

Kent Academic Repository

Full text document (pdf)

Citation for published version

Hurst, Andrew (2017) Dynamic Light Structures: The Aesthetic and Performative Qualities of Solid Light Scenography for Performance and Installation. Doctor of Philosophy (PhD) thesis, University of Kent,.

DOI

Link to record in KAR

<https://kar.kent.ac.uk/65202/>

Document Version

UNSPECIFIED

Copyright & reuse

Content in the Kent Academic Repository is made available for research purposes. Unless otherwise stated all content is protected by copyright and in the absence of an open licence (eg Creative Commons), permissions for further reuse of content should be sought from the publisher, author or other copyright holder.

Versions of research

The version in the Kent Academic Repository may differ from the final published version.

Users are advised to check <http://kar.kent.ac.uk> for the status of the paper. **Users should always cite the published version of record.**

Enquiries

For any further enquiries regarding the licence status of this document, please contact:

researchsupport@kent.ac.uk

If you believe this document infringes copyright then please contact the KAR admin team with the take-down information provided at <http://kar.kent.ac.uk/contact.html>

**DYNAMIC LIGHT STRUCTURES:
THE AESTHETIC AND PERFORMATIVE QUALITIES OF SOLID
LIGHT SCENOGRAPHY FOR PERFORMANCE AND
INSTALLATION**

Andrew Hurst

Submitted in fulfilment of the degree of
Doctor of Philosophy by Practice as Research in Drama

School of Arts
University of Kent

December 2017

Word Count: 47,319

Acknowledgements

A heartfelt thanks to my supervisors, Dr Melissa Trimmingham and Dr Rosie Klich for their supportive words, their diligent appraisal of my work and their constant encouragement. Thanks also for being friendly faces at progress presentations, performances and installation weekends.

Many thanks to the wider academic community at the University of Kent and specifically to fellow PhD candidate, the now Dr Judita Vivas, for her readiness to take a chance on experimental light and work collaboratively with me on the development and performance of *Etched*. Her commitment to this process and subsequent presentation and touring of the work is greatly appreciated.

Much appreciation too for the support shown to me by my colleagues at Canterbury Christ Church University. Their willingness to engage in conversations about my research and to offer genuine interest and advice in the process is greatly appreciated. My thanks in particular to Dr Angela Pickard for helping to arrange a suitable student cohort to participate in the *OSV as Choreographic Tool* project.

And finally, to my family. Thanks to my Dad for always asking if I had submitted it yet, and why not? To my wife Catherine who, after coming in from a long day at work, would always listen to how amazing I had been for managing to scratch out 500 words. And to my boys, Will and Sam, who always seemed to know exactly when I really needed a break from writing, by selflessly instigating a fight over whose turn it was on the Xbox.

And thanks to my Mum, who never got to see this. But I know it would have made her happy.

Abstract

This practice as research thesis centres on the use of light projected through theatrical haze as a method of creating tangible, volumetric objects within a performance or installation space. The practice seeks to define light as a physical object, not simply an illuminating force but as a material in its own right, and in doing so examines the relationships built between that physically perceived light and the performer, the installation participant, the audience and the choreographer. The term Dynamic Light Structure has been coined here as a way to identify light perceived as a solid object, and to describe a sense of movement, reconfiguration and agency.

Although the use of theatrical haze for performance lighting design is an accepted and ubiquitous technique used in the pursuit of conditioning a stage space, the resultant volumetric forms that appear when light is introduced to that conditioned space have not been examined in terms other than those relating to design methodology. This thesis moves beyond discourse that explores light as a design tool by placing the Dynamic Light Structure at the heart of the performance and installation experience. The research establishes the relationships that are built between Dynamic Light Structures and audience members, installation visitors and choreographers. In examining participant reception and practitioner process, the research defines how Dynamic Light Structures are perceived as autonomous stage objects in dialogue with a live performer, as manipulable objects used to redefine an environment and as process tools that can shape the trajectory of performance making.

Table of Contents

Acknowledgements	ii
Abstract	iii
Table of Contents	iv
Introduction	1
1 Context	9
1.1 <i>Light and the development of the scene</i>	9
1.2 <i>Setting in stone/ breaking moulds</i>	21
1.3 <i>Contemporary practice and the new pioneers</i>	32
2 Methodology, Process and Practicalities	42
2.1 <i>Methodology</i>	42
2.2 <i>Process and practicalities</i>	49
2.3 <i>First spiral: working practices and Kynaactions as proof of concept</i>	54
3 Second Spiral: Etched	70
3.1 <i>Objectively speaking</i>	73
3.2 <i>Look, but don't touch...</i>	84
3.3 <i>Smoke and mirrors</i>	92
4 Third Spiral: On Slow Violence	103
4.1 <i>Participant/ control relationship</i>	108
4.2 <i>Participant/ control system hybrid and the dynamic light structure/ space relationship</i>	116
4.3 <i>The aesthetic experience</i>	124
5 Final Spiral: OSV as Choreographic Tool Project	142
5.1 <i>{if (choreographer = true) performer = technician}</i>	145
5.2 <i>Of sites, systems and specificity</i>	163
6 Conclusions	175
6.1 <i>Implications</i>	183
Bibliography	189

Appendices

Please refer to the accompanying USB Flash Drive for the Appendices document which includes audience/ visitor questionnaires. Further supporting video material can also be found on the USB Flash Drive.

Table of Contents	ii
Table of Images	iii
Appendix A <i>Kynaactions</i> audience questionnaires	1
Appendix B <i>Etched</i> audience questionnaires	51
Appendix C <i>On Slow Violence</i> participant questionnaires	115
Appendix D Transcripts of <i>OSV as Choreographic Tool</i> observations and discussions	167
Session 1 – Learning the system	167
Session 2 – Choreography	173
Session 3 – Choreographic reflections discussion	184
Appendix E Further discussion on the method and tools used to create Dynamic Light Structures	192
Appendix F Limitations	206

Table of Figures

Figure 1 - <i>Mortal Engine</i> by Gideon Orbarzanek (2008), photo courtesy of Chunky Move/ Credit: Andrew Curtis	37
Figure 2 - <i>Mortal Engine</i> by Gideon Orbarzanek (2008), photo courtesy of Chunky Move	39
Figure 3 - <i>Light Barrier</i> by Kimchi and Chips (2014), photo courtesy of FutureEverything	40
Figure 4 - Early experiments with Dynamic Light Structures	55
Figure 5 - Graphics rendered by <i>Isadora</i> using an iPad running <i>TouchOSC</i>	58
Figure 6 - <i>TouchOSC</i> control surface for <i>Kynaactions</i> (2012)	62
Figure 7 - Images from <i>Kynaactions</i> (2012)	64
Figure 8 - Early light structure production photos from <i>Etched</i> .	79
Figure 9 - <i>Etched</i> (2014) haze textures in Dynamic Light Structures	83
Figure 10 - <i>Etched</i> (2014) hands and head through a light wall	89
Figure 11 - <i>Etched</i> (2014) body parts	91
Figure 12 - <i>On Slow Violence</i> (2016) room layout	106
Figure 13 - Control surface for <i>On Slow Violence</i> (2016) created using <i>Lemur</i>	111
Figure 14 - <i>On Slow Violence</i> (2016) participant experience descriptors	134
Figure 15 - <i>OSV as Choreographic Tool</i> project (2016) Vertical planes and limbs	154

Introduction

This practice as research thesis centres on the use of light projected through theatrical haze as a method of creating tangible, volumetric objects within a performance or installation space. The practice seeks to define light as a physical object, not simply an illuminating force but as a material in its own right, and in doing so examines the relationships built between that physically perceived light and the performer, the installation participant, the audience and the choreographer. The term Dynamic Light Structure has been coined here as a way to identify light perceived as a solid object, and to describe a sense of movement, reconfiguration and agency.

The research manifests itself through four distinct projects, which build an iterative cycle of development. The experimental performance *Kynaactions* (2012), which acts as a proof of concept, is a precursor to the second performance piece, *Etched* (2014). Both works take the Dynamic Light Structure as a central device and make use of bespoke touch screen control methods that allow for live control throughout the performance on the part of the technical operator. The third piece, *On Slow Violence* (2016), is an interactive installation that invites participants to collaborate and create Dynamic Light Structures within the installation space. In this respect, the technological system used for *On Slow Violence* can also be seen as a tool, to be used as an aesthetic device, or as a starting point for image led, postdramatic performance works. As such, the final chapter of the thesis considers the installation technology as a means to define the process of choreography. The *OSV as Choreographic Tool*

project (2016) examines a period of devising where dancers were required to become technicians in the pursuit of an integrated physical/ technical creative process.

Dynamic Light Structures offer a way for lighting to be presented alongside the live body, or any other stage object, as an equally dynamic element within a performance or installation piece. In defining postdramatic theatre, Hans-Thies Lehmann suggests that:

The state is an aesthetic figuration of the theatre, showing a formation rather than a story, even though actors play in it. It is no coincidence that many practitioners of postdramatic theatre started out in the visual arts. Postdramatic theatre is a theatre of states and of scenically dynamic formations. (Lehmann, 2009: 68)

It is perhaps no coincidence that lighting designers describe each successive lighting cue for a play also as a 'state'. The visual world of lighting design provides a succession of states through which a performance can be seen. The importance of the postdramatic form is manifest in the shift in hierarchy of objects within a scene. In terms of lighting, opportunity is given for it to be presented as equitable with the rest of the scenic mechanics. Lehmann continues: 'Visual dramaturgy here does not mean an exclusively visually organized dramaturgy but rather one that is not subordinated to the text and can therefore freely develop its own logic' (Lehmann, 2009: 93). This research has its focus in defining the logic of light as it is released from textual subordination. To this end, the research is driven by the following questions:

- How can Dynamic Light Structures form a coherent scenographic environment for performance?

- How can Dynamic Light Structures be manipulated so as to ‘perform’ in conjunction with a human performer?
- What are the aesthetic and performative qualities of Dynamic Light Structure scenography?

Chapter 1 contextualises the practice by examining the development of the use of light for performance and installation as presented by a number of key figures working through the late 19th century and throughout the 20th. It charts the ways in which the gradual decoupling of light from the scene took place; a link that had been cemented historically through academic and practitioner discourse. The use, growth and diversity of lighting methodology in theatre has been meticulously detailed in existing publications that both chart the development of theatrical lighting technologies (Baugh, 2005; Palmer, 2013; Crisafulli, 2013) and examine the techniques associated with using light on stage for a panorama of purposes (Reid, 2002; Moran, 2007; Moody, 2010 to name but a few).

Light in relation to scenography has been much discussed, certainly within the writing mentioned, but also within publications relating specifically to scenography as opposed to light as a discreet subject (McKinney & Butterworth, 2010 for example). Existing discussions relating to light *as* scenography tend towards the use of the projected image as part of the scenic toolbox and are expanded upon specifically by some (Giesekam, 2007; Dixon, 2007; Pavis, 2013). However, the focus of this

dissertation is not the interplay of projected light with a boundary surface, but the use of light to populate a space as a volumetric form. The focus of existing discourse centres primarily on the result of light being applied to a surface, with the notable exception of discussions on the work of Czech scenographer Josef Svoboda.

Lighting technique invariably examines the best way to wash a stage for visibility, or sculpt a form, as in the sidelight used ubiquitously in contemporary dance. The use of gobos (image cut-outs) within specific lighting fixtures to create a texture on a floor or a wall, or the playback of a video to create moving clouds on a cyclorama backdrop all necessitate a surface of some sort to enable light to be perceived. As this is the case, importantly, the perception of that light is always in relation to another object. In order to achieve its own logic as a discreet scenic element, light must be freed from the constraints of the scene. By examining contemporary performances and installations by the likes of South Korean collective Kimchi and Chips and Australian dance company Chunky Move, the real emancipation of light can be seen.

Chapter 2 outlines the methodology used for the research. It details a cyclical process that has its roots in Robin Nelson's (2013) triangular praxic method of working, together with Melissa Trimingham's (2001) concept of the hermeneutic spiral. Each practical piece situates the Dynamic Light Structure in a different environment and asks it to perform in a different way with the outcomes and the reflections on one performance piece subsequently informing the next. In this way, there is no one overarching frame of analysis, rather a series of connected themes that emerge from the examination of the practice and through the dissection of audience and participant experience.

The chapter also defines the beginnings of the practical process by analysing the first performance piece *Kynaactions*. The performance is seen as the starting point for the practice and serves as a method of determining the viability of the Dynamic Light Structure as a concept for performance and installation. Similarities are drawn with the developmental process of art installations created by the British artist Anthony McCall. Also presenting projected light structures, McCall works with three-dimensional card-based visualisations of his installation ideas, whereas *Kynaactions* was developed as an iterative cycle of computer based visualisation followed by the physical realisation of the light structures within a space. Appendix E provides a more detailed discussion on the methods used in the construction of the Dynamic Light Structures and the ways in which they are controlled.

Chapter 3 examines the performance piece, *Etched* (2014). The performance presents the Dynamic Light Structure in a variety of ways with it establishing a scenic boundary by forming ‘walls’, ‘floors’ and ‘ceilings’, whilst at the same time performing as a stage object with which the live body can engage. Furthermore, the Dynamic Light Structure behaves as another ‘performer’, responding and reacting to the movements and spatial positioning of the live body. Within the context of this performance, the audience responses to the piece define the Dynamic Light Structures as existing on an equal footing to the live body in the space. Their non-representational quality sets them apart from the traditional notion of the stage prop or even the ‘poor object’ as detailed by Tadeusz Kantor (1993) and positions them as something other.

The visually tangible, yet physically intangible nature of the Dynamic Light Structure resists the objectification of touch. Within the performance frame, meaning is given and sense is made of the structures through the visual sense alone, with no prior knowledge of texture, of weight, or of use beyond the performance other than what is expressed through pure form and movement. The environment created is seen to mimic elements of virtual reality whilst at the same time not conforming to established notions of Hybrid Space or augmented reality (de Souza e Silva, 2006). Once again, in this respect, the Dynamic Light Structure confounds categorisation and merits investigation.

Chapter 4 is an analysis of *On Slow Violence* (2016). As an interactive installation, it invites visitors to play or simply exist within a constantly evolving spatial environment. The research identifies a developing aesthetic experience among the participants, which combines the process of gradually understanding a technological system with the ability to create seemingly tangible structures in space that act as a mediated extension of the self through a technologically extended personal gesture. The research defines the parameters of that aesthetic experience, with participants uncovering a combination of a developing gestalt appreciation of the environment (Kwastek, 2013), elements of relational aesthetics (Bourriaud, 1998) and a deep sense of the technological uncanny (Causey, 1999). The research ties these elements together to present an argument for the Dynamic Light Structure as occupying a unique position in the way light can be perceived and manipulated.

Finally, Chapter 5 details the *OSV as Choreographic Tool* project (2016) and examines the process of dance creation through the use of Dynamic Light Structures

as the primary mode of choreography. In the same way that *Etched* defined the ways in which light could be situated within a postdramatic performance frame, the project defines the type of choreographic method that appears when a technological system presents a defined framework within which to create. The Dynamic Light Structures are seen to act not only as a manipulable performance medium, but offer an implicit set of instructions to the dancers that mimic elements of live coding dance as defined by Kate Sicchio (2014). In this way, the structures act as tool *and* choreographer in unison with the dancers.

The final choreographic methodology defies simple categorisation within the accepted frames of theatrical or site-specific dance method. By examining choreographic methods and interpretations presented by both Victoria Hunter (2015) and Sita Popat (2015) an argument is put forward for a third method that better defines the results of the research.

Using performance, installation and observation, traditional thinking relating to the way in which light for the stage is created and controlled is challenged. The Dynamic Light Structure system seeks to subvert established ideas of performance lighting creation and manipulation by eschewing traditional lighting fixtures and control methods and deliberately embracing technologies that are not immediately obvious. Using standard data projectors as a light source and iPads as touch screen control surfaces able to manipulate graphical information projected through haze, the system is tied together using Troikatronix's *Isadora*¹ software, acting both as a tool to create

¹ www.troikatronix.com

graphical information to be projected through the haze, and a communications conduit for the iPad control surfaces communicating over a wireless network.

The resultant volumetric forms are subsequently seen as scenic architecture, performer, digital double and choreographer. Even though light and theatrical haze go hand in hand as production elements for live performance, their distillation into something apparently solid and freely plastic is not something that is commonplace in theatre. Even less commonplace is the invitation to an audience, or an installation visitor, to manipulate and engage bodily with such a phenomenon. The research examines the responses to such invitations and explores the human relationships that develop with the Dynamic Light Structures.

Supporting materials can be found on the accompanying USB flash drive. These include video evidence of a performance of *Etched*, a short documentary film charting the development of the *On Slow Violence* installation, and video recordings of post session discussions as part of the *OSV as Choreographic Tool Project*. Links to each of these can also be found within the body of the thesis text for quick access if reading electronically. All questionnaires completed as part of the research, together with a detailed discussion on the methods used to create and control the Dynamic Light Structures can be found in the Appendices, which can also be found on the drive.

1 Context

This chapter will discuss the ways in which stage light started to be seen as a tool not simply for illumination, but as a multi-functional device. By examining the work of the Swiss designer Adolphe Appia and that of the English director Edward Gordon Craig at the turn of the 20th century, the discussion will focus on the ways in which these two pioneers explored light as a plastic entity and foregrounded its emancipation from the rigid constraints of set illumination. Their use of light as a conditioner of scenic space set theatrical lighting on a pathway to performative freedom which represented a firm belief in light as a substance and one to be used in a creative and theatrically dramatic way. Secondly, the chapter will argue that the Czech scenographer, Josef Svoboda embraced light as a discreet element in such a way as to develop methods of creating light structures on stage that further decoupled it from both the scenic object and the performer.

Finally, thought will be given to those current artists and practitioners that are combining new technologies and software platforms to create performances that manipulate light in visually engaging and intriguing ways. The discussion will act as a precursor to, and a contextualisation of the analysis and investigative critique of the practical performance and installation works that drive this thesis.

1.1 Light and the development of the scene

The renowned communications theorist Marshall McLuhan (1997) viewed light as having unique properties among media. Of all media, it is that which flies in the face

of his own proclamation that the medium is the message: ‘The electric light is pure information. It is a medium without a message, as it were, unless it is used to spell out some verbal ad or name’ (McLuhan, 1997: 8). In discussing this idea, Paul Levinson (2011) examines McLuhan’s notion of ‘light on’ and ‘light through’. The premise suggests that light projected through a screen, directly at an observer, as with television, is more engaging to the viewer than light projected onto a surface and by reflection, to the viewer, as is the case with cinema. It’s a subtle distinction and one which instantly invites criticism – surely the affecting difference between light reflecting from a surface to the eye of the viewer and light broadcast directly to the viewer is at best a technicality and at worst ‘an interesting distinction blown well beyond its importance...’ (Levinson 2001: 96)?

Yet as idiosyncratic and sometimes provocatively vague as McLuhan’s ideas can be, the use of light on the theatrical stage has qualities that mimic the distinction that McLuhan makes between ‘light on’ and ‘light through’. To use McLuhan’s (1997: 313) terminology, the proscenium arch bounded stage creates an environment that can be both ‘light on’ and ‘light through’. Unless a piece of theatrical equipment such as a gauze has been employed for a specific effect, as in Merce Cunningham’s *Biped* (1999), there is no physical screen separating the audience and the stage at the proscenium arch. Light coming from the stage (such as that created by backlight) does not travel through a physical screen, but can interact with the audience as McLuhan suggests television broadcast does:

The TV image is visually low in data. The TV image is not a *still* shot. It is not a photo in any sense, but a ceaselessly forming contour of things limned by the scanning-finger. The resulting plastic contour appears by light *through*, not light *on*,

and the image so formed has the quality of sculpture and icon, rather than picture.

(McLuhan, 1997: 313)

In discussing television, McLuhan suggests that the viewer makes sense of the broadcast light by approaching it as a mosaic and interpreting the rapidly repeated trace lines of light as points in a picture, much akin to a painting by Seurat. In this way, the viewer is forced to engage with the medium to a much greater degree than that of the cinema-goer, presented as they are with a much higher level of picture data in a light on manner.

Theatre and live performance presents itself as a unique medium in this respect with the ability to switch seamlessly between 'light on' and 'light through' modes of presentation (and indeed a mixture of both). Even though there is no physical screen across a proscenium arch, the travel of light across a stage space, through a performance and on to the audience has a specific look and engaging quality. With regard to the theatrical stage, this perspective shift correlates to light coming from behind the audience (front light) to illuminate the performance area and light coming from the back and sides of the stage acting as a performance element in its own right. From this angle the light creates silhouette, backlights scenery and performer to alter emotional perspective, and sculpts the form of that which is on the stage to enhance depth of field. This is not a light that bounces off a performance and reflects into the eyes of the audience, but one that reaches them directly, through the stage space, through the performance, through the liminal divide that makes up the proscenium environment and on to the spectator.

In this way, 'light on' equates to McLuhan's description of cinema, with lighting fixtures projecting light onto the performance space from rigging positions above the audience, and 'light through' mirrors that of television, with lighting fixtures positioned behind the performance projecting through both performers and scenery.

Roughly sixty years before McLuhan's theoretical work, both Adolphe Appia, working in Germany and Edward Gordon Craig in England were questioning the structure of the established European form of the theatrical *mise en scène*, with a particular focus on the primacy of light. Crucially they both understood that light could be an object of interest in and of itself rather than a technical means by which the stage setting could be seen. Their desire to establish a shift away from representative illusionistic theatre has been well documented by scholars such as Baugh (2005) and McKinney and Butterworth (2010) who provide detailed accounts of the developmental timeline that saw a fundamental shift in how the stage could be perceived.

Both practitioners understood the importance of light direction to the dramatic scene. As discussed by Palmer (2013), lighting for theatrical performance had undergone its own renaissance moving from the candle powered chandeliers of the Italian Court Theatre in the 16th century through to the advent of gas lighting and electric lighting in the early and late 19th century respectively. Although the positioning of lighting units was an area of experimentation and debate throughout this extended period, the function of the lighting was the same – to illuminate the set and then performers (in that order – the illumination of the performer was very much a by-product of the set visibility). The use of light reflecting back at an audience was constantly promoted by

the ubiquitous use of footlights and auditorium positioned lighting fixtures. Appia rallied in his writings and stage settings to create a sea change in the way light was used for the stage:

...light illuminates the backcloths (which have to be seen), without a care for the actor, who endures the ultimate humiliation of moving between painted flats, standing on a horizontal floor. All modern attempts at scenic reform touch upon this essential problem; namely, on how to give light its fullest power, and through it, integral plastic value to the actor and the scenic space. (Beacham, 1993: 115)

Appia here focuses on elevating the status of the performer over painted flat scenery and in doing so points to the plastic nature of the live performer, by which he means a living, moving, versatile three-dimensional presence.

Appia saw the development of the scene, specifically that related to the presentation of opera, as being constructed in relation to a hierarchy of control. At the top, he saw the original musical expression and the outpouring of emotion that would be detailed by the final drafted score. This score would in turn define the actions of performer, acting as the arbiter of the musical expression. The performance of the live body in the space would articulate the stage space and the way in which objects and lighting would be distributed. This governing power of music seems in this instance to be quite dislocated from the performance lighting, but Appia saw them as being conjoined:

Light is to production what music is to the score: the expressive element as opposed to external signs; and as in the case of music, light can express only that which belongs to 'the inner essence' of all vision... The two elements have an analogous

existence. Each of them needs some external object if their activity is to be put into effect: the poet in the case of music, and the actor (by means of spatial layout) for lighting. (Beacham, 1993: 51)

The expressive elements of light and music could only be truly realised when placed in conjunction with a third party. To present the musical composition, the singer must act as a conduit between the score and the performance, and at the same time the artistic qualities of light are only perceived through their relationship with the scenic objects of the stage.

In order to maximise the effective nature of this stage hierarchy, Appia understood that the varying qualities of light would have to be utilised to the fullest. His writing makes a distinction between diffused light and active or formative light. In his compendium of Appia's essays, Beacham defines the difference:

The first was the general illumination and brightness of *diffused* light, which could supply a sort of undercoat upon which later, more suggestive effects could be realized. The second, *formative* (or active) lighting was composed of more concentrated mobile radiance, which in the hands of the scenic artist became a highly subtle tool. With it he could emphasize objects on stage, including the performer himself. (Beacham, 1993: 5)

Appia was clear that the use of the active lighting was key to creating shadow on the stage and thereby accentuating his three-dimensional settings as well as the performers. The shadows and their inherent contrast to the lit areas of the stage were as important to the *mise en scène* and indeed were necessary to allow the active light to be perceived to its fullest: 'To avoid the shadows would weaken the effect of the

active light...’ (Beacham, 1993: 54). Appia describes his active lighting as being mobile, but not in a way that suggests constant movement, more fixtures freed from completely fixed positions within the theatre space. In this respect, he understood that to fully realize the power of shadows within a performance, the ability to position lighting fixtures through the performance space was crucial. At this point a shift takes place from light on the surface of the scene, to light through it, towards the spectator.

Edward Gordon Craig (1958) was less concerned with losing the detail from the performer through low stage light usage than from the setting. Craig’s mobile screens, designed to contribute to a flexible and easily manipulable stage space, provided both a blank canvas backdrop to *enhance* performer detail whilst also diminishing the scenic imitation so prevalent in the contemporary representational setting:

You can see a face – a hand – a vase - a statue better when backed by a flat plain non-coloured surface than when backed by something on which a coloured pattern or some other object is painted or carved (Craig, 1958: 23)

Craig’s screens act in a similar way to Appia’s projected cyclorama backdrops. Even though they are deliberately blank (so as to be easily conditioned through coloured light), they serve to frame the performer and contribute to her plastic nature. The screens could be coloured and varied throughout a performance without affecting the light on the performer. For Craig, it was important to maintain facial expression and detail and the screens allowed him to create a sense of place that was fluid in terms of mobility, flexible in terms of received light and functional in terms of the plastic scene.

As Appia, writing in 1902 suggests ‘we shall no longer attempt to give the illusion of a *forest* but instead the illusion of a *man* in a forest; man is the reality and the rest is of no importance.’ (quoted in Beacham 1993: 63). Both Craig’s moveable screens and Appia’s staging for rhythmic spaces comprising horizontal and vertical planes (Appia, 1981) place the performer at the centre of the scene, reduce the information given by the physical set and tie the two together with light and movement. Craig was convinced that those observers who were in tune with this more abstract way of evoking sense of place would understand and ultimately benefit from the method:

But I will give you the form of the four places, the light belonging to each and three or four details – here a door added – here a grille and here an alcove which, when you see them, shall somehow bring up to your mind the conviction that you see what I intend you to see.

And suppose I don’t see what you intend me to see? You ask.

There will be thirty out of eighty who do not see as the other fifty see - that I cannot help... that has always been so (Craig, 1958: 22-23)

It is this steadfast refusal to take responsibility for the audience and its response to his stage that free Craig (and likewise Appia) from the shackles of the representative theatrical experience. Both practitioners had an innate sense that a lack of specific detail within the *mise en scène* was capable of engaging and embracing the spectator. Appia (1981) goes further and rallies against the theatrical work of art having a title, believing that the spectator is comforted by the performance label and cannot truly see the performance whilst constantly seeking meaning and persistently asking of the performance ‘What does that represent?’ (Appia, 1981: 45). The lack of a title for a performance piece and therefore by extension the lack of information given to the

spectator promotes the sense that the work is not fixed or bound by specifics and should be viewed free from predetermined ideas or constraining contexts.

In this way, both Appia and Craig again foreshadow McLuhan. McLuhan's writing throughout the sixties relating to light and the visual and aural mediums of television, cinema and radio provides a useful contextual bridge with which to link the shift in the creation of the European theatrical stage at the turn of the 20th century, with the contemporary performance works of the new millennium. His ideas on hot and cool media (McLuhan, 1997), a theory which he relates to all kinds of media (although not theatre specifically), amplify those instinctive feelings relating to the stage that drove Appia and Craig to their reforming practices. McLuhan suggests that any medium that extends any single sense into high definition is categorized as 'hot':

A hot medium is one that extends one single sense in "high definition." High definition is the state of being well filled with data. A photograph is, visually, "high definition." A cartoon is "low definition," simply because very little visual information is provided... Hot media are, therefore, low in participation, and cool media are high in participation or completion by the audience (McLuhan, 1997: 22-23)

He compares a telephone call to a radio broadcast and a cartoon to a photograph. In examining the latter, it is the low detail inherent in the cartoon that asks questions of the observer. There is a requirement of the observer to fill in the blanks and in this respect to engage at a higher level than that which is required of a hot medium, which in turn promotes passivity.

Appia and Craig's theatre then was an instinctive attempt at 'cooling' the elaborate, intricate and ultimately hot experience that was the representational stage of the latter part of the 19th century. Appia in particular saw over-heated limitations in the staging of Richard Wagner's operas at the purpose built Festspielhaus at Bayreuth. Wagner's main aim was to create a separate illusory world on stage as totally distinct from the auditorium space:

1. Complete separation of the ideal world on the stage from the reality represented by the audience.
2. In accordance with this separation, the orchestra to be unseen, perceptible only to the ear (Carnegy, 2006: 71)

In hiding the orchestra, the view from the auditorium was entirely unobstructed which in turn removed any impediment to cognitive immersion for the observer. In McLuhan's terms, the combination of the physical layout of the Festspielhaus, the dimming of the auditorium lights, the masterful compositions and bravura performances together with the lavish production techniques on the stage itself would have undoubtedly promoted Wagner's productions at Bayreuth from 1878 onwards to that of 'hot'. In fact, perhaps they became too hot. McLuhan introduced the concept of the 'Reversal of the overheated medium' (McLuhan, 1997: 33) and the 'break boundary' that occurs when any one medium reaches its zenith. At this point, the medium reverses its state and its social impact. McLuhan discusses the impact of the roads system and argues that the development of transport links to such an extent eventually reversed the country/ city, work/ leisure dialect. He also links the break

boundary concept and subsequent reversal of form to the Greek concept of hubris and man becoming ‘overextended’:

In a Chinese work – *The Way and Its Power* (A. Waley translation) – there is a series of instances of the overheated medium, the overextended man or culture, and the peripety or reversal that inevitably follows:

He who stands on tiptoe does not stand firm;

He who takes the longest strides does not walk the fastest...

He who boasts of what he will do succeeds in nothing;

He who is proud of his work achieves nothing that endures.

(McLuhan, 1997: 39)

To suggest that Wagner and his productions were wrapped in hubris would be disingenuous and the above quotation seems remarkably harsh if applied to a man whose creative achievements are so celebrated today. However, it does point towards a system of theatre that had reached its logical conclusion.

Within the technical constraints of the time, Wagner produced theatre that had achieved a peak, that is until the advent of the use of electric lighting systems; and this points towards McLuhan’s next word on the reversal of the overheated medium: ‘One of the most common causes of breaks in any system is the cross-fertilization with another system, such as happened to print with the steam press, or with radio and movies (that yielded the talkies)’ (McLuhan, 1997: 39). And as electricity was seen to decentralize society, as Carnegie suggests in discussing Wagner’s collaboration with

technicians Brandt and Bähr, the electric theatre lamp broke the restrictions of the rigid gas lighting systems of the time:

He in his visual imaginings and they in their inventive ingenuity stood at the watershed dividing the Baroque-based theatrical era, with its pictorial representations lit by fixed illumination, its transformations and effects produced by mechanical means, from the modern era, in which dynamic, infinitely variable electric lighting is the designer's principal medium. (Carnegy, 2006: 87-88)

The introduction of electrically controlled lighting fixtures not only gave designers such as Appia a new palette with which to paint, but had a more fundamental shift in the medium of theatre. Decentralization happened within the performance space itself. Appia's mobile lighting and Craig's shifting screens, to be lit from a number of angles, decentralized the lighting fixture and by extension the design methods available to practitioners. This type of lighting simply would not work with two-dimensional scenery painted on flats.

