a range of emotions and tempo. Because this music will be a new experience for the viewer there is a strong possibility that they will become more alert during the performance and there is a possibility that the performance could elicit new stimuli within the viewer.

The space will be in darkness except for the spotlights which will change in colour as the music is playing from the violin. I will be standing under the lights, with the lights shining directly on my face; a representation of someone who experiences synesthesia. This manipulation of light will deliberately direct the viewer's attention to my face creating a new reality for the viewer. In a reference to Disney's *Fantasia's* release in

1940 I was dressed as a black and white style 1940's performer. Since colour TV did not come out until the 1960s all movies on TV at that time would have been in black and white. The coloured light does not belong to this era, just as in the way that a non synesthetic would not experience colour. Being dressed in black will help me to blend into the background, take the attention away from my body, and focus the viewer's attention on the coloured lights thus keeping the viewer involved in the performance.

Phenomenological description of the performance

Dressed in black, I am standing at the top of the auditorium. To my right I am accompanied by Rowan seated on a high stool also dressed in black. I am standing under four LED lights. There is silence in the room a shadowy outline exists of the audience members in the darkness. Four LED lights shine red, green, blue and yellow indicating the beginning of the performance illuminating the performers and the audience members. The sound of the violin playing a slow tempo with low sounding notes causes the lights to change colours from blue to green to yellow. As the tempo of the music changes the lights change in the same rhythmic pattern, causing different shadows and different parts of the performers body to be illuminated in different colours of light. This in turn casts a coloured hue around the auditorium illuminating different sections of the audience. The initial melody played on the violin is melodic and soothing causing a sense of relaxation. This comfort is then disrupted with the sound of sharp abrupt bursts of sound causing an erratic changing of the lights. The sound becomes uncomfortable and unpleasing to the ear. This feeling ceases with the fluid playing of notes creating a sad slow but melodic tune. This is repeated throughout the performance. The sounds go from loud to soft sad happy melodic and erratic until finally finishing on a quiet melodic tune. The final colour of the lights is blue and the performance ends, bringing my attention back to the movie *Three Colour Blue* (1993).

Concerns of Phenomenology in the performance

Heidegger questions technology and outlines how technology had developed at the detriment of a more artistic truthfulness (Lovitt, 1977). When reflecting on the performance I questioned this theory in relation to my performance: was technology taking away from the performance, from the truth of the experience? My conclusion to this question was that technology enhanced the bodily presence during the live art

performance. In this case the lights created a presence within the performance, a liveness that could not be experienced without the use of the lights.

We see the performer's body highlighted by the lights – presence – the reality of the physical body – life – existence – the strength/frailties of the body. This represents the personal experience of synesthesia, as only the performer's body is highlighted under the lights. As the music changes the one thing that remains constant is the performer's stance, the presence of the performer and the presence of the audience for the duration of the performance. The passing of time is experienced with the changes in the music, we experience the present which then becomes the past.

The theatrical aspect of the performance supplemented Fortier's theory where he suggests "theatre has a special relationship with the presentation of lived experience to the spectator. Theatre appears to the spectator's senses as something to be seen and heard" (Fortier, 2002, p.39). The lights shining on the performer while also casting light on the audience create a relationship between the performer and the audience. They aid in breaking the fourth wall, making them aware that they are in the space of a live art performance and are part of that performance, thus affecting the sensory experience and strengthening the connection between the audience and the performer.



Fig. 3 Flynn, R. (2013) *Imperfect Pitch* at Waterford Institute of Technology

The performance for Research Day highlighted the fact that live art is an art form that many people may not be familiar with. During a live art performance the body is the artist's instrument, the performance space is a phenomenal space dominated by the body and its "spatial concerns" (Fortier, 2002, p.38). Live art utilizes the relationship between the audience, the performer and the surrounding space. In my experience in performing and attending live art events, the smaller the performance space the bigger the connection between the audience and the performer. The performance for Research Day took place in an auditorium, in a space that mimicked an amphitheatre. The audience were seated in raised seating watching the performance staged below. This setting posed to suggest a more theatrical performance than a live art performance. There was an immediate connection between the audience members due to the fact that they were seated closely together; however there was a large distance between me and the audience making it a lot more challenging to form a connection.

Fortier (2002) explains Heidegger's theory between art and its relationship to truth. He explains that:

"Unlike objects of utility or our day-to-day existence, works of art endure without being used up, passed by or cast aside. They provide access, not to things in themselves, but to a privileged relation, of reflection and understanding, with the world, a relation usually concealed in day-to-day human activity" (Fortier, 2002, p.42).

This raises the question of memory and experience, how much of our day to day lives do we remember experiencing. A live art performance has the ability to provoke a response within the viewer making them more aware of the stimuli they are experiencing.

Live art attempts to blur the boundaries between audience and performer. The audience is a critical contributor to the performance; they have the potential to change a performance through reaction, engagement, connection, response or non response. The audience not only watch a live art performance, they are part of that performance just by attending, and therefore they also experience the event – the body of the performer, the spatial element of the performance space and the relationship between audience and performer.

As discussed previously live art is ephemeral and each experience is unique. New stimuli are created within the viewer and the performer, causing the brain to remember

the experience more than an ordinary daily experience. As Mock (2000, p.3) explains when a performance is over “it reverts back to (mere?) ‘ performance’, its trace documented (even in memory) and recalled by other means”, therefore, even documentation of the event produces a different experience – even if it is repeated, each experience will be unique.

Live art demands a physical presence in both the audience and the performer, this presence is a shared experience confronting what is present in a specific time and space. The raw being of presence is the essence of a live performance; it causes a new reality present only in that moment, investigating the real as we experience it with imagination as we perceive it. When the performance is over so too is that reality and a new moment is being experienced.

I repeated this performance again at Soma Contemporary Gallery (June 2013) for *Elements* (a night of live performances). I made the decision to include my own voice speaking and then holding a note at the end for as long as I possibly could. The rationale behind this was that speaking over the music would disrupt the sound of the violin adding a new element thus refocusing the viewer’s attention. The performance space was a small white cube style space which added a sense of intimacy to the live event. The space was in darkness, the lights reflected off the white walls and floor introducing a new visual element to the performance. The reflections of the lights on the viewer created coloured shadows on the walls and floors, making the viewer part of the performance. In addition to the new visual elements in this space the sound too was different. The sound echoed off the walls and ceiling, thus including the gallery space in the performance, adding to the visuals and sound, thus enhancing the experience of the viewer. Time was not an issue; the performance was allowed to respond to time within the gallery space. This was not the case for the performance for Research Day at Waterford Institute of Technology. Since the performance was presented as part of Research Day with many researchers presenting their work, the allocated time for each presenter was five minutes exactly. This meant that the performance had to be timed exactly with no room for improvisation. The presentation space was in a large auditorium where the presenter had a small space at the end to present their research making it difficult to form a connection with the audience. The auditorium space had raised seating as a result all the audience members were seated above me, leaving little

if no possibility of creating a connection with the viewer through eye contact. The seating arrangement was like the layout of a cinema where audiences expect to sit and watch rather than become part of the experience. The performance was interrupted at the beginning with one of the organisers of Research Day asking me to state my name and research topic, I did not respond to the questions but I felt it disrupted the beginning of my performance. When the performance was over I was then asked questions about my research from the research panel. The feedback I was given was that they liked the way the lights changed in response to the music. There was very positive feedback; audience members said it was the first time they had ever experienced a live art performance.

There were very notable differences between both performances. The performance at Soma was presented as part of a performance night, the audience were aware that they would be viewing a live performance. The performance space was a small darkened intimate space where the audience had the option to walk around the space, stand or sit on the ground. Whereas the performance for Research Day was the first live art performance ever presented, even though it was timetabled as a live performance the majority of the audience seemed surprised. As previously discussed the experience of a live art performance may be interpreted differently according to the viewer's knowledge of the subject. This theory was evident in the differences between both performances. The performance for Research Day came as a surprise to most viewers and for most had no previous experience of a live art performance, whereas the performance at Soma was presented within a gallery space where more people may have been familiar with live art practice.