Appia's three-dimensional scene contributing towards his rhythmic space as promoted by Eurhythmics² would be as flat as a painting had he not understood the importance of the decentralized medium: 'We shall learn first of all that merely to 'render visible' is not light in this sense at all, and on the contrary, to be form-giving or plastic, light must exist in an atmosphere, a luminous atmosphere' (Beacham, 1993: 96). The atmosphere that Appia refers to here is dictated by the combination of the plastic architecture of the scene (comprising mainly horizontal and vertical lines), music,

² A system of musical training through rhythmic movement developed by the French musician Émile Jaques-Dalcroze. Appia saw Eurythmics as a method of movement study that could underpin his scenic designs. For further information see Beacham, 2003: 69-105

movement and crucially, the positioning of lighting fixtures to reveal form. Appia and Craig, in their respective design methods effected a crucial uncoupling of light from the scene. No longer was light fixed in the service of illumination, but was decentralized and free to act with agency on the scene. Indeed the scene was now at service of the lighting – its multiple forms only revealed through the varying gaze of a panoramic and expressive luminance.

1.2 Setting in stone/ breaking moulds

Perhaps it is no coincidence that within a relatively short time of both Appia and Craig's various publications on their vision of a new theatre paradigm, that the subject of theatre lighting became one of educational interest. Yale professor, Stanley McCandless published his *A Method of Lighting the Stage* (1932), which disseminated a practical and easy to follow way of lighting for the dramatic stage. More recently, publications that explore lighting for performance specifically tend towards the instructive, with practitioners such as Reid (2002), Moran (2007), Cadena (2011), Pilbrow (2008) and Moody (2010) focusing on hardware, control surfaces and the physical practices of lighting the stage in an artistic and design-centred way.

However it is Palmer (2013) together with Crisafulli (2013) who examine the role of lighting specifically as a discreet element of 20th century scenographic transformation and indeed light as the primary conditioner of the scene. Both authors explore Appia and Craig's conviction that light was a tool that could transform the stage space in a radical way and examine their practice as a clear departure from the established norms of light simply as means towards illumination. Palmer (2013) charts those lighting

professionals that have contributed to the range of lighting handbooks that consider design and control, and this field of exploration continues as lighting technology for performance develops.

Stanley McCandless's method divides the acting space into a number of acting areas (literally stage areas of equal dimension across which the actors are seen to perform), to be lit with a minimum of two lighting fixtures. The method makes clear that the role of lighting does not stop at illumination and in this respect builds on the work of Appia and Craig and attempts to formalize their working principles into a unified system. Its success is supported by its longevity as it is the *McCandless Method* or a variant thereof that is taught today at colleges and universities and is still used extensively as a basic lighting method for today's dramatic stage. As Arnold Aronson suggests, the lighting guidelines espoused by Appia 'would become systematized and codified' (Aronson, 2005: 31).

However, there is a drawback to this success. By providing a publication that suggests a method, McCandless may have inadvertently gifted the theatrical world a rulebook. Its formalised steps can be equated to painting by numbers and whereas it provides a suitable platform from which to understand the basics of stage lighting, it runs the risk of setting those techniques in stone and once again irrevocably tying light to the service of scenic objects, performers and fixed space, but with the added roles of helping to define time and place, mood, and atmosphere as well as that of visibility. For dramatic presentation, this may well be necessary, but it does not serve the postdramatic stage well.

Josef Svoboda, working throughout the mid to late 20th century focused his efforts towards once again freeing light from its newly formed manacles. His scenic designs were always born out of dramatic need and he was heavily influenced by the staging of both Appia and Craig (Palmer, 2013, Baugh, 2005). His use of light as a tangible object contributes to that which marks his working practices as distinct and groundbreaking for the time. However, much of his work sought to explore new surfaces onto which light could be projected, as well as using light as a semi solid surface itself. The need to find ways of presenting light as an image (through projection) that would not rely wholly on a visible final surface was key to Svoboda's experimentation; he was clearly preoccupied by the notion of disrupting the flat projection surface.

In discussing his own design for Richard Strauss's *Die Frau Ohne Schatten* in 1967 at Covent Garden in London he suggests that the leaf shaped screens used for the upstage projections 'didn't give the projected image a form but was merely its passive carrier' (Svoboda, 1993: 29). His experimentation with various projection surfaces resulted in him projecting onto hung strips of plastic, mirrors and lengths of chord stretched vertically next to one another to create more suitable surfaces:

All my life I've asked myself questions: Why is it necessary to project only onto solid surfaces and not onto a mobile cluster of lines, on fragmentary surfaces, or on sticks or rods? Why isn't it possible to introduce light into their layers as well as onto their surface? (Svoboda, 1993: 29-30)

The two-dimensional surface for projection points towards the representative as opposed to the impressionistic and Svoboda, as with Appia and Craig, was more

interested in ‘expressive suggestiveness’ (Svoboda, 1993: 16). Even when his projections were to create an image of something defined, such as a cloud-laden sky, he sought to create a sense of depth that would remove it from a two-dimensional feel.

Jarka Burian more than any other has documented and commented upon Svoboda’s life and work and brings together the scenographer’s writings and thoughts relating to his own designs. Burian (1971) details the design for *A Sunday in August* in 1958, which featured four projection surfaces for the back of the scene. Two of these surfaces were opaque, joined at the middle at an obtuse angle. However, these were partially obscured by two further surfaces again joined at the middle made of variably transparent scrim. The combination of the two diffused the projection end point and created an expanded depth to the stage. The need to dissolve the projection surface in this way (and also through the use of stretched grey chords that were not immediately recognizable as a projection surface) demonstrates an intuitive need to disassociate light from the stage set, and once again liberates it from its reliance on solid reflection.

Svoboda was always keen to work at the forefront of technological experimentation, with his work often ‘associated with a full-scale exploitation for stage purposes of the latest mechanical, electronic, and optical devices (many of which he has developed himself)’ (Burian, 1970). His lasting physical legacy within the world of theatrical lighting fixtures is the ‘Svoboda’ batten³. The batten was the result of work completed in 1960 for lighting to be used in Chekhov’s *The Seagull* directed by Otomar Krejča.

³ Svoboda Lighting Batten. In *whitelight.ltd.uk* [online]. no date. [cited 26 October 2017]. Available from: <<http://www.whitelight.ltd.uk/shop/manufacture/Adb+Lighting+Technologies/adb-1070-05-012/>>

They allowed Svoboda to create high intensity beams of light that ran virtually parallel to one another and when placed laterally side-by-side above the stage would create a ‘curtain of light’ (Svoboda, 1993).

Of course, this visible light was only made so by the presence of a particle system within the dramatic space. This could have been naturally occurring dust in the stage environment, but the light could only be ‘seen’ as reflections from these particulates. The high intensity beams created a tightly focused light that did not diffuse. When reflecting from dust particles in the air, this tightly focused light travel became visible as a well-defined beam. The light curtains used within the production of *The Seagull* were actually shone through netting which supported leaves and branches in order to produce the effect of bright sunlight coming through an orchard canopy. Svoboda describes the scene: ‘The resulting impression of an orchard with its sultry heat and total atmosphere, affected the spectator in a palpably physiological way.’ (Svoboda, 1993: 59).

Ever in search of the affecting image, the light curtain was to become something of a trademark of Svoboda’s design work (Burian, 1971; Svoboda, 1993; Crisafulli, 2013; Palmer, 2013), but perhaps it was most strikingly used in his design for a production of *Tristan and Isolde* at Wiesbaden in 1967. The design centred on a spiral ramp structure that formed the mainstay of the stage area. Svoboda placed his battens throughout the spiral, concealed from the audience inside the structure’s curve. The battens facing upwards created a solid light cylinder designed to completely envelop the performers as they climbed the spiral ramp. The result was a solid light structure that did not attempt to create the impression of an environment, like that of the light

curtains in *The Seagull*. This was an abstract construct and one which existed to promote an ‘absolutely physiological effect on the viewer’ (Svoboda in Burian, 1971: 64).

The cylinder of light, more than any other example of tangible light structure created by Svoboda at the time was a pure example of light totally freed from the scene. It did not illuminate in the sense of conventional theatrical lighting and it did not evoke a sense of place or time. It was a visual spectacle, tied to nothing except the water vapour, sprayed to hang throughout the stage environment, completely invisible to the audience; water vapour that did not function as a visual device contributing to the drama of the scene, but as ephemeral medium through which a light object could be constructed. It was the visual focal point of the scene and one that literally embraced the performers within it. Rather than making them more visible, the cylinder would have made it more difficult to make out their detail; a curtain of light in front of the performers, directly contravening the strictures set in stone by the practising educators of dramatic lighting.

Svoboda’s exploration of light and its alternative perception did not end with the stage. His interest in projection presents a determination to redefine the use of the two-dimensional image in the same way that his use of light for the stage was developed. Presenting *Polyekran* at the Brussels ‘Expo-58’, Svoboda designed a screen environment built from multiple projection surfaces installed throughout an exhibition space. Chris Salter describes the installation:

Polyekran’s eight carefully positioned and hung square a trapezoidal surfaces, whose suspension wires were hidden by black velvet masking, was designed to emphasize

the screen as screen: an empty surface in an empty space that during the performance (a ten-minute promotional film for the Prague Musical Spring Festival), would come alive through projections appearing from eight slide and seven film projectors... (Salter, 2010:170)

The need to create an environment through projected light, but at the same time shift passivity of the projection surface to something more dynamic, saw Svoboda develop a scenic environment through projection, but not one that was subordinated to the projected image content or the singular rectangular screen. In the same way that he experimented with stage materials that would dissolve the surface interplay of theatrical light (Svoboda, 1993), so too would he experiment with projection surface shape and positioning in order to energize it within an installation space.

Gene Youngblood (1970) further identifies ways in which the screen could be made transparent as a projection surface. In discussing the work of Francis Thompson in the late 1960s, Youngblood highlights the artist's thoughts on a projection construction that would be totally immersive so as to render the physical screen transparent:

...I would like to make a theatre that would be a huge sphere, [...] and seat the audience around one side of it: a series of balconies so everybody's in the front row. The audience would become part of the sphere. The picture comes around as far as you can see, and beneath you too (Francis Thompson in Youngblood, 1970: 358)

By immersing the audience within a giant spherical screen, the surface itself becomes invisible as the projected image extends beyond the peripheral vision of the observer. There is no screen hung against a back wall to denote context within a larger space, the entire environment is the screen. As soon as the media projection occurs what is

observed is purely the light image, rather than information bounded by a visible container.

Youngblood goes on to detail a series of events that seem to mirror Thomson's artistic aspirations. The *Vortex Concerts* took place at the Morrison Planetarium in San Francisco as a regular occurrence throughout the late 1950s. Developed by Henry Jacobs and Jordan Belson, the concerts fused multiple speaker audio with a projection system that could cover the entire dome of the planetarium with a vast number of individually controllable projected images. Taking advantage of the ability to generate a complete blackout within the dome, Jacobs and Belson were able to manipulate the visuals so as to render the projection surface invisible:

Also we experimented with projecting images that had no motion-picture frame lines; we masked and filtered the light, and used images that didn't touch the frame lines. It had an uncanny effect; not only was the image free of the frame, but free of space somehow. It just hung there three-dimensionally because there was no frame of reference. (Jordan Belson in Youngblood, 1970: 389)

The artistic aim here was to separate the projected image from the projection screen. In exactly the same way that Svoboda strove to decouple light from a scenic or bodily surface on the stage, so too did Jacobs and Belson want to present light as an image without recourse to a visible carrier for that image. The term 'uncanny effect' is an interesting one here and points to an understanding that the light image cannot exist without a collaboration with a surface, but experiencing such an image seemingly independent of a screen is palpably strange.

Svoboda's use of light as an autonomous tool, specifically when used on the stage belies its reliance on the medium that carries it. As noted, Svoboda needed to condition his stage space with a particle system to act as a medium through which light could be visualised. The very point of that particle system was to remain invisible to the observer, much like Jacobs and Belson's invisible projection screens, but of course, the effect would not be possible without it. The use of smoke, or more broadly a range of particle system atmospheric effects, as an artistic tool in its own right, not only as a visible entity, but as a method of obscuring and redefining the limits of objects and spaces is worthy of consideration.

Chapter two of this thesis examines in a little more detail the practical considerations and processes that define the production of atmospheric effects such as smoke and haze. Peter Eckersall et al. (2017) discuss a variety of ways in which artists and performance makers have embraced particle systems as a primary creative tool. In examining Nakaya Fujiko's series of works entitled *Fog Sculptures* they identify the unique properties of the primary medium and of the sculptures themselves:

The wonderfully named *Fog Sculptures* that are the invention of Japanese artist Nakaya Fujiko inhabit a zone, [...] between visual arts, architecture and performance. As sculptural works they have volume and structural design, but their materialist dramaturgy creates atmosphere and more so they invite immersion. They possess the uncanny contradiction in that they are material forms, whilst also constantly dispersing. (Eckersall et al., 2017: 86)

The organic quality of fog, its ability to move, envelop, morph and dislocate can be utilised by artists such as Nakaya to 'operationalise atmospheres' (Eckersall et al.

2017: 83). Her first fog sculpture, *Fog Sculpture #4773: Pepsi Pavilion*⁴, was installed at the 1970 Osaka Expo and saw the Experiments in Art and Technology group (E.A.T.), of which Nakaya was a member, place a system of nozzles across the entirety of the building, through which fine water droplets could be sprayed. The result was permanently positioned fog that enveloped the whole structure in a constantly shifting architecturally blurring shroud.

Nakaya later explored the organic quality of such a particle system in conjunction with the choreographer, Trisha Brown. *Opal Loop/ Cloud Installation #72503*⁵ (1980) saw Nakaya's fog as a voluminous entity that constantly reframed the dimensions of the performance space '...she designed a fog sculpture that was installed in a theatre as a moving and transforming set design, to interact with the dancers and slowly change the dimensionality of the space' (Eckersall et al., 2017: 87). The focus was on the fog as a scenic object and as a moving entity that could act as a counterpoint to the movement of the dancers within the space. In both this instance and with the use of fog at the 1970 Osaka Expo, the particle system is generated to become visible. In terms of its relationship with light, it acts as a performer or scenic object and is lit, rather than being used as a medium through which light can receive form. Svoboda saw the particle system as a device to make light visible rather than highlighting the system itself. The Dynamic Light Structures that underpin the research evident in this thesis again tries to make the particle system transparent to the point at which it is defined by projected light. At this time the light and the particle system combine to create the structures.

⁴ All You Can E.A.T. The 1970 Pepsi Pavilion in Osaka. In *uncubemagazine.com* [online]. 2014 [cited 12 November 2017]. Available at <<http://www.uncubemagazine.com/blog/13753251>>

⁵ Opal Loop/ Cloud Installation #72503. In *Trisha Brown Dance Company* [online]. no date [cited 16 November 2017]. Available at <<https://www.trishabrowncompany.org/?page=view&nr=419>>

The methods by which artists have attempted to dislocate projected media from a perceptible surface are not confined to the use of a particle system as used by Svoboda, or size and projection positioning as explored by Jacob and Belson. Blast Theory's *Desert Rain*⁶ (1999) presented a desert environment during the first Gulf War through which participants would 'travel' in search of a specified target person. The environment is created virtually through graphic projection, but rather than being faced with a conventional projection screen, the participants view the virtual world as it is projected in front of them onto a plane created by a water spray.

The water-made boundary surface not only creates a semi-solid projection medium, but can also disappear completely when necessary. As Scott deLahunta suggests, the falling water screen creates "a traversable interface" through which the performer can visit the players at certain key moments" (deLahunta, 2002: 108). This ability to dematerialise the projection medium at will reinforces its ephemeral quality, as does the appearance of a Blast Theory team member through the water curtain at intervals. In their own artistic statement, Blast Theory suggests that 'Desert Rain uses a combination of virtual reality, installation and performance to problematise the boundary between the real and the virtual' (Blast Theory, 2017). The physical boundary of the rain curtain exemplifies this as the world of the mediated depiction of the Gulf War desert environment gives way to the reality of a real person in the same space, instantly fusing the personal navigation of a virtual projected scene with an interactive live performer.

⁶ Desert Rain. In *Blast Theory* [online]. 2017 [cited 16 November 2017]. Available at <<https://www.blasttheory.co.uk/projects/desert-rain/>>

1.3 Contemporary practice and the new pioneers

Just as Svoboda was relentless in his exploration of new technologies, materials and techniques with which to further his design ideas, so too are the current contemporary artists interested in working within a digital frame. Steve Dixon's *Digital Performance* (2007) is an encyclopaedic publication that attempts to chart the development and rise of those artists and performances that in some way utilize digital media as a central working method. The sheer scale of the text is impressive in its scope and points towards a vast landscape of modern and contemporary performance work that has embraced the digital, and by extension digitally projected and manipulated light as image.

While the technological world continues to develop apace, so too does the performance work that seeks to embrace the newest iteration of its evolution. Developments in mobile computing and the advent of wireless communications protocols such as Open Sound Control⁷, have allowed artists to start to develop their own tools and methods of working within a digital environment, instead of having to rely on engineers and electronics experts as Svoboda did.

Motion tracking is a tool that has become popular as both an installation and a performance-making device. It has found its way into the home through entertainment systems such as Microsoft's Xbox Kinect technology and Sony's PLAYSTATION Eye. Artists and companies such as Troika Ranch, Chunky Move, Recoil and Klaus Obermaier have all produced works – *16 [R]evolutions* (2006), *Mortal Engine* (2008),

⁷ Introduction to OSC. In *opensound.org an Enabling Encoding for Media Applications* [online], no date, [cited 5 October 2017]. Available from: <<http://opensoundcontrol.org/introduction-osc>>

Body Navigation (2008) and *Apparition* (2004), respectively, that employ live motion tracking systems that in turn generate graphical information that is projected onto the performance area. Motion tracking systems are capable of creating digital scenic elements that seem to shift and flex in time with performance movements.

However, a problem lies in the perception of process from the audience perspective. Robert Wechsler, director of the performance group Palindrome develops the point by highlighting the inherent weakness of motion tracking as a performance technology in terms of audience engagement. He suggests that the observer is inherently more interested in the physical elements of shape, form, height, acceleration etc. and less so in the technology which informs a specific performative happening: ‘it lacks immediacy, it is not palpable or tactile, and finally location, as a parameter of movement, is simply of little interest to us compared to, say, body height, shape or movement dynamic.’ (Wechsler, 2011: 70-71).

He goes on to make the point that to attribute a digital scenic shift to a live performance movement requires some understanding of the system at play. Audience members are used to lighting and sound states changing on cue, so when a projected graphic or video image is manipulated on stage, the initial reaction is that it is pre-rendered, pre-recorded or pre-programmed to happen that way and that ‘the observer simply has no sense that anything special has taken place.’ (Wechsler, 2011: 71) This perspective is borne out with companies offering post-show talks enabling the audience to question the creative team and become more familiar with the working practices related to live motion tracking. Contemporary dance company Chunky Move held such a talk after their 2012 performances of *Mortal Engine* at the

Southbank Centre in London. ‘Educating’ an audience in this way is an interesting concept and would perhaps lead to a different level of engagement should the observer revisit a performance with this new knowledge.

The position of motion tracking and indeed all cutting edge technologies used in performance come under scrutiny by Mark Coniglio, the artistic director of the Troika Ranch contemporary dance company and programmer responsible for the *Isadora* performance environment software. He puts forward the idea that technologically biased performance works can be either ‘*materials-driven*’ or ‘*content-driven*’ (Coniglio, 2011: 81) and that broadly these terms relate to work that explores and celebrates the technological medium on show (materials-driven) or uses technology to help explore thematic concepts within the work (content-driven). He contends that within the realm of intermedial performance, artists can be seduced by the ever-developing landscape, which constantly offers up new and exciting tools that can be used to create an original aesthetic.

Difficulties then can arise when this shift in technological focus leaves earlier technologies behind and their use within a performance frame is not fully explored, having been passed over for more ‘exciting’ technologies that may have appeared within a relatively short space of time. He uses the example of electric light as an established medium having been through a full artistic exploration:

...theatrical lighting technology has developed to the point where it is most often used to support the narrative mood of a performance, and its presence as a technology is not questioned *a priori*. The electric light is so integrated into our theatrical (and societal) experience that exhaustive exploration of it seems, generally speaking,

unnecessary. Are we at the Thomas Edison stage of dance-technology, or somewhere further down the line? (2011: 81)

Whereas Coniglio's argument may hold true for what might be termed conventional theatrical lighting fixtures and techniques, it does not necessarily follow that new ways of lighting and using light as a material within a performance frame have all been considered. The practical work that drives this thesis seeks to further tease out new ways of using light and exploring the medium beyond that which has been appraised and documented to this point. Coniglio does propose however, that artists must be free both to create content-driven and materials-driven work in parallel, thus driving forward exploration of existing technologies to the full whilst also exposing audiences to as yet uncharted technological waters.

Umbrellium is a collective of architects, designers and technical experts that operate on a large scale. Working with lasers, both *Marling* (2012)⁸ and *Assemblance* (2014)⁹ create user-controlled environments by respectively using participant sound and participant movement as data that informs and directs the installation visuals. In the case of *Assemblance*, lasers are focused down into the installation space, much in the same way as the projectors in Anthony McCall's *Vertical Works* (2011)¹⁰ are. Again, haze is introduced into the space meaning that the lasers produce tangible curtains of coloured light. Motion tracking technology is then used to pinpoint the position of the participants within the space, which is then used to reconfigure the positions of the

⁸ Citizen Engagement Spectacles. In *Umbrellium* [online]. Updated 2017. [cited 5 October 2017]. Available from: <<http://umbrellium.co.uk/initiatives/citizen-engagement-spectacles/>>

⁹ Assemblance. In *Umbrellium* [online]. Updated 2017. [cited 5 October 2017]. Available from: <<http://umbrellium.co.uk/initiatives/assemblance/>>

¹⁰ Anthony McCall: 'Vertical Works' Installation. In *Vimeo* [online]. Updated 2017. [cited 5 October 2017]. Available from: <<https://vimeo.com/20565228>>

laser projection, creating a shifting environment that is the result of both individual and collaborative movement.

For the participants, the motion tracking technology is transparent, but the connection to the fluid scenography is absolute in a way that Wechsler (2011) argues is not as apparent to a non-participatory audience in a motion tracked performance. Usman Haque from Umbrellium describes how people have interacted with the installation:

...people using their entire bodies, not just their hands to interact with the luminescent forms; collaborating by holding hands to generate novel structures; or pushing the light structures together. Some people recognize immediately that they need to treat delicate structures delicately; others start off thinking that if they move faster or wave their hands more widely they'll have a greater effect—but they soon notice that careful, considered and deliberate movements have much more robust effects (Haque, 2014)

The level of interactivity present within *Assemblance* allows for a clear and immediate connection between participant and digital system. The movements of the laser created light sheets and the movements of the users become co-dependent with the limitation of the projection and motion tracking technology limiting fast or overly generous movement, leading to a symbiotic movement state that is gradually arrived at through participant experimentation within the boundaries of effective result.

The success of the installation (beyond its aesthetic merits) relies on the understanding of cause and effect by the participants. The gradual understanding of how the system works, together with its boundaries and limitations lead to an

appreciation of the process and inform the eventual outcome. If Wechsler's (2011) contention that motion tracking is generally accepted by an audience if there is an inherent understanding of the underlying control system, then *Assemblance* succeeds, not by providing an after show talk, but by gradually revealing the mechanics of the installation through its use.

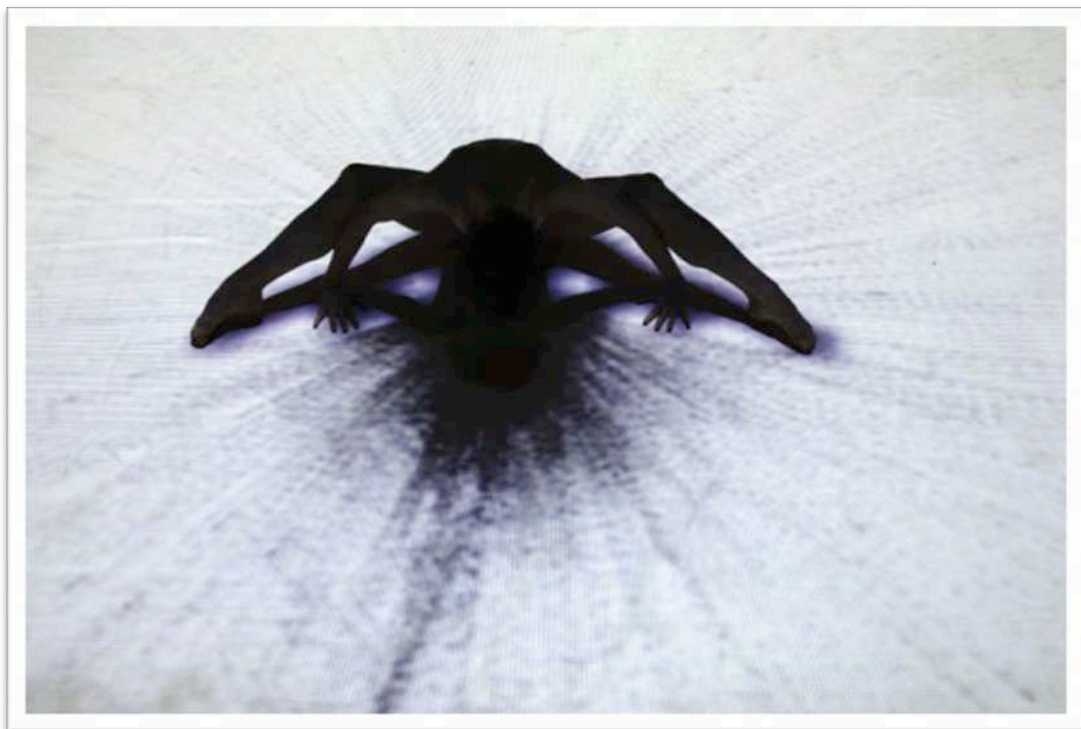


Figure 1- *Mortal Engine* by Gideon Orbarzanek (2008), photo courtesy of Chunky Move/ Credit: Andrew Curtis

The use of projection within contemporary performance work, not to provide pictorial information as its pioneers (Méliès, Prampolini) first described its usage, but to dissolve the boundaries of the human form or the stage space in which a performance takes place, has gained traction since Merce Cunningham's ground-breaking *Biped* (1999). Both *Glow* (2006) and *Mortal Engine* (2008) by Australian contemporary dance company Chunky Move combine performance motion tracking with a

projection system that redefines the performance body and the space it inhabits. By projecting onto the performer and creating an image whereby the human form and the projected graphical information become indistinguishable from one another, a symbiosis of movement and form is created (see Figure 1). Interestingly, the natural state of being within the performance environment is absolute darkness.

The image in Figure 1 presents a lit space with a dark figure at its centre. Whereas in standard performance, light is used to create a visible space and often to illuminate the performance subject at its centre, *Mortal Engine* often subverts this norm, by creating a lit environment and leaving the subject in absolute darkness. In this way, the projected 'costume' being 'worn' by the performer can seamlessly integrate with the virtual scenography of the performance environment. The tracking of the movement of the dancer provides a way of creating a negative space within a positive lit space.

For all of the technical accomplishment that both *Glow* and *Mortal Engine* represent, together with other works such as Klaus Obermaier's *Apparition* (2004) and Recoil's *Body Navigation* (2008), they still represent light projected onto a surface. The light is free from fixed form and can move with a performer, indeed can move *as* a performer in these cases, but still, the meaning of the projected light becomes clear when in contact with a final plane or performer. However, *Mortal Engine* does move away from the surface projection technique towards the end of the piece, when clouds of theatrical haze are rapidly introduced into the space, to allow walls of light to be created by shining laser built forms through the particle system (see Figure 2).



Figure 2 - *Mortal Engine* by Gideon Orbazanek (2008), photo courtesy of Chunky Move

At this point, the performer is embraced, not by a virtual costume created from projected light, but a virtual three-dimensional environment that has attributes of physicality, but being made entirely of reflected light and smoke, is ephemeral and fluid. The motion tracking allows the performer to move the positions of the light walls by ‘pushing’ outwards, repositioning the projected scenery within the space. It is exactly this type of motion tracking trickery that Wechsler (2011) calls into question. Is the performer moving the light wall, or is it a cleverly programmed set of lighting cues? Only in the post show talk is the answer revealed to the audience and at that point, the moment has passed.

The work of the South Korean art collective Kimchi and Chips takes the notion of light as physical object a step further. Their installation, *Light Barrier* (2014)¹¹

¹¹ Light Barrier. In *KimchiandChips* [online]. no date. [cited 6 October 2017]. Available at: <<http://www.kimchiandchips.com/works.html#lightbarrier>>

conjures objects made purely of light that hang, suspended in the air as a true three-dimensional form (see Figure 3).

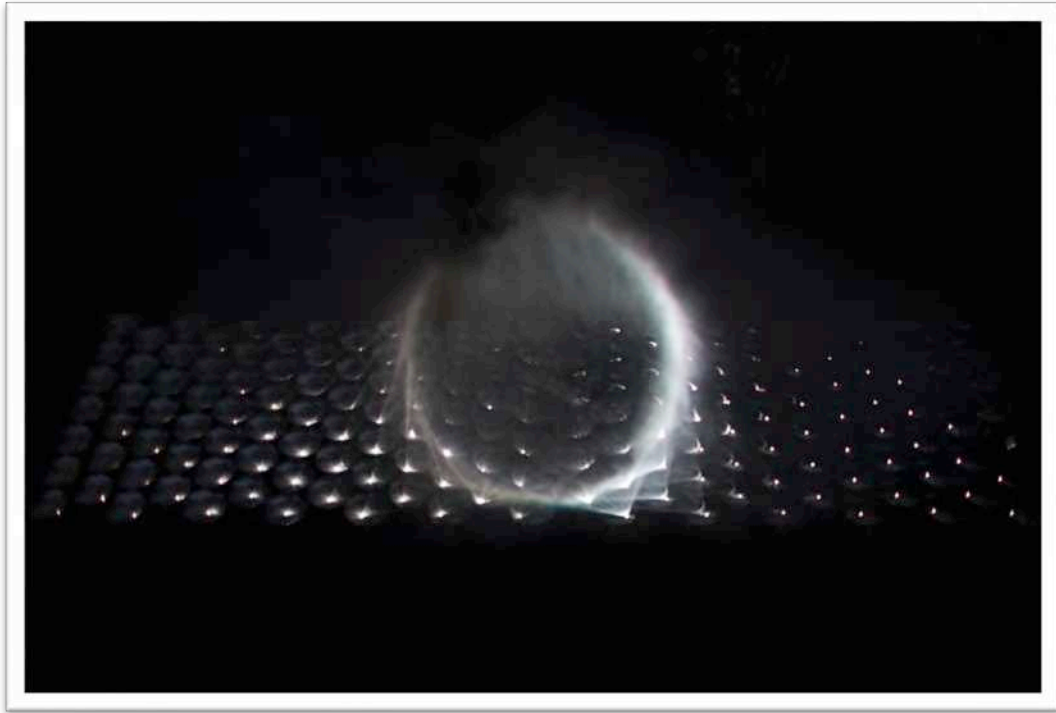


Figure 3 - *Light Barrier* by Kimchi and Chips (2014), photo courtesy of FutureEverything

The technique relies on a projector focused at an array of convex mirrors that redirect the split projected light beam into a defined point in space. The point of intersection creates an intense, bright spot of light, but again, the use of haze is key, as each intersecting spot of light is seen as much brighter than the individual beams of light from the mirrors. The result is a system that can create animated objects, curves and volumetric bodies in space existing as seemingly autonomous entities.

The work is an installation and as such is viewed primarily from an end on perspective and as such it might present itself as a means to create independent light structures for performance, with which performers could interact and engage.

However, even though the contributing mesh of single light beams cannot be seen, they are still there. Any attempt to move around or through the light structure would disrupt the path of these constructing beams and the effect would dissolve. In this respect, the structures seem to invite interaction, but need to maintain a detachment from other physical objects, or risk being destroyed. Despite the rich panoply of invention and innovative use of current technology, what is still lacking is an examination of how light as a physical object can relate to the human form within the performance and installation space. This research will define the relationships built between Dynamic Light Structures, performers, installation visitors and the devising process.

The following chapter identifies both the working practices relating to the construction of Dynamic Light Structures together with those research methodologies best suited to understanding their nature when in contact with the live body. As a precursor to the larger scale research practice, the chapter also considers the role of the experimental *Kynaectiions* performance, which established the notion of Dynamic Light Structures as a viable production tool. A comparative study is made between the development processes of using light through haze in the creation of *Kynaectiions* with the working methods of artist Anthony McCall, known for producing kinetic sculptures with similar tools.

2 Methodology, Process and Practicalities

The previous chapter considered ways in which the use of light in a performance context shifted, with practitioners exploring the medium as a plastic tool and not simply a means of illumination. Coupling light with a particle system, either formally generated, or provided by naturally occurring dust in a space, light could be recognised as a visceral and palpable form capable of contributing to a scene in a tangible and spatial way. This chapter examines the methods used in the creation of the practical elements of this thesis together with the framework and context used for their subsequent examination.

2.1 Methodology

Robin Nelson provides a useful methodological framework for practice as research in the arts, which is predicated on what he identifies as the ‘Modes of knowing’ (2013: 27). He details three cornerstones of a triangular praxic network, with each describing one of the modes of knowing: ‘Know-how’, ‘Know-what’ and ‘Know-that’ (Nelson, 2013: 41-47), which broadly chart the practice as research process. From a starting point of ‘know-how’ - the embodied or tacit knowledge of a subject put into practice to explore a new method of presentation - the researcher develops ‘know-what’ through the experiential and iterative nature of that process. Ultimately, ‘know-that’ is developed through the examination of the practice and the contextualisation of its outcomes. If viewed in a linear fashion, this three-step process would inevitably conclude, but with a triangular representation, the final ‘know-that’ step informs the tacit knowledge of the researcher and allows the process to begin again.

This iterative cycle chimes closely with what Melissa Trimingham describes as the ‘hermeneutic spiral’ (2001: 58), a concept relating to her own proposed methodology for practice as research within the arts. Trimingham makes clear the importance of explicitly stating the research hypothesis at the outset of the practical process, both in order to ensure rigour to support the stated outcomes, and also to focus the research through what inevitably can become quite a chaotic creative process. The spiral allows for a continuous development of practical exploration, with one cycle informing the next, but in a heightened and more informed way, ultimately creating a vertical movement of the process, as well as a cyclical one.

The researcher must be clear as to what point of entry onto the spiral is made and indeed at what point to exit. This underlying continuum lends credence to the notion that the conclusions relating to the hypothesis may well only be part of the story:

The orientation of my own specialism – theatre – predetermined that my subject, Schlemmer, would be analysed in theatrical terms; a dancer would have found different answers, and so would have a performance artist. The solutions found are merely *an* answer, but never *the* answer. (Trimingham, 2011: 57).

Joslin McKinney and Helen Iball examine methodology with a more specific focus relating to scenographic research practice. They identify five broad areas that make up the research process and help to define guiding principles to keep the practice focused. These five strategies are:

retrospective reviews of past practice which use scenographic archives, uncovering the tacit and embodied knowledge used in scenographic practice, strategies of spatial

thinking, practice-based approaches to investigating audience response and scenographic writing. (McKinney and Iball 2011).

Immediately, the identification of tacit or prior knowledge through experience connects with Nelson's ideas of 'know-how' and Tringham's focus on the artist understanding their own point of entry into the hermeneutic spiral. It was this tacit knowledge that led to the development of the practical elements that form the heart of this project.

My own professional experience as a theatre lighting technician and subsequently as a lecturer within this area confirmed the premise that published methods of performance lighting shackle the medium to the service of the stage and performance body. The intention then was to define techniques of performance and installation presentation that subverted not only the conventional use of stage lighting, but also those closed and predetermining methods of lighting control, devised with traditional lighting methods in mind. In this respect, the practical pieces developed challenged an implicit body of tacit knowledge of light as a medium and in the control of light for performance.

Joslin McKinney and Helen Iball's (2011) focus on scenographic research methodologies is particularly apposite to the practice here. The prior examination of the use of light through the latter parts of the 19th century and on through the 20th saw a shift in role of light from an illuminating force to a tool used for scenic architecture in the theatre and music performances. The use of light as a primarily scenographic medium is where this research picks up the trail and enters the hermeneutic spiral. The work also develops Nick Hunt's (2011) call for a change in the methods of

lighting control, and although the research does not advocate the redesign of hardware in this pursuit, its contention is that touch screen surfaces and freely available software can start to offer flexible, bespoke methods of lighting operation for a variety of performance and installation needs.

The concept of light as object, which as previously stated will be referred to as the Dynamic Light Structure, acts as a starting point for the practical pieces that form the central creative output of this research. The term gives a sense that light is both physical object and at the same time in some way expressive and energetic, implying movement and spatial transition. The project examines the ways in which light projected through theatrical haze can act as dynamic and manipulable scenography for a variety of live performance and installation environments. At the heart of the project exist a number of research questions, each of which inform the basis of exploration relating to the practice-based research:

- How can Dynamic Light Structures form a coherent scenographic environment for performance?
- How can Dynamic Light Structures be manipulated so as to ‘perform’ in conjunction with a human performer?
- What are the aesthetic and performative qualities of Dynamic Light Structure scenography?

In order to consider these questions, the following methodological approaches, distilled from the work of Nelson (2013), Trimmingham (2001), McKinney and Iball (2011) and McKinney (2008), were used:

- The utilization of tacit knowledge relating to performance technology, with a primary focus on lighting and sound. An awareness of lighting methods that are traditionally used for dramatic presentation was key to the development of techniques that were to question these approaches and lead to the development of live performance/ installation work that presented light as the primary medium of focus. The development of dynamic light structures as a tool to define space, as performing object, as a prop and indeed a tool for lighting, required the conventional guidelines relating to dramatic lighting, such as those described by McCandless (1958), to be broadly ignored.
- Retrospective review, as detailed by McKinney and Iball (2011). Understanding the historical development of light in theatre, in terms of technique, hardware and control, both provides context for contemporary work and highlights conventional working practice. The mechanisms by which lighting and the stage space developed through the late 19th and early 20th centuries serve as useful background to the formalisation of design practice and methods. Case study analysis of contemporary practitioners defined current technologies and methods used in the creation of light objects for both performance and installation. Their control through technologies such as motion tracking elicited problematic views held by commentators and

practitioners relating to audience responses to the motion control of performance lighting and sound elements.

- The appropriation of Tringham's (2001) hermeneutic spiral and reflective praxis to underpin the development of three performance/ installation pieces. The spiral acted as an umbrella that saw the latter two pieces develop as a direct consequence of the outcomes of the previous pieces. Individually, the creation of each individual piece was guided by Nelson's (2013) principles of Know-how, Know-what and Know-that. The identification of the entry and exit points of the spiral were guided by the research questions mentioned previously and each piece was created with clear aims and objectives at the point of their conception. McKinney's (2008) own practice-based PhD study used this cyclic methodology as a way of informing three performance pieces that explored audience/ scenography communication. This in turn informed her later work on defining practice based research methodologies for scenographic design. McKinney examined her three works through three cycles of development and a similar method is used here, referring to three spirals of developmental activity.
- Again, as suggested by McKinney (2008), live performance was used to enable the physical exploration of Dynamic Light Structures. In this way, logistical detail and practical techniques were uncovered as well as defining the aesthetic and performative qualities of the structures. Production elements such as projector placement, light output, colour, haze density, the range of graphics for projection, performer illumination where necessary and the

limitations of bespoke control design could only have been considered through their realisation within a performance frame. The development of *Etched* explored ways in which a physical theatre performer could find methods of manipulating the light structures and create a series of images, many of which used silhouette as a primary visual, to realise the final performance piece. *On Slow Violence* was presented as an interactive installation, but the technological system used to create it was also used as a tool to subsequently develop a more formally choreographed dance piece for a performance to a more traditionally observing audience. Within the final *OSV as Choreographic Tool* project, the system was used to create audio for performance together with solid light structures to provide a scenic environment, illumination and objects with which the dancers could engage.

- Finally, and also identified by McKinney (2008), questionnaires were used together with post performance discussions as a method of gathering audience and participant feedback. Patrice Pavis (2012) suggests a working frame for the analysis of media onstage, defining five questions that can be used to examine the use of technology within theatre. These serve as a useful starting point for audience and performer interrogation, guiding thoughts on production elements such as the ratio of audio visual and mediated elements to live performance, the historical and social context of media elements included, and the inclusion of live versus pre-recorded media.

The practical elements of this thesis comprise two performances, an interactive installation and an observation of choreographic practice. Katja Kwastek (2013)

acknowledges the blurring of lines between contemporary performance and interactive installation. Initially identifying artworks as being ‘exhibited’ rather than ‘performed’, she goes on to draw out the performative qualities of interactive installation work:

There have always been hybrid forms of performing and visual arts, but interactive art creates a new kind of relationship between those genres. As we have seen, interactive art is based on an interaction proposition that has been developed and constructed by an artist and can be activated at any time in the form of an individual realization – whether or not the artist is present. This twofold basis in presentability and performability must, therefore, be taken into account for an ontological definition of interactive art.’ (Kwastek, 2013: 165)

In these terms, *On Slow Violence* is presented as an interactive installation. It is an interaction proposition that can be manipulated, explored and reconfigured without the artist present. Both the initial performance experiment *Kynaactions*, and subsequently *Etched*, are presented as performances in that the developers of the pieces must be present at the time of performance and the audience agency is confined to that of spectating. The categorisations here acknowledge the fact that installations by their very nature can be performative and that interaction can place participants as co-creators and potentially performers themselves.

2.2 Process and practicalities

The starting point for the practical element of this research was a conscious and clear departure from conventional tools and design techniques relating to light within a

performance space. With that in mind the control of lighting instruments needed to change and subsequently the way in which the lighting technician would interact with control mechanisms.

Beyond this though is a constant and ubiquitous addition to the live space that is necessary for the creation of the Dynamic Light Structure, and that is theatrical haze. Frequently used in all areas of live performance, haze is a fine particle system that can be introduced into a performance environment to act as a reflector for travelling light. Particle systems can range from very dense smoke that can billow and expand across a stage space, to low-lying fog that can be seen to creep across a floor. As a specific particle effect, haze is designed to suspend in the air, evenly distributed throughout a performance space. It is a very fine atmospheric effect which won't obscure vision unless used very heavily, and provides a perfect conditioning medium through which light can be projected and subsequently visualised. The result of this can be a clearly defined beam of light, as commonly seen in rock concert lighting, or an illuminated 'bloom' effect as diffused light passes through the suspended particles.

The haze itself is produced by dedicated hardware units such as the Martin Jem Hazer Pro.¹² The unit passes a water-based fluid across a heating element which vaporises the liquid. This vapour is then propelled from the unit by a fan into the space, the amount of which can be regulated on the machine itself, or controlled remotely through a lighting desk or any other DMX control device. With regard to the generation of Dynamic Light Structures, a room would be filled with this fine theatrical haze prior to any performance or installation. By projecting high-resolution

¹² Jem Hazer Pro. In *Martin.com* [online]. no date. [cited 30 October 2017]. Available from <<http://www.martin.com/en-us/product-details/jem-hazer-pro>>

graphics through the haze, very defined volumetric structures could be made, which could in turn be manipulated in real time within the space. The rendering of light as a tangible object in this way forces a new way of approaching the use of light as a tool within a production environment. It poses questions relating to how a lighting technician might contribute to the development of a performance in the first instance and then subsequently how the control of that lighting might be executed at the point of performance or presentation.

Nick Hunt (2011) laments the technological determinism that the cycle of performance hardware development throughout the 20th century has engendered. He argues that the advent of the computerised lighting control system presents a scenario whereby performance lighting is designed and pre-rendered, rather than performed live with an element of artistic expression capable of reacting to a performance narrative. He suggests a system of lighting ‘threads’ rather than a series of static lighting states, empowering the operator by demanding a constant reappraisal of the lighting as the performance proceeds, and inviting a reengagement of the operator with the live control of lighting as a reactive and artistically expressive discipline at the point of live presentation. In this respect, the lighting operator, or ‘Lighting Artist’ to coin Hunt’s phrase (2011: 219), becomes more akin to a sound engineer behind a mixing console.

Hunt’s call for an enhanced integration of the lighting artist into the heart of the performance development process is to be applauded. However his proposals are still hamstrung to an extent by an adherence to, and a reliance on, the technologies that have defined the lighting operator to date. For example, the use of conventional

theatrical lighting fixtures such as profiles, fresnels and PAR cans promote a specific look within a stage space. Intelligent lighting fixtures, often seen in large-scale rock or musical theatre performances are built with a predefined set of capabilities that in turn prescribe their use within the performance environment.

His ideas question control method and performance operation aesthetic, but not necessarily the constraints implicit within the lighting hardware. The ‘thread/impulse’ (Hunt, 2011: 218) focus for which he argues, seeks to establish the lighting operator as a more active proponent of live artistic lighting control, but one who is ultimately beholden to and constrained by the palette offered to them by established technologies. Ultimately, it seems that Hunt is concerned with the methods of refining lighting presentation for dramatic theatrical performance. His ideas do not seek to develop performance style as a whole, but to extend the role of lighting within those parameters that are familiar to established lighting techniques:

In other words, it is possible to have two lighting states that are, in a given performance context (i.e. under a particular set of *operations*), aesthetically and dramatically equivalent even though they might be visually distinct. Thus we might have a whole series of lighting changes that create visual change, but not a change of affect – for example, a series of cues to subtly emphasize the area of the stage being used by the performers at a given moment so as to guide the audience’s locus of attention (Hunt, 2011: 217)

The method of subtly altering stage lighting levels over time to guide audience focus and point towards areas of stage action is an established lighting design technique (McCandless 1958, Reid 2002, Moran 2007) and Hunt’s ideas extend the ways in

which design principles like this can be achieved. However, they do not fundamentally alter the relationship between light, stage, performer and audience. The effect of the lighting may well be amplified and be born from a more artistically engaged control method, but ultimately it adheres to the established aims of lighting as espoused by McCandless, Reid, Moran et al.: visibility, mood, atmosphere, focus, and the revelation of form.

The three practical projects and one process observation that form part of this thesis seek to address a number of concepts related to Hunt's (2011) work and test extensions of his thinking. In turn they question established tacit knowledge in the field relating to the design principles and the use of light within live performance. Primarily the projects develop both live performance that is not lit in a conventional sense at all, and installation work where light is the primary focus of participant attention. Indeed, light for visibility, normally a prerequisite within the dramatic theatrical performance environment in essence becomes a by-product of the light structure that is apparent onstage during a performance/ installation.

To that end, the lighting for *Kynaactions* (2013), *Etched* (2014) and *On Slow Violence* (2016) together with the subsequent choreographic process observation, *OSV as Choreographic Tool* (2016), employ standard data projectors, not established performance lighting fixtures, as the primary lighting source.

Normally used to visualise text and images onto a screen, projectors are used to deliver simple graphic images, such as lines and dots, through a haze filled environment, creating light structures within a space. The aim of these is not to

illuminate, but to create Dynamic Light Structures that in turn provide some degree of illumination as a by-product of their existence. The use of data projectors as lighting instrument creates an immediate caesura in the line of established lighting techniques for performance. At that point, assumptions relating to style and control of lighting needed to be rethought and indeed developed from scratch. Standard lighting desks have no immediate way of talking to a data projector to affect control in conventional terms, and the projectors themselves are not designed to produce an aesthetic lighting product as a function inherent to their operation. For a more detailed exploration of the method by which the data projectors were used as a lighting instrument, together with the associated method of control using iPads and performance software, please see Appendix E.

2.3 First spiral: working practices and *Kynaactions* as proof of concept

‘In theatre, image and object, pretence and pretender, sign-vehicle and content, draw unusually close. Or, as Peter Handke more interestingly puts it, in theatre light is brightness pretending to be other brightness...’ (States, 1985: 20)

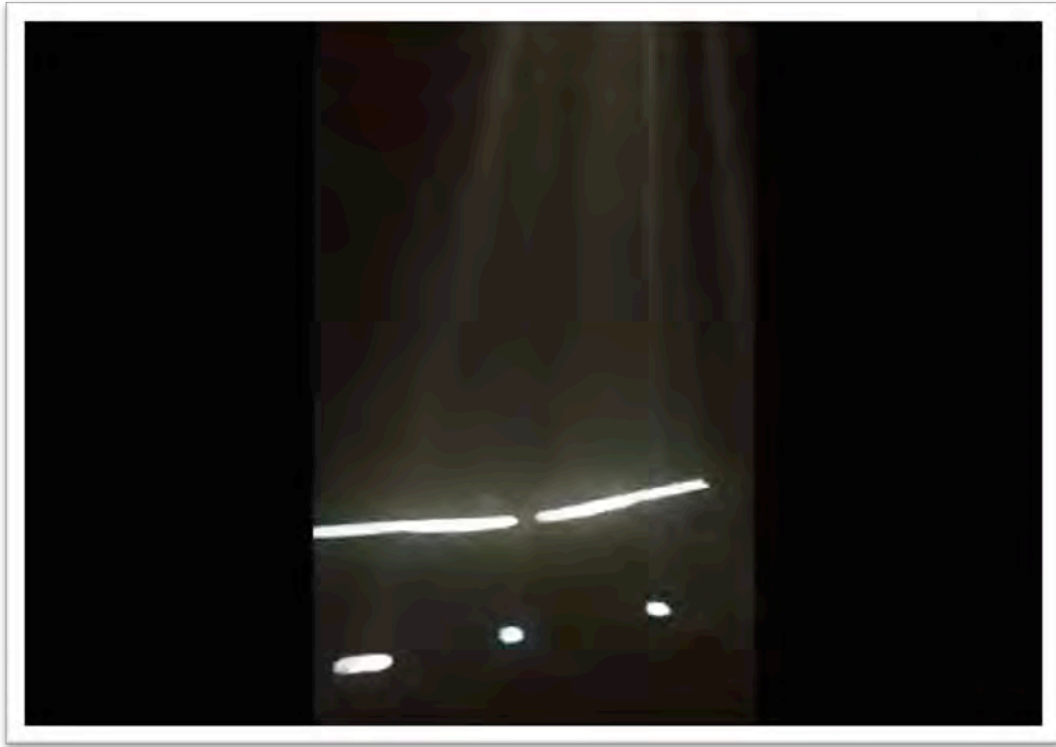


Figure 4 - Early experiments with Dynamic Light Structures

The first practical piece, *Kynaactions*, was essentially a devised performance that was to act as a basic proof of concept for the production of Dynamic Light Structures. It started life as a way to explore what Trimingham describes as ‘an undeclared hunch.’ (Trimingham, 2001: 58). I was aware of the methods of creating light structures through haze, but it was the advent of the ubiquitous touch screen tablet that sparked an interest in the live control and manipulation of these structures.

Lighting fixtures have specific operating parameters that have been developed in order to fit with the various demands of live theatrical and musical performance. Modern intelligent lighting fixtures capable of remotely operated movement such as focus, colour change, gobo pattern selection, iris adjustment etc., are incredibly sophisticated pieces of performance equipment and require a degree of training and familiarity to both rig and operate. The control hardware associated with their

operation can be vastly powerful and thus potentially complex in terms of their accessibility and functional usage. Again, these pieces of equipment have developed over time to help lighting designers and operators present visual images that concert going audiences have come to expect from large-scale live productions. The ‘hunch’ then was a way to develop the use of lighting for live performance from a simple illuminating force, into a three-dimensional immersive environment.

The first experiments with an iPad running the *TouchOSC*¹³ software and an Apple Mac computer running *Isadora* as a graphics generation programme, were captured in early 2013 and an example can be seen in Figure 4 (if reading electronically, click picture to play in browser or alternatively access the short video file on the accompanying USB flash drive).

In this example, alluding to the quotation at the start of this section, the resultant form created is brightness not pretending to be other brightness. Light here does not project through a breakup gobo to give the impression of illumination through a tree canopy. It does not strike a performer from an obtuse angle to frame the face as if half caught by a street lamp. It exists as an animated object with form and fluid motion.

Admittedly, what is observed here does not take place within the context of a theatrical performance and so does not exist within a stated artificial context, or a context applied to it by an audience, but its use within theatre would allow this light to exist as itself, as easily as it could be used to signify something other.

¹³ TouchOSC. In *Hexler.net* [online]. No date. [cited 26 October 2017]. Available at <<http://hexler.net/software/touchosc>>

The strength of the structures created by the projected graphics are not fully captured in the Figure 4 video, but what is clear is a method of creating manipulable light using projected graphics drawn live on an iPad. The video file shows a control mechanism capable of creating the free hand drawing of lines of light that are mirrored symmetrically. A ‘gravity’ effect was applied to the graphics so that as soon as they are rendered, they start to pull away from their point of origin. Whilst watching the video, the resultant lines are clearly seen on the floor of the space and certainly the images give the impression that these are much more noticeable than volumetric structures within the space created by the light travel illuminating the haze within the environment. This is in part due to the programmed gravitational pull, which ends up blurring the distinctive edges of the light structures. In turn, this is in itself a result of the initial exploratory working methods.

The work leading to the live experiment shown in Figure 4 was completed after the initial hunch relating to manipulable light projected through haze. As a consequence, the programming of the control and graphical generation system using *Isadora* was done so entirely within the software environment, with only a two-dimensional representation of a projection output. Figure 5 shows two images of the on screen ‘stage’ as it is referred to in *Isadora*.

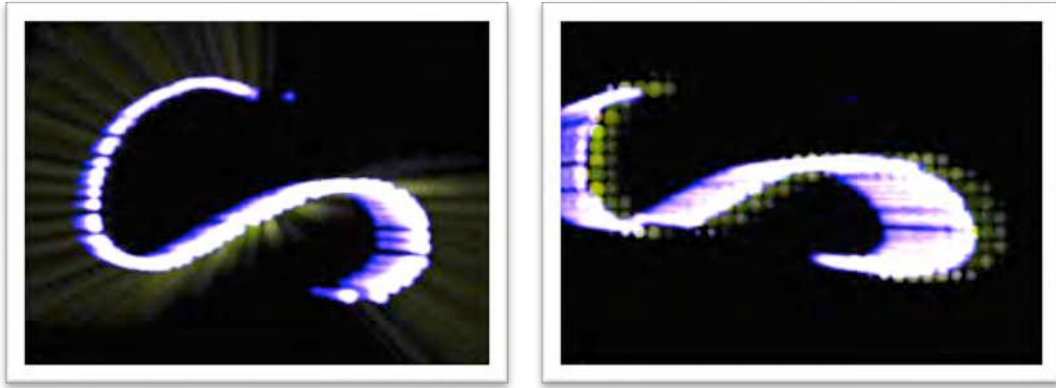


Figure 5 - Graphics rendered by *Isadora* using an iPad running *TouchOSC*

During this process of experimentation with a live iPad drawing mechanism, the focus was on these screen representations of the light. Quite a considerable amount of time was spent developing the visual impact and interest of the images generated by the live drawing. The image on the left contains a radial blur effect with striations as if light emerging from the drawn graphic came from an infinite focal point. The image on the right sees the graphic dissolve into dots at the edges as a gravity-like pull stretches the image towards the left.

‘On paper’ as it were, these results seemed very pleasing; the drawn images had a dynamism to them and the extra animations above and beyond the live rendered line added a visually interesting animation and an organic quality to the scene. However, it is perhaps predictable that a focus on the two-dimensional final image created by the light would result in a projected structure that was not ideal. This however, is not necessarily a bad thing. The process of devising a work in one frame and then translating that work into another creates an iterative cycle in itself. There exists a gradual fine tuning of method and an emerging understanding of acceptable function.

In creating his volumetric light installations, Anthony McCall eschews an entirely digital working environment, experimenting with a physically miniaturized projection space fed through a laptop, or more practically still, a series of paper cones made to represent the various 3D forms that would be projected:

McCall's use of the small paper forms when working on multiple projection installations is a process of manipulation, by hand and quite intuitive or playful, of the work 'as a whole'. This 'hand-held' quality, vital to the kind of play they make possible, distinguishes them from McCall's tabletop 'prototypes' where the process can be seen as closer to what is at work in a visualization. The characteristics of the volumetric form can be studied in this way and it is from these modules that the various parts that make up the work can then be devised and modified. (Ellard and Johnstone, 2015: 14-15)

When McCall presented his early solid light films such as *Line Describing a Cone* (1973), the opportunity for digital visualisation of the final product throughout the design stages was not there. McCall used sketchbooks, or as Ellard and Johnstone term them 'workbooks' (2015: 16) as a physical documentation of the flow of ideas and to gain an understanding of how the volumetric structures might look within a space. In conversation with McCall, Ellard and Johnstone pose questions about working within the liminal space between workbook and full realization:

GE: I'm thinking about what you've said about the difficulty of reconciling the image projected on the wall and the extruded form, the planes of light that seem to be suspended in mid air. How do you actively work with that ambiguity, that uncertainty in making a solid light film? [...]

AM: Digital technology has certainly changed the way I work. In developing my ideas I do a fair amount of drawing. This requires me to constantly oscillate between two and three dimensions, since what is programmed (and later projected) is an animated line drawing, but what I am really making is a three-dimensional, volumetric form. [...]

SJ: But you don't use digital technology in the initial stages, some kind of drafting program?

AM: No, just a pencil. I like the simplicity and speed of pencil and paper. (Ellard and Johnstone, 2015: 49)

McCall works with a programmer, whose role is to translate his final 'score' into a digital animation. At that point, save for parameters to control elements such as size and speed of the projected images, the work is fixed and ready for projection within a space. Once the public is engaged with the installation, the work is as preset as lighting for a scripted play and its lifecycle is instigated through the inevitable 'go' button associated with standard theatrical performance lighting.

With *Kynaactions* aiming for live manipulation of lighting and the free development of scenographic visuals, sketches and physical paper models have only so much use. The live two-dimensional scene as offered by *Isadora*, whilst not perfect in this instance, does offer the visual/ haptic response that is important to the animated nature of the work, albeit as a live notebook existing on one side of the live/ production liminal divide. As a method of working, this shuttling back and forth

between media representations forces a connection with the work that is akin to that of the Lighting Artist proposed by Hunt (2011).

Kynaactions was the result of such an iterative process of development and was an 8 minute contemporary dance piece that used Dynamic Light Structures as the main lighting instrument as well as being the catalyst for choreographed movement. The system comprised a single data projector rigged to point vertically down onto the space. A wide-angle lens was used to maximize the lit performance area and a data projector with a light output of 3500 ANSI lumens was used in order to create light structures that were bright enough to achieve a suitable ‘solidity’ when the graphics were projected through the theatrical haze within the room.

The control surface used to generate the graphical information to be projected was Hexler’s *TouchOSC* and the performance system that interpreted the open sound control information and created the associated graphical information was Troikatronix’s *Isadora*. Figure 6 shows the control surface as seen on an iPad screen. The whole of the central box with the title ‘Draw Dynamic Light Structures’ was given over to this element of control as it allowed for broad flowing movements that in turn would generate quite organic looking, sweeping, structures.



Figure 6 - TouchOSC control surface for *Kynaactions* (2012)

The viability of the touch screen as a control surface was being tested here. The final design needed to promote an experience for the user likened to that which Sita Papat and Scott Palmer refer to as being ‘both visual and kinaesthetic at the embodied interface’ (2008: 137), and to what Maria Engberg refers to as ‘polyaesthetics’ (2013: 27). Engberg’s examination of the mobile application as a performance tool accessed through a touch screen surface centres on the ways in which the user experience changes the perception of a performance through a haptic connection to a device:

The question becomes for the designer and the artist how to work with (or against) the potentiality of that perceptual, or as I have put it, polyaesthetic moment. The immediacy that can occur is different than that of Alberti’s notion of a transparent window onto the world, the lure of non-mediated vision through painting. These

tactile interfaces suggest a different, tactile immediacy that allows us to touch the medium itself, even as we focus on whatever it mediates. (Engberg, 2013: 26)

The notion of a tactile immediacy was key and the idea that the user is in fact touching the medium itself (in the case of *Kynaactions*, the invoked Dynamic Light Structure) was vital for the control system to be able to produce light scenography that could respond and perform effectively with a live body in space. The flow of information from the mind of the user, through the touch screen surface, on to the graphics generation system and finally to the real world projection must not be obstructed by the medium of control. It was important for the surface to be able to facilitate the following in an intuitive way:

- The control surface needed to be able to respond quickly to performer movement and in that respect, needed to be able to generate graphics in any direction;
- The light structures needed to be able to evolve so as to present a range of capabilities across the duration of the performance;
- The degree of intensity had to be controllable so as to be able to effect fades when necessary;
- To fit with the contemporary dance nature of the piece, the light structures needed to have a fluidity about them, and be presented as organic curves, rather than lines.

The final performance was choreographed to a piece of music which had been composed to allow for the repetition of movement elements, and which developed over time to allow for the visuals to grow and expand. The piece was quite minimalist

in its approach and acted as a way for the technician, and the two dancers, to work in sections and be aware of various anchor points within the performance at any given time.



Figure 7 - Images from *Kynaactions* (2012)

Figure 7 shows some stills from the work. The performance kept an element of improvisation, but through rehearsal, much of this became embedded movement. The experience for the audience was actually divided into two parts; the first a traditional observation of a presented piece of work, but then an invitation to take control of the light structures and improvise movement with the performers. This was done with

minimal guidance and once a brief explanation of the control surface had been completed, participants were free to create whatever visual scenes they liked.

As this was the first time that the use of Dynamic Light Structures had been demonstrated as part of a devised piece of work, feedback was gathered to gain an insight into how the scene was received by the audience members. Philip Auslander discusses the reception of live performance that contains both live and mediated elements and develops a theory which he presents as an equation: 'Dance+Virtual=Virtual' (Auslander, 2008: 42). His contention then, that when faced with a combination of both live performance and a variety of media elements (such as large video screens) is that it is natural for the attention of the audience to be drawn to that which is culturally dominant at the time – i.e. the screens.

The nature of the live projection within *Kynaactions* is not as clearly mediated as a video screen. As has been argued, the practice that underpins this thesis sees attention being drawn to volumetric projection within space rather than the resultant image on a surface. Nevertheless, the Dynamic Light Structures created are in reality a projected image and are part of the scene in conversation with the live body. The aim then was not to refute Auslander's claim, and he does qualify the statement by suggesting performance works that find ways of 'asserting the presence of a human body over that of a projection' (2008: 43), but rather to find a way of creating a real balance of form on stage between the live and the mediated.

The intention was that the scene would be made up of light architecture that performed in concert with the human body and was neither subjugated to, nor given

primacy over, the live performer. Pavis has a slightly different take on the gaze of the spectator:

As stated earlier, in the competition between image and real presence (video and actor), the spectator does not necessarily choose the living over the inanimate – far from it. Rather the spectator chooses that which is visible on the largest scale, what keeps moving, and thus grabs the attention (Pavis, 2013: 140)

In much of Auslander's discussion on the presence of video and film on stage, the media elements are contextualized as fulfilling roles relating to the presentation of a live performer in a mediatised way – as a digital double, or as a spatially dislocated presence. In these cases, the line of thought applied to the pull of focus of the spectator is easily visualised and perhaps even understood through personal experience (perhaps the tendency to watch giant video screens at a rock concert instead of the live band onstage).

The Dynamic Light Structures of *Kynaectrons* walk a hybrid media line. In one sense, they are simply made of focused light, and are therefore the result of something no more technologically media related than a standard stage PAR Can lighting fixture. Simultaneously, they are constructed from projected graphics that create an identifiable image on a surface as well as a volumetric form within a space, thus having both the temporal and visual elements of film and video as well as the spatial and visual reality of a scenic object. However, they do conform to Pavis's suggestion that scale and motion are contributing factors in the unintended focus of audience attention, being as they are in constant motion and physically large within the space.