The space in which a live art performance is presented is crucial to the experience of the event; space has the ability to change the perception of performance. During Research Day the audience were seated in the large auditorium with no option to walk around the performance. Di Benedetto (2010, p.54) expresses the importance of space to a performance: "The space in which the visible elements of theatre are displayed contributes to the ways in which these elements are perceived." Therefore, space is a crucial element in the design of a performance that attempts to engage and elicit new sensations within the audience, the more intimate and relaxed the setting the greater the possibility of audience involvement in the performance. Live art is a collective

experience; the spatial proximity between audience members and the performer affect our reaction to the live performance creating an unconscious stimulation of the senses. As Mock (2000) expresses “The act of watching such performances thereby is transformed into the act of witnessing; audience members must respond to kinaesthetic, aural, somatic, spatial and emotional sensations as thinking bodies like the performers” (Mock, 2000, p.7). The reaction of the audience to a performance has the possibility to alter the response of the performer and conversely back and forth (Di Benedetto, 2010).

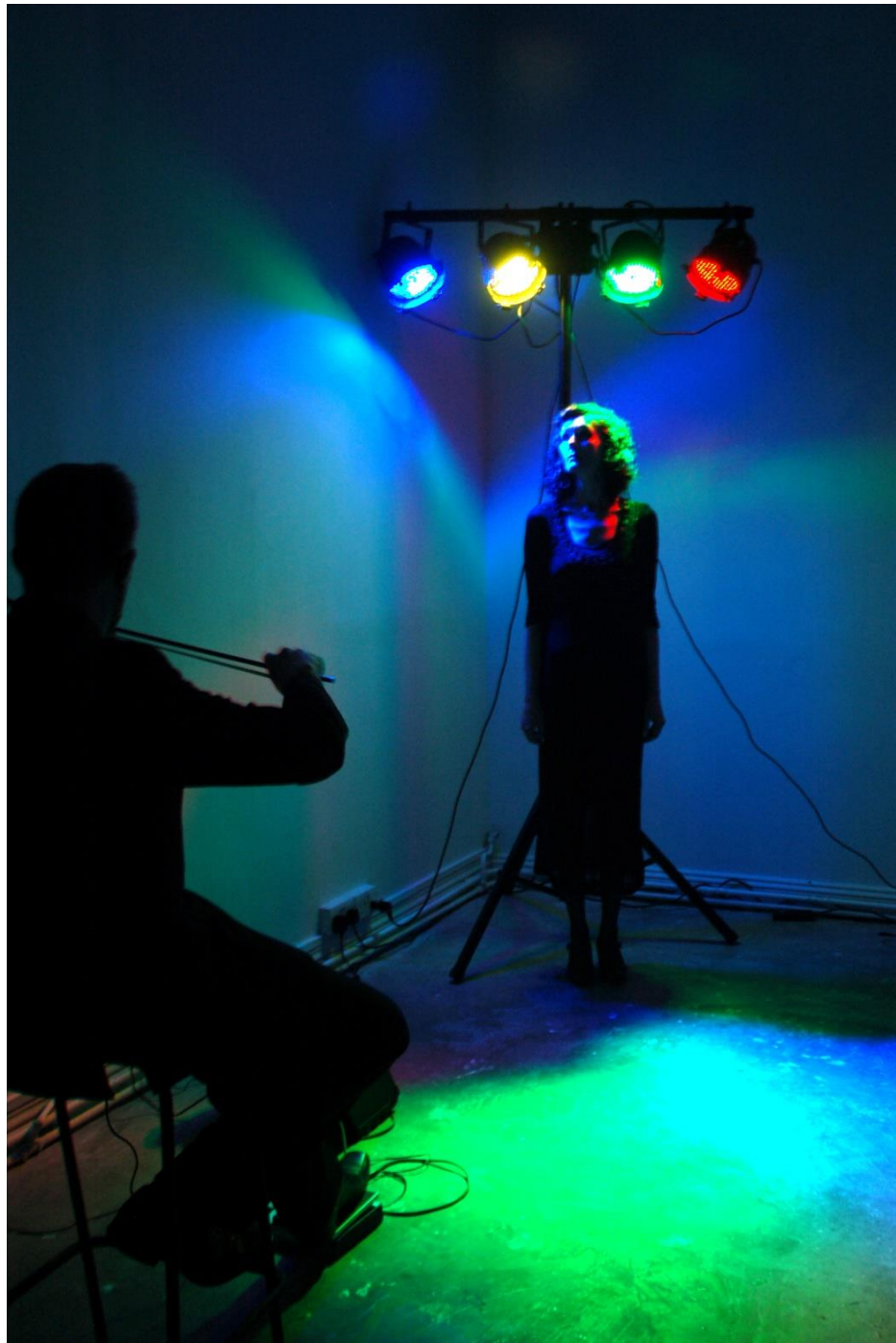


Fig. 4 Flynn, R. (2013) *Imperfect Pitch* at Soma Contemporary Gallery, Waterford

Reflections

Reflecting on my research question – How does live art affect the sensory experience of the performer and the viewer? - it emerged that the sensory experience was made manifest in the way the lights were shining on the performer while also casting light on the audience, thus including the viewer in the performance and in addition creating a relationship between the performer and the audience. The sense of sound and vision were the most dominant in the performance with the visual responding to the sound creating a sense movement and rhythm, mimicking the representations of synesthesia in film where the images on the screen respond to the music.

The performance was designed to fit within a certain time slot and to be presented in an auditorium space, limiting what could be presented. Through further research I came across writing from a scientific researcher Crétien Van Campen's "The Hidden Sense" wherein he discusses the idea that all humans are synesthetic but we are unaware of our synesthetic capabilities. I decided to explore other areas of the senses rather than limit myself to sound and colour, I elected to explore the possibilities of including smell, taste, and movement.

With further research into synesthesia and the senses I made the decision to change my research question. My new question is as follows: what sensorial stimuli can be used to evoke a perceptual experience in live art performance, and in what ways can live art contribute to existing research in synesthesia through this exploration?

My research brought me to the interesting subject of illusion.

Illusion

"It is a fact of neuroscience that everything we experience is a figment of our imagination. Although our sensations feel accurate and truthful, they do not necessarily reproduce the physical reality of the outside world. Of course, many experiences in daily life reflect the physical stimuli that send signals to the brain. But the same neural machinery that interprets inputs from our eyes, ears and other sensory organs is also responsible for our dreams, delusions and failings of memory. In other words, the real and the imagined share a physical source in the brain" (Martinez-Conde & Macknik, 2013).

According to Di Benedetto (2010) the way in which we view the world is more about perception than reality. This brings us to examine how the brain is tricked by illusion – "an instance of a wrong or misinterpreted perception of a sensory experience" (Oxforddictionary.com, 2014). Vision is the sense that we rely on the most. If we hear

strawberry, we think of its shape and colour in our mind's eye, not how it tastes, smells, feels or how it sounds when bitten into.

The most common example of illusion where we rely on sight and ignore sound is the ventriloquist's dummy. The brain is tricked into believing that the dummy is speaking because the visual – lips moving, are in sync with the sound we hear – speaking voice, this is just like when watching a Disney cartoon we believe that Mickey Mouse is actually speaking. In this example the visual input is superseded by our imagination. The eyes are concentrating on the moving lips and wrongly predicting where the sound is coming from as Alrutz et al (2012, p.106) concurs “We see what we think we ought to see” (Cytowic, 2011; Di Benedetto, 2010).

Artists have been exploring the idea of illusions for centuries. Take, for instance, a painted canvas; the artist can trick the viewer into believing that a 2D painted image is in fact a 3D form. The artist deceives the eye by using dark colours to suggest shadow and form, perspective and contrast to suggest depth. This knowledge of how the brain can misinterpret a sensory stimuli, can offer the artist the ability to distort the viewer's perception and believe a fictitious situation to be real. “An amazing aspect of how we see the world is that vision can deceive our own brains” (Alrutz et al, 2012, p.106). Illusion breaks down our preconceptions of our senses making the viewer question what they think about their own senses, therefore opening the viewer's mind to more extraordinary sensorial experience.

Solitaire

I experimented with introducing the sense of taste; my intention was to give audience members a sweet to eat during the performance. On reflection I concluded that this could prove to be too distracting in the performance. It could possibly focus the viewer's concentration to eating thus taking their attention away from the performance. I changed my attention to the sense of smell. Our experience of the world is enhanced by our sense of smell and it is a crucial element in our relationship with others. The sense of smell has the power to influence our emotion and mood due to the close connection between memory and smell which is a result of “conditioned association” (Di Benedetto, 2010, p.99). Our cognitive capability to describe, categorise and

recognise odours is extremely limited, according to Di Benedetto (2010) this is why we are disinclined to speak about it. Our sense of smell is connected to the subconscious region in our brain. We experience an involuntary response to smell and our bodies have been influenced by smell before we are aware of the presence of the stimuli. If we have the ability to stimulate a sense that we have trouble putting into words, this has the capability of creating a mysterious atmosphere without the need for props and lighting.

My second research performance *Solitaire* aimed to include the elements of *Imperfect Pitch* that were highlighted – space, time, sound and vision, while also including new stimuli of body movement and smell. One factor that worked in the previous performance as mentioned in the previous chapter was the unfamiliar aspect on Research Day. When we are confronted with an unfamiliar situation, our brains become more alert in order process the new stimuli (Di Benedetto, 2010). Intrigued by my research into illusion I decided let this be a contributing factor in designing the performance and would aid in keeping with the unfamiliar element of *Imperfect Pitch* while also still investigating the importance of space, time, sound and vision. As mentioned in the previous chapter, the light and shadow created in *Imperfect Pitch* created a rhythm and tempo which served as a visual accompaniment to the music, giving a suggestion of movement to the piece. I decided to include movement of the body in the movement of my hands in response to music.

Contemplating my personal experience of illusion, magic and tricks of the brain brought me to the idea of a fortune teller at carnival. Even though we are aware of this fictitious setting, we allow ourselves to interpret the experience as if it was real, some of us even believing what we hear. This is because as Di Benedetto (2010) states, the conscious brain is incapable to do more than one thing at a time therefore when the brain is stimulated during a live performance we are willing to suspend disbelief accepting mimesis as real and this mimesis is a shared experience between the viewer and audience. He explains that the experience is “also physiologically real to the attendant; fiction and reality are merely different degrees of neuronal activity” (Di Benedetto, 2010, p.63).

Working with this theory in mind I decided that the illusionary aspect would be in the design of the space, creating a space that had a carnival like feel, a space that was dark

and mysterious and including sound to enhance the experience of the space. Alrutz et al (2012) affirms that sound has the ability to provoke a perceptive reaction within the listener and is often used to induce a tangible experience in a live performance. I collaborated with Karen Hegarty who composed a piece of music for the performance which had a very melodic tune. We decided to introduce a new element in the piece that the audience would not be aware of initially but would gradually become aware of. The composition began with a happy and lyrical sound that continues throughout; darker sounds are gradually introduced making the final sounds of composition very dark in feeling and slightly uncomfortable sounding.

Time and space were factors to be taken into consideration when designing the performance. The intention was for the performance to be performed at Acro Studios as part of a gallery opening night along with another performance, paintings and sculpture. Acro Studios is an artist-led studio space and is situated within the Viking Triangle area of Waterford City. It is a small studio space consisting of an entrance lobby, gallery space and seven studio spaces. My performance would take place in a small room at the back of the studios. Taking into consideration that the space in which a live performance is presented has an effect on the performance, this small space was perfect for creating an intimate illusionary space. Space and the visible components of a live performance contribute to the way we perceive the live event. The design of the performance area can then assist in representing space, time and atmosphere (Di Benedetto, 2010). "Theatre attendants share the same space as the stimuli of performance, watching what the artist shapes for us" (Di Benedetto, 2010, p.63), therefore, the viewer becomes part of the performance.

I covered the whole space with blackout curtains which would be dimly illuminated by spotlights on the ceiling and on a table. The illumination of the space was an important factor as light has the ability to create an atmosphere and a new reality within a space, hence creating new stimuli that would not normally be experienced in our daily routine. The scent of a scented candle just blown out will surround the space to enhance the sense of mystery. The performer will be seated at a table in front of a large mirror, which has the potential of including the audience in the performance as they may be able to see their reflection while watching the performance, highlighting their sense of sight (Alrutz et al, 2012; Banes and Lepecki, 2007; Di Benedetto, 2010).

The table in front of the mirror will contain eight spotlights and a deck of cards. The performer will be dressed in black wearing carnival-like exaggerated makeup. The music will surround the space, playing through speakers placed at either side of the room. The performer will be sitting in front of the mirror when the audience enters; as the music plays the performer will play a game of solitaire. In the way that synesthesia is a personal experience, so too is the game of solitaire. Additionally, it is a game that may be familiar to many viewers: “The more familiar an experience the more likely we will respond to it” (Di Benedetto, 2010, p.15). Movement, sight and sound will be combined during the performance. The game will be played in a rhythmic movement in a response to the music. Since the performance is a game, the performer has to relinquish control, there is no certainty that the player will finish the game, it is completely left to chance. When the music ends so too does the performance regardless if the game is finished or not.

Phenomenological description

The performance space is a small room dimly lit. The scent of a blown out candle wafts through the space. I am sitting at a table in front of a mirror. Eight spotlights illuminate my hands which are placed face down at the edge of the table. To the centre is a deck of cards face down. The audience enter the room I can see shadows all around me from the corners of my eyes. The door closes and the music begins. The tune is very lyrical and soothing. I look into the mirror; dark lines exaggerate my eyes with a red triangle at the lower part of each eye. I begin the game of solitaire concentrating on the movement of my hands in time to the music. I close my mind to all exterior sounds concentrating only on the music. Gradually, the music becomes darker causing the playing of the cards to become less rhythmic I can hear the sound of bells ringing and the music stops, signalling the end of the performance. I haven't managed to finish the game of solitaire. I look into the mirror for a brief period before returning to my first position at the table. I turn off the eight spotlights bringing the performance to an end. Di Benedetto (2010, p.x) suggests that “while images generated during the performance may fade from memory, a semblance of the experience will remain within the memory of the attendant”.

Concerns of phenomenology in the performance

The body of the performer is highlighted by the repeated actions of playing the cards. The presence of the performer can be seen in reality and in reflection through the mirror. The presence of the mind is highlighted through the performer's concentration on playing the game of cards. The unpredictability/uncertainty of life is highlighted by playing the game. The performer's attention to the surrounding sound is evident in the rhythmic playing of the cards, this in turn brings the viewers attention to the sound bringing the sense of sound, rhythm and vision together creating a new sensorial experience for both the viewer and the performer.

The game of solitaire combined with the music introduces the aspect of time to the performance. The card game brings an element of past, present, and future. The past in the dropping of the cards, present with each card picked up and the future with the cards on the table, the uncertainty of finishing the game. There is a desire to finish the game, as the performance ends the experience of the game is gone and it is then in the past suggesting a sense of mortality.

As the music and the performance change the constant element is the presence of the performer sitting at the table in front of the mirror, and the presence of the audience members who remain for the duration of the performance. There is a physical relation in space between audience members with each other and with the performer:

“In these moments we are reminded that theatre works with vitality, corporeality – in short, life. Its primary accomplishment is not to represent the world but to be part of it, to effect a ‘transaction between consciousness and the thickness of existence’ (Fortier, 2002, p.42).

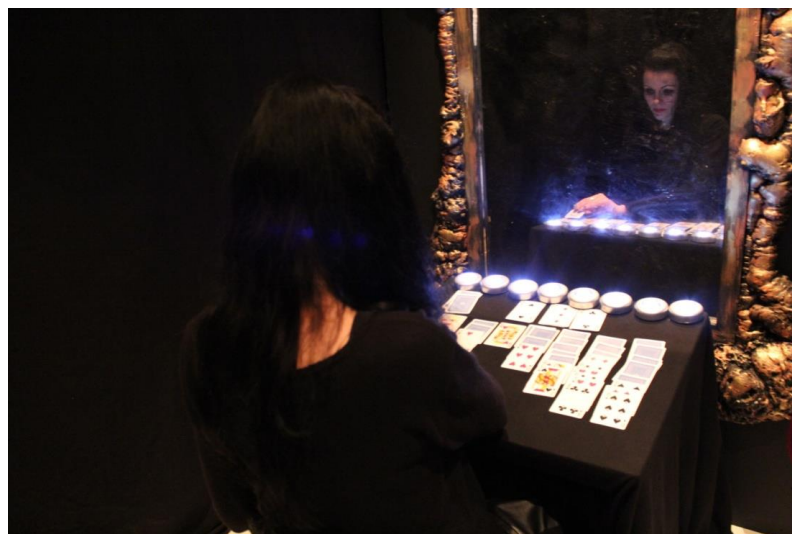


Fig. 5 Flynn, R. (2013) *Solitaire* at Acro Studios, Waterford

Reflections

The sense of sight, sound, movement and smell were all present in the performance. As the game of solitaire was played these senses were combined thus creating a new stimuli for the viewer. The mirror worked to represent the idea of illusion – reality – unreality. Additionally, it aided in making the viewer part of the performance; however, I felt it did not work as well in the performance. The spotlights were in front of me on the table illuminating the mirror, which resulted in the space behind me where the audience were located being very dark. This made it difficult for me to see the audience and I felt that this created a lack of connection with them.