Spectators were invited to complete a simple questionnaire, which on the one hand asked for a response to a set of given questions relating to the control mechanism, ease of use and focus of attention etc., but also offered them the opportunity to pen some general thoughts on what they had seen. In hindsight, the design of these questionnaires was problematic and yielded limited data relating to the use of the control surface itself. However, the more general thoughts did highlight the ways in which the scene was observed and some of the closed Likert scale questions did reveal some patterned responses. Of the 24 completed questionnaires 20 either agreed or agreed strongly that they were able to focus on both the dancers and the light structures. That question was posed directly after the performance with no prior explanation before the performance of what was to be seen. Taken in isolation, the question is somewhat limited in scope and certainly subsequent methods of data collection were revised to encourage much more qualitative responses, not only through written observations on given questions, but also through group discussion. However, the brief general comments offered by a number of the *Kynaactions* spectators start to point towards experiences of a coalescence between media and the live body:

I loved the relationship between performer and light

The choreography and light combined was just beautiful

I felt that the dancers reacted to the light movement very well

The movements added tension – I felt concerned for the dancers with the ‘sheet’ of light

*You weren’t distracted as the dancers interacted with the light. Almost as if the light was another dancer*¹⁴

The use of terms such as ‘relationship’ and ‘combined’ together with descriptions of the light as another force (a third dancer, or a sheet with some kind of menacing presence) suggests a symbiosis of scenic mechanics, both mediatized and non-mediated, that do not present a tension for the attention of the spectator. Rosemary Klich and Edward Scheer offer a revision of Auslander’s formula: ‘Dance+Virtual=Multimedia Performance’ (2012: 105) and this points more towards a more unified appraisal of a piece like *Kynaectons*.

As a proof of concept, the performance provided a gateway to continue the research. It was clear that as a method of creating manipulable light scenography, the control system had worked, but more than that it had provided a basis for developing a variety of types of performance and installation work in the future.

The following chapter considers the performance work *Etched* in light of the establishment of the Dynamic Light Structure as a workable concept. It examines the role of the Dynamic Light Structure as a tool for performance creation in conjunction with the live body in a space. Through the examination of audience response an argument is made for the structures to be seen as stage objects whilst at the same time

¹⁴ *Kynaectons* audience questionnaires – see Appendix A

being seen to create a scenic environment that has links to both digitally augmented spaces and virtual reality.

3 Second Spiral: *Etched*

For a visual record of *Etched*, please click [here](#)¹⁵ if reading electronically, or refer to the film on the accompanying USB flash drive.

Having established the concept of the Dynamic Light Structure as a workable method of creating manipulable light scenography, the next step of the research was to examine how it could be used within a number of performance and installation scenarios. *Kynaactions* had demonstrated the means of control and also a devising practice that relied on improvisation and the creation of choreography through the action/ reaction of both live performers and light exploring a relationship within a space. *Etched* had a more specific focus, which was to examine ways in which light scenography could play a role within a performance that was presented with a more formal structure. *Kynaactions* was an example of what Mark Coniglio refers to as a ‘materials-driven’ performance (Coniglio, 2011: 81). It was designed to test a technical system and evaluate the resultant product. *Etched* would be more of what he describes as ‘content-driven’ (2011: 81).

Etched had a catalyst element that acted as a starting point for the devising process. The theme of acid attack had been prevalent in the national media and seemed to be a particularly insidious form of attack that was becoming more prevalent. I was fortunate enough to be able to develop a working relationship with Judita Vivas, a fellow PhD candidate at the University of Kent. Judi was studying physical theatre

¹⁵ *Etched*. In *vimeo.com* [online], 2017. [cited 26 October 2017]. Available from <<https://vimeo.com/94639397>>

practice and agreed to collaborate on a project that would explore the use of Dynamic Light Structures as a starting point for the devising process.

Etched used four projectors in total with three at floor level, configured with one positioned behind the performer and one to each side. The final projector was rigged at ceiling height facing the performer. The projector that would provide the majority of the scenographic form was the one positioned behind the performer. By projecting lines and squares through dense theatrical haze, it could create planes and a tunnel like effect with which the live body could intersect. The scenography would also stretch into the seated audience area inviting audience members to perceive and be present with the structures at close proximity. Control of the Dynamic Light Structures was achieved through a custom iPad control layout using Liine's *Lemur*¹⁶ software, which allowed for live manipulation of graphical information created by the *Isadora* software. The animation of the light structures was a combination of pre-programmed movement and live manipulation through the iPad control.

With regard to the central research questions, the Dynamic Light Structures were to provide the scenography for a postdramatic performance work whilst also performing with a live body in the space. The practice was to determine by what means that could happen and then subsequently analyse the audience response to the very visual theatre presented and examine the ways in which the light structures were received and interpreted. From the outset, whilst exploring movement that combined both the physical body and the intangible light structures, the first two research questions were crucial in guiding the development of the performance:

¹⁶ Lemur. In *Liine.net* [online], no date. [cited 26 October 2017]. Available from <<https://liine.net/en/products/lemur/>>

- How can Dynamic Light Structures form a coherent scenographic environment for performance?
- How can Dynamic Light Structures be manipulated so as to ‘perform’ in conjunction with a human performer?

In the first instance, the mechanics of the project stand at odds with Adolphe Appia’s views on set and the solidity of the performance scene. He argues for the environment to be seen as an opposing force to the human body and as such having a necessary weight to physically realize that opposition. In this way, the stage environment becomes a living space:

A body approaches. Out of the contrast between its movement and the quiet immobility of the column is born a sensation of expressive life, a sensation that the body without the column or the column without the advancing body could not have evoked. Further, the sinuous and rounded lines of the body differ essentially from the plane surfaces and the angles of the column – and this contrast is in itself expressive. The body finally touches the column; the opposition is further accentuated. Finally the body leans against the column, and the latter’s immobility offers a point of solid support: the column resists; it *acts!* The opposition has created life in the inanimate form; the space has become living! (Appia, 1981: 28)

Of course, Appia’s drive was to ground the living performer within a tangible space and thereby remedy the falsities apparent when the scene forces together a two-dimensional environment with a three-dimensional body. His concern was to create

and maintain realism in the relationship between performer and stage and by doing so, bring life to each – ‘By opposing itself to life, the ground, like the pillar, can receive life from the body’ (Appia, 1981: 29). *Etched* was to challenge the ideology of solidity and seek to define a new relationship between the body and the intangible.

3.1 Objectively speaking

As Appia saw the column performing when in proximity to the live body, so *Etched* needed to define how an ephemeral plane of illuminated haze particles could be seen to perform in a similar way. Appia describes the solid form (pillar or ground) as being able to receive life *from* the live performer through a definite resistance *to* the performer; in essence, a conversation between two solid objects, with one able to support the other. Of course a light structure can be seen to have proximity with the live body in space and just as Appia suggests, the relationship between the two can effect a ‘sensation of expressive life’ (Appia, 1981: 28) within each, but at the moment of touch, the entire artifice of solidity crumbles and a new relationship is formed as the body passes through and redefines the light structure.

With regard to *Etched*, the establishment of a theatrical norm at the start of the piece enabled the definition a familiar aesthetic and one that would be readily recognizable to an audience within a performance frame. With that in mind a lit space was created consisting of nothing more than a chair, accompanied by a low soundscape of chatter within a social environment. According to Bert O. States, the chair exemplifies that which centres the performer within a realistic place in the environment:

We could have approached the realistic paradigm from any number of directions or points in history; but in furniture, we have perhaps its most concrete manifestation, for the whole phenomenology of realistic acting – especially as a reaction to classical acting – can be derived from it. If we reduce the realistic theatre to its single most important property, we arrive, in effect, at the chair. (States, 1987: 43)

For States, like Appia, the physicality of the setting is key to grounding the style of performance. The chair has such an established relationship with the body that its presence within the performance environment invites naturalism: ‘...when characters begin to sit as naturally as they stand, the body comes fully into its own as the centre of a new spatial concern...’ (States, 1987: 45). States’s chair denotes a natural realism on the stage and the solidity of its form gives a life to both performer and the object within the scene. The chair at the start of *Etched* seeks to establish a familiar norm as perceived by an audience. Tadeusz Kantor fuses both State’s ideas on the creation of naturalism through the use of the chair with Appia’s sense of the body/ object dialogue:

In *The Return of Odysseus*, Penelope, sitting on a kitchen chair, performed the act of being “seated” as a human act happening for the first time. The [physical] object acquired its historical, philosophical, and a r t i s t i c function! The [physical] object ceased to be merely a stage prop and became the actor’s competitor. (Kantor, 1993: 212, original emphasis)

Kantor moves a step beyond Appia suggesting a more combative stance between object and live body. His sense of hierarchy comes to the fore and one that underpins his thinking in relation to the ‘reality of the lowest rank’ (Kantor, 1993: 74). Kantor’s need for stage objects to be freed from the subordinate position of replica and to be

seen as real within a performance space was key to his 'Elimination of the Conventional Elements of Theatre' (Kantor, 1993: 75). His was not the naturalistic theatre to which States alludes in his description of the importance of the chair, but a visual theatre that was defined by the reality of the 'poor object' (Kantor, 1993: 74) presented. Kantor's poor object relied on the life of the object being seen as a visible texture that fully exposed it as material. Its granular, blemished, rusted, worn body would stand as testament to its own reality and in doing so give credence and validity to both the surrounding environment and the live acting body at hand. This could only happen if the object is presented as itself and is not replaced by some sort of imitation prop that aims to *represent* the real object; Kantor rejected the "...artistic object," which contained in itself both imitation and representation of the fiction of reality...' (Kantor, 1993: 75).

Kantor's later work saw the development of the term 'bio-object' (Kantor, 1993) that more pointedly fused the relationship between actor and object than had the poor object. Rather than relying on a visible past history to lend a truth and realism to a scene, the bio-object existed as a symbiotic entity with the live body, informing its articulation within a space:

As a corollary of this shift, a wheel smeared with mud, a rotten board, a chair, a gun barrel, a loudspeaker, and dusty parcels did not have to represent the functions and values assigned to them either by life or war; rather they existed in relationship to other objects and figures that refuge in the performance space. (Kobialka in Kantor, 1997: 275)

The bio-object is an integration of actor and object that redefines the hierarchical nature that can exist between a character and a prop: ‘...the actor and his or her object were set apart from the character and the action of the play’ (Kobialka in Kantor, 1993: 391).

For a piece of visual performance such as *Etched*, the hierarchical nature of the body/light object relationship is key to the overall aesthetic. However, the Dynamic Light Structures, as objects within a space, have no allusions to imitation. In Kantorian terms, the light objects cannot be seen to be replacing an artistic object (prop), but neither do they fit as a poor object, that brings with it an inherent expression of reality. With regard to the bio-object, the Dynamic Light Structures are independent of the performing body. They may interact and at times occupy the same space, but the connection between light object and performer is not constantly physically linked so as to become a single entity. The Dynamic Light Structures exist as technical objects. That is to say they exist as a visible and seemingly tangible entity, but with no previous *real* life and equally no existential frame of reference to locate its purpose within a scene. It brings no other information to the scene other than its visible presence to the space.

In this respect, the light structures have their origins in basic abstract form, or as Kantor describes them ‘THE ELEMENTS OF ABSTRACTION – that is, the square, the triangle, the circle, the cube, the cone, the sphere, the straight line, the point, the concepts of space, tension, and movement...’ (Kantor, 1993: 209). As a line is projected through the haze-filled environment, it finds a final resting place on a boundary surface, but its progression from the projector is traced in space and the

object created is an extrapolation of the virtual movement of that line. To give these objects a McCall-esque description, when extruded, a line describes a triangular plane, a circle describes a cone and a square describes a pyramid. The consequence of this appraisal helps to define the role of the dynamic light structures within *Etched* by identifying what they cannot do:

- The Dynamic Light Structure cannot lend a weight to a live body in space in the same way that Appia (1981) sought a reciprocal relationship between column and the body.
- As might be expected, the Dynamic Light Structure cannot ground a work in naturalism in the same way as States (1987) describes the use of a chair.
- The Dynamic Light Structure cannot offer truth to the scene through an implicit real state of being as Kantor argued for the ‘poor object’ (1993)

Both Kantor and Appia identify the importance of proximity and the tension created through a change in spatial relationship between performer and object, or indeed two abstract elements:

One person draws a C I R C L E . Another one draws this something that is in opposition to a CIRCLE, that is, a LINE.

Dramatic tension appears and increases when the line gets closer to the circle. When the line passes the circle and moves beyond it, the tension decreases. (Kantor, 1993: 213, original emphasis)

As a visibly tangible object, the Dynamic Light Structure occupies the same space as the live body, in a similar space as the stage object, but with the added dimension of

autonomous movement. The reciprocal relationship of proximity between object and body within *Etched* can be instigated and manipulated not only by the live body, but also the object itself as it is mobile and can either be programmed to move in space or can be manipulated to do so live by the technician in response to the position of the performing body.

It is at the point of touch that the Dynamic Light Structure starts to come more into its own. Without solidity or weight the light structure has a different relationship with the live body in space than do the scenic and poor objects of Appia and Kantor when it comes to touch. Appia celebrates a new environmental power as the column and the body finally touch: ‘the space has become living!’ (Appia, 1981: 28), whereas Kantor fuses the body and the object together to create a new performance entity, with the object informing the movement of the body:

A man with doors

who cannot separate himself from them

aimlessly carries them and performs the only

actions that can be performed with doors-

closing and opening.’ (Kantor, 1993: 103, original emphasis)

In both cases the physicality of the object is key, with weight, texture, functionality and materiality impacting hugely on the scene and the associated live body in the space. These elements are not so easy to quantify within the Dynamic Light Structure and for much of the performance the structures do not only function as objects, but

also the stage environment, and specifically an environment that has a physical spatial link to the watching audience.

At approximately five minutes into the performance, there is an abrupt visual shift from what could be described as ‘conventional’ performance lighting to a scene that is created from light objects. This guillotine like interruption signals a very clear shift in form and function within the stage space. Gone is the chair, which grounded the performer and painted the scene with a sense of naturalism. Gone is the garish, simplistic flashing backlight, which positioned the piece within an established musical performance design frame. Gradually, out of the dark, a tendril of light extends from the back of the performance space into the audience position.



Figure 8 – Early light structure production photos from *Etched*.

Figure 8 demonstrates this change in scenic approach. It shows a light structure initially extending from the back of the stage out towards where the audience would be seated. In essence, there is a reversal of the standard performance stage scene, with a followspot originating from behind the audience to illuminate a subject on stage. Here, the spotlight originates from the stage space and highlights the audience. The finger of light morphs into a horizontal sheet of light, flips vertically and then scans the audience in a literal interpretation of McLuhan's notion of the TV viewer:

With TV, the viewer is the screen. He is bombarded with light impulses that James Joyce called the "Charge of the Light Brigade" that imbues his "soulskin with sobconscious (sic) inklings". (McLuhan, 1997: 313)

As Terrence Gordon (2010) argues, McLuhan explores the TV image as being related to sculpture and iconography and as demanding a response from the viewer that extends the visual sense into the realm of the tactile: 'McLuhan does not refer to the television image as tactile because of a metaphorical finger scanning the screen, but because the image requires of the eye a degree of involvement as intense as that of touch.' (Gordon, 2010: 16) His interpretation of McLuhan's work suggests that the image on a TV screen, created by light shining through a set of pixels within the cathode ray tube creates an object that crosses senses: 'Though received by the eye, the image on the screen has the type of texture associated with touch, which creates an interaction of all the senses.' (Gordon, 2010: 9).

Current high definition television screens do not produce images in this way and it is in the low definition of the cathode ray tube that McLuhan sought this unique textural

quality within the electronic image. In comparing a television image to a movie image, he argues that the TV image is constructed by light shining through a type of lattice structure, suggesting that the image is ‘now a mosaic mesh of light and dark spots...’ (McLuhan, 1997: 313). It is in this sense of the image as a tactile object – a mosaic and something with a textural quality - that *Etched* presents its dynamic light scenography. As the light extends into the audience, expands across them and then scans them, the scenography of the piece is in direct contact with them. The audience members will not feel a physical touch, but visually, the light is perceived as solid and having a textural quality about it.

Of course, the object itself shares more with McLuhan’s thinking than is at first perceived. The light scenography is made up of a mosaic like structure in that it is constructed through the patterning of an array of dots. The light shining through the haze within the environment brings each haze particle to life in exactly the same way as an electron gun illuminates a coloured phosphor within the cathode ray tube of a TV. The TV screen limits the position of the coloured phosphor elements, but the light extends beyond that boundary and carries on through to the viewer.

The three-dimensional position of the haze particles in space is not bounded in this way and so can trace the position of the light as it extends into space and in doing so the haze particles gain a unique position within the piece. As Chris Salter (2010: 102) suggests of the faceted metal plates in his appraisal of the dynamic architectural installation *Aegis Hyposurface*¹⁷ (2003), the haze particles possess a latent performance quality that is only realized when in contact with the travelling light.

¹⁷ Aegis Hyposurface. In *Mark Burry* [online], no date. [cited 26 October 2017]. Available from <<http://mcburry.net/aegis-hyposurface/>>

Once defined by the light, they live, in exactly the same way that Appia's column achieves life when in contact with the living body.

As the light scans the room, the haze, which is ever present, but universally ignored in the dark, achieves a performative significance as it defines the scope of the light. Indeed, the relationship between the two elements of light and haze is one that is reciprocal, as the scenic element cannot be achieved without this specific dialogue. As the structure scans the audience member, each is briefly illuminated in the same way the haze particles are, and then equally plunged back into anonymity within the darkness. In this way, the audience members become another 'particle'. Due to physical size, they block and disrupt the physical shape of the light structures, but the light carries on around them and onto the next human particle in the row behind.

In essence, the walls of the performance room are the only limits to the light structures and the audience is brought forward to exist within the scenic space, as if transported through McLuhan's TV screen boundary, to observe the function of light before it creates an image on a surface. To observe the medium and not the message.



Figure 9 - *Etched* (2014) haze textures in Dynamic Light Structures

Whereas a cathode ray tube electron gun scans the back of an old TV screen in a uniform and systematic way in order to induce static phosphors to glow, the haze particles caught in the travel of light from the projector in *Etched* are mobile. The fan within the haze machine is constantly causing a disruption to the air in the space, which in turn causes the haze particles to move, leading to eddies within the makeup of the light structure. The movement of the haze causes areas of textural variation in the Dynamic Light Structure. These variations move in a very fluid-like motion giving life to the object in a visceral and textural way that has more in common with a moving image on a TV screen than a materially physical static stage object. Figure 8 is a still from *Etched* at approximately ten minutes into the performance, and demonstrates the textural variance in the light planes that make up the description of the physical space.

3.2 Look, but don't touch...

The notion of light seemingly perceived as an object in its own right was key to understanding its relationship with a live performer in a space. Audience responses to that very phenomenon would help define that relationship as well as their own audience/ light structure relationship. Textural perception has been shown to be most accurate when using bimodal systems of identification (Heller, 1982), where the senses of both touch and vision provide information on the smoothness of an object; but with a light structure, the sense of touch cannot contribute to the understanding of the object in these terms.

Catherine Vasseleu (1998) considers the texture of light itself (and I make a distinction between light and the compound object of the Dynamic Light Structure) and proposes a coming together of the senses that is allied to McLuhan's (1997) proposal of the light from the TV image as being a textural phenomenon:

A significant aspect of light's texture is that it implicates touch in vision in ways that challenge the traditional differentiation of these senses within the sensible/intelligible binarism of photology. Conceived of in terms of this binarism, vision has the distance required for theoretical knowledge and gives the sense of objective certainty and freedom, while the subjective immediacy of contact in the tactile faculty gives the sense of qualitative alteration and intuitive irrefutability. In its sensible indeterminacy as both feeling subject and object being affected, tactile perception is defined as a loss of objectivity in relation to the infinitude of vision's scope. The distance and space for reflection and insight that comes with vision through the mediation of light is lost as the sense of sight passes to the sense of touch. (Vasseleu, 1998: 12)

From this philosophical standpoint, the visual sense is afforded a position of freedom and any ideas associated with viewing an object remain valid until made concrete through touch. As the Dynamic Light Structures within *Etched* cannot be physically touched, even though they can be positioned in the same physical space as the audience or performer, any initial impressions that try to qualify them visually can never be disrupted, thus retaining ‘the distance and space for reflection and insight.’

After each performance of *Etched*, the audience members were invited to both discuss the work and to offer thoughts by completing a questionnaire. Some initial responses to the light structures refer directly to the need to interact physically with them and others imbued the structures with a real sense of material form -

The lighting was in you, around you through. I've never wanted to touch light so much before. Usually lighting enhances a world but here it was a character of itself

At first I thought [the haze] was uniform, then, the more I looked, I saw organic shapes as the haze flowed around

Graininess vs. smooth? Looking through haze

You knew the space was just visual rather than solid but you were tricked into believing it was physical – if that makes sense

[light through haze] could create almost sculpture like images

*Revolutionary! Very keen on the idea of the audience becoming part of a digital scenography that has properties of solid matter*¹⁸

These responses express desires (wanting to touch the light structures) and organic *interpretations* of the light structure's existential qualities (sculpture-like, grainy/smooth, appearance of solid matter etc.) that could not be formed if touch were able to be part of the objective mode of identification. Melissa Trimingham (2004) muses on the way in which audience members have the ability to understand scenic function and have an awareness of the mechanics of a particular stage visual, whilst at the same time being able to disregard this functional knowledge and still marvel at the illusion created within the space:

In the quotations earlier the audience make a claim for the power contained in illusion, even when you can see the nuts and bolts of how it is done, as if the watchers have a simultaneous capacity to use their rational minds to work it out but are also capable of blotting this out and moving into a different non-rational mode (Trimingham 2004: 89)

The first *Etched* audience response above reveals a similar willing suspension of disbelief and is what ultimately gives the Dynamic Light Structure its unique material quality. The lack of physical touch *invites* an interpretation that cannot be subverted by the concrete materiality of touch. Its shape and form exists visually, but its substance exists in the mind and as such has no boundary. In this way the Dynamic Light Structure functions in a way that is diametrically opposed to Kantor's (1993) Poor Object:

¹⁸ *Etched* audience questionnaires – see Appendix B

The Poor Object	The Dynamic Light Structure
Has an objective materiality	Has a subjective materiality
Has a clearly defined function in reality	Has no function in reality
Expresses reality through its 'poor' status	Cannot express reality and has no definable status as an object
Relies on a clearly defined texture	Relies on textural interpretation
Expresses a known function (a door, a wheel)	Can be manipulated in a number of different ways

Table 1 Poor Object/ Dynamic Light Structure Comparison

There is one area where the Poor Object and the Dynamic Light Structure coincide and that is in the hierarchical relationship with the live body in space. As Kantor (1993) elevates the status of the poor object by allowing it to define both the scene and associated performers through its reality, so the Dynamic Light Structure commands definition through its unreality and thereby gains an equal status with the body.

The conditioning of a body and space through light and indeed the elevation of its presence to something other than simple illumination is of course nothing new; in further accounts of her experimentation with Schlemmer's methods of performance production, Trimingham details how light figures prominently as a significant autonomous presence on the stage:

The light in *Stäbetanz*, for example, has its own character; it isn't passive, it is active, just as in *Pieces in Motion* we isolate the hands and the face and the light itself interacts with the shape, hitting the side of the face, the sides of the hands, sculpting the shapes: *I liked the use of light within it as sculptural shapes rather than just the lighting of the objects.* (Trimingham, 2004: 86-87)

Again, there is a similarity in audience response to Trimingham's own work (*Pieces in Motion*) as there is to *Etched* – The identification of 'sculpture like images' removes light from a functional tool and positions it more clearly as an object in space. The difference between these two perceptions is in the relationship with the live body. For the former, when the fracturing of the human form takes place and for the isolation of limbs to be seen, the light still has to be in contact with the human body so that it can achieve its qualities as a plastic substance and an autonomous entity within the space. For the latter, the Dynamic Light Structures exist independent of any bodily contact.

In a similar way to *Pieces in Motion*, *Etched* explored the physical fragmentation of the body and in doing so defines the relationship between the Dynamic Light Structure and the live body more clearly. At 9'25'', a hypnotic, repeating light pattern settles into a static structure reminiscent of box like space disappearing into infinity at the point of projection. Gradually a hand extends through the stage right wall of the box, followed by another, and then a head, as depicted in Figure 9. This is the first point in the piece in which we see the physical body interact with a Dynamic Light Structure and it is now a very different visual body to the one present at the opening of the piece. The body is not lit, it interacts with light and from the audience perspective the body, or the body parts, are presented as silhouette. To make a

distinction here, this is not a silhouette appearing on a backlit screen as would normally be expected in the creation of such visuals, or a powerful beam light focused from behind an individual, this is a result of the body in a dark space being contrasted with an object which itself is light. In this instance the Dynamic Light Structure acts as stage object and scenic backdrop.

Further audience comments gathered through questionnaire support the notion of an equal (and sometimes a dominant) hierarchical position of the light structures with the performing body. When asked both how the light from data projectors differed from more ‘conventional’ theatrical lighting, and the role the structured played in the performance piece, some responses were as follows:



Figure 10 - Etched (2014) hands and head through a light wall

...the flexibility of the light from data projectors allowed it to participate in the show as a force in its own right.

By splitting the light, the finger like struts became a character that participated in the show.

Manipulation of the performer's body

[the light] didn't feel pre-programmed & thus the light felt like a performer

The light was a performer in its own right rather than purely as a background.

She affected the light. The light became the performer (usually the other way round)...

The light was not soullessly [sic] accompanying. It was leading and coexisting.

Dominating – pushing/ pulling with weight.¹⁹

¹⁹ *Etched* audience questionnaires – see Appendix B



Figure 11 - *Etched* (2014) body parts

These comments point towards the light structures as having a clear presence on stage that has solid links to Kantor's (1993) poor object in terms of its hierarchical relationship with the body. If the poor object validates the performer by bringing its own evidence of a life lived to proceedings, then at times the light structure focuses the view of performer to that of pure movement and form.

Figure 10 shows a combination of mannequin limbs and live performer. The image demonstrates the flattening of these elements to silhouette, but also the reduction of the live performing body in hierarchical terms to that of simply one more object within the performance frame. The Dynamic Light Structure takes on a multiplicity of roles here; scenographically it constructs the space, it provides the light necessary for other forms to be visualized, it defines those other forms within the space and it is the medium with which the other performing objects interact. The Dynamic Light Structure is object, performer, medium and environment.

3.3 Smoke and mirrors

A space populated with objects which defy expectation and which present themselves through a multiplicity of purpose within a performance frame needs further examination in terms of the environment they create. Pioneering lighting designer Jean Rosenthal suggested that ‘dancers live in light as fish live in water’ (Rosenthal and Wertenbaker, 1972: 117), alluding to the all-encompassing role that light plays in defining the environment for contemporary dance. Within that context, dancers perform and move and the light is positioned so as to maximize the audience perception of the three-dimensional frame. It is as if light is painting contrasting areas of shade and brilliance on the body and of course, as the dancer moves through the space, providing the lighting designer has positioned the lighting fixtures correctly, it will always be there to envelop the performer. With that in mind, the performer is free to concentrate on choreographed movements without a thought to the light and its sculpting properties.

To this point, the examination of the Dynamic Light Structure as a performance phenomenon has centred on the perception of the light element and the symbiotic relationship that defines the object, but in reality, this is only half the story. The haze within the space is as crucial to the construction of the light structures as a propagation medium is to the reception of sound. As mentioned previously, throughout *Etched* the haze particles present within the space have a latent performativity that is brought into being when illuminated by projected light. However, the haze can also be seen as the medium through which Dynamic Light Structures are built. In a sense, Dynamic Light Structures live in haze as dancers live

in light; the haze medium is ever present and providing the haze machine has been set correctly, will always be there to underpin the light structures.

In defining her notion of the ‘Hybrid Space’, Adriana de Souza e Silva (2006) argues for a distinction between those spaces described as being virtual or augmented reality:

Hybrid spaces are mobile spaces, created by the constant movement of users who carry portable devices continuously connected to the Internet and to other users. A hybrid space is conceptually different from what has been termed mixed reality, augmented reality, augmented virtuality, or virtual reality, as discussed later in this article. The possibility of an “always-on” connection when one moves through a city transforms our experience of space by enfolding remote contexts inside the present context. This connection is related both to social interactions and to connections to the information space, that is, the Internet. (de Souza e Silva, 2006: 262)

The emphasis for her definition is the integration of the mobile interface as a constantly connected access point to the Internet. The premise of augmented reality relies on the overlaying of graphical information onto that which can be accessed by the mobile device. City landmarks can be viewed through a mobile phone camera and have information appear as an overlay, which might enhance the appreciation of the object being viewed. At the time of writing, the Riverside London²⁰ application is available to download for iOS and Android devices and allows the user to explore London landmarks in detail by using global position systems and the mobile device camera. De Souza e Silva (2006) cites *Botfighters*²¹ as being one of the early augmented reality games that started to develop the hybrid space. The ability of this

²⁰ Riverside London App. In *Riverside London App* [online]. 2017. [cited 26 October 2017]. Available from <<http://www.riversidelondonapp.com/>>

²¹ Ready, Aim, Text. In *The Guardian* [online] 2002. [cited 26 October 2017]. Available from <<https://www.theguardian.com/technology/2002/aug/15/electronicgoods.games>>

game to use the real world as its environment and to allow users to access a *social* space both situated in reality but altered graphically through the mobile device is what sets it apart from the augmented space.

Ten years on and the recently released *Pokémon Go*²² has wholly superseded this pioneer of mobile augmented reality gaming. The contention is the same; the mobile interface which allows multiple users to view the real world around them with graphical overlays that constitute the game world, and interact with one another, goes beyond augmented reality and creates the hybrid space.

De Souza e Silva prefaces her hybrid space argument by exploring augmented reality as defined by Milgram and Colquhoun:

Milgram and Colquhoun (1999, pp. 5-28) pointed out that current literature on augmented reality defines it in three distinct ways, depending on the technology used. First, the traditional augmented reality is achieved by means of some kind of head-mounted or head-up display with see-through capabilities, in a way that the user can see the “real” world with overlaid graphical data. Broadening this concept, the second use of augmented reality refers to “any case in which an otherwise real environment is ‘augmented’ by means of virtual (computer graphic) objects” (p. 6) (de Souza e Silva, 2006: 264)

This definition is interesting as it has implications for the Dynamic Light Object scenography as seen in *Etched*. Augmented reality relies on the introduction of some kind of interface onto which graphical information is displayed together with images

²² Pokémon Go. In *Pokémon Go* International [online] 2016. [cited 26 October 2017]. Available from <<http://www.pokemongo.com/en-uk/>>

of the real world environment. However, the projected light structures creating the scenic and performative elements in *Etched* are nothing more than computer generated graphic objects. The word ‘virtual’ in the above quotation is what defines the computer-generated objects and marks them as different from the representation of the real world objects as seen on a screen.

So are the Dynamic Light Structures inherent in *Etched* virtual objects which are overlaid onto the real world? Both de Souza e Silva’s Hybrid Spaces and Milgram and Colquhoun’s definition of the augmented reality rely on some sort of interface screen to conjure the final composite reality and *Etched* has no such concrete interface. But it does have haze. As discussed by Hurst and Vivas (2016):

The haze introduced into the scenic space of *Etched* can be seen as a random structure; millions of dots hanging in the air, each physically inhabiting a three-dimensional coordinate that constantly updates in a very fluid like motion as the haze drifts and reacts to external forces. It exists akin to a point cloud created by a 3D scanner, but before the scanning is initiated – pure information prior to being patterned. It creates an environment yet to be finalized, like a piece of stone before the sculptor starts to chip away. (Hurst and Vivas, 2016: 141)

Just as with a device screen, such as that found in a mobile phone, or an augmented reality headset, information is displayed through the illumination of a pixel matrix. In a device screen, that matrix is held rigidly in position so that the correct LED (light emitting diode) can be triggered or the necessary element of the Liquid Crystal Display (LCD) can be illuminated. But with the haze environment present in *Etched* the space is conditioned so that at any time the haze particles will be present as a

random cloud of coordinate information. Each particle occupies a position in three-dimensional space that can be tracked as an x, y, z series of coordinates, with x representing the horizontal, y the vertical and z, the depth. Each particle is constantly moving and together, as a point cloud, they support the appearance of the Dynamic Light Structure at any position in space.