In both *Imperfect Pitch* and *Solitaire* light played an important role in creating an atmosphere, setting the mood and highlighting the elements of the performance that were important. Our brains become more alert and pay attention to what is happening around us when our sense of sight is stimulated. According to Di Benedetto (2010, p.46) stimulating the sense of sight during a performance allows the performer to manipulate the senses of the viewer.

“In effect, in the arts we are creating circumstances that exercise our pupils, our muscles, and our senses, and that is why even fiction can transport us into an emotional state. We are making use of the tools of the body to create a sensory-rich mimetic representation”.

Light is an important element of performance, devoid of light we are left in darkness, light illuminates our existence and it has the ability to create a new reality within a live art performance. Light exposes dimension, form, shadow and silhouette, allowing the performer to bring to the audience a fabricated experience, engaging our sense of sight, thus engaging the brain which in turn creates a new stimulus within. In previous performances there were limitations on what effects the light could achieve. In *Solitaire* the lights were clear and in a fixed position, they aided in creating an atmosphere within the space, however the coloured lights in *Imperfect Pitch* seemed to have a closer relationship to a synesthetic coloured hearing experience, like that in film when the lights changed colour in a response to the sound. However the spotlights had to remain in a fixed position and only produced four different colours. The lights changing created a rhythm to the accompanying music akin to the synesthetic rhythm of Disney’s *Fantasia*. How then could this sense of rhythm (new stimuli) be further developed? According to Di Benedetto (2010, p.13) “if artists make use of stimuli, they can trigger involuntary responses within attendants or, at least trigger mental reactions”; therefore

by further developing the rhythm and sound associations this will enhance the experience of the performance for the viewer. The experience of a live art performance becomes part of our memory if this experience is enhanced the chances are it will stay in our memory for longer.

This chapter has explored different sensorial stimulation within live art performances. The most notable stimulation being that of sound and vision which when combined create a new stimulation of rhythm and movement. The importance of light and sound in manipulating the sensorial stimulation within the viewer is evident within the performances and merits further exploration.

CHAPTER 3

Bubbles

This chapter will investigate the concept of audience participation in a live art performance. It will discuss the belief that we all possess synesthesia as children and through the live art performance of *Bubbles*, attempt to recreate a synesthetic experience within the viewer.

Bubbles at Temple Bar

Urban Coup, a group of artists in Dublin, sent out a call for submissions to create a live visual take – over of an urban area in Dublin in March 2014. The brief was to creatively engage the passing public using live art and the body to affect the landscape and to add diversity to the city - a quick injection of life into the space. Their stated aim was to:

“creatively intervene in the lives of Dublin urbanities using live art and to add diversity within the landscape of the city. Our aim is to use performance art and the human body to affect the landscape visually and engage the public positively” (Urban Coup, 2014).

Research

The rationale behind the project was to create a live performance that would engage the senses of the viewer and also encourage audience participation. In his journal article “The Hidden Sense: On Becoming Aware of Synesthesia”, Van Campen (2009) suggests that we are all born with synesthesia; when we are children we accept an intersection of the senses because we have not learned to separate them. It is only when we go to school and learn cognitive skills that we learn to separate our senses (Van Campen, 2009).

For most people we are aware of our five senses, sight, taste, smell, touch and sound but we also use additional sense organs such as movement and balance without thinking about it. This is the same for other multisensory perceptions including synesthesia. Van Campen (2009) proposes that people have the ability to experience synesthesia but because we only use a portion of our senses this is not a possibility for most of us. By becoming more aware of our existing senses we have the ability to become aware of an intersection of the senses. We can train ourselves to “become aware of the darkness of sounds or of the musical rhythm in visual animations” (Van Campen, 2009 p.7). Synesthesia happens inside the body, between the senses and is not observable outside

of the body. For some people this 'hidden sense' is revealed and they consciously experience synesthesia. Van Campen (2009, p.7) sees this as "personally developed abilities to perceive uncommon multisensory gestalts in the physical environment".

Bubbles

According to Di Benedetto (2010) the effect of cultural or environmental conditioning should be taken into account when creating a live performance designed to evoke a sensorial experience in the majority of the viewers. If the artist examines experiences that are common to many people bearing in mind that they may not be common to everyone, it is possible as Damasio suggests that we can "predict with some success that certain stimuli will produce certain emotions" (cited in Di Benedetto, 2010, p.7). In addition, Di Benedetto claims that we are more likely to react to a familiar experience (Di Benedetto, 2010, p.15).

Research suggests that it is most likely that everyone is born with synesthesia but for most of us during the first few years these multisensory connections are reduced to fewer intersensory connections. As Van Campen (2009, p.8) explains "at a young school age everybody will have a number of neural synesthetic connection". He continues to explain that multisensory connections are made during childhood and it is very easy for a child to accept an intersection of the senses. Keeping Van Campen's theory in mind, I embarked on research into my own childhood; this in turn led me to children's games. I set about trying to find a game or activity that activate the imagination and bring back memories of childhood.

This research led me to explore blowing bubbles. Many of us have played with bubbles as children. We can remember the excitement of watching the bubbles float into the air, the constant need to blow a bigger bubble every time and the hope that somehow it would not burst. Soap bubbles have been around for centuries. In his lecture, C.V. Boys (*Soap Bubbles: Their Colors and the Forces Which Mold Them, 1889*) quotes that "there is an Etruscan vase in the Louvre in Paris of the greatest antiquity, on which children are represented blowing bubbles with a pip" (Guttenberg, 2010). As well as proving to be a very popular children's game they have featured in art, music, literature as early as the Renaissance. Cornelis Ketel was the first artist to paint soap bubbles in

1574 (Emmer, 1987). One of the most well known paintings was painted by Jean Simeón Chardin around 1733, the artist painted a figure of a young man blowing a bubble pipe while leaning out of a window.



Fig. 6 Chardin, J. (1733) *Soap Bubbles*

A painting by Sir John Everett Millais of this grandson blowing bubbles (1886) was bought by Pears soap and used in their advertisement for the product. More recently, Joseph Cornell used soap bubbles and bubble pipes as the subject of some of his assemblages.



Fig. 7 Millais, J. (1886) *A Child's World*

The intention for the performance was for the audience to have a perceptual experience. The performance aims to heighten and bring an awareness of the senses, hopefully creating a synesthetic experience. “Awakening to the multisensory perceptions is one key to synesthesia, but other keys are exposing oneself to new sensations” (Van Campen, 2009, p.10). Blowing bubbles is a non-threatening and non-invasive, fun activity; because of this, there is a strong possibility of audience participation in the performance. As Di Benedetto (2010, p.x) points out “The unexpected visual experience is intended to offer the attendants a pathway for participating in the performance”. The performance will take place in a busy area of Dublin city during lunchtime surprising the passing public creating a sense of curiosity within the viewer thus offering the viewer a chance to take part in the performance.

The viewer then becomes part of this performance working with the artists to create an ephemeral art installation of bubbles. The performance will take place over one hour and will be constantly changing as viewers participate and leave and the installation created will be mercurial.

Many adults and children have been fascinated by bubbles, with their brilliant colours, delicate form and almost illusory nature. Interaction with bubbles is very much a synesthetic perceptual experience; since bubbles have the ability to stimulate several senses simultaneously, the senses were activated in the following ways:

Touch – When the bubble bursts near our skin

Sound – Blowing the bubble and the faint popping sound when the bubble bursts

Taste – The taste of the mixture in our mouth when we blow the bubbles or when a bubble bursts near the mouth.

Sight – the delicate colourful image of the bubbles in the air.

Smell – the scent of the soapy mixture.

Van Campen suggests that experimental forms of art confront our way of perceiving through our five senses, thus have a “viable function in helping people find new ways of experiencing and perceiving, including synesthesia” (Van Campen, 2009, p.11). *Bubbles* has the ability to create a synesthetic experience in both the artist and the viewer through the experience and participation in the live art piece. The viewer had the

ability to touch the art piece which would not be the norm with many artworks, but by touching the art they also changed a constantly changing work of art. Participating in *Bubbles* presented the participant with a sense of fun evoking a recollection of memories of childhood.

Phenomenological description

At 3pm in Temple Bar Square another performance artist and I began blowing bubbles in the air. We were surrounded by one hundred bottles of brightly coloured bubbles. Passersby started to stop and look at what we were doing. At this point we offered them a bottle of bubbles and an invitation to participate in the performance. The sight of bubbles filled the air and was combined with the sound of laughter coming from the participating members of the public. The artists and participants were connected in the live art performance. As more and more bubbles were blown, I could smell the bubbly soap mixture in the air and many times had one burst near my mouth letting me taste the mixture. For the duration of the performance there was an atmosphere of fun, people began to react to each other both vocally and through the expression of a smile. The performance ended at 4pm, at this point we were approached by many people who thanked us and asked to take our photo.

Concerns of phenomenology in the performance

The performer's presence is emphasised with the performer blowing the bubbles. The viewer's response and participation highlights their physical presence within that specific moment in time, and focuses on the ability of the body to perform the physical act of blowing bubbles.

Fortier suggests that daily routines deprive us from being present in the moment, he questions our experience of the previous day and if we actually remember the experience of it: "Were you struck with wonder by events around you, or did you eat, open doors, walk down the street without even realising" (Fortier, 2002, p.42). *Bubbles* offered the participant a chance to be present in the moment, to break from the daily routine to experience the moment and become aware of their senses. The live performance initially appealed to the senses as something seen and heard and later the sense touch, taste and smell were experienced.

The act of repetition of blowing the bubbles created a rhythm. The sense of vision is highlighted with the image of bubbles in the air; the sense of sound is highlighted with the sound of blowing and the laughter of the participants. These senses are combined with the sense of touch of the bubbles, smell and taste of the mixture, rhythm and movement. This sense stimulation is constantly changing as the bubbles appear and disappear. “Phenomenology’s primary concern is with the engagement in lived experience between the individual consciousness and reality” (Fortier, 2002, p.41). The performance was a real life experience for both the viewer and the performer, engaging the senses to create a perceptual experience.

Bubbles created a sense of liveness and of presence within that moment evoking a recollection of memory of previous experiences blowing bubbles combining the past and the present. The dimension of time is highlighted, blowing a bubble which then disappears into the past, the present in the act of blowing the bubbles and the future in trying to catch the bubbles as they float away. This dimension of time introduces the idea of existence and mortality with the constant desire to keep the images of the bubbles by continuing to blow more.

The performance is constantly changing as bubbles appear and disappear. The only constant is the physical presence of the performer and the participants, which in turn is also constantly changing as people come and go throughout the performance, both participating and viewing. Alrutz et al (2012) explains that human response can surpass culture and a stimulation of the senses that evoke memory has the ability to produce the same emotions. During the performance, young and old as well as different ethnic groups, locals and tourists all interacted in a way that they would not normally do. As Fortier explains (2002), p.41) “To be in the world is to encounter other people, and part of our awareness is an awareness that others perceive us, judge us and set limits for us”. This consciousness of others perception of us has the ability to affect and in a sense limits our behaviour. Seeing viewers participate and enjoy the experience of *Bubbles* allowed for the audience to let their guard down and become involved in a fun group activity that would not normally occur in their day to day routine.

The aim of the performance was to disrupt the daily routine of passersby in a busy urban area of Dublin and encourage audience participation in the performance creating a

unique sensory experience within the viewer. *Bubbles* evoked the ideas of memory as most of us remember this as a child; this point was reinforced to me by the comments from the participants suggesting their own memories of bubbles. It brought the artists and participants into a communication with nature as the sky was filled with bubbles changing the landscape for a brief moment in time. Woodruff Smith (2013) states that the starting point of Phenomenology is conscious experience. During *Bubbles* the participants were aware of their actions because they had the choice to perform or not. By participating with the group they became aware of the actions of the group. The theory of phenomenology states that during daily activities we are normally not conscious of our experiences (Woodruff Smith, 2013, p.3). The performance asked the audience to participate in an act that would not normally be part of their Friday lunchtime routine. Suggesting that we should take notice of what is around us, as Woodruff Smith points out “what makes an experience conscious is a certain awareness one has of the experience while living through or performing it” (Woodruff Smith, 2013, p.3).



Fig. 8 Flynn, R. (2014) *Bubbles* at Temple Bar, Dublin

Bubbles at Acro Studios

Bubbles was performed at Acro Studios as part of a night of live performances, sculpture and painting. The intention was for *Bubbles* to take place outside Acro Studios in the adjacent courtyard area. This area is in a quiet area of Waterford with not a lot of people walking by. Because this was the case I decided to include bubble machines which would aid in filling the area with bubbles.

The performance began at 6.30pm with only a few members of the public present. People were very eager to participate as they were aware that it was a live art performance and arrived at the location with the intention of engaging with the piece, providing a different experience for the viewer than the experience at Temple Bar. At Acro Studios the viewer was aware that a live performance piece would be performed whereas at Temple Bar it came as a surprise event as they went about their daily routine. The intention behind *Bubbles* was to engage the passing public in a piece of live art which succeeded in both locations. Very few people refused to participate in the performance and most of these that did not participate stayed to observe the live act even when the performance at Temple Bar came as a surprise event to most. In my opinion, this was the case because the performance was a non-threatening, fun experience that accommodated all age groups, gender and nationalities. The activity of blowing bubbles is a familiar experience for the majority of people during childhood, hence they knew what to expect. All the senses were heightened during both performances, with different sensory fusions occurring at various stages of the live act. The sense of sight was stimulated firstly with the image the audience participation created within the space and secondly with the vision of the bubbles in the air creating an ephemeral art installation. Laughter and talking combined with the sound of blowing the bubbles stimulated the sense of sound. This activity of blowing the bubbles and reloading the wand with the mixture also highlighted the senses of touch as the liquid touched the skin, smell of the liquid when the wand was placed near the mouth and taste when the mixture brushed against the lips.



Fig. 9 Flynn, R. (2014) *Bubbles* at Acro Studios, Waterford

Space was an important element in both performances highlighting the ability of a space to have an effect on the outcome of a live performance. On reflection, audience engagement with the performance at Acro Studios within a gallery context was for a shorter period of time than at Temple Bar. There were various other art pieces being presented in the gallery space on that night, resulting in viewers disengaging with the performance in an effort to engage with other works within the gallery space. During the performance at Temple Bar it was an unexpected live art performance presented in a busy shopping area of Dublin City.

This chapter has demonstrated how *Bubbles* called to mind a sense of memory of childhood, thus reconnecting to a time when according to Van Campen (2009) synesthesia was present within our brains, hence evoking past synesthetic sensibilities. In addition the participation of the viewer enabled them to create their own synesthetic experience and an experience in others, where in previous performances I created the experience. It required participation and exploration encouraging conversation and engagement with others rather than observing the live act. It has shown the importance of space to a live art performance which needs to be considered within the performance design.

CHAPTER 4

The Light Dress

This chapter will analyse the most effective sensorial stimuli of previous performances and outline the design of a final performance aimed to stimulate the senses and evoke a perceptual experience within the viewer. It will consider the light and sound associations in film and combining technology with live art practice create a costume that will mimic this light and sound association.

The Light Dress

The most effective sensorial stimuli in the previous three performances were sound, sight, light, movement and colour, with the spacial element also playing an important role. During *Imperfect Pitch* the coloured lights reacting to the sound created a sense of movement and rhythm, the combination of sound and sight created a new stimulation that does not exist without the stimulation of both of the senses. This was also the case in *Solitaire* where movement and rhythm was created by the body in response to the sound causing a cross sensory experience of movement, sight and sound. The participation of the viewer and their physical presence in *Bubbles* was crucial in creating the visual, sound and movement within the performance; however, when the performance was presented within the gallery context audience engagement was fleeting. The next progression was to take the successful elements to create a final performance that would stimulate the senses and evoke a perceptual experience.