The result is not a two-dimensional screen but a three-dimensional canvas for graphical display. The technician responsible for the movement, generation, deformation and positioning of the light structures overlays graphical information onto a three-dimensional reality without the real world itself having to be syphoned into some kind of digital screen representation. With both hybrid reality and augmented reality, the real world has to be converted to bits and bytes of data to conform to the ontology of computer graphics and then can only exist within the digitizing device. The haze environment of *Etched* presents a three-dimensional digital display space using haze particles as its medium of image transmission. The condition that de Souza e Silva puts on the definition of Hybrid Space is that of a digitally interconnected social space. The performance environment of *Etched* frees the individual from a device screen and positions them within a communal environment –

It had the effect of creating solid walls that could close in the audience – surrounding them and drawing them into the performance.

Completely altered the dimensions of the space

Created not just an atmosphere but a whole new space in which normality didn't seem to exist

*The structures created a mood, a tempo, a scene and a setting. The light seemed to be the set and the stage.*²³

With this in mind, *Etched* exhibits elements of both augmented reality (overlay of graphic information onto the real world) together with those of the Hybrid Space (the social elements of the performance situation). However, it does not conform fully to either notion. The absence of the constantly connected mobile device and the inability of the individual to relocate to any point of the environment autonomously, as if in an installation piece for example, limits the hybrid space definition. The agency of the audience is curtailed to that of spectator, albeit one that is immersed inside something that is seemingly virtual.

It is apposite that at the time of writing, the new second wave of virtual reality hardware is being heralded by global technology giants as the next watershed in media development. Tools such as the Oculus Rift²⁴ and Sony's Playstation VR²⁵ promise unrivalled experiences in the world of virtual reality computer gaming. Indeed, they promise to offer the experience that Bolter and Grusin describe some 17 years ago at the time of writing, which singularly failed to materialise:

²³ *Etched* audience questionnaires – see Appendix B

²⁴ Oculus Rift. In *oculus.com* [online]. 2017. [cited 26 October 2017]. Available from <<https://www3.oculus.com/en-us/rift/>>

²⁵ Playstation VR. In *playstation.com* [online] 2017. [cited 26 October 2017]. Available from <<https://www.playstation.com/en-gb/explore/playstation-vr/>>

Virtual reality operates most often under the logic of transparency. For enthusiasts, the perfect interface is one in which the user, wearing a head-mounted display, feels as if she has fallen through Alberti's window and into a world of computer graphics. For them the immediacy of virtual reality comes from the illusion of three-dimensional immersion and from the capacity of interaction. (Bolter and Grusin, 2000: 162)

A myriad of amusing video clips²⁶ of people using the hardware for the first time, abound on media sites such as YouTube, which seem to suggest that the level of immersion afforded by the experience is tangible and affecting. As a performance spectacle, *Etched* exhibits properties that are markedly similar to that of virtual reality. As the VR user falls through Alberti's window and is transported into a graphical domain that can be explored, but not touched,²⁷ so too is the *Etched* audience member. As the performance transits from identifiable stage piece to something more abstract, the spectator is presented with a space that is unfamiliar, as if transported from an identifiable reality to somewhere more fantastical by donning a VR headset; the standard dimensions of the room are not immediately obvious and as eyes become more accustomed to the new environment individuals struggle to identify the space and relate to it in a conventional sense –

A fractured sense of self. Immersive/ Tangible/ Abstract/ Immediate/ Omnisensual

Invasive Immersive Memorable other-worldly. Stunning

²⁶ 10 People Try VR for the First Time!. In *youtube.com* [online] 2016. [cited 26 October 2017]. Available from <https://www.youtube.com/watch?v=f6p4Dac_Ei4>

²⁷ At the time of writing, technology such as the VR Glove <https://manus-vr.com/> is in its infancy and developers are exploring ways in which physical response can be used within VR environments

*Claustrophobic constrictions of space*²⁸

The audience is faced with an environment that is mostly darkness with a number of visible light objects extending through it. The objects are of course computer generated graphics, not programmed to create a seemingly real three-dimensional perspective, but extrapolated through the haze to create a ‘real virtuality’:

I felt, as an audience member I was in a virtual simulation

Virtual simulation hyper reality

*Screens of light – the lake – thin, penetrable delicate/ breakable*²⁹

However, the *Etched* performance environment only borrows elements that point towards a virtual reality environment. As Mark Hansen (2001) claims, VR environments are typically predicated on the ocular centric and are created in ways that mimic a visual perception of the world, and as such fail to fully immerse the participant by ignoring the other senses. Within a virtual reality environment, the individual can see in 360 degrees and can navigate through the graphical world using a control device. The world is presented visually in high definition (and may well be described as a hot media environment), but lacks the haptic feedback of touch.

The room presented to the audience as they experience the *Etched* space seems to invert this VR paradigm. The individual is aware of other audience members, they can

²⁸ *Etched* audience questionnaires – see Appendix B

²⁹ *Etched* audience questionnaires – see Appendix B

hear them and possibly feel them sitting next to them, they can touch other spectators and speak to them, but visually, these elements of the performance room are presented in low detail as the room is dark and difficult to map visually. The Dynamic Light Structures inherent to the piece offer the only visual stimulus, but as with VR, are intangible. *Etched* offers elements of virtual reality within a real world setting. It places the audience into a liminal state whereby familiar physical surroundings are pushed to the background and virtual structures, which do not behave in ways that might be expected, are foregrounded.

Hansen promotes the ‘primacy of touch’ and argues that the lack of resistance and any kind of proprioceptive feedback is exactly what limits the VR experience. Within the liminal reality that *Etched* offers, it is this lack of touch feedback that defines the experience and creates a world of opposites, where the real boundaries of the space are rendered dark, and the objects are created from light and not illuminated by it –

The lighting was in you, around you through. I’ve never wanted to touch light so much before.

A feeling of being suspended in time, broken apart and suspended.

Extraordinary. Feel part of the light – bathed. Part tunnel part lighthouse beam.

The light created physical spaces that you wanted to touch. It disjointed your mind.

*Intense, captivating, overloading*³⁰

The final comment above gives an impression of being situated in an environment that has disrupted vital senses, but at the same time has magnified others. The use of the word ‘overloading’ implies a forceful act, or a punishment of some sort. When faced with something that can be seen and is visually intriguing, but cannot be touched, this sense of overload can be understood.

The participants’ words describe a confusion where they are ‘suspended in time’ and describe the experience as ‘other-worldly’. There is no virtual reality headset to prepare the spectator for such a mediated experience. There is no ritual, such as donning the VR headset and putting on headphones, that allows the user to become orientated to a new virtual world, thereby giving them the time and distance to be able to suspend their own belief. In this instance belief has been suspended for them without so much as a ‘by your leave’. Much as an optical illusion is a trick of the eye, the Dynamic Light Structures of *Etched* are presented as a trick of the senses.

This chapter examined the ways in which an audience responded to Dynamic Light Structures within the context of a devised performance piece. Comments taken from post-performance questionnaires suggested that the structures developed a relationship with the live body that positioned the use of light objects as a dominant force within the scene. The perceived textural qualities of the structures and their ability to shift and morph in real time, together with their ability to surround and immerse an audience, lead to feelings of being placed in a virtual environment where

³⁰ *Etched* audience questionnaires – see Appendix B

the physical boundaries of the space were fluid. Not only did the Dynamic Light Structures provide a scenic space, but also took on a performative role that challenged the dominance of the live body as a dramatic entity.

The next chapter removes the devised performance element of the practice. Presented as an interactive installation, *On Slow Violence* offered participants the opportunity to generate, control and explore Dynamic Light Structures at a pace and proximity of their choosing. In this way the research examines the relationships created between the light structures and the participant visitors to the installation space and further defines the affect of the Dynamic Light Structures on the participants as they engage with the interactive system.

4 Third Spiral: *On Slow Violence*

For a short documentary film exploring *On Slow Violence*, please click [here](#)³¹ if reading electronically, or refer to the accompanying USB flash drive.

After the initial *Kynaactions* experiment and subsequently the performance of *Etched*, the practical work had demonstrated a more complete understanding of how Dynamic Light Structures could be perceived as objects by the observer and how this could form part of exploring their position within a piece of contemporary performance. The limitations of the control system had become apparent, as had the ways in which the Dynamic Light Structures could best be created in terms of their identity and presence within a space. Simplicity was the key with complex shapes having a visual pull at the design stage in two dimensions on a computer screen, but which subsequently lacked any kind of observable definition or clear form when translated to the three-dimensional space. Primitive graphical structures such as lines and dots worked well and combining these together to create simple animations provided dynamic interest.

Whereas *Etched* helped to define the operational parameters for a projection system that would create a functional reactive environment for a performance, *On Slow Violence* posed a set of problems that related more to the relationship created between user and technical system. With *Etched* there was no need for anyone to understand the functions of the system other than the performance technician, but the aim of *On Slow Violence* was to present a system that was transparent in terms of use, and to

³¹ Andy Hurst – On Slow Violence. In *youtube.com* [online] 2016. [cited 26 October 2017]. Available from <<https://www.youtube.com/watch?v=khhjDvKTEUI&feature=youtu.be>>

enable visitors to the installation to interact with it in a fluid and intuitive way. The whole system had to function autonomously, in that it would not need intervention to reset it, or need constant monitoring to keep it running for an extended period of time.

In some ways, *On Slow Violence* presented itself as a distillation of that which was shown in *Etched*. The former took the mechanics of the latter and examined the scenographic medium in more detail, but was devoid both of a narrative structure and a devised relationship with the performing body. There was no specific performance with light structures existing in concert with the choreographed movement of the body. It was a focused examination of the Dynamic Light Structure in isolation and its agency within a space, and in this respect, fell more into the category of interactive installation than postdramatic showing. In terms of the central research questions the following provided the focus when examining the visitor experience and the relationships built between participants, the light structures themselves and the control system as a whole:

- What are the aesthetic and performative qualities of Dynamic Light Structure scenography?

The responses from *Etched* had expressed intrigue as to the makeup of the Dynamic Light Structures. The audience was in a position to appraise them both as an object with an interesting and surprising visual texture and also as an element within a performance that could be in some way interpreted. Beyond that the responses expressed a desire to interact with the structures on a physical level and *On Slow*

Violence would give participants that opportunity. The installation would also provide an event to examine participant reaction to the generation of Dynamic Light Structures and a means to analyse experience of not only bringing these ephemeral structures into being, but also the experience of exerting control over them within the environment. The installation afforded the possibility of examining relationships built between participants, control system and the Dynamic Light Structure. In this way the perceived aesthetic qualities of the projected light together with the aesthetic experience of the visitors to the space could be determined.

Creatively, it was necessary that the installation was not simply a vehicle for the demonstration of a technological construct, but had at its heart a conceptual framework that would inform its presentation and its artistic aesthetic. A chance encounter with Rob Nixon's ideas detailing his concept of 'Slow Violence' (2011) provided this framework and enabled the work to exist as a living light object environment - one that could be manipulated in real time and would respond instantly to touch and the instigation of instructions from a number of people simultaneously. The system would comprise five projectors, with four mounted at floor level, and one at height pointing down into the space. Each would be controlled by a corresponding iPad control surface again running Liine's *Lemur* software, providing a customised interface.

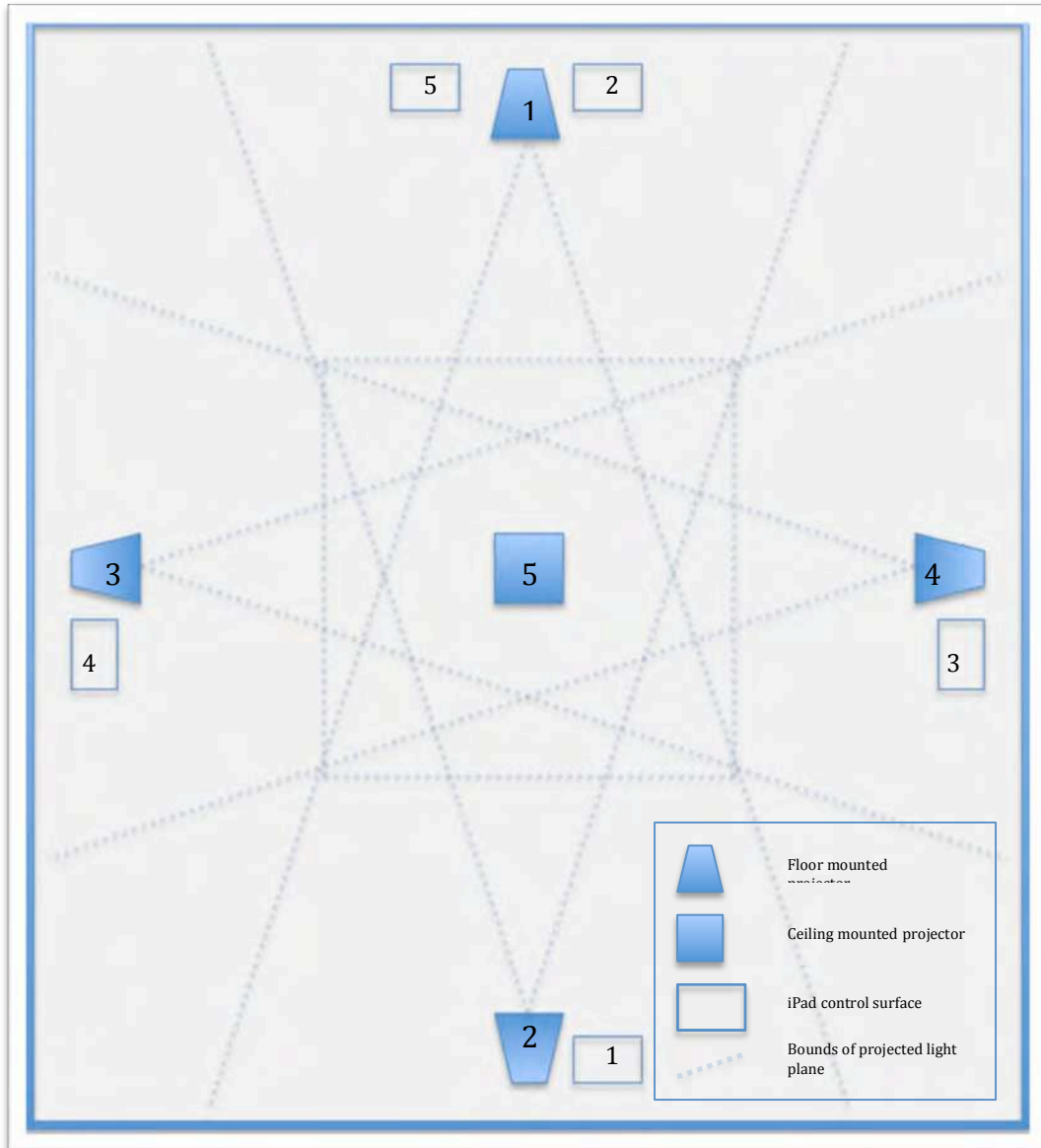


Figure 12 - *On Slow Violence (2016)* room layout

Figure 11 shows the layout of the room and identifies the positions of the control surfaces in relation to their respective projectors. Each numbered surface controls the projector with the same number. In each case, this is the projector directly opposite the surface, with the exception of the ceiling mounted projector. The position of the projectors is such that projected light structures meet in the centre of the room and create a solid light environment that can be animated and changed. Visitors to the

installation have the choice to either control the visual scene or interact with it in the centre of the room.

On Slow Violence inhabits a space that lies somewhere in between visual art, performance and installation. Katja Kwastek (2013: xvi) acknowledges the blurring of the boundaries between the visual arts and the performance arts, specifically when discussing interactivity and it is this literal and metaphoric grey space in which *On Slow Violence* resides. *Etched* made use of the dynamic light structure as a tool within a performance piece that was contextualised through an artistic statement (relating to the act of an acid attack) and subsequently the role of the performing live body within the performance. From that, the observing audience read and interpreted a narrative that in many cases cast the role of the light structure as a performer and indeed a malevolent force; a number of observers used words such as ‘sinister’, ‘assaulting’, ‘consuming’, ‘chilling’ and ‘frightening’³² to describe the experience.

The narrowing of research focus with *On Slow Violence* sought to dislocate the dynamic light structures from such an initially narrative driven context in order to understand the participants’ relationship with the structures in a more critically distant environment. The installation did present an artistic statement that was available for participants to read, but almost exclusively this was wholeheartedly ignored as visitors moved straight into the room. From that point on the installation was a plaything and relationships were formed with the space without the need to interpret or read a performance. In this respect, the thought process and rationale behind the existence of the piece was broadly irrelevant. Kwastek defines an interactive artwork:

³² *Etched* participant questionnaires – see Appendix B

an artistically configured interaction proposition that concretizes its gestalt only through each new realization by a recipient. What remains to be explored is the interplay, in the process of gestalt formation, between the definition of the parameters of the work by the artist and its active realization by the recipient (Kwastek, 2013: 47).

This process of gestalt formation is the breeding ground of the relational experience between participant and generated light environment, yet it is one that can be split into two distinct sections, the first being the relationship between participant and control system and the second between the participant/ control system hybrid and the dynamic light structure/ space.

4.1 Participant/ control relationship

Two of the central research questions sought to define the ways in which the Dynamic Light Structures could be manipulated and indeed how they were then perceived in the space. Both of these questions invited an exploration of the relationship between the user and the control interface and it was in that relationship that the gestalt experience of *On Slow Violence* could be seen.

Sita Popat and Kelly Preece (2012) explore Gabriella Giannachi's (2004) notion of the hypersurface as a liminal space where the real and virtual meet. When considering digital systems that invite interaction and offer an extension of the individual, they detail a mechanism of 'from', 'and', and 'to' to help define the nature of that extension. They give the example of an artist sketching with a pencil where the

artist's attention 'is directed *from* his body, *incorporating* the pencil, *to* the sketchpad' (Popat and Preece, 2012: 168). The process of the skilled practitioner subsumes the tool and works with it as a means to an end. Within *On Slow Violence*, the iPad control acts as a hypersurface, which connects the real world to that of the virtual through the act of tracing fingers across its screen. At the beginning of the process of interaction the direction of attention *from* the participant is *to* the iPad. This state may last for a little while as the participant becomes familiar with the graphical controls. It may be that there is no immediate realisation that the control surface is having a direct impact on the light structure projected into the space (depending on which controls are used), in which case the connection with the hypersurface is somewhat limited and the chain of 'from', 'and' and 'to' breaks down. But as the participant perseveres and gradually builds a rapport with the iPad controls, the attention shifts from the graphical interface to the resultant light structure. At this point, the flow of attention can be described as *from* the participant *and* the control surface *to* the light structure. The iPad has been subsumed at this point as a mechanical extension of the body.

Popat and Preece invoke Sean Gallagher's (2005) ideas on the body schema that point towards our unconscious manipulation of the body's physicality. As Gallagher suggests, '*a body schema* is a system of sensory-motor capacities that function without awareness or the necessity of perceptual monitoring' (Gallagher, 2005: 24). Popat and Preece argue that the hypersurface (in the case of *On Slow Violence*, the iPad) can develop to form part of that unconscious schema. However, the chain does not necessarily stop there. The open format of *On Slow Violence* invites participants to wander through the space and interact with the light structures physically – walking through them, creating areas of negative space within the light structures by placing

fingers into them, lying beneath them, etc. For those generating the structures, this provides a new opportunity to extend the chain of attention. It is possible for structures to be manipulated so as to deliberately interact with a live body in the space, at which point the chain of attention is *from* the participant *and* the iPad *and* the light structure *to* the live body in the space.

Popat and Preece (2012) hypothesise that this extended chain of attention from user to virtual space creates a doubling effect whereby the live body coexists with the mediated form in the virtual world. The process of the hypersurface being subsumed by the body schema enables the user to disappear and focus solely on their virtual representation. This of course is dependent on the hypersurface being transparent and they point towards technological problems, such as glitches or breaks in the system that would cause attention to be drawn back to the media system, thus causing a ‘disappearance’ (2012: 171) – a dysfunction in the virtual body and an appearance of the live self, which is now focussed on the piece of technology which has failed. In their own practice, the hypersurface is a graphical pen and tablet, which has no function other than to act as a location device to draw graphical images (sprites) projected onto a screen. It requires very little in the way of learning and the user is able to spend time appreciating the behaviour of the drawn sprite from the outset.

The control system for *On Slow Violence* has a number of discrete operational parameters and these differ from iPad to iPad. As a participant approaches an iPad, the function of the controls is not immediately obvious and some dedicated time needs to be spent with the tool before moving on to the next step in the chain. The process of understanding the system of control and thereby subsuming this into the

body schema to ultimately allow for a remediation of the physical self into the virtual world is a long one. The control surface is deliberately low in detail:



Figure 13 - Control surface for *On Slow Violence* (2016) created using Lemur

Figure 12 shows the layout and text information relating to one of the graphical user interfaces designed to control a projector. The text information is minimal and there are no overt instructions as to what to do when confronted with the iPad in the space. In this instance, if a user were to press the button labelled ‘shatter’ with this configuration of controls, nothing would happen. A certain combination of controls would need to be manipulated before anything visible could be seen to occur within the space. This design principle implements Marshal McLuhan’s ideas of ‘Media Hot and Cold’ (1997: 22) whereby a medium presented in low detail engenders a more intense connection with the observer or user.

In embracing this design ethos, the aim was to draw the user in to the interface and invite a developing relationship in such a way as to promote exploration rather than frustration. Questionnaire feedback from visitors relating to the control system for the installation would suggest that this was indeed the case –

I wanted to learn how it worked. It was easy, yes, but also complex

Experimented and tried to work out what I was controlling then had some fun interacting, yes would do it again

Yes it was easy to use maybe experimented for a minute trying different layouts. Yes appealing

Control surface was easy but controlling the light (cause & effect) took more practice

Took a bit of working out but very enjoyable – occupied my 7yr old for ages

Yes, unclear at first but after trial and effort it became clear

Easy, but also nice to have to work out how to see the structures, how to move them. A change in colour was a nice surprise

Quick to pick up control system. Ambiguity of the controls was appealing

It took a while to really work out how the sounds were connected to the light. The more I played with it the more I enjoyed it

It was easy to use and it felt like we were only using for a little while but actually was quite a long time

It was very simple working the iPad, and fun working out which controls caused which effects. Spent 45 minutes to an hour – very appealing. Entrancing.

Yes they took a small time to fully understand but after that were easy to use. The experience was very appealing³³

The overriding feeling from users was that the exploration of the control surfaces played a significant role in the participant experience. The time spent in working with the controls before fully appreciating the movement and capabilities of the light structures describes a slow but steady descent through the hypersurface. The engagement with the cool media invites the development of the ‘and’ state, before the user and the iPad could move onto the ‘to’ state, as described by Popat and Preece (2012).

Returning to Kwastek, this is not seen as problematic and sets up the conditions for examination relating to the process of interaction as aesthetic experience. She discusses the work of Wolfgang Kemp and the use of the blank space (intentional gaps, ambiguities, or considered omissions apparent in text or art) and points towards

³³ *On Slow Violence* participant questionnaires – see Appendix C

his argument that the blank space ‘induces the reception of an artwork through postponement or obstruction of the connectivity between work and observer...’ (Kwastek, 2013: 54). Referring mainly to 19th century artworks, Kemp does comment briefly on interactive art, but Kwastek suggests that he ‘doesn’t see interactive media art as an ideal example of the type of art that activates the recipient; rather he sees its structures as tending to represent an obstacle to an open, dialogic relationship with the observer’ (Kwastek, 2013: 54).

There are clear links between this notion of the blank space and McLuhan’s (1997) thoughts on cool or cold media. The obstacle in relation to *On Slow Violence* is the iPad control system and the minimal set of instructions given to the user. Rather than inhibiting a dialogic relationship, it appears that its design promotes that same relationship and presents an access point to a further developed relationship with the piece at the level of the hypersurface. Chris Csikszentmihályi supports this idea of aesthetic experience through control education:

Successful pedagogy in technical education seeks to introduce the joy of control to students early on: The thrill of the successful compile, the grace of the kinematic motion, the correct spin of the electron all release endorphins as surely as a nice risotto. (Csikszentmihályi, 2006: 125)

When users describe this process as ‘appealing’, ‘enjoyable’, ‘entrancing’ and ‘fun’³⁴ it seems to come in part from a development of agency within the space, together with an excitement at being allowed to simply play and explore; they experience a gradual becoming and empowerment from a low hierarchical position. Some users described

³⁴ *On Slow Violence* participant questionnaires – see Appendix C

their initial feelings on entering the space as ‘visually overwhelming’, or being ‘a bit intimidated’ and the space itself being ‘frightening’. These feelings, although they may not disappear completely give way to those expressions of enjoyment detailed above. Csikszentmihályi draws on Piaget:

Piaget argues that one of the first stages of development in children (his Sensorimotor Stages 2 & 3) is “the pleasure of being the cause,” of being not motivated by imitation or enculturation but rather by a more innate, animal joy of power. In many ways, technology becomes a venue for and extension of such pleasures... (Csikszentmihályi, 2006: 125)

As a result of an instigated dialogue between user and control surface and a gradual development of agency, the user is empowered and a shift in status occurs from observer to operator. The notion of technology as a venue for pleasure fits very neatly with Giannachi’s (2004) liminal hypersurface; as the confidence increases with the iPad controls, so the connection with the hypersurface becomes more apparent and the digital doubling of user within the space and virtual extension of the bodily form becomes more complete.

The aesthetic experience shifts from that of concentration on the technology as a dialogic device (complete with blank spaces), to an embodying of a tool that acts as a gateway to another aesthetic experience.

4.2 Participant/ control system hybrid and the dynamic light structure/ space relationship

For those controlling the scene, the strange environment of light structures and spatial darkness presents itself as both familiar and unfamiliar at the same time. Matthew Causey discusses the notion of the uncanny as invoked by the presence of the digital double:

The confrontation with the Double, the recognition of yourself outside of yourself, through the echoing voice on the telephone, the anamorphic projection on the television in freeze-frame, slow motion, fast forward, and reverse, through “a kind of” being in cyberspace with morphing identities that exist within the fragility of the digital hypertext, present the technologically triggered uncanniness of contemporary subjectivity. (Causey, 1999: 385)

For an operator within *On Slow Violence*, once the control surface has become familiar, the individual is able to concentrate on the movement of the light structure. Although not physically represented through a screen on which Causey’s examination of the phenomena relies, the user experiences a doubling in the movement and shaping of the light structure.

Jay Bolter and Richard Grusin detail two ways in which the individual can be remediated through the virtual. The first chimes with the notion of virtual reality where the individual is presented with an alternate self in a constructed world and the second defines a relationship with a mediated environment that can be navigated through the use of hyperlinks and the creation of a multimodal, ‘networked self’

(Bolter and Grusin, 2000: 233), linked electronically across new media sites and built as a confluence of these separate digital existences. The two methods describing the remediation of the self are presented as being mutually exclusive. Either one is fully immersed in an immediate and technologically transparent virtual reality environment, or one is connected to a visually stimulating hypermediated frame, extending a second self, or number of selves outward from the biological self.

For a visitor manipulating the space with an iPad control, *On Slow Violence* presents an opportunity for these two methods of remediation to occur at the same time. As a user takes control of an iPad, they become one of five control nodes within the space, each working individually or as a network to create the light structure environment. Through a screen, the user is ‘not so much “being immersed” as “being interrelated or connected.” The hypermediated self is a network of affiliations, which are constantly shifting’ (Bolter and Grusin, 2000: 232). The participant can make choices about how they work with others at the iPad controls – to work proactively with or against them, or ignore them completely –

It was nice to react to the light itself, or another people moving around and affecting the structures. It was a constant reaction to movement and rhythm of the light

At times I felt the lights were creating something whole

I saw that others impacted my light by doing things. There was a strange sort of anonymous friendship trying to work together³⁵

³⁵ *On Slow Violence* participant questionnaires – see Appendix C

At this point, the user is remediated as a networked structure, in a relational sense, to other control surface users, and visitors simply exploring the space. However, through the hypersurface of the digital system, the user's gestures on the iPad screen creates a digitised self that is also present within the room. A plane of light is called into being by, and behaves in concert with, the various movements, swipes, taps, slides and pinches of the hand. By virtue of the position of the projector that is controlled by its associated iPad, the user is immediately confronted by their remediated self. The user is 'touched' by the plane of light that is manoeuvred so as to wash over their body –

The planes were interesting to construct as you were 'in' the structures and could feel immersed in the shape

Painting my own imagination in light

I really enjoyed controlling the light, I was trying to manipulate the space to see how the light affected the feel of the room³⁶

At this point then, the user is remediated in two ways, both as a networked entity and a digitised form within a space. Causey suggests that:

The screens of mediated technologies...construct the space wherein we double ourselves and perform a witnessing of ourselves as other. The uncanniness of a mediatized culture is a technological uncanniness (Causey, 1999: 386)

³⁶ *On Slow Violence* participant questionnaires – see Appendix C

The physical doubling of the user by the light structures is created by a control screen, but the resultant artefact is something that is physically present in the room. It has a three-dimensional form and can be made to move and interact with live bodies in the space. Causey suggests that the observation of the mediated double on a screen forces the observer to confront their own mortality and invokes the spirit of Auslander (1999) when suggesting that the mediated version of the real is that which validates and defines the real. The visitors to *On Slow Violence* sometimes reported unease in the space –

Uneasy – which was interesting in itself, so all rather thought provoking

Frightening once I realised I could partially control it

*Eerie and metaphysical*³⁷

This doubling extends beyond a simple simultaneous representation of the individual and into the creation and reimagining of the whole space through the replication of the self. In this instance, the double is not simply a digitised picture of the self, existing within an environment, but a form of the self that *is* the environment, within which other live bodies appear –

I felt like my body created structures and interacted vividly with the space

*I was part of the space, present also absent and I wondered what was going on*³⁸

³⁷ *On Slow Violence* participant questionnaires – see Appendix C

Present, absent, and part of the space. Kris Ravetto-Biagioli presents an extension to the feeling of the uncanny and uses the term ‘digital uncanny’ (Ravetto-Biagioli, 2013: 1) as a way to examine new states of aesthetic experience related to those invoked by current media systems. She moves on from Freud’s traditional sense of the uncanny, whereby the feeling generated is a reflection on or a critique of one’s own mortality and human frailty, to a sense of machinic dehumanisation:

Unlike the uncanny of Freud (or even Jentsch), the digital uncanny is neither just an intellectual uncertainty nor a troubling affective experience tied to the return of repressed past experiences. Instead it anticipates those practices, responses, experiences or expressions that we have used to distinguish the human from the nonhuman – practices such as thinking, expressions such as empathy, and affective or embodied experiences such as consciousness. It also deflects attention away from the individual and the alleged uniqueness of her experiences. (Ravetto-Biagioli, 2013: 2)

The questionnaire responses that relate to unease, being frightened, experiencing a sense of eeriness or metaphysicality, together with wondering what is going on, and interacting with bodily-created structures, support this notion of the digital uncanny. However, this is not a sense created through the doubling of a recognisable image of the participant, whereby the image is projected on a screen and is presented or behaves in an unfamiliar way, this is a doubling of physical gesture that occupies not only a physical space, but the same physical space as the participant. This double is not removed; it encroaches on the living form and keeps no respectable distance, meaning at times –

³⁸ *On Slow Violence* participant questionnaires – see Appendix C

You feel part of the light – it slices through you

*Like being eaten. In a mouth. Being above a storm*³⁹

These are violent images that tear the descriptions of the digital uncanny away from those examples given by Ravetto-Biagioli (2013), which exclusively point towards screen projection and the interactive user. The visceral co-presence of the dynamic light structure as controlled object and abstract double creates a literal ghost in the machine – an apparition that can be seen but presents no resistance as it sweeps through the participant.