Light and sound

We spend most of our daily life oblivious to the constantly changing qualities of light within our environment. It is only when a prominent change occurs that we tend to pay attention to the light around us. It is this change in our perception that artists such as James Turrell, Olafur Eliasson and Robert Irwin draw our attention to. They have created works that stimulate our sense of sight by highlighting the changing qualities of light, thus bringing an awareness of reality, perception, representation and our response to light. In a theatrical setting light can be used as a device to deliberately focus the viewer's attention and to create atmosphere, as Di Benedetto indicates (2010, p.36): "In

everyday contexts, light serves to make existing things visible. On stage, however, it creates a new reality”.

In addition to light’s ability to create for us a new sense of verisimilitude within a live performance, likewise sound can be incorporated to aid in creating an atmosphere or as a means of establishing a mood or feeling. Sound is ever present in our lives and constantly surrounds us. John Cage made us aware of the ever presence of sound and that silence does not exist in his 1952 composition *4’33*, a musical performance that lasts for four minutes and thirty three seconds where the performer is instructed to not play their instrument for the duration of the piece in order to draw the audience’s attention to the sounds within the environment. Cage is demonstrating the ability of sound to elicit a visceral experience thus creating the atmosphere of the performance. Sound artists continue to use ambient sounds to stimulate the viewer allowing us to hear something other than music. Ryoji Ikeda and Hans Peter Khun explore this experience of sound enhanced by light effects within a museum space in which the viewer’s experience is integral to the work, in their very presence and the sounds they create (Di Benedetto 2010).

When we hear a sound our attention becomes focused in order to identify what we are hearing and from where the sound is emanating. Our brains seek out patterns in sound and will try to predict the next likely sound; this is evident when we tap our feet to music. An increase in sound can stimulate a feeling within through which we feel the vibrations through our bodies. By encouraging an awareness of sound during a live performance, the artist has the ability to change the perceptions of the viewer and potentially stimulate feelings and emotions (Di Benedetto, 2010).

In his writing “*The Hidden Sense: On Becoming Aware of Synesthesia*” (Van Campen, 2009), Van Campen points out that coloured sound and music is the type of synesthesia most explored by artists. As previously discussed, musicians and artists alike engaged in artistic experiments of the sensory fusion of colour and sound associations; Alexander Scriabin (1871-1915) focused on the arrangement of the colours of the rainbow and assigned a colour to the keys known as the circle of fifths (Cytowic, 2011). At the same time, Wassily Kandinsky (1866 – 1944) was exploring painting music he heard while also incorporating movement and form into his work. According to Van Campen (1997,

p.9) “The most elaborate experiments with sensory fusion of colour and music were carried out by inventory, not by artists”. One of the reasons was that a specific instrument was required to produce colour and music simultaneously. The name colour organ was patented in 1893 by Alexander Wallace Rimington (1854 – 1918) and it was with this instrument that Scriabin’ wrote his composition *Prometheus* to be played on. Van Campen (1997) maintains that the artistic experiments of Kandinsky and Scriabin are valuable alternatives to scientific research, revealing important aspects of perception. “In the study of perceptual phenomena, scientists and artists have often used each others discoveries to start new directions in their own disciplines” (Van Campen, 1997, p.9). An example of this is the synesthetic research of Scriabin where his research was completed by artistic means and the resulting compositions can be scientifically examined with modern technology allowing for a new avenue in scientific exploration.

Scriabin examined the synchronized playing of music and colour with his composition ‘Promethus’ which was written to be played by orchestral instruments and the ‘tastiera per luce’ which was a type of colour-organ. The written score contained lines designed so that consonance and dissonance would be heard when played mimicking the movements of colour and music. The aim of the experiment was for the audience to experience both audio and visual perceptions (Van Campen, 1997).

This colour sound association of the colour organ was further developed through the advancement of film the earliest being *Fantasia* (1940). Traditionally in film, music acts as a supplement to the visual displayed on screen. In a movie such as *Fantasia* the conventional sound to visual accompaniment is opposed as a result the sound dictates the animated visuals of the film. According to Palmer (2010, p.1) *Fantasia* provides “something akin to a synesthetic symphony for the eyes rather than abide by music’s traditional filmic function; the images here are motivated, structured and paced by the dictates of the specific piece of music”. In this example the music influences the image thus creating a new sensorial stimulation. Film can capture light creating images that can respond to the accompanying sound; however film is a permanent art form where the same visuals and sound will always remain constant with no possibility of change. On the contrary, a live art performance will always create a new visual experience each time it is performed. The live aspect of the performance is very important as it has the

ability to create a new perceptual experience for the viewer. It is possible for a film to invigorate the senses, but watching a film is not a natural perceptive experience within the brain as it consists of a sequence of twenty-four static images per second (Di Benedetto, 2010). A live art performance is ephemeral and is a live experience that relies on memory to recall the experience. A video documentation of the performance does not capture the essence of the live act and it is a different experience for the viewer. It does not possess the ability to recreate the perceptual experience of the live performance or the connection between the viewer and the performer which existed in that moment in time. “In many ways, the ‘moment’ has passed and another one has already begun” (Mock, 2000, p.2). Therefore the ephemeral experience of the performance can only be truly experienced within a live context and any documentation of the event whether it is photography or video makes this documentation into a completely different art form.

Colour light and sound associations seemed to be a natural progression for the research. An element of this was present in *Imperfect Pitch* with the LED lights changing colour in response to the music. This changing of coloured light suggested movement within the performance, an element that could be developed further. My objective for the performance was to make myself the light source. Further developing the concept of LED lights responding to sound my idea was to develop a costume using a light source that would react to sound in the same way that a synesthetic experience was achieved in film. Attention becomes focused on a moving object and even more so if the colour of the object contrasts with the background colour. The performance design would be a black background in a darkened space with the contrasting colour in the form of light on a costume that I could wear, thus I am the moving object, therefore creating a new sensory experience for both myself and the viewer in a combination of a live performance and technology, where the performer and the technology become one. This has the possibility of creating a fused sensory experience of sight, sound and movement that is unique and does not exist in each individual form, where the unified sensation becomes superior. The use of light in a live performance evokes in the viewer an experience of fiction as reality. Even though the viewer is aware of mimesis of a live performance, additionally it is a real experience as both mimesis and reality stimulate the brain in the same way (Alrutz et al, 2012; Di Benedetto, 2010).

Research

With the collaboration of Kevin Gallagher, a hardware and software design engineer, we embarked on a project to make a costume with lights that would react to sound further exploring previous artistic experiments of the light organ. We began the research of various types of light sources that could be manipulated to respond to sound. The intention was to work with light on a costume that I could wear thus I would be the colour organ. According to Di Benedetto (2010, p.13) “if artists make use of stimuli, they can trigger involuntary responses within attendants or, at least trigger mental reactions”. The aim was for the lights to respond to sound stimulating the sense of sound and vision within the viewer.

Various types of lights were researched and eventually the decision was made to work with LEDs. LED stands for Light Emitting Diode which glows when current flows through it. The reason for this decision is because LED lights do not draw much power; they emit a large amount of light and do not generate much heat. The RGB (red, green, blue) LEDs that were chosen make it possible to control the colour of light coming out. Red, Green and blue are the primary colours of light and by combining these three colours it is possible to produce any colour.

The first step was to use conductive thread to sew the LEDs onto the fabric. Three LEDs were used to test out how this would work. Both input (I) and output (O) for each LED had to be connected individually as it is not possible to connect through the LEDs. However the ground (G) channels and the positive (+) channel can be connected through.

Many problems were encountered when attempting to connect the LEDs to each other. The first endeavour was to use conductive thread, this proved to be very time consuming and very unstable as the thread in the channels kept touching and, in addition, it was not keeping contact with the LEDs, as a result connection was being lost and at one point resulting in a fire. Double looping of thread around the contact point and clear nail varnish were used to resolve this issue, but were unsuccessful.

The conductive thread was causing too many problems with the LEDs. It was very time consuming taking an hour to secure three to the fabric; we questioned how long it would take to attach 48. After more research it was decided that wire would be the best way to connect the LEDs. We could solder the wire to the LEDs so that the connection would be constant. If the middle part of each wire was covered it would not matter if the channels touched. Each wire had to be cut to exactly 6 ½ cm in length with 1 ¼ cm of the covering stripped at each end. I measured this out and marked it on a piece of wood that would be used as a guide for the wires. The wires were colour coded to avoid confusion later on.

Eight hours later all the LEDs were connected to each other and connected to a single board microcontroller (Arduino) that can be programmed on a computer. The initial idea was to sew the four strips of LEDs to the dress. Analysis of this posed the question that if there was a problem with any of the LEDs it would prove very difficult to fix. We toyed with the idea that the LEDs should be a separate unit from the dress that could be removed if necessary. After some more research, I designed an apron that would hold the LEDs securely. The first design of the dress was above the knee where the lights would hang from the neck to the knee, but when I tried it out it did not give the desired effect and the solution was to design a longer dress so that the lights could be worn from the waist down to the floor.

There were numerous possibilities when making the decision on what the lights were capable of doing. They could create different patterns gradually changing colour, create a shape – circle, triangle or square. For the sound element of the project I initially thought about working with a musician as in my previous performance *Imperfect Pitch* or using the music composed for *Solitaire*. In Di Benedetto's (2010) research he asserts that during a theatrical performance we expect the musical accompaniment to come from instruments; by disrupting this prediction we stimulate the brain. By using my own voice instead of an instrumental accompaniment this would result in a stimulation of the senses in the viewer: "The act of listening is a means to provoke the embodied mind and invigorate sensorial perception. As we listen and focus our attention on the aural stimulation, we allow our body to feel emotion and respond preconsciously" (Di Benedetto, 2010, p.131). My singing voice would encourage the viewer to listen to the

aural stimulation highlighting their sense of perception and will have the ability to evoke a response within the viewer.

During the performance of *Bubbles* in Dublin one of the audience members participating started singing “*I’m Forever Blowing Bubbles*” (1920). As I had previously thought about singing this during that performance, I decided to include it now. According to Palmer (2010):

“Associating a specific image with a sound or piece of music forever alters its meaning and changes its context for understanding, and our ability to be conditioned to make such associations as viewers, especially as these associations are further legitimated within the larger cultural discourse and exchange of art, makes us all synesthetes in our consumption of cinema.”

The question arising here is can this be the same in a live art performance? Just as we will always associate the image of the shark in *Jaws* (1975) to the accompanying deep base sound, I wanted to explore the possibility of eliciting this sound and image association in a live performance, where the costume of lights, performer and song become one sensation. According to Di Benedetto (2010) in a live performance we expect sound to have meaning. If a sound and image association is accomplished then any suggestion of one component of that sensation will stimulate the brain to evoke all of the components of sensation.

I transcribed the musical score for the song “*I’m Forever Blowing Bubbles*” and associated a colour with each note. Colour and music associations are individual to each synesthete and are always constant. As I do not possess these associations, I decided to use the colours of the rainbow and associate each colour to a note on the major scale in the same way that Scriabin had previously in his coloured music compositions.

RED	–	C
YELLOW	–	D
PINK	–	E
GREEN	–	F
ORANGE	–	G
PURPLE	–	A
BLUE	–	B

The original music score that I obtained was different to my recollection to it from my childhood, so I changed the score to suit the needs of the work. The required colour note

associations were programmed to the LEDs, with a sharp note brighter than the major note and a flat note darker, this is an association that even non-synesthetes associate with. The intention was to try to work with the beat of the song so the LEDs will mimic this. The half notes from the score were a problem. The resolution was to double up so one beat would be programmed as two, and then the half beat could be programmed as one. In theory this seemed to be the perfect solution but when the lights were programmed and I tried to sing along to the sequence the timing was completely off. As there are only two half notes in the song, the resolution was to ignore the half beats working only with the full notes.

There were different options available to control the lights, they could be sound sensitive, controlled by Bluetooth on an external computer, or pre programmed and activated by conductive thread sewn into gloves connected to the costume or basic switches. If the lights were sound sensitive, an external sound of a phone or audience coughing would activate the lights. Bluetooth could cause problems as there could be interference from other Bluetooth devices and conductive thread was too difficult to work with as previously discussed.

The answer was an on/off switch for the battery pack which would power the lights and a switch for each hand which were crafted from old CD Rom ejectors. I decided to pre-program the lights in order for me to have full control. Initially, the entire song was programmed and working successfully. It would require countless rehearsals to be in sync with the lights. I was not sure if this was the correct way for me to proceed with the design of the performance. According to Fortier (2002, p.49) “The art of the actor is to recreate, which is not the same as repetition: repetition if mechanical is lifeless; repetition of a moment of truth is impossible.” If the lights were programmed to the full song there would leave no room for improvisation during the performance. According to Di Benedetto (2010, p.63) “Theatre attendants share the same space as the stimuli of performance, watching what the artist shapes for us”, offering the ability to form a connection between the viewer and the performer. During a live performance both audience and performer have the ability to evoke a response from each other through the shared experience of the live act. This connection would be missing if there was no room to improvise. I made a decision for each line of the song to be programmed as an individual sequence, providing me with the ability to control pauses between each line.

By temporarily eliminating the sound of my voice the viewer's attention will be manipulated to focus their attention to the ambient sounds within the space, reinforcing their presence within that moment in time while also creating a shared stimulation of the senses between myself and the viewer. A longer pause in singing would disrupt the viewer's expectation of the song which could create a feeling of tension and anxiousness (Di Benedetto, 2010).

The second sequence for the lights was to have a random light/lights (max3) appear and last for 8 seconds, the objective was for me to activate the mode when walking during the performance. As indicated by Alrutz et al (2012, p.101):

“Our spotlight is triggered in the moments in theatrical reception where we notice transitions and become attendant to smell, taste, touch, vision and sound in relation to theatrical interpretation. It is at this moment that we can begin to become conscious of the ways in which our body filters sensory-data from the ways which an artist has stimulated our senses.”

My intention was to stimulate the sense of vision within the viewer by walking around the darkened space with the lighting on the dress changing as I walked.

In the final adjustments for the performance I explored the notion of having the LED apron construction visible on the dress. However, when I placed voile material over the LEDs it created a 3D effect with the lights which worked so well in keeping with the intention of illusion it was as if the lights were dancing within the material, creating shadow, form and movement. According to Alrutz et al (2012, p.105) “The power of novelty to capture our spotlight of attention is useful to theatre practitioners”, and the lights have the ability to create a unique visual experience. Additional material was gathered to create a tunnel effect for the lights to further enhance the 3D effect.

The Light Dress at Soma Contemporary Gallery

The performance was to take place at Soma Contemporary Gallery in Waterford, the same space that Imperfect Pitch was presented in. The space allocated for the performance was the first white cube space beside the entrance to the gallery. I had initially intended the live performance to take place in a black space so that the LEDs could be viewed to their full potential; however, I was unable to source enough black material to cover the area. The gallery space was white but when the lights were turned off it was dark enough to view the lights as intended. The floor of the gallery space was

also white which reflected the lights emitting a ray of light on the floor which would provide an additional element of visual, rhythm and movement. A section of the top corner of the space was painted black to act as a stage where I would perform. According to Alrutz et al (2012, p.103): “Our close proximity to live actors interacting in a constructed theatre space enables us to use our senses to perceive the action of a play as we perceive any other experience.” The space where the performance would take place was small enough to create an intimate setting in order to enable a connection between the performer and the viewer.

I created a video of bubbles falling down and this would be projected on the black area of the wall at the beginning of the performance. I wanted to include the bubbles into this performance design because the live performance of *Bubbles* aided in connecting the audience with their past synesthetic sensibilities and would therefore enhance the multimodal perception of the live performance of *The Light Dress*. The performance of *Bubbles* evoked in the viewer a memory of childhood, a time when they would have had a synesthetic experience (Van Campen, 2007). I wanted to include this stimulation of memory so I decided to have a projection of the bubbles in the space. Using four bubble machines placed at either side of the frame the bubbles were filmed against a black background. Careful manipulation of a spotlight in a dark room succeeded in capturing the iridescent colours of the bubbles. The resulting video captured a cascade of coloured bubbles. The video created rhythm, motion, light and a sense of texture through sight because when you look at the bubbles, from memory you know what they feel like because you remember how they feel. Even though sound was not present, the rhythmic patterns of the bubbles created a faux sensation of sound. The intention is for the projection to be playing at the beginning of the performance when the audience enter the space. According Di Benedetto (2010, p.128), “An alert will capture our attention, causing us to monitor for significant stimuli”. Adding to the significance of sensorial stimuli in a performance, Alrutz et al (2012, p.104) explain that

“as we begin to attend to the elements of theatrical composition that trigger sensations, we pick out significant data that helps us more richly interpret what we are experiencing; a light will catch our eye or a sound will cause us to look at another part of the stage and become conscious of a new element enabling us to pay attention to the meaningful details.”