Presence and absence become a case in point relating to both the dynamic light structures themselves and the participant in contact with the control system. The dual position of present and absent as a participant controls the light structures through an iPad relates to the patterning of information through the extended gesture of the touch screen surface. The gesture is made, the extension occurs through the manipulation of Open Sound Control data passed on to the *Isadora* software and the generated graphic is finally projected through haze within the space as a tangible object. But this object itself is seen as both present and absent as well.

The paradox is created by the notion of ‘haptic visuality’ (Marks, 2002), which as Huhtamo suggests ‘implies the transposition of qualities of touch to the realm of vision and visuality’ (2007: 73). This transposition sets up an expectation on the mind of the visitor to *On Slow Violence*. The haptic visuality created by the light structures

³⁹ *On Slow Violence* participant questionnaires – see Appendix C

present in the room is engaging and leads to the sense that the structures will be tactile and that when touched will offer the haptic response set up by the presupposition of the initial observation –

*Powerful. Put my hand in the light like water*⁴⁰

The response above is engineered in part by the sound effects present in the room at the time. Sounds of melting ice flow were sometimes present and one of the control surfaces offered a mechanism by which the user could affect a ‘ripple’ in one of the structures, causing it to animate and churn, not unlike a babbling brook. This coupled with the haptic visuality describing an expectation of touch leads towards this description of the experience. The disquiet comes when the assumed tactile sensation does not materialise and the visitor is left with a yearning and a need to understand –

Interacting with them was strange. It was sort of magical – you feel as if it should have substance, but it doesn't

Trying to make sense of the textures you see but then cannot feel...

I walked through the light and tried to touch it

*I kept expecting to ‘feel’ the light. I wanted to make it change, ripple by touching it but couldn't until using the iPads*⁴¹

⁴⁰ *On Slow Violence* participant questionnaires – see Appendix C

⁴¹ *On Slow Violence* participant questionnaires – see Appendix C

This contributes to the sense of the uncanny within the room; that physical objects do not behave as might be expected and that the innate sense of vision coupled with touch is in some way fractured. Filippo Marinetti in his ‘Manifesto of Tactilism’ (1921) outlines a proposal for a Theatre of Tactilism featuring Tactile Boards whereby improvisations would be created by Tactilists in response to touch. These improvisations would not be conducted in darkness as ‘for the true tactilists, the full light of a projector is preferable, since darkness has the drawback of concentrating sensitivity into an excessive abstraction’ (Marinetti in Svankmajer, 2014: 68). Although somewhat obscure in terms of Futurist manifestos, this belief that touch without sight would overstimulate the sense of touch has connections to McLuhan’s (1997) assertion that hot media extends one sense disproportionately and leads to a weaker sense of engagement than cool media.

When applied to *On Slow Violence*, the participant is presented with a room that is not in total darkness, but with the only objects fully visible being those that do not conform to a natural presupposition of haptic visuality. The visitor sees the light structures and forms an assumption about their physical qualities, thus amplifying any potential reaction to physical participant engagement when object and participant finally do interact. Erkki Huhtamo (2007) describes the way in which Duchamp’s readymades challenged the prevailing notion of the ocular centric gallery of the early 20th century where artwork was revered and to touch it would be frowned upon:

Duchamp’s idea of displaying them in the gallery in the place usually reserved for the “untouchable” art objects is an ambiguous gesture that created a powerful irony. Far from denying the tactile nature of these objects, it could be claimed that their new site

(with its pre-existing connotations of “distance”) increased the temptation to touch them as a subversion of their newly acquired “status”. (Huhtamo, 2007: 81)

The setting for *On Slow Violence* of course promotes interaction. It was marketed as an interactive installation and the way it is presented encourages visitors to engage with the control surfaces, which are by their very nature designed to be tactile. The resultant Dynamic Light Structures, as Duchamp’s readymades, invite touch, but ultimately renege on that invitation. The sense of uncanny is created through a cumulative effect of both the invasion of the digital double into the personal space of the participant together with the subversion of the innate sense of haptic tactility that has been intentionally promoted through the positioning and explicit expectations of the interactive piece. Of course, the invitation was not for everyone –

*I was a bit intimidated but maybe another time I’d put my hand in the light*⁴²

4.3 The aesthetic experience

The aesthetics of *On Slow Violence* is the aesthetics of participation, engagement and relationships. Articulating an experience such as *On Slow Violence* was challenging for many participants; the questionnaires offered to them at the end of their time in the space asked them to describe how they felt about the installation and they elicited some interesting responses that could be used to examine the relationships built within the space, not only with other people, but with the Dynamic Light Structures and control mechanisms as a piece of visual art.

⁴² *On Slow Violence* participant questionnaires – see Appendix C

In exploring a multisensory approach to an art aesthetic in order to more fully understand a consumer experience from a marketing viewpoint, Annamma Joy and John Sherry (2003) find themselves at odds with the traditional Kantian perspective on the appreciation of beauty. In observing visitors to a number of museum exhibits, they draw on Merleau-Ponty's (1962) vision of the virtual body and argue for an embodied approach to understanding works of art that necessitate either a physical interaction with the piece, or a virtual interaction that is grounded in an understanding of the physical qualities of the piece:

Kant may have recognized the importance of sensations and the perceptions that derive from them, but he contended that reason had to be divorced from feelings, which required the elimination of the body. We, on the other hand, begin with the premise that the body represents the root of all thinking—not just the process of thinking bodily—and informs the logic of thinking, because the world is primarily accessed through the body. We move Kant's argument forward by suggesting that reason divorced from the body is inconceivable. (Joy and Sherry, 2003: 278)

The subjects observed by Joy and Sherry are seen to respond physically to a variety of exhibits within a museum setting. In one scenario, a sculpture which depicts a pair of arms, was first observed by the visitors and then approached in a more physical way, with their own arms becoming outstretched so as to measure the piece and equate it to their own physicality. Without touching the exhibit, the visitors moved away from a purely ocular centric (and formally cognitive) understanding of the work to something that approached touch; a manifestation of Merleau-Ponty's virtual body. In further observations, visitors described how senses were invoked through the addition of audio information when viewing an exhibit (2003: 74) and through the eating of food related to the Mexican provenance of the artworks (p.277). By analyzing interviews

and the responses given by the research subjects, Joy and Sherry collate excerpts of phrases and language that are visceral in terms of affective description.

Building on Lakoff and Johnson's (1999) theory of image schemata and of metaphor in language as a method of identifying unconscious embodiment, they present a persuasive argument that emphasizes the 'somatic experience in art appreciation' (Joy and Sherry, 2003: 278). However, this presents difficulties when examining *On Slow Violence* and its associated aesthetic experience from a similar perspective. If Joy and Sherry are correct when they suggest that 'if you use only one of the senses, you acquire only one-fifth of the aesthetic experience' (p.277), then is the aesthetic experience of visitors to the *On Slow Violence* installation a limited one? If a participant chooses not to engage with an iPad control surface and simply navigates the space, as a piece of interactive or participatory art, or as a kinetic sculpture, vision alone becomes the primary mode of perception. There is no basis of self-reference from which to engage a virtual sense, as was seen with the suspended pair of arms.

For the visitor who disregards the artistic statement pinned up at the door to the installation, the Dynamic Light Structure signifies nothing but itself, and as has been mentioned, fails in its promise to deliver any kind of tactile response to physical interaction. The answer to this question lies in the examination of the disruption of participant expectation, the contribution to a community and the relationships developed within the space.

In discussing modes of experience within the phenomenology of interaction, Kwastek explores the nature of participant agency within interactive art and considers the idea of the intentional subversion of that agency by the artist:

Such strategies of disruption thus elicit epistemic processes from the act of exploration. Ultimately, disruptive strategies are at odds with the primacy of agency, for the recipient is deliberately not given a sense of empowerment; instead he is intentionally irritated. The recipient cannot fully control the system and is instead encouraged to grapple with its mediality. (Kwastek, 2013: 129)

The very presence of an antagonistic element within the interactive piece engages the participant as an adversarial process of needing to understand the system at play begins. This goes a step further than that of presenting the user with a limited set of instructions by inserting barriers or obstacles in the way of progress. It relies on the tenacity of the user to continue to explore the mechanics of the piece. fanSHEN's *Invisible Treasure*⁴³ (2015) experimented with such processes with the nature of the interactivity becoming the artwork and the aesthetic experience of the group. The focus was shifted from the use of interaction as a means to an end, i.e. the process by which an artistic objective is communicated, to that of the subject matter of the piece.

In discussing the evolution of today's artistic practice, Nicolas Bourriaud explores the community effect as a response to contemporary art:

The public is being taken into account more and more. As if, henceforth, this "sole appearance of a distance" represented by the artistic aura were provided by it: as if

⁴³ Invisible Treasure. In *fanSHEN* [online]. no date. [cited 26 October 2017]. Available from <<https://www.fanshen.org.uk/invisible-treasure/>>

the micro-community gathering in front of the image was becoming the actual source of the aura, the “distance” appearing specifically to create a halo around the work, which delegates its powers to it. The aura of art no longer lies in the hinter-world represented by the work, nor in the form itself, but in front of it, within the temporary collective form that it produces by being put on show. (Bourriaud, 2002: 61)

These relationships built throughout this temporary collective assembled in front of a work of art are at the heart of Bourriaud’s *Relational Aesthetics* (2002). Nathaniel Stern (2013), commenting on Bourriaud’s ideas describes his definition of a relational artwork as ‘public encounters, events, and collaborations that go beyond aesthetic consumption. These works deal with relationships between people, whether individuals, groups, networks, or some combination thereof’ (Stern, 2012: 78). fanSHEN’s *Invisible Treasure* sets up a framework for interaction that promotes this relational aesthetic. In establishing group collaboration as a *modus operandi* and then deliberately sabotaging this accepted working practice, the piece examines the communal relationship as it gradually mutates and breaks down.

On Slow Violence does not have any kind of intentional disruptive agenda. As an installed piece, it allows participants to meander through a community that is fluid, with the individual choosing to ignore, or pro-actively engage with others. However, disruption can occur in the participant expectation of object property and the ways in which the dynamic light structures are expected to behave in relation to physical interaction, but this is not the only arena of disruption. The relational aesthetic is built in a number of ways; either between participant and light structures, between iPad controller and light structure, or between iPad controller, light structure and participant body in the central space. As these various nodes in the system all

have the agency to behave in completely free form ways, disruption can appear throughout –

Certainly thought I was being collaborative! Wanted to tell others what I was making happen

Took me some time to work them out (The iPad controls) But then I wanted to take control of them all

(On experiencing the piece as an individual) Not as an individual at all but sometimes against – not with others!

I would have loved to be able a very specific environment [sic] & be able to have control over all the iPads.

I kept trying to find controls to quieten it down, could have become more soothing + womb like with fewer bangs

I watched others and tried to follow but it all seemed random. I liked the environment created.

Were trying to experience it with others but found it quite hard, so I experimented alone

(On working collaboratively) Not sure about ‘collaboratively’ but certainly together, or against one another.⁴⁴

These comments point towards disruption or tension in places (‘sometimes against’, ‘against one another’, ‘but it all seemed random’, ‘I wanted to take control, of them

⁴⁴ *On Slow Violence* participant questionnaires – see Appendix C

all' (the implication being that this was impossible), 'but found it quite hard'). This tension was not intentional in terms of the design philosophy of the piece or the control mechanisms, but simply as a result of the collaborative play within the space. The disruption felt by an individual either as a result of an absent control (volume), or as an inability to control everything and deny other users the ability to intervene is all part of the aesthetic experience, but does not become the focus of the work as with *Invisible Treasure*.

The tension or disruption experienced by the participants is a fluid one and can ebb and flow as part of the relational experience within the installation and is certainly not a culminating point at which the experience breaks down and ends. At no point is the participant forced to work collaboratively as within *Invisible Treasure*. *On Slow Violence* is a dynamic system, which promotes free form action within the space that extends fully from individual engagement to collaborative play. The comments along with other more specific responses also point toward the 'micro-community... a momentary grouping of participating viewers' as described by Bourriaud (2013: 58) –

Yes – a light dual with the opposite 'player'

Sometimes focused in on what was happening, but always aware of wider group

Yes definitely felt the cooperation and the effect others had on my creation

Collaborated with my friend. Was interesting noticing what others were doing, but it felt peaceful and solitary at times too.

Mostly individual but was still able to see the others and what they were doing and everything together – don't even know how to describe – so amazing!

Individual... but there were a couple of moments when I interacted with people standing in the middle of the space

There was one moment with the two iPads next to each other, which sonically I felt we collaborated on for a moment. I wanted to be solely interacting at some points. Very different dynamic when 5 people are controlling vs. 2.

It was a collaborative experience without verbal communication which is a great way to interact

I saw that others impacted my light by doing things. There was a strange sort of anonymous friendship trying to work together⁴⁵

So this community, through which the participant can slip, can become a source of tension/ disruption as well as a place of connection and collaboration. It is available when needed and can be ignored if necessary. The participant can be oblivious to it or actively seek it out. As Stern (2013) suggests, Bourriaud's relational aesthetics focuses on a local community that embraces the social dynamic between engaging participants:

Bourriaud, many of the artists he writes about, and most of the theorists that follow his lead (Bishop included) largely ignore the following: the body as more than a vessel for consciousness and identity; recent technological innovations in art; and embodied interactions in the gallery space [...] I take inspiration from Bourriaud's and Bishop's texts, but proffer an approach and framework for embodied experiences and practices in addition to social participation (2013: 80)

⁴⁵ *On Slow Violence* participant questionnaires – see Appendix C

This need to look beyond the relationships built between people participating in an interactive artwork space underpins Stern's desire to examine relationships that are defined at a more visceral level. He is concerned more with the embodied experience of engagement, a technique of examination that he terms the 'implicit body approach', something that 'concentrates on emergence and corporeality, matter and matters, as framed through affect, movement, and sensation' (Stern, 2013: 81).

As discussed, *On Slow Violence* does not simply offer a social engagement as its interactive focus. Yes, there are responses from participants that do point towards a developed community through unspoken collaboration, but the range of experiences also point towards solitary engagement and being unaware of others. Beyond that there is a clear relational experience between iPad user and technological system and then Dynamic Light Structure control and body in space.

Stern proposes a framework in order to analyse interactive artworks that promote a more embodied experience of interaction than those detailed by Bourriaud. The implicit body framework has four areas of analysis – 'artistic inquiry and process; artwork description; inter-activity; and, relationality'' (Stern, 2013: 91), with the last two areas being of most importance in moving the analysis on from social engagement to the corporeal. As an example of method, Stern examines Tmema's *Messa di Voce* (2003), an interactive projected graphics system that visualizes physical movement and vocalisation as generative images. He describes some of the grand gestures and strange sounds that participants make during their time with the installation and highlights the atypical nature of their performance. In creating odd movements and sounds, the participants created a caesura in normal life processes:

The ‘oooohs’ and ‘PHBTTTTTTs’ and their accompanying gesticulations are, this book has effectively argued, interventions in movement and continuity – in the emergence, potential, and relationality of the body – and can thus offer insight into the embodiment and materialization at large. (Stern, 2013: 96-97)

Stern’s third area within the implicit body framework, inter-activity, seeks to identify those areas in interaction that can be marked as atypical, or unique to the activity.

In identifying these areas of engagement the framework describes a caesura in normal bodily operations and allows the observer to analyse movement and sound and examine the relational connection between the two within the interactive environment. For *Messa di Voce* the generated graphic environment was manipulated by flowing graceful movements accompanied by melancholic, melismatic vocal sounds, while ‘angry spittles, hand-waves, and chin juts are accompanied by rolling tongues’ (Stern, 2013: 97). The connection between movement and vocalized sound when manipulating generative image is telling and demonstrates how ‘movement and language emerge and define one another in their mutual immanence’ (Stern, 2013: 97). The participant responses to the *On Slow Violence* experience reveal their own sense of the atypical. These were manifested through contradictory feelings being identified, or a sense of the strange

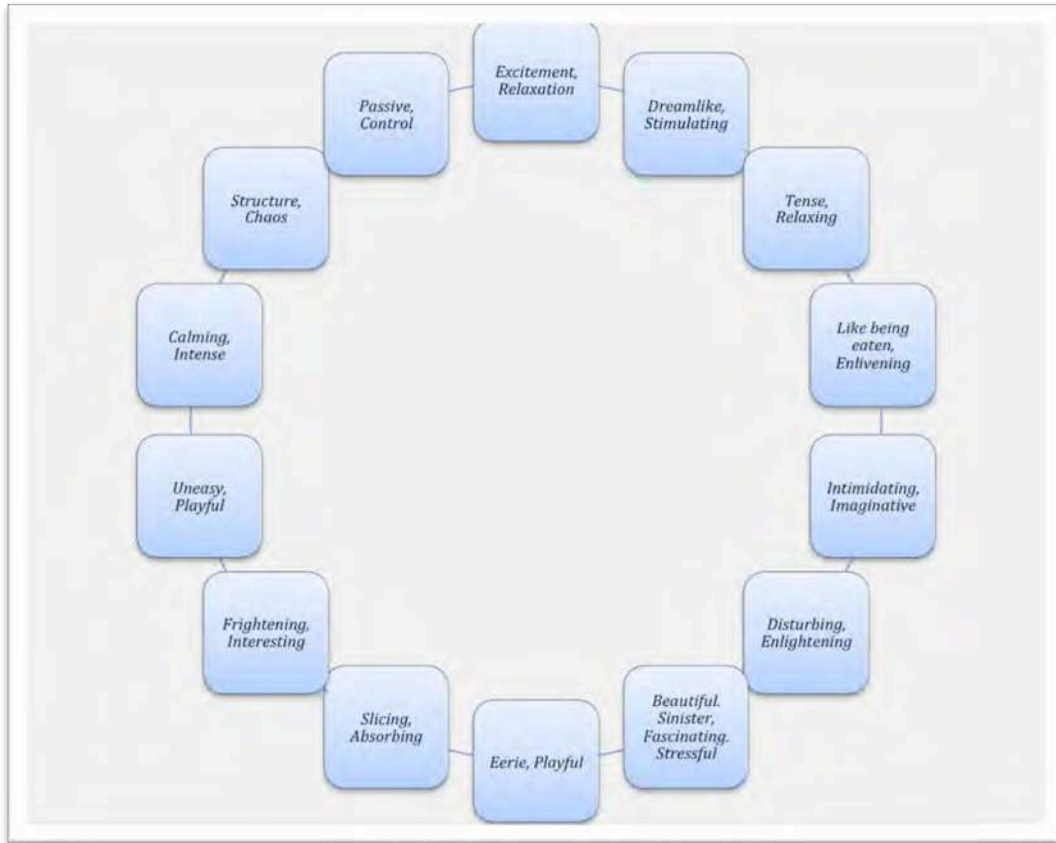


Figure 14 - *On Slow Violence* (2016) participant experience descriptors

Figure 13 shows a range of responses from participant questionnaires (see Appendix C) when asked to describe the experience of *On Slow Violence* using a number of single words or short phrases. Each node in the diagram presents words or phrases from a different participant. The number of responses that detail conflicting or seemingly contradictory words describes a break from the norm in this instance. Not all are mutually exclusive of course; intimidating and imaginative can comfortably co-exist, but they are not co-present experiences that are common to everyday life. Calming and intense however do seem to be more at odds with one another, as do tense and relaxing. The strange is exemplified here as well; eerie and playful, disturbing and enlightening, uneasy and playful all give a sense of the otherworldly but at the same time as being inviting and ludic.

What is presented here is relational and describes an experience with a Dynamic Light Structure either as a participant in control, as a participant immersed within a space, as a participant interacting with another person, or as a participant interacting with a control system in tandem with a Dynamic Light Structure and another person in the central space. Those brief descriptors are an attempt by the visitors to explain how they embodied those various experiences and the ways in which they understood the environment.

The fourth area of inquiry, relationality, as described by Stern (2013) in his implicit body framework analysis asks how ‘we move-think-feel in our inter-actions, how our conceptual-material relationships intervene in our transformation with the world around us’ (Stern, 2013: 97). The concept of move-think-feel is presented as a relational one and its importance in the implicit body framework relies on the notion of the amplified body. In discussing the interactive art piece *Chalk Vision*⁴⁶ by Tegan Bristow, Stern suggests that ‘Like a directional microphone, *Chalk Vision* picks up and amplifies specific facets of our continuous relations over time...’ (Stern, 2013: 73).

The piece presents a movement tracking system that creates projected chalk-like drawings that relate directly to the movement of the participant. This becomes a potentialised space where movement has a consequence. The participant is cast in the role of performer where the everyday activity of moving without necessarily thinking about it becomes a point of focus. Stillness becomes as important as movement in this scenario – ‘And here, we move-think-feel without moving. We sit still and this

⁴⁶ Chalk Vision. In *Tegan Bristow* [online]. no date. [cited 26 October 2017]. Available from <<http://teganbristow.co.za/?portfolio=chalk-vision>>

stillness is *still moving* – an activity that is affective in its stillness’ (Stern, 2013: 72). Sitting or standing still in this space causes the chalk marking to disappear. The stillness and the thinking about the potential of movement and the type of movement that will be made when the stillness ends exemplifies the concept of move-think-feel. The implicit body framework at this stage examines not just the actions of a person engaging with an interactive system, but the embodied relationship that has been developed between the two entities. Stern makes a distinction between the *implicit* body as a functional element within a relational interactive system and the *continuous* body – ‘interactive art, then, situates and intervenes in the body’s ongoing constitution – the continuous body’ (Stern, 2013: 74).

This notion is a natural progression from that which the third area of enquiry, interactivity, identified; the break in the norm. The fourth area examines that which is embodied within the implicit body and seeks to analyse the relationship between the move-think-feel of the participant and the interactive system, something which Stern refers to as ‘‘embodiment and X’ – X being a sensible concept (language, society, architecture, other matter, forces, and matters)’ (Stern, 2013: 97-98). *On Slow Violence* presents a space that potentialises movement in a similar way to that seen in *Chalk Vision*. The result of movement is not a generative graphic, but a deconstruction of a Dynamic Light Structure. For those participants who spent time in the middle of the space, being co-present with the structures, examples of a move-think-feel relational experience is evident –

My first touch of the light had electrostaticity [sic] pinch to my finger. If you move fast you see the 3 colours of light combined sometimes with white strips

It was nice to react to the light itself, or other people moving around and affecting the structures. It was like a constant to movement and rhythm of the light

Made me feel like dancing. So I did, on my crutches

I stood rather inertly, like a tree, or a shed

Also lay down on the floor with my 3 yr old & we had a dance with the lights too. If I wasn't with my kids I'd probably feel too self conscious to stand in the centre alone

I walked through it and tried to touch it. I also intentionally tried to alter my vision through the light

Just putting my hand through the light just to break the perfect line of light

Because the light looked so perfect it was hard not to destroy it

It made me feel creative and playful

Moved quickly towards the light – moved my arms around – did a 360 turn⁴⁷

The comments made here are of course after the fact. They are an attempt to retrospectively describe feelings and experiences within the space, but examples of an implicit body forming from a continuous body are implied here. The person that stood inertly, like a tree or a shed, uses language that points towards a performative relationship with the light structures. They are fluid and moving, ethereal weightless. The participant in this instance is grounded, rooted to the spot and solid. The reference to shed is intriguing; Stern (2013) makes mention of a relational connection to embodiment and architecture and in this instance, the participant finds him/ herself

⁴⁷ *On Slow Violence* participant questionnaires – see Appendix C

in an architectural environment that is animated and free. In the midst of this life s/he embodies the sense of a static object, another building completely at odds with the ever-transforming surroundings. The relational aesthetic in this instance is not a social one, but an embodied experience connecting space, form, movement and Dynamic Light Structure.

This immersion within an animated environment is key to the aesthetic experience and is something that extends early experiments in light art. On the 10th of January 1922, Thomas Wilfred gave his first public performance using a device that he called the Clavilux.⁴⁸ The machine was a mechanical device that could project colours onto a screen which would then be manipulated live by the artist to create morphing, animated, abstract images made purely from light. He termed the then new art form, ‘Lumia’:

An eighth fine art is beginning its life in our generation, a silent visual art, in which the artist's sole medium of expression is light. The new art form has been named lumia. Like its seven older sisters, lumia is an aesthetic concept, expressed through a physical basis of methods, materials and tools. In a complete definition the two aspects must be stated separately before a composite can yield a clear picture. The aesthetic definition must clarify the artist's conception and intent, the physical one the means he employs in achieving his object.

a: Aesthetic concept: The use of light as an independent art-medium through the silent visual treatment of form, color and motion in dark space with the object of conveying an aesthetic experience to a spectator.

⁴⁸ 1930 CLAVILUX made by Thomas Wilfred, in operation. In *youtube.com* [online]. 2011. [cited 26 October 2017]. Available from < <https://www.youtube.com/watch?v=icGdtUQy5qQ> >

b: Physical basis: The composition, recording and performance of a silent visual sequence in form, color and motion, projected on a flat white screen by means of a light-generating instrument controlled from a keyboard.

The spectator is a necessary factor in the concept: *a materialized vision, beheld by a beholder*. The spectator may be only the artist himself. (Wilfred, 1947: 252)

At the time, the flat screen was the only medium on which the light images could be made visible, although Wilfred lamented the lack of the three-dimensional form and described the artistic thinking behind the performance work:

But the original vision-the three-dimensional drama in space-is constantly before him and he strives to add, by optical means, an illusion of the missing third dimension to his flat screen image, and to perform it so convincingly in a spatial way that the screen creates the illusion of a large window opening on infinity, and the spectator imagines he is witnessing a radiant drama in deep space (Wilfred, 1947: 252)

Unsurprisingly, Wilfred's terminology is very ocular centric – 'a materialized vision beheld by a beholder' and 'he strives to add, by optical means, an illusion of the missing third dimension'. His concept of the aesthetic experience is one that is 'conveyed' to a spectator. Frustratingly for Wilfred, his art had to be presented at a distance, but his writing belies a desire for the spectator to be transported into the artwork, to experience a co-presence with the light art. *On Slow Violence* extends this notion of Lumia. In placing the participant both at the controls of, and among the three-dimensional Dynamic Light Structures, the aesthetic experience shifts from the visual to an embodied and relational happening.

As Kwastek (2013) suggests ‘The work’s processuality is no longer designed to call the work into question but is the basis for the aesthetic experience of realizing an artistic interaction proposition’ (2013: 47). The constantly shifting, mercurial connection between participant and installation system/ space is what defines the aesthetic experience and defines the ‘process of gestalt formation’ (Kwastek, 2013: 47-48):

- The power of becoming, for those learning the operating system and subsequently coming together to take control of a structure within the space and interact with a live body;
- The sense of the uncanny when a light structure remediates a gesture and doubles the participant in the space, made more disorientating when that gestural double occupies the same space as the participant;
- The visual tactility of the Dynamic Light Structure and the disruption of expectation on touch;
- The atypical behaviour when in the space, a caesura in the norm, which disrupts the continuous body creating a relational and embodied experience

All of the above *are* the aesthetic experience of *On Slow Violence* and in that respect of the light structures themselves. They can be relevant in isolation, in their entirety, or anywhere in between. As Gareth White suggests ‘The principle of the purity of the Aesthetic shifts away from the object itself and its relationship to concepts and interests, and further towards what comes to mind in the moment of judgements.’ (White, 2015: 68). With regard to the central research question guiding this element of practice, the aesthetic and performative qualities of the Dynamic Light Structures

are inextricably linked. Their performance is built on relationships which develop through a process of participant development, and through that development their aesthetic is revealed.

5 Final Spiral: *OSV as Choreographic Tool* Project

The research relating to *On Slow Violence* focussed on the relationship built between installation participant, the system of control and the Dynamic Light Structures themselves. It examined a relational experience and a gestalt aesthetic that embraced a notion of becoming - the development of a systemic understanding of the space and a shift from an explicit body to an implicit one, together with an embodied response to an environment that engendered a sense of the strange. The responses given by the participants after interacting with the installation were an attempt to describe an experience after the fact and the research did not attempt to capture or analyse the behaviour of the visitors as they engaged with system.

The final element of this project was to examine the use of the installation system as a tool for performance making and to observe that process as it happened. *Etched* was a bespoke system and was built and modified to suit the needs of the production as it developed hand in hand with the live body. *On Slow Violence* presented a system in situ that acted simply as a space to play and explore. The *OSV as Choreographic Tool* project, as the final spiral of this research, saw the interactive system being handed over to a small group of undergraduate and postgraduate dance students with instructions to create a new piece of dance choreography using solely bodily movement and the generated Dynamic Light Structures. The dancers would have to act as technical operators as well as providing physical movement within the space. They were to switch between roles, blurring the line between performer and technician. The research examined the process of performance creation and as such was not intended to produce a final finished product for public consumption.

Specifically, the scenographic environment was to be seen in conjunction with the body in the live space and the observation of the choreographic practice would determine how that combined performativity influenced and directed the choreographic process.

The projectors and iPad controls were in exactly the same layout as *On Slow Violence*. The group were given one hour to familiarise themselves with the controls of the system and to explore functionality. Very minimal training was given on the controls, as part of the investigation would be to observe how quickly (or not) the students were able to grasp the various parameters of the system in order to start using it as a performance tool. Two further one hour sessions were then given over to the choreographic practice and in each case the students were recorded through a camera/microphone system. The video files of the first hour can be found on the accompanying USB flash drive. A transcript of the first choreography hour is also included in the Appendices.

This data gathering method was not without its difficulties. Capturing very low light level environments with sudden specific areas of light posed problems for camera equipment and the audio recording of the students' conversations was at times hard to make out above the noise of the installation itself. However, this did not present significant problems and the data captured provided ample information for examination. Group discussions also took place, which further examined process and explored responses to the system. Video documentation of these can be found, along with transcriptions, in Appendix D.

Again, the central research questions for this thesis provided the focus for the project:

- How can Dynamic Light Structures form a coherent scenographic environment for performance?
- What are the aesthetic and performative qualities of Dynamic Light Structure scenography?
- How can Dynamic Light Structures be manipulated so as to ‘perform’ in conjunction with a human performer?

The performance of the light structures would be tied to the choreography. In this way the aesthetic and performative quality of the structures would help to define the type of choreography being produced by the group. Examination of the practice raised two initial observations that would go on to form the main direction of enquiry; firstly to question the actions of performer as technical operator and secondly to examine the use of manipulable scenography as a specific site.

Being an installation system, the interactive mechanisms in place required user interaction and the expectation to become devising artist, dancer and technical operator, was a departure from normal proceedings as far as the dancers were concerned. It does however have clear links to Hunt’s (2011) call for the lighting operator to be recast as ‘Lighting Artist’ and to be inextricably embedded within the

creative process of devising and to have autonomy and flexibility to react and respond to the performer in a live performance situation.

Hunt's (2011) argument for technician agency as a live practitioner still draws a line between those on stage and those off whereas this research explored more the idea of performer as technician – a utilitarian creator and one which would naturally shift from role to role throughout both the devising process as well as any presented performance. As a place for devising and potentially showing work, the system installation was set in a fairly empty university performance room with drapes on the walls creating quite an anonymous environment. The nature of the installation removes the space from what might be considered a typically theatrical style presentation and the way in which the projected Dynamic Light Structures reconfigure the dimensions and perceptible boundaries of a room drew some parallels with work devised through site specific performance processes, i.e. the reliance on the environment to inform and provide stimulus and context for the performance mechanics and devising work. However, ultimately the process could not be classed as such and this invariably posed questions relating to the ways in which the devising process proceeded and how indeed it could be contextualised.

5.1 {if (choreographer = true) performer = technician}

Ben: So is it only going to be us four or are we going to have people working the...?

*Abby: We act as the people that change it and the dancers*⁴⁹

This exchange highlighted a sudden realisation from Ben, one of the dancers engaged in the choreographic process, that the operation of the technical mechanics to construct the visual scene for the express purpose of the dance, was in fact, part of the dance. The movement between iPad stations in order to reconfigure the environment, the manipulation of the graphical interface, the speed of control relating to projected light structures enmeshed with a live body, were all as much about choreography as the movement at the centre of the space in conjunction with the light scenography being created. This was an unusual situation to be in for all of the dancers and to learn how to integrate the manipulation of technical devices as part of the performance making process was a skill to be developed.

However, it must be said that this expectation is not one that is anathema to other performance making scenarios and performers. Live music performance and particularly that associated with electronic music has long relied on the musicians interacting with a host of electronic devices – laptops, synthesizers, samplers, effects pedals and mixing desks – to warp and manipulate the sound that is being generated live. For some live instances the expectation is not that a keyboard will be played live and programmed to change sound or effect, but will be physically manipulated by the player throughout the performance.

The visual spectacle of the performer, not only as a master of a musical instrument, but also as a master of the technologies associated with it in the evolution of

⁴⁹ Transcription from Session 2 – Choreography. See Appendix D

organically created sound is important in terms of audience reception. Kim Cascone (2003) explores the problems faced by laptop performers in the field of electronic music. In such cases, the performer may well be manipulating computer patches, software instruments, virtual mixer routing and applied effects to the sound output. But without a strong visual demonstration of this technique to support the mastery of the system, the perception of value by an audience can be problematic:

Historically, the unfamiliar codes used in electronic music performance have prevented audiences from attributing “presence” and “authenticity” to the performer. Seen more as a technician than a musician, the performer of electronic music hovers over a nest of cables, knobs and blinking lights; electronic circuits filling the space with sound via an “artificial” process. (Cascone, 2003: 102)

Cascone laments the appropriation of music appreciation style from a more established culture – that of rock music, where virtuosic skill is demonstrated in an acutely visual manner in the live arena. Philip Auslander defines the way in which the live music concert validates the recorded medium as a demonstration of the authenticity of recorded live performances: “if the mediatized image can be recreated in a live setting, it must have been “real” to begin with (Auslander, 2008: 43). Cascone highlights the difficulty when expectations such as these are transferred to the laptop music performance:

when money is exchanged for electronic music performed on a laptop, the audience has the expectation that they will receive a demonstration of musical skills they do not own. The more skill (hence authority) the performer can demonstrate, the more value is received by the audience. However, it is difficult for an audience to perceive

the value of a performance where the artist could simply be playing back sound files on a device more suited to an office cubicle than a stage (Casone, 2003: 103)

Understanding these difficulties in reception gives agency to the development of the choreographer/ performer/ technician. As an intensely visual medium, dance will always have a level of overt display that the laptop musician simply does not have access to, however, the performer/ operator must be aware of audience reception when engaged in technical control. With regard to the *On Slow Violence* system as choreographic tool (*OSV as Choreographic Tool*) this has implications on how any final performance work might be presented and how the performer/ operators might be perceived.

The connection between a visually introverted technical operation such as the control of a laptop, and an explicitly visual medium such as dance, has already been made by Collins (2011), and the researcher and dance practitioner Kate Sicchio (2014). Sicchio's work explores the nature of live coding⁵⁰ as a companion and choreographic system for dance practice. The Organisation for the Promotion, Proliferation, Permanence, Parsimony, Pragmatics of Live Algorithm, AudioVisual, Programming (TOPLAP) is a community dedicated to the development and presentation of live coding. It promotes the artistic pursuit of the real time manipulation of programming code in order to reimagine or systematically alter the outcome of that code. As a performance practice, it is ordinarily associated with the generation of graphical or sound objects and is used to create visual and aural improvisations at a programming

⁵⁰ About. In *toplap.org* [online]. 2011. [cited 26 October 2017]. Available from <<http://toplap.org/about/>>

language level as opposed to interacting with either hardware or predefined software instruments.

Sicchio recognises the problems faced by live coders in relation to audience reception of a typically non-visual practice:

Most live coders want the audience to be aware of the liveness within the decision-making and composition of the work, so a live video projection of the coding is usually incorporated into the performance. This is also underscored in the TOPLAP draft manifesto. (Sicchio, 2014: 38)

As a particularly insular activity, the process of coding as a performative act must be projected onto a screen for the audience both to connect with the output as a live and generated happening, rather than a digital recording, and to also appreciate the virtuosity of the programmer's skill, with the laptop keyboard being played very much like an instrument.

In her own practice, Sicchio merges live coding and choreographic improvisation. The *Hacking Choreography*⁵¹ (2014) practice as research project examines ways in which coding, or instructions similar to computer code can act as choreographic score with a technician typing instructions projected onto a screen for dancers to use as either an explicit set of instructions, or an improvisation stimulus. In recognising the need for code visibility in dance performance, Sicchio has developed a set of principles distilled from TOPLAP's draft manifesto relating to live coding practice

⁵¹ Hacking Choreography. In *Kate Sicchio* [online]. 2017. [cited 26 October 2017]. Available from <<http://blog.sicchio.com/works/hacking-choreography/>>

within a dance frame. The following is an extract from a table showing that relationship:

TOPLAP Draft manifesto

Hacking Choreography

We demand:

Give us access to the performer's mind, to the whole human instrument.

The code allows the audience to view the choreographer's and performer's minds, processes, and interpretations – not just their bodies.

Obscurantism is dangerous. Show us your screens.

Code/ score is visible on stage to the audience, not just the performers

Programs are instruments that can change themselves

Programs are choreographies that can change themselves. The dancer, however, always has the ability to change, ignore, or subvert the program.

Code should be seen as well as heard, underlying algorithms viewed as well as their visual outcome.

Both code and the visual outcome of the choreography are seen.

Live coding is not about tools. Algorithms are thoughts. Chainsaws are tools. That's why algorithms are sometimes harder to notice than chainsaws

Dance technique is a tool. Choreography is thought and sometimes harder to notice than dance technique.

The left-hand column reproduces the TOPLAP draft manifesto (TOPLAP 2004); the column on the right juxtaposes the approaches taken in the *Hacking Choreography* project.

(Sicchio, 2014: 37)

The emphasis on the visual is clear here. As a performance act, the coding in both sets of principles must be seen as an indication of thought process and therefore to have a primary place in the presentation of the work to the audience. This thought process is

often opaque in dance performance, with the choreography having taken place behind closed doors, fixed and then rehearsed. Sicchio's aim is to open the window on the process of dance choreography and present it as a live, in the moment activity. Parallels can be drawn with performance improvisation, but the projection of the code gives an insight into the thinking behind the improvised act. In this way, the observer recognises both physical skill in the performer as well as the underlying procedural thinking of the choreographer/ coder.

With transparency in mind, Sicchio's own procedural choreography, as coder rather than dancer used a projected text 'loosely based on Java and attempted to create a language that, while looking like Java, was readable by performers.' (Sicchio, 2014: 34). Not only was the language to be readable by performers, but also by the audience. The 'code' acting as a choreographic score was executed in a linear fashion and the correlation between movement and codified instruction was clear to the audience:

```
/hack/  
  
{  
  
  if (dancer b = kneel)  
  
    dancer a = kneel  
  
  if (dancer a = rotate)  
  
    dancer b = rotate opposite direction  
  
}
```

(Sicchio, 2014: 35)

As an improvised piece, the thought process of the choreographer (coder) is presented as series of instructions, and then executed by the dancers. In later works, the improvisation also extended to the dance performers as they were allowed to contravene instructions and generate subversive movements, thereby ‘hacking’ the original choreography. Again, the understanding by the audience of the original thought process of the choreography led to comedic scenarios as the movements of the dancers intentionally undermined the instructions.

The process observed as part of the *OSV as Choreographic Tool* project drew parallels with the notion of coding as instruction through text language, but presented an interesting development; that of coding choreography through object as language –

Connor: Oh this bit, I thought you meant the thing on the floor...

Abby: No, no I don't go through this (popping up through the horizontal plane) This one and that one, so you can turn them straight.

Connor: Like that?

*Abby: Yep, [inaudible] you see what I mean, now we've got a section we can go through into someone else's. (moving through a vertical plane)
[inaudible]*

*Ben: Oh that would be something really cool to do... if we start off behind walls and then if someone shatters it as someone breaks through*⁵²

In this scenario, Abby, Ben and Connor experiment with the manipulation of a Dynamic Light Structure and start to explore choreographic movement. The presence of the light structure immediately presents spatial options. When manipulated to offer a vertical plane, the options become either ‘side’, or ‘through’. A horizontal plane presents either ‘under’, ‘through’ or ‘over’. The nature of the environment means that the dancers have to be in proximity to the structure, or they will not be seen – at all times they are inextricably linked. Subverting these options, as the dancers could in the *Hacking Choreography* project, would lead to invisibility in the dark voids between the structures. Without explicitly writing the code, the position of the structure demands a certain set of live body responses that frame the movements of the dancers. They are led towards these decisions as inexorably as a text command stating ‘stand either side of the plane and extend an arm through it’.

⁵² Transcription from Session 2 – Choreography. See Appendix D



Figure 15 - *OSV as Choreographic Tool* project (2016) Vertical planes and limbs

The operator, creating the light structures through the iPad controls, acts as unwitting instructor while at the same time forming a visual environment for the dance. Figure 14 exemplifies an underlying coded instruction here:

```
{  
  
if (light structure = vertical)  
  
dancer a = arm through  
  
dancer b = leg through  
  
}
```

There are of course variations that can take place – limbs can vary, height of interaction can alter, perspective can be played with etc., but the base instruction is present. As part of the system exploration time, some of the dancers started to define these implicit instructions themselves whilst learning how to use the iPads –

Abby: So especially for this one (pointing at projector 2), I was using it as sort of like a plane so I could go over it, I could go under it, on that one (pointing at station 3) there was like white lines through it and thinking I could go through that, I and was working on what I was doing on the screen and I was going ok maybe I could do this with the movement, rather than actually doing it I was thinking ok I need to understand what's going on on the screen and in the space...

Ben: With these two (pointing at stations 3 & 4), I was trying to make patterns where it had as much space between the light as possible. And I was thinking if we could get people in places where there wasn't light and use the light as barriers in between them, so it gives them like a set space to perform in and then change the colour of the strips relating to how they move⁵³

From the outset, Abby identifies 'over', 'under' and 'through'. Her need to 'understand what's going on on the screen and the space' underlines her position as

⁵³ Transcript from Session 1 discussion – Learning the System. See Appendix D

both dancer and choreographer using codified information. The position of the light structures within the space will present a certain set of options for the performers and fully appreciating these boundaries is necessary to be able to move forward. Maxine Sheets-Johnstone (1979) expresses the notion of the ‘object-in-motion’ as distinct from an object in motion:

...we see a dancer who is moving with a certain qualitative *élan*, a dancer who is moving flamboyantly, lyrically, explosively, sententiously, eloquently [...] What appears is no longer an object in motion. That object in motion, along with its accomplishing or doingness, has been surpassed toward a wholly qualitative presence. What appears is a different kind of visible altogether: the presence before us, though *object-ive*, is one whose motion is inseparable from it. If still describable in terms of an object in motion, this wholly qualitative presence could only be referred to as an object-in-motion, the hyphens attesting to the integral wholeness of the phenomenal appearance. (Sheets-Johnstone, 1979: 40)

Abby’s initial understanding of the link between performer and light structure from the outset helps to define an appreciation of the dancer/ structure symbiosis. In the same way that Sheets-Johnston presents an object whose ontology relies on an inseparability between its action in space time and its physical presence in the world, so too, a new object must emerge that is defined by both dancer and light structure. The choreographic practice when using *OSV as Choreographic Tool* relies on a refined definition of the dancer as an object-in-motion and more akin to objects-in-space where the resultant figure is defined by the spatial relationship of the two component parts of live body and light structure. This is further exemplified by the deconstruction of the light structures when in contact with body parts. The choreography does not simply rely on a body moving through a light structure, but

also on the resultant effect on the light structure – the creation of a negative space where the body part blocks the travel of the projected light. This fundamental relationship between choreographed movement and light structure became something both liberating and restrictive –

Ben: I was going to say it's quite restricting, I mean yeah we are given a lot to be able to do with this setup, but at the same time there's only so much movement you can see in the darkness and there's only so many things you can do going between lights. So yes whilst we've got a lot of stuff to be able to show with the light, the amount of movement we're able to do with that is reasonably restricted.

Interviewer 1: So there's a slight difference of opinion there between Connor and Ben. Connor you felt that you were able to present movement that you wouldn't have been able to present had you been in a...

Connor: Not that I wouldn't have been able to present it, but just maybe that it was, it would get like a better reception with the lighting and using the lighting around that.

Interviewer 1: So you wouldn't necessarily have chosen the movements that you did then in a different scenario because perhaps you would have discounted them as being...?

Connor: *Yeah, just being plain or not very entertaining for people watching it.*⁵⁴

Ben's comments relate to the intrinsic set of coded instructions inherent in each of the light structures relating to position and movement. Within the time allowed for exploration, there was only so much that could be determined and once the structure had been explored throughout this time, the parameters of 'over', 'under', 'through' etc. felt restricting. However, at the same time, Connor found freedom to explore movement that would ordinarily have been discarded as uninteresting. The objects-in-space relationship gave new life to seemingly tired, or simplistic choreographic language; the co-present movement of the dancer in conjunction with the light structures becomes something more. Again, Sheets-Johnstone explores the notion of movement as distinct from moving object, with pure movement having a separate phenomenological identity than that of moving object:

In the one instance movement may simply call attention to itself, emerging suddenly from behind the usual screen of the object, because it is peculiar or unexpected – e.g., an uneven gait which may draw attention to the fact that a person is limping, or the lurching energy pattern of an inflated but open-ended balloon. (Sheets-Johnstone, 1979: 35)

The compound apprehension of the objects-in-space allows for movement to be re-evaluated by the performer. The simple movement, when tied to a singular hybrid object becomes more than the original movement and 'appears' once again as a valid endeavour through its relationship to the whole.

⁵⁴ Transcript from Session 3 – Choreographic Reflections. See Appendix D

At times, there are also reciprocal instructions evident. Inherent within the control system for one of the projectors is an option to ‘shatter’ a built light structure. This will destroy a single horizontal plane forming many shards of light thrown up into the air, which then gradually fall back into place, reforming the horizontal plane. At one point in the choreography Ben suggests a quick violent arm movement up from beneath the horizontal plane as an operator invokes the shatter command. The result is a light plane seemingly destroyed by the movement. The piece of choreography seems dancer led, with the operator executing an instruction as a response; however, it is the specifics of the system that dictates this type of movement and offers the parameters in which to work.

Graham Kirkpatrick demonstrates that such a systemic engagement of a live body is evident elsewhere in contemporary culture. Areas of his work on video game aesthetics examine the ways in which the manipulation of a control system in the playing of video games mirrors those learned choreographic steps in contemporary dance practice. Further, he likens the ‘tutorial’ stages of modern computer games, designed to orient the player to the game mechanics, to the process of learning dance steps in readiness for a performance:

The player learns a ‘training sequence’ at the beginning of play. The player learns a sequence of moves on the controller that can be deployed when a certain kind of visually projected situation is encountered. To some extent, each time we find a situation like this in the game it is initially a puzzle and the challenge is to recognise it. We have to ask ourselves if it is a case for this manoeuvre or not and then we have to test the idea by trying it. Since it is difficult, we have to persist until we get it right. In doing so, we gradually master the move, much as a dancer learns a new sequence or position... (Kirkpatrick, 2011: 134)

The video game tutorial relies on specifics, with the player being given a very clear instruction on how to approach a particular task in terms of controller configuration; when faced with situation A, press B. The scenario faced by Ben and the dancer controlling the iPad able to produce the shatter effect was a little more free form, but the underlying mechanics of the tutorials were present. The solid horizontal light plane has only so many functions associated with it, 'shatter' being one of them. In the exploration of choreographic movements associated with this light structure, the system invites a limited set of responses from the performer, and the operator acts accordingly.

Referring to the game *Mirror's Edge*, Kirkpatrick explains how the gamer is trained to associate visual game world objects with specific avatar movements – 'A sloping roof, for example, with a glimpsed red object beyond it, means that we can 'slide' down it. A gap at the bottom means we need to press L1 to jump or Faith plummets to her death.' (Kirkpatrick, 2011: 136). Not only does the *OSV as Choreographic Tool* process draw parallels with the video game tutorial, but it is the dancer and the operator learning the game at the behest of the light structure. Both the dancer within the space and the dancer acting as iPad operator see a light structure in a particular configuration and are presented with a range of options in order to proceed. The iPad dancer/ operator (player) shifts the game world in one of a set number of ways in response to the situation of the dancer in space (avatar). It was not surprising then to find Ben likening the process of controlling the iPads and performing as a dancer to a computer game sequence –

Ben: How I'm thinking about it – I said it to these guys earlier – I'm thinking of it almost as if I'm playing a game, when I'm playing that because as someone who plays lots of games I remember a lot of controls and how things work very quickly. So when I'm up there doing lights, I'm like ok yeah I now need to remember to do this because this goes in this particular order. Then when I'm on the stage I transition to being a dancer and remembering steps. And when I come out of it again it's going back to ok now I need to remember this combination of inputs⁵⁵

The choreographic process now extends to the manipulation of controls as well as the devising of movements in space and through these processes the dancer and the technical operator become blended into the role of performer/ operator. This blending is not necessarily an easy one. The demands of the hybrid role are cumulative and potentially contrasting –

Aaron: I find just as much pressure doing the technician. In fact I possibly think doing the technician's [role] is probably a little bit harder because you have to precise everything, whereas if you were to dance, you can improve [sic] it – you can move through something if you go wrong, whereas with lighting you're going to see – oh you've gone wrong there⁵⁶

⁵⁵ Transcript from Session 3 – Choreographic Reflections. See Appendix D

⁵⁶ Transcript from Session 3 – Choreographic Reflections. See Appendix D

The specificity of control that Aaron highlights is at odds with the very somatic nature of the choreographed bodily movements in space. The placing of light structures within the environment requires a very different type of motor control to that used when a dancer creates physical movement in space. Maxine Sheets-Johnstone discusses the nature of the individual's perception of bodily movement. She argues that movement can be perceived as both an objective and a subjective experience:

Perceiving my movement as a three-dimensional happening is *not* contingent on vision. The 'inner' and 'outer' of my movement are directly experienced (or experience-able) in my movement itself. Indeed, movement is inherently spatial in the double sense of my *kinesthetically feeling* a certain qualitative spatial dynamics (curved, jagged, twisted, straight, constricted, confined, expansive, open, and so on) and of my *kinesthetically perceiving* the three-dimensional reality of my movement. (Sheets-Johnstone, 2010: 114)

When dancing, the dancer can be aware of the bodily movement both as a feeling, but also have a perception of the movement as a moving object in relational space. And there is a clear somatic link between the two. When Aaron talks about the ease with which a dancer can move through a choreographed phrase, it is because of the understanding that has been reached with the body with regard to kinaesthetic feeling and kinaesthetic perception. The transition to technician requires a fundamental shift in that bodily relationship. In the first instance, movement becomes much more contained and restricted to the hands and fingers. Control boundaries are placed on the body that restrict movement that confine kinaesthetic feeling to limited gestures. Secondly, when controlling an iPad the technician experiences a remediation of gesture in the form of a light structure called into being within the performance space.

At once, the limited kinaesthetic feeling apparent in the hands and the fingers orchestrates a phenomenon of kinaesthetic perception that extends beyond the body.

The realisation of bodily movement extending into space as a digital double decouples the two kinaesthetic experiences with the resultant volumetric form behaving in a way that can be seen as amplifying the small digital movement of the hand. The correlation between limited gesture and the potentially spatially large sweeping movements of the light structure calls into being the focus on control precision, which from a bodily perspective is qualitatively different to that at a dance level.

Of course, the parallels with text instructions do not carry through to any eventual performance of a devised piece as far as an audience is concerned. Unless there was some connection to the original choreographic method, these initial instructions will be invisible to the audience. However, the performer as operator should be made clear, less risk the fate of the laptop musician and not be seen as demonstrating a skill and undermining the perceived live validity of the light structure control.

5.2 Of sites, systems and specificity

The observed choreographic process throughout the *OSV as Choreographic Tool* project highlighted not only developments in the ways in which the performer/operator boundary became blurred, but also raised questions as to the nature of choreography that was taking place. Hunter (2015), Kloetzel and Pavlik (2010) and

Pearson (2010) all discuss site specific performance work and examine that which is peculiar to its development. With regard to the central research questions that informed this project, the following impacts most significantly on the examination of the choreographic process and the creative space:

- How can Dynamic Light Structures form a coherent scenographic environment for performance?

The symbiotic relationship of the site, the devising process and the resultant work acts on both the viewing audience as well as those practitioners responsible for the creation of the work. As Allain and Harvie suggest, the term site specific describes performance work ‘that was produced in non-theatre sites, aimed to engage directly with the meaning and history of those sites, and went out to audiences who might not normally come to the theatre.’ (Allain and Harvie, 2006: 149). In the first instance, the positioning of the choreography at play in *OSV as Choreographic Tool* is important.

For the Dynamic Light Structures to be viable, they need a room capable of a total or near total blackout. It needs to be indoors as environmental issues such as wind or rain would impact on the ability of the haze to remain consistent and so impact on the solidity of the light structures. However, the dance practice does not have to be situated within a theatre environment. The research project was sited in a dance classroom at a university, but the resultant choreography (or indeed the choreographic

process itself) could be moved and presented in any suitably enclosed space, because the resultant system *is* the environment. This problematizes the dialectic of theatrically presented dance and site-specific dance. As Tara Munjee suggests of site-specific:

...the term is intentionally used to differentiate between dances created for and presented on a designated stage setting as opposed to dances that are particularly created for or in relation to a site other than a conventional stage setting. (Munjee, 2014: 130)

Whereas it is true that the choreography created during the *OSV as Choreographic Tool* project was devised in an environment other than a conventional stage setting, the term 'in relation to a site' causes difficulties. Munjee (2014) presents a way of examining site-specific dance that uses human geographer Edward Soja's (1996) *Trialectics of Spatiality* as a lens. She breaks this idea down to the three constituent parts of perceived space, conceived space and lived space. When discussing site-specific dance, these three terms have a clear use. Perceived space is that which can be measured and quantified in some way by both the viewing audience and the choreographers during the devising process. It is space with which a physical relationship in terms of bodily position can be viewed:

The use of Perceived Space thinking can be noted in audience discussion of the contours and limits of a site, how the performers engage with these limits, and how the performers' engagement with the physical spatiality shapes the dance's reading (Munjee, 2014: 133)

Conceived space requires an engagement with the environment at a level beyond perception and relies on enquiry into the relationship that an observer or performer has with a space. Unique experiences might come into play with individuals drawing on past associations with the space as a specific environment, or an understanding of the space in historical terms:

The application of Conceived Space to site-specific dance valuing calls for examination of subjective—and at times subliminal—perceptions regarding sites and the ways in which people inhabit them. Personal history, class, race, gender, and other aspects of identity will influence Conceived Space thinking because these factors relate to how one is situated in the physical and social world. (Munjee, 2014: 133)

Finally, lived space interrogates a piece from the perspective of function – both function of the space and function of human life within a space. In simple terms choreography produced in a factory environment might produce movements relating to mechanic or repeated phrases that underpin the routine of production - ‘Lived Space thinking explores the repetitive human physical practices that contribute to the production of space. It examines what people are doing in space that creates the character of a site.’ (Munjee, 2014: 134). As a way of both examining a piece of site-specific dance, and indeed as a way of developing choreographic practice, this seems eminently sensible and presents a framework that can unify physical space, meaning and relationships when reading dance performance. However, much of it relies on the non-abstract nature of the dance environment.

In terms of framing the choreographic process, the *OSV as Choreographic Tool* project does not sit comfortably with either conceived space or lived space. Its abstract nature removes it from any kind of historical preconceptions that relate to the human condition or indeed a functionally recognisable space from which to draw creative ideas or to develop meaning. It does have relationships with perceived space as its ontology draws perception to an ever-changing environment, but in terms of triangulating the three precepts of the Triad of Spatiality, the *OSV as Choreographic Tool* method of devising work is resistant.

Hunter reinforces this point of view when she discusses the making of a site-specific dance piece through an understanding of the 'spirit of the place' (Hunter 2005: 367). In examining a piece of her own devising she approaches the site-specific choreography through phenomenological terms, splitting the choreographic process into distinct sections - 'Experiencing the Site', 'Expressing the site', 'Embodying the Site', and finally 'Receiving the Site' in the form of a performance work.' (Hunter, 2005: 367).

The piece was developed in the basement of Bretton Hall, an eighteenth century mansion house and, at the time of the project, home to the University of Leeds School of Performance and Cultural Studies. The environment was rich in history as well as being architecturally distinct and Hunter describes initial choreographic practice as being problematic and dictated too heavily by her own clear and developed knowledge of the form and function of the building. In order to extricate herself from its overwhelming presence, Hunter describes a more phenomenological approach to understating the space:

Clearly an embodied approach involving the body-in-space was required. In an attempt to experience the site in a less contrived manner I allowed myself time to just enter the space alone and simply 'be' in the space in a series of 'moments'. This would involve me moving slowly through the space, for example, touching, sensing, and experiencing the space, or simply sitting quietly and absorbing the space around me. (Hunter, 2005: 372)

Hunter's method of freeing herself from the perceived authority of the building (experiencing the site) and working towards a process whereby the site's 'phenomenology and *genus loci* are revealed' (Hunter, 2005: 372) was a mixture of both tactile response to the building itself and a meditative like method whereby 'movement material was informed by a complex interplay of responses resulting from interaction with both formal/ architectural and intangible/ atmospheric components.' (Hunter, 2005: 323). Hunter's process of experiencing the site was as a direct response to her initial understanding of the site's clear history and formal presentation. In order to fully experience the place, she had to firstly acknowledge this and then remove herself from it to experience the place at a more embodied level.

The resultant understanding of the space became a mix of these two perceptions. Again, without that initial presence, history and formalised perception, the environment created by the *OSV as Choreographic Tool* project limits this idea of experiencing the site. In terms of understanding the space, the group of dancers were given time to immerse themselves in the control mechanisms and in this way they were seen to be experiencing the system. Discussions and comments made by the group pointed towards a process that was a very visual one and a choreographic

method that relied very much on the scene created in conjunction with a light structure rather than dance phrases that came about as a result of experiencing an intangible or atmospheric element. The following are separate phrases, rather than a continuous discussion –

Ben: As that's stretching, I'm guessing some sort of like uncomfortable stretching out...?

Abby: From here you can't see it, but from the sides it looks really good

Ben: No I don't think so, because it looks really effective from the front. I don't know if you understand what we're doing because we've got the depth thing going on – it looks like you're so far away

Abby: I mean it looks nice from this side as well. Try not to leave that bit though. If you go any further than here (motioning to Connor in the light), you lose any effect.⁵⁷

The focus here is on the resultant image created between dancer and light structure and the positioning of the light structure is as crucial to that image as is that of the dancer. The aspect of the audience also tended to be a constant consideration as a change in perspective could cause some light structures to be less visible, therefore rendering the choreography meaningless –

⁵⁷ Transcription from Session 2 – Choreography. See Appendix D

Aaron: It depends on what we're making this. If we're making this for an audience in the centre or an audience walking round.

Abby: I guess they'll be round the outside

Connor: what does it look like from the front?

Aaron: Yeah I mean you can't see what you're holding on to from the front. You can see... just.⁵⁸

The choreographic relationship with the 'site' in this instance is a practical one and the devising process explores the validity of movement and position of both the site and the dancer. Here, Hunter discusses the difference in choreographic engagement between her site-devised project and that of a more theatre-style based performance:

The term 'embodiment' is used to refer to the performer and the dance as the medium of expression and their capacity to embody the site's essences in a phenomenological sense. In conventional creative performance processes, contained within a studio setting, the rehearsal and refining process, with its necessary shift of focus towards the concretization of an end product, can result in the performers becoming distanced from their initial response to a particular stimulus. However, in site-specific dance performance the potential for this process of detachment is lessened due to the omnipresent nature of the surrounding site stimulus. (Hunter, 2005: 376)

The difference between the two relies on a distancing from the theatre-style site and a phenomenological embodying of the site's 'essences' for the specific work. Again,

⁵⁸ Transcription from Session 2 – Choreography. See Appendix D

the *OSV as Choreographic Tool* project sits to the side of both of these definitions with the process neither based on the embodiment of the spirit of the site, nor a detachment from the devising space. The dancers' embodiment of site was replaced by a more cognitive understanding of light structure property; movement potential, size, position, visibility and developmental function (shatter, stretch etc.), together with a visual understanding of resultant form created when dancer and light structure intersect. Detachment from the site was impossible as the choreography was based on a relational whole.

Rather than being seen as in a theatre-style, or a site-specific style, the choreography observed as part of the *OSV as Choreographic Tool* project can be seen as sitting somewhere else, but connected to them. In essence, what was observed was a 'system-specific' choreography. The term system-specific describes processes that mirror three of Hunter's (2005) four stages of site-specific choreography, whilst pointing towards the boundaries and functional properties inherent within the system. In the first instance, the dancers learned the system capabilities, rather than experiencing the site. Where Hunter might express the site, the dancers explored the structural capabilities of the system and instead of embodying the essence of the site, the choreography was formed by envisioning the dancer/ structure hybrid.

Sita Popat (2015) examines a technologically defined space in relation to site-specific choreography when she examines Gibson/ Martelli's installation *VISITOR* (2011). Part of the installation, entitled *Vermillion Lake*, consists of an interactive space made up of a log cabin, inside which the visitor finds the back half of a rowing boat complete with oars. On sitting in the boat, the front half appears on a projection

screen along with a projected environment. The visitor finds him or herself on a waterway through an environment inspired by the Canadian Rockies. As the visitor ‘rows’ the filmed projection is seen to move – the force feedback built into the oars developing the sense of physical effort needed to row the boat. Popat argues for the installation to be seen as a site-specific work noting that the virtual projected environment was developed through the real experiences of the artist:

In *Vermillion Lake*, the physical location is the art gallery while the virtual landscape is a representation of the phenomenological qualia (or essence) of the Canadian Rockies as experienced by the artists [...] The installation aims to capture the pre-cognitive, embodied engagement that the artists felt in the Rockies and present it as a parallel experience for the visitor’s sensing body in the virtual environment. Yet can it be defined as site-specific? (Popat, 2015: 166)

Popat questions the legitimacy of defining the piece as site-specific performance because of its reliance on the representation of an environment, rather than using the environment proper. Ultimately she comes to the conclusion that the description is valid. She acknowledges that the definition of ‘site’ is somewhat different to those described by Hunter (2005) or Munjee (2014), but points towards an embodiment of the site within the visitor. Popat develops Bolter and Gromala’s (2003) work relating to mixed reality environments, in which they propose the ‘window’ and the ‘mirror’, by which they suggest that a virtual environment can act as a window to a virtual world, but the mechanisms which create the virtual world are evident to the user. In being aware of both window and mirror, the user appreciates the experience fully. Popat goes a step further and details the need for a ‘door’:

I propose that digital artefacts designed as mixed reality environments offer a third mode of engagement – as a door. The door is accessed by the experience of the moving body within the artwork, offering an active counterpart to the otherwise inherently visual/ cognitive orientation of the reflective/ transparent binary. (Popat, 2015: 169)

The introduction of the notion of the door is key to Popat's assertion that the virtual environment found in *Vermillion Lake* can be considered site specific. The fact that the visitor has to engage and move bodily within the installation allows him or her to engage at an embodied level with the work. The visual projection of the body of water in the mountains acts as a window, with the visitor aware of the log cabin surroundings, the half a boat and the projection screen – the mirror. The act of rowing, the sense of place as movement occurs through the environment on the screen and the replication of the qualia of the Rockies through soundscape, camera work and sense of vast openness, allow the visitor to move through the door into an embodied site – 'Her embodied practice of the potentials of that virtual place brings it into focus as a space, the site of a particular set of phenomenological qualia – the site-specificity of this installation' (Popat, 2015: 173).