Working with this theory in mind the projection will be turned off before the live performance begins in an effort to focus the viewer's awareness of the space and signal the beginning of a new stimulation.

Phenomenological description of the performance

The audience enter the gallery space through the bubbles blowing around the entrance, accompanied by music playing. The sense of vision, sound and touch are heightened. They enter a large white space with a section of the top corner painted black where bubbles falling are projected. The space is in darkness. The projection is turned off as I enter the space. As I am walking into the space, I activate a mode of the lights which randomly displays one to three lights for a few seconds. The shadows from the lights are reflected on the floor and create a 3D flowing image on the dress. A few audience members are holding a pot of bubbles. As the lights are activated on the dress, I blow the bubbles which are illuminated by the lights on the dress. A few children in the audience try to catch the bubbles. The lights also illuminate a section of the audience closest to me. I walk over to the black space in the corner; without the lights I blend into the darkness. I start singing "*I'm Forever Blowing Bubbles*" activating the sequence on the dress, the lights corresponding to the notes I'm singing. I am aware of the reflections of the lights on the floor as I move around. Each note reflects a different coloured shadow on the ground. The absence of accompanying music creates a personal experience between me and the audience. I do not sing the song fluidly, pausing at different intervals to reflect on the words. Once I am finished singing the song, very slowly the entire dress becomes illuminated in lights. I leave the space blowing the bubbles.

Concerns of Phenomenology in the performance

At the entrance to the gallery the music is playing and the bubbles are blowing around the area. In the performance space, the projection of the bubbles evokes a memory of childhood, creating a visual rhythm and movement. The physical presence of the audience and their relation in space with other audience members, seated and standing and moving around the room to view the projection involves them in the performance itself. When the projection ends it signals the end of one experience alerting the

audience to their presence within the space while also highlighting the beginning of a new experience.

The physical presence of the body of the performer becomes evident as the performer enters the space. The bodily presence of the performer is enhanced by technology of the LED lights. The sense of vision is heightened with the performer's entrance into the space combined with the rhythm of the walking and the rhythm of blowing bubbles. The bubbles offered a new element of touch to the audience while also evoking a memory of bubbles from the past.

The voice singing combined with the lights changing created a new sensorial stimulation of rhythm, combining vision, sound and movement into one unique experience. The absence of accompanying music exposed the strength and frailty of the human voice offering a more truthful human experience of presence and liveness this is enhanced by the changing colour of the lights.

The sounds and the lights are constantly changing throughout the performance. The constant is the lights accompanying the sound. The audience's presence within the space is constant throughout the performance while the performer's presence is constantly changing through movement around the space. When the performer moved back into the black painted corner space the body blends into the background leaving only the lights to be seen by the viewer.

As the performance ends, the physical presence of the performer is no longer within the space, evoking an experience of time; the performance is in the past while the audience remain in the present. According to Di Benedetto (2010, p.79), "The experience of the theatrical event becomes a part of our physical memory. We are affected physiologically by the experience, which changes our belief about the objects we encounter". The viewer becomes part of the live art performance simply by attending the event. They live through the performance just as they would any other life event and the experience becomes part of their memory.



Fig. 10 Flynn, R. (2014) *The Light Dress* at Soma Contemporary Gallery, Waterford

Reflections

The sensorial stimuli that evoked a perceptual experience in the live performance were movement, light, sounds, words, touch and spacial awareness. At the entrance to the gallery the viewer had to walk through the bubbles while the music was playing. By walking through, the ability for all the senses to be stimulated was present.

In the performance space the absence of deliberate sound in the bubbles projection made the viewer aware of the ambient sound within the gallery space thus reinforcing

the viewer's awareness of their own presence and the presence of others. They were creating the sound, becoming part of the performance, creating their own synesthetic experience – cross modal connections. The visual movement of the bubbles on the screen created a sense of rhythm. The sense of touch was also highlighted with the projection as many viewers simulated catching the bubbles on screen. There was a close proximity between audience members as they stood to watch the projection.

In the examples of synesthesia in film Landon (2010) asserts, “Music in such cases acts for the filmmaker as the stimulation of an additional sense, it inspires the nature of the corresponding image”. I used this example using my voice to inspire the image. In addition, I added another element to the stimulation including words within the performance, thus adding word colour association synesthesia to the colour sound association present in film, creating new synesthetic combinations: movement/light, sound/vision, words/vision, words/sound, movement/words, and movement/sound.

A song in itself is synesthetic creating a sound/word association that always remains entwined. If, for instance, lyrics of a popular song were spoken this would evoke the melody of the song in the mind of the recipient. Words – which in themselves may not present a synesthetic experience to non synesthetes – when presented together in a particular sequence a line of a song may elicit the accompanying melody. For example, uttering the phrase “Driving home for Christmas” will evoke the melody of the Chris Rea song of the same name.

The sense of touch is always present, according to Di Benedetto (2010, p.89) “At the most basic level, touch is activated from the moment we begin our journey to the theatre. We must negotiate the world to travel to the theatre” (Di Benedetto, 2010, p.89). In addition to this basic sense of touch, while I was blowing bubbles audience members reached out and touched the bubbles as they floated within the space.

This chapter has shown that by taking into consideration the successful sensorial stimulation of previous performances, the artist has the ability to guide the viewer's awareness of their senses and evoke a perceptual experience within. With the sensory fusion of light, sound and movement it is possible to elicit a new sensorial stimulation that only exists when all three sensations are combined.

CONCLUSION

The object of this research project was to address the question: what sensorial stimuli can be used to evoke a perceptual experience in live art performance, and in what ways can live art contribute to existing research in synesthesia through this exploration? According to Van Campen (2009, p.11) “Experimental art forms challenge the regular ways of perceiving via the five sensory domains” and “open ways to multisensory perceptions in audiovisual art forms”. For example, society teaches us how to look at a masterpiece in painting or how to listen to a famous musical composition; however, when we are introduced to an unfamiliar art form we have the ability to make our own unique multisensory perceptions: Experimental art forms have a viable function in helping people find new ways of experiencing and perceiving, including synesthesia” (Van Campen, 2009, p.11). *The Light Dress* was an experiment of combining technology with live performance. The essence of a unique live experience was created through the combination of technology and the reality of the performing body. The costume of lights and the performer became one creating a live synesthetic experience akin to the representations of synesthesia in film. The lights responded to the sound of the voice creating a rhythmic animation on the body of the performer thus creating a new sensory fusion stimulating the sense of sight, sound, movement and form. In this way, the sensorial stimulus (*The Light Dress*) was used to evoke a perceptual experience in the viewer.

In addressing the second part of the research question, this project has shown that as an experimental art form live art can offer new ways of experiencing a stimulation of the senses for the reason that live art has the ability to reveal synesthetic characteristics of perception. During the performance the changing qualities of light produced by the dress focused the attention of the audience and created a complex interplay of light and shadow that stimulated a synesthetic response in the viewer. In this way, live art can also offer an alternative to scientific experiments which may compliment and enrich previous studies and open new directions for further research.

Live art requires participation, by simply attending the event the audience become part of the performance. It invites the viewer to explore and contribute to the event, thus

becoming engaged participants as opposed to the experience of theatre or film where generally the viewer is required to sit silently detached from the experience. Audience members interact either voluntarily or involuntarily in a live experience that is shared with those around them. The audience therefore becomes both observer and participant, becoming aware of their surroundings and the other inhabitants of the space with whom they shared the experience. To enter the gallery space for the MA performance audience members had to navigate their way through falling bubbles created by bubble machines. Bubbles fell around audience members and landed on their bodies; individuals interacted with the falling bubbles - dodging them or reaching out to touch them. In this way the piece evoked a bodily response in the audience; those viewing the performance became part of the installation. In the absence of sound in the projection, the sight of bubbles breaking evoked a corresponding sound association. The rhythmic cascading and breaking of the bubbles created an imaginary sense of sound for viewers, creating a cross modal synesthetic experience. The constant falling of bubbles in the projection also had the ability to evoke memories of childhood, blurring the lines between past and present experiences; memory became intertwined with the here and now. Audience members instinctually reached out to break the bubbles even though they were merely projections of light, thus bringing a kinaesthetic awareness to their experience. By encouraging sensorial fusion live art has the ability to create a perceptual experience that will remain in the memory of the viewer.

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