The *OSV as Choreographic Tool* project is clearly a technologically generated environment. As explored in earlier chapters, it can be seen as a realisation of a virtual environment, with the intangible elements of virtual reality given form in real space. However, again, it is at odds with Popat's technologically focussed definition of site-specific. As in Hunter's (2005) and Munjee's (2014) discussions, Popat's focus is on a link to a specific place. In this case, the specificity comes from the artistic origins of the piece – the Canadian Rockies. Both Popat (2015) and Hunter (2005) refer to a

site's 'essences' as being that which is a fundamental intangible quality found in a specific place and something to be explored as a stimulus or transmitted as an experience.

This is where *OSV as Choreographic Tool* stands at odds with the definition. The Dynamic Light Structures created by the dancers during the project have no link to an external reality; they act as pure form. The manipulable environment created through the choreography has no underpinning communal or experientially agreed qualia. If a final dance piece were to be created, finalised and presented, each member of the audience would experience the space as an individual, with no common understanding or positioning of the space. Any final performance could be read, understood or experienced by each individual as freely as a piece of abstract art – free from any defining reality.

Technologically devised spaces constantly develop and the performance environment will inevitably seek to make use of such advances. As Popat suggests '...more contemporary definitions are essential now, as previous definitions were devised for a world in which the blending of digital and physical was less possible and less prevalent than it is today' (Popat, 2015: 176). The *OSV as Choreographic Tool* project immersed a group of dancers in one such technological environment that not only blended the physical and the digital, but also blended the role of performer and operator. The project saw the dancers subsume the role of operator into the choreographic process with different types of bodily movement affecting the embodied experience of choreography. The method of generating dance phrases was completed in concert with the Dynamic Light Structures so as to create an-object-in-

space, the ontology of which is defined through its relational connection between projected light and dancer.

The method of choreography was seen to sit outside that of both the traditional concepts of performance as theatrical presentation and established thinking relating to site-specific choreography, both set in physical real world spaces, and mixed media environments. The concept of the system-specific performance defines a choreographic method that sees not a reliance on the 'essence' of a real world space that can be embodied and revealed through dance, but an environment where the mechanics of a system are explored and lead the choreographer to movement phrases through implicit instructions inherent in the system, almost like sequenced code.

6 Conclusions

Remarkably little has been written about the phenomenon of light through haze as a discreet subject. Discussion tends towards the general practice of light for performance or how haze can be used to condition a stage space to create a specific effect. This research has examined the light/ haze relationship in order to more clearly define the resultant physical manifestations as Dynamic Light Structures and to articulate their place within the performance and installation frame. By engaging with alternative lighting instruments and methods of lighting control, the research sought to subvert the tacit body of knowledge historically established in performance lighting practice. The practical performance and installation pieces that formed the central part of this research thesis were driven by a number of central research questions, the findings of which can be summarised here.

1. How can Dynamic Light Structures form a coherent scenographic environment for performance?

For Joslin McKinney and Helen Butterworth, scenography is –

...defined by the manipulation and orchestration of the performance environment. The means by which this is pursued are typically through architectonic structures, light, projected images, sound, costume and performance objects or props. (McKinney and Butterworth, 2009:4)

What is striking is that the Dynamic Light Structures used within *Etched* fall into a number of these categories at the same time. Their initial instantiation is of course light and the projected image. Together with the haze-conditioned space, the light develops into architectonic structures and develops further still into performance objects in conjunction with the live body in the space. Scenographically, the Dynamic Light Structure is all of these things but crucially, more besides. Whilst establishing a scenographic environment in an architectonic sense, such as the light tunnel in *Etched*, with defined walls, floor and ceiling, the structure offers a fluid and malleable space and one which can be reformed when in immediate proximity to the live body or prop.

With regard to the research question, the word ‘coherent’ is key. The structures themselves are presented as pure form, but establish their own logic in the minds of a viewing audience when in relation to the live body. Their coherence comes not from

an objective materialism, as one of Kantor's (1993) poor objects might display, but a subjective existence that forms purely in the mind of the observer throughout the period of the performance. With no relation to a predefined object that may exist outside of the performance frame, the Dynamic Light Structure demands engagement by the viewer. It is a cool medium as defined by McLuhan (1997) and it is precisely this lack of detail that activates in position within the scenographic frame. It asks questions – 'What is my role here?', 'what is my relationship with the live body?', 'how do I define this space?', 'is the body manipulating me, or I the body?', 'am I protagonist, antagonist, or both?'. The lack of recognisable detail (such as weight, material construction, functional purpose) other than a fluid like texture caused by the languid flow of haze through the space and the form itself, means that the observer has no formal knowledge of the structure through prior experience or touch. There is simply a gradual understanding of place within the performance that is determined solely through vision.

The *OSV as Choreographic Tool* project identified another way in which the Dynamic Light Structure can be seen scenographically. Two common forms of choreographic dance practice are seen as working within either a theatrical style or a site-specific style, but as has been demonstrated the functional, manipulable and shifting ontology of the Dynamic Light Structure does not fit comfortably with either of these methods of working. Examining the practice of both Victoria Hunter and Tara Munjee, it became clear that the process of immersion that the site-specific choreographer undergoes with relation to the site could not be paralleled within a light structure informed space. The abstract nature of the forms and the intangibility of the substance of the structures resists the processes of embodying the site (Hunter 2005)

and also those that relate to the historical understanding of the site in relation to perceived space, lived space and conceived space (Munjee, 2014).

In this way, established choreographic methods are difficult to apply to the *OSV as Choreographic Tool* project and the research proposes system-specific performance as a new term that better describes the process of performance making when using such a mechanism. System-specific performance allows for similar types of process to be explored in the devising of new work, but one that examines the technological boundaries and capabilities of a technical system as central to the performance making rather than the aesthetic, historical, practical and phenomenological experience of place.

2. How can Dynamic Light Structures be manipulated so as to 'perform' in conjunction with a human performer?

The *OSV as Choreographic Tool* project examined a process of performance creation. In observing four dancers, the choreographic process was seen to extend into the manipulation of the control surfaces used to instruct the light structures. The choreographic process observed mirrored closely those suggestions made by Hunt (2011) in relation to his call for a Lighting Artist rather than a simple lighting operator. The dancers were not only responsible for the creation of the physical movements within the space, but also the manipulation of the space itself as a plastic environment that in turn informed movement.

By looking at Kate Sicchio's work on live coding in dance choreography, it became clear that the Dynamic Light Structures were not simply under the control of the performer/ technicians, but demonstrated an agency within the space through being able to direct movement. Just as a live code choreographer will present instructions to dancers through projected programming, so too the Dynamic Light Structures presented a set number of possible movements that could be performed in relation to them. In some ways this became restricting to the dancers, as they could not move away from the structures, else risk disappearing into the blackout of the rest of the space.

What resulted was dance that had an inextricable link to the Dynamic Light Structures; movements were completed in tandem with the evolving environment with the choreographic process being informed by the position and makeup of the structures. Further movements then informed the next phase of the scenic manipulation. The culmination of this way of working presents a development of Maxine Sheets-Johnstone's (1979) notion of objects-in-motion as distinct from an object in motion. The idea that a new object is created through dance choreography that conflates both dancer as body and the perceived movement of dance as two distinct elements that combine as one, paves the way for the proposal of objects-in-space which see the live body and Dynamic Light Structure fuse into one symbiotic presence.

The very act of controlling the light structures became a performative undertaking in itself, with dancers moving from one type of bodily focus to another as they transitioned from performance space to control area. Again, developing Sheets-

Johnstone's (2010) thinking, the process of choreographic movement followed by the fine motor control of the hand gesture at the iPads extends her idea on kinesthetic feeling and kinesthetic perceiving. The somatic bodily experience embracing both kinesthetic feeling and perceiving in the creation of the dance movement shifted when controlling the Dynamic Light Structures. The extension of the gesture from control surface to volumetric presence in the center of the performance space splits the feeling of gestural movement at the hands with a perception of creating presence in the space.

The process became a new learning experience and one that started to find parallels in the developing of skills related to computer gaming control, with trial, error, timing and repetition needed to cement choreographic movement and gestural manipulation together. And always, it is the Dynamic Light Structure at the heart of this process, defining possible movement combinations, keeping the live body close to create an object-in-space embrace, and presenting itself as an extension of a technician/performer. As Ben, one of the dancers suggested '...and because the light was always shifting, it was like having a constantly moving set or another person with you'⁵⁹

3. What are the aesthetic and performative qualities of Dynamic Light Structure scenography?

To be able to play with light as a seemingly tangible substance is not an experience that is common. *On Slow Violence* offered that experience and presented a space that put visitors, control system and Dynamic Light Structures in the same proximity and

⁵⁹ Transcript from Session 3 – Choreographic Reflections. See Appendix D

invited people to play. Respondents to questionnaires gave feedback that related to a multiplicity of roles and experiences within the space and much of what was described was individual and personal. However, themes did emerge from those responses that enabled the research to more clearly articulate the relationship between participant and Dynamic Light Structure.

A theme that appeared frequently was that of the strange which can be allied closely to Causey's (1999) notion of the technical uncanny. The behavior and visualisation of the light structures themselves is unusual and was surprising to the visitors who on first encounter expected them to have some kind of tangible substance and present some kind of haptic feedback on touch. As with all new experiences, adjustment takes time and comments described initially feeling uneasy and potentially frightened by the environment, feelings that in some cases would then give way to a sense of excitement or empowerment.

The aesthetic qualities of the Dynamic Light Structures are intrinsically linked to the experience of those engaged with them. In an interactive installation setting, those experiences are built not only with a visual appreciation of the light structures, but of the opportunity to engage with them in a bodily sense. This may be through the creation of a digital double as a hand gesture is remediated into a volumetric presence in the space, or it may be the act of placing a limb slowly through a light plane to create areas of negative space. It may be the gradual sense of understanding as the mysteries of a control surface slowly reveal themselves, or it may be the wordless connection between two people in the space working together to create a developing image. The aesthetic quality then is a gestalt aesthetic; an aesthetic experience that

combines all of these varying relationships and one which can change and develop through the intervention of other live bodies as well as the manipulation of the space itself.

The use of the Dynamic Light Structure in a performance environment such as *Etched* creates a different kind of aesthetic. The light scenography acts both as a visually tangible yet physically intangible object and acquires properties similar to those observed in a virtual reality environment. The light structures sweep across the sitting audience and extend the scene beyond them, placing them in the same abstract space as the performance. Again, responses described an altering of spatial awareness, a sense of being in a virtual space, or a sense of the otherworldly. The similarities to a VR environment extend only so far and in a sense the environment is more ‘real virtuality’, with graphics being drawn in a real world space without the need for some kind of goggle prosthesis. The performative nature of the Dynamic Light Structure is thus defined by its use. The *Etched* audience described the position of the structures within the performance by trying to make sense of the live body/ light/ haze interface. As might be expected of an audience at a performance, sense is made of the visual spectacle by attaching meaning to what is seen. The participants at the *On Slow Violence* installation did not need to imbue the structures with meaning. The performative nature of the structures was formed through personal experience and engagement, together with a sense of relationship between other bodies in the space, with the control system, with the Dynamic Light Structure as tangible entity, or an extension of the self.

6.1 Implications

The starting point for this research was an innate curiosity with the phenomenon of light travelling through a particle system to create a visible entity. This spectacle can be seen most clearly when witnessing large-scale music events, where the practice is common. Powerful lighting fixtures emit a very focussed output that produce very sharply defined ‘beams’ of light when in conjunction with haze. The resultant scene can be dramatic and visually impactful when designed to work with the live music being performed on the stage.

The design principles relating to such an event take the music as a cue and as the primary text, which in turn defines the logic of the subsequent lighting design. In this respect, the relationship between a contemporary rock concert and its supporting lighting is very similar to that described by Adolphe Appia (1981) in relation to his thoughts on lighting and opera. The research questions that inform this thesis were devised to explore the ways in which the phenomena of light through haze could be used as a functional tool for the development of live performance and installation rather than acting as an addendum to a performance or in some way being solely informed by the performance.

Although not directly explored in this thesis, the Dynamic Light Structure could clearly have a meaningful impact on concert lighting, particularly that which currently supports commercial music performances. Such performances benefit from lighting which can be improvised to an extent, but comprise visuals that are limited by the predefined design of the lighting hardware. Hunt’s (2011) provocation, which calls for the Lighting Artist, focuses on the techniques used for lighting stage drama, but

could be extended to concert lighting through a system akin to the iPad control surfaces used to generate Dynamic Light Structures. The haptic nature of the iPad could be used in conjunction with traditional concert lighting systems to provide an alternative and complimentary style of performance visual. The natural development of this research would be to work with high output projectors, or laser systems to develop an intuitive control method for concert lighting to provide a more organic and fluid type of lighting visual as a counterpoint to the more rigid 'air graphics' (Moody, 2009) currently available.

The research does highlight the materiality of the Dynamic Light Structure and forces light to become dislocated from illumination, traditionally seen to be its primary function: 'the first basic requirement of stage lighting is sufficient illumination to achieve positive visibility.' (Reid, 2001: 3). The tangibility of the light structures offers a freedom from that shackle and presents light as an object rather than a tool needed for visibility. When discussing colour and design, Pamela Howard (2009) draws on the notion of an emotional palette and the use of colour and texture to affect an emotional state of being. Dynamic Light Structures have been shown to have an affecting phenomenological impact on those engaging with them and this presents implications for scenographic practice. The Dynamic Light Structure is now a new addition to the creative toolbox and can expand the ways in which light is seen to behave with other objects on the stage. Illumination is not necessarily the primary concern of contemporary performance, and the experimentation with silhouette, the monochromatic, dark spaces and symbiotic light/ material collage will offer new paths of devising.

The Dynamic Light Structure doesn't only offer new materialities with which to work. The volumetric nature of the tool affords new ways to alter a room and play with the relationship between what Howard terms 'architectural space (exterior space) and the dramatic space (interior space)' (Howard, 2009:21). The ability to define 'walls', 'ceilings' and 'floors', together with animated planes of light that can morph, split and reform at a moments notice, challenge a fixed notion of place. The ability to manipulate a set within a static architectural surround is nothing new, but the ability to render external walls invisible through darkness and reconfigure the space through animated boundaries again extends the scenographic toolbox into areas more associated with virtual reality, but without the need for technological prosthetics.

The system through which the Dynamic Light Structures were brought into being has implications for technical performance practice. The research demonstrated ways in which non-traditional lighting instruments could be manipulated into the service of performance and installation design. Mick Gordon, a musician and composer working in the field of computer game audio production presented a talk on his philosophy on creating a new style of music composition for video games. The talk was given as part of the Games Developers Conference 2017⁶⁰ in San Francisco, and almost as a mantra, he repeatedly came back to the phrase 'Change the process, change the outcome.' (Gordon, 2017). The call was clear; to build innovative creative artefacts, the processes of construction must alter.

With a change of process in mind, The Dynamic Light Structure system promotes a new way of thinking about how light can be manipulated during a live event. It

⁶⁰ 'DOOM' Behind the music. In *GDC Game Developers Conference* [online] no date [cited 30 November 2017]. Available from < <https://www.gdevault.com/play/1024068/-DOOM-Behind-the>>

removes elements of the pre-programmed theatre stack (cue-to-cue) lighting and encourages the technician to explore new relationships between their role and the performance creation process. In changing that process, the resultant scene can be demonstrably removed from that which is described in performance lighting textbooks. Using a flexible software solution such as *Isadora* at the heart of a bespoke performance control system (and equally this could have been *Max/MSP*, *Pure Data*, *Processing*, or the like), means that creativity is no longer reliant on the predetermined functions of a mass produced lighting desk, or the well trodden visuals created by commercial lighting fixtures. The creative processes that underpin the performance and installation work presented in this thesis challenge pre-conceived ideas of the technician and the role of the technical elements within contemporary performance.

The Dynamic Light Structure system offers new ways for performers to become integrated into the technical operation of performance visuals and work alongside dedicated technicians when building bespoke control parameters. Once constructed and configured the system becomes an intuitive tool responding to the touch and sweep of hand movements, allowing performers to become integrated into the evolving stage mechanics of a performance scene. Pedagogically, this practical method of lighting and performance control could invigorate the exploration of performance practice both from a technical training perspective, but also from that of the performer, director or dramaturg. The examination of light as object can extend beyond experimental performance as seen in this research, and could be used as part of an analytical framework that seeks to examine all types of performance and installation that uses light in some combination with haze.

The *OSV as Choreographic Tool* project observed undergraduate and postgraduate dance students developing new work and new systems of working whilst engaging with the Dynamic Light Structure control system. In order to maximize the impact of this research, similar systems could be extended to school programmes, and installation/ performances could be presented at conferences and festivals, but health and safety concerns within non-performance environments and practicalities in isolating alarm systems will always make this challenging.⁶¹

The start of this research spiral was grounded in a tacit body of knowledge that was defined by accepted and formalised practices in the field of performance lighting and a need to disrupt and undermine that body of knowledge. The drive to create the Dynamic Light Structure as a perceivable object in space, disassociated from a boundary surface or object within a performance scene, allowed it to be examined as a discrete entity. In doing this, light could be elevated in terms of the scenic hierarchy and raised from a supporting or subordinate role within the scene to a material presence capable of challenging the live body for dominance. Within contemporary performance, but particularly that which is described as postdramatic, the Dynamic Light Structure is capable of defining its own logic within a scene (Lehmann, 2006). The presence of this new material object can create performance imagery that is not determined by the preset capabilities of existing theatrical lighting systems, but is flexible and intuitive enough to work alongside existing creative processes, whilst exerting a unique emphasis upon them.

⁶¹ Further discussions on the practical limitations of the research can be found in Appendix F

Laura Collins-Hughes writing in the New York Times focuses on a number of Broadway and Off-Broadway shows that utilize some sort of particle system within the scene, be it to create a realistic smoke for a disaster scene, or to give the impression of the fog of war with mist creeping across a battleground. One of her interviewees, designer Brian Tover, suggests that ‘haze makes light a sexy thing.’ (Collins-Hughes, 2016), broadly hinting at the symbiotic nature of the relationship between theatrical haze and light and alluding to some kind of heightened state that is achieved when the two elements combine. The Dynamic Light Structure gives scope, definition and substance to that relationship.

Bibliography

- Allain, P. and Harvie, J. (2006). *The Routledge companion to theatre and performance*. 1st edn. New York: Taylor & Francis.
- Appia, A. (1981). *The work of living art & man is the measure of all things: a theory of theatre*. Miami: University of Miami Press
- Aronson, A. (2005). *Looking into the abyss: Essays on scenography*. Ann Arbor: The University of Michigan Press.
- Auslander, P. (2008). *Liveness: Performance in a mediatized culture*. 2nd edn. New York: Taylor & Francis.
- Baugh, C. (2005). *Theatre, performance and technology: The development of scenography in the twentieth century*. Basingstoke: Palgrave Macmillan.
- Bay-Cheng, S., Kattenbelt, C., Lavender, A. and Nelson, R. (2010). *Mapping intermediality in performance*. 1st edn. Amsterdam: Amsterdam University Press, Netherlands.
- Beacham, R. (1993). *Adolphe Appia: Texts on theatre*. London: Routledge.
- Bishop, C. (2011). *Artificial hells: Participatory art and the politics of spectatorship*. London: Verso Books.
- Blast Theory (2017) Desert Rain. *Blast Theory*. [Online] Available from: <https://www.blasttheory.co.uk/projects/desert-rain/> [Accessed 16 Nov. 2017]
- Bolter, J. and Grusin, R. (2000). *Remediation: Understanding new media*. 6th edn. Cambridge, MA: The MIT Press.
- Bourriaud, N. (1998). *Relational aesthetics*. Dijon: Les Presses du réel.
- Broadhurst, S. and Machon, J. (2011). *Performance and technology: Practices of virtual embodiment and interactivity*. 1st edn. Basingstoke: Palgrave Macmillan.

- Broadhurst, S. and Machon, J. (2012). *Identity, performance and technology: Practices of empowerment, embodiment and Technicity*. 1st edn. Basingstoke, Hampshire [England]: Palgrave Macmillan.
- Burian, J. (1970). Josef Svoboda: Theatre artist in an age of science. *Educational Theatre Journal*, [Online] 22(2), pp.123-145. Available from: http://www.jstor.org/stable/3205717?sid=primo&origin=crossref&seq=1#page_scan_tab_contents [Accessed 2 Mar. 2017].
- Burian, J. (1971). *The scenography of Josef Svoboda*. Middletown, CT: Wesleyan University Press.
- Cadena, R. (2006). *Automated lighting: The art and science of moving light in theatre, live performance, broadcast, and entertainment*. Amsterdam: Focal Press.
- Carlson, C. (2014). Umbrellium's Assemblance at digital revolution, London. *Cool Hunting*. [Online] Available from: <http://www.coolhunting.com/culture/umbrelliums-assemblance-at-digital-revolution> [Accessed 2 Mar. 2017].
- Carnegy, P. (2006). *Wagner and the art of the theatre*. Yale University Press.
- Cascone, K. (2003). Grain, sequence, system: Three levels of reception in the performance of laptop music. *Contemporary Music Review*, 22(4), pp.101-104.
- Causey, M. (1999). The screen test of the double: The uncanny performer in the space of technology. *Theatre Journal*, [Online] 51, pp.383-394. Available from: http://www.jstor.org/stable/25068707?seq=1#page_scan_tab_contents [Accessed 2 Mar. 2017].
- Clark, J. and Ando, T. (2014). Geometry, embodied cognition and choreographic praxis. *International Journal of Performance Arts and Digital Media*, 10(2), pp.179-192.

- Collins, N. (2011). Project MUSE - live coding of consequence. *Leonardo*, [Online] 44(3), pp.207-211. Available from: <https://muse.jhu.edu/article/431861> [Accessed 2 Mar. 2017].
- Collins-Hughes, L. (2016). 'Where There's Smoke, There's Stagecraft.' [Online] Nytimes.com. Available from: https://www.nytimes.com/2016/03/27/theater/where-theres-smoke-theres-stagecraft.html?_r=0 [Accessed 11 Mar. 2017].
- Coniglio, M. (2011). Materials vs Content in Digitally Mediated Performance. In: S. Broadhurst and J. Machon, ed., *Performance and technology: Practices of virtual embodiment and interactivity*, 1st edn. Basingstoke: Palgrave Macmillan.
- Conrad, E. (n.d.). *The manifesto of Tactilism by F.T. Marinetti*. [Online] Available from: http://peripheralfocus.net/poems-told-by-touch/manifesto_of_tactilism.html [Accessed 2 Mar. 2017].
- Craig, E. (2009). *On the art of the theatre*. United States: BiblioLife.
- Crisafulli, F. (2013). *Active light: Issues of light in contemporary theatre*. Dublin: Artdigiland.com.
- Csikszentmihályi, C. (2006). Control. In: C. Jones, ed., *Sensorium: Embodied experience, technology and contemporary art*, 1st edn. Cambridge, MA: MIT Press.
- deLahunta, S. (2002). Virtual reality and Performance. *Art and Performance*, 22(1), pp.105-114.
- de Souza e Silva, A. (2006). From Cyber to hybrid: Mobile technologies as interfaces of hybrid spaces. *Space and Culture*, 9(3), pp.261-278.
- Dixon, S. (2007). *Digital performance: A history of new media in theatre, dance, performance art, and installation*. Cambridge, MA: MIT Press.

- Eckersall, P. Grehan, H. Scheer, E. (2017). *New media dramaturgy: Performance, media and new-materialism*. London: Palgrave Macmillan.
- Ellard, G. and Johnstone, S. (2015). *Anthony McCall: Notebooks and conversations*. 1st edn. United Kingdom: Lund Humphries Publishers.
- Engberg, M. (2013). Performing Apps: Touch and gesture as aesthetic experience. *Performance Research*, 18(5), pp.20-27.
- Gallagher, S. (2006). *How the body shapes the mind*. Oxford: Oxford University Press.
- Giannachi, G. (2004). *Virtual theatres: An introduction*. New York: Taylor & Francis.
- Giesekam, G. (2007). *Staging the screen: The use of film and video in theatre (theatre and performance practices)*. New York: Palgrave Macmillan.
- Gordon, M. (2017) 'DOOM': Behind the music. *Game Developers Conference*, [Online]. Available from: <https://www.gdcvault.com/play/1024068/-DOOM-Behind-the> [Accessed 30 Nov. 2017].
- Gordon, T. (2010). *McLuhan: A guide for the perplexed*. Continuum.
- Grau, O. (2010). *MediaArtHistories*. Cambridge, MA: MIT Press.
- Griffin, C. (2012). *Line describing a cone, Anthony McCall 1973 | Tate*.
- Hansen, M. (2001). Embodying Virtual Reality: Touch and Self-Movement in the Work of Char Davies. *Critical Matrix*, 12(1-2), p.112.
- Hayles, K. (1999). *How we became posthuman: Virtual bodies in cybernetics, literature, and informatics*. Chicago, IL: University of Chicago Press.
- Heller, M. (1982). Visual and tactual texture perception: Intersensory cooperation. *Perception & Psychophysics*, 31(4), pp.339-344.

- Howard, P. (2009). *What is Scenography? - 2nd edition*. 2nd edn. New York, NY: Routledge.
- Huhtamo, E. (2010). Twin-Touch-Test-Redux: Media Archaeological Approach to Art, Interactivity, and Tactility. In: O. Grau, ed., *MediaArtHistories*, 1st edn. Cambridge, MA: MIT Press.
- Hurst, A. Vivas, J. (2016). "iPad Svoboda, the Physical Theatre of Projected Light", in: Marstein, Helene Gee and Arthur Maria Steijn (ed.). *Inhabiting the Meta Visual. Contemporary Performance Themes*. Oxford: Inter-Disciplinary Press
- Hunt, N. (2011). Lighting on the hyperbolic plane: Towards a new approach to controlling light on the theatre stage. *International Journal of Performance Arts and Digital Media*, 7(2), pp.205-220.
- Hunter, V. (2015). *Moving sites: Investigating site-specific dance performance*. London, United Kingdom: Routledge.
- Joy, A. and Sherry, Jr., J. (2003). Speaking of art as embodied imagination: A Multisensory approach to understanding aesthetic experience. *Journal of Consumer Research*, 30(2), pp.259-282.
- Kantor, T. (1993). *A journey through other spaces: Essays and manifestos, 1944-1990*. 1st edn. Berkeley: University of California Press.
- Kershaw, B. and Nicholson, H. (2010). *Research methods in theatre and performance (research methods for the arts and the humanities)*. 1st edn. Edinburgh: Edinburgh University Press.
- Kirkpatrick, G. (2011). *Aesthetic theory and the video game*. Manchester: Palgrave Macmillan.
- Klich, R. and Scheer, E. (2011). *Multimedia performance*. 1st edn. New York, NY: Palgrave Macmillan.

- Kloetzel, M. and Pavlik, C. (2009). *Site dance: Choreographers and the lure of alternative spaces*. 1st edn. Gainesville: University Press of Florida.
- Kozel, S. (2008). *Closer: Performance, technologies, phenomenology*. Cambridge, MA: The MIT Press.
- Kwastek, K. (2013). *Aesthetics of interaction in digital art*. Cambridge, MA: MIT Press.
- Kobialka, M. (1993). The quest for the self: Thresholds and transformations. *A journey through other spaces: Essays and manifestos, 1944-1990*. 1st edn. Berkeley: University of California Press.
- Lakoff, G. and Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to western thought*. 1st edn. New York: Basic Books.
- Lehmann, H. (2006). *Postdramatic theatre*. 1st edn. New York: Taylor & Francis.
- Levinson, P. (2001). *Digital McLuhan: A guide to the information millennium*. New York: Taylor & Francis.
- Manovich, L. (2013). *Software takes command: Extending the language of new media*. New York: Continuum Publishing.
- Marks, L. (2002). *Touch: Sensuous theory and multisensory media*. Minneapolis: University of Minnesota Press.
- McCandless, S. (1958). *A method of lighting the stage*. 4th edn. New York: Theatre Arts Books.
- McKinney, J. (2008). *The Nature of Communication Between Scenography and its Audience*. PhD thesis, University of Leeds.
- McKinney, J. and Butterworth, P. (2008). *The Cambridge introduction to Scenography*. 1st edn. Cambridge, UK: Cambridge University Press.

- McKinney, J. and Iball, H. (2010). Researching scenography. In: H. Nicholson and B. Kershaw, ed., *Research methods in theatre and performance*, 1st edn. Edinburgh: Edinburgh University Press.
- McLuhan, M. (1997). *Understanding media: The extensions of man*. 1st edn. London: Routledge, an imprint of Taylor & Francis Books.
- Milgram, P. and Colquhoun, H. (2013). A taxonomy of real and virtual world display integration. In: Y. Ohta and H. Tamura, eds., *Mixed reality: Merging real and virtual worlds*, 1st edn. Berlin: Springer-Verlag Berlin and Heidelberg GmbH & Co. K.
- Moody, J. (2009). *Concert lighting: Techniques, art and business*. 3rd edn. Amsterdam: Elsevier/Focal Press.
- Moorefield, V. (2005). *The producer as composer: From the illusion of reality to the reality of illusion*. Cambridge, MA: MIT Press.
- Moran, N. (2008). *Performance lighting design: How to light for the stage, concerts, exhibitions and live events*. London: A & C Black Publishers.
- Munjee, T. (2014). Appreciating “Thirdspace”: An alternative way of viewing and valuing site-specific dance performance. *Journal of Dance Education*, 14(4), pp.130-135.
- Nelson, R. (2013). *Practice as research in the arts: Principles, protocols, pedagogies, resistances*. Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.
- Nixon, R. (2011). *Slow violence and the environmentalism of the poor*. Cambridge, MA: Harvard University Press.
- Oddey, A. and White, C. (2006). *Potentials of spaces: The theory and practice of Scenography & performance; Ed. By Alison Oddey*. 1st edn. Bristol: Intellect Books.

- Palmer, S. (2013). *Light: A reader in theatre practice*. New York: Palgrave Macmillan.
- Pavis, P. (2012). *Contemporary Mise en scene: Staging theatre today*. 1st edn. New York: Taylor & Francis.
- Pearson, M. (2010). *Site-specific performance*. Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.
- Pilbrow, R. (2008). *Stage lighting design: The art, the craft, the life*. London: Nick Hern Books.
- Popat, S. (2015). Placing the body in mixed reality. In: V. Hunter, ed., *Moving sites: Investigating site-specific dance performance*, 1st edn. London, United Kingdom: Routledge.
- Popat, S. and Palmer, S. (2005). Creating common ground: Dialogues between performance and digital technologies. *International Journal of Performance Arts and Digital Media*, 1(1), pp.47-65.
- Popat, S. and Palmer, S. (2008). Embodied interfaces: Dancing with digital sprites. *Digital Creativity*, 19(2), pp.125-137.
- Popat, S. and Preece, K. (2012). Pluralistic presence: Practicing embodiment with my avatar. In: J. Machon and S. Broadhurst, ed., *Identity, performance and technology. Practices of empowerment, embodiment and technicity*, 1st edn. Basingstoke, Hampshire [England]: Palgrave Macmillan.
- Ravetto-Biagioli, K. (2016). The digital uncanny and ghost effects. *Screen*, 57(1), pp.1-20.
- Reid, F. (2001). *The stage lighting handbook*. 6th edn. New York: Taylor & Francis.

- Remshardt, R. (2010). Posthumanism. In: S. Bay-Cheng, C. Kattenbelt, A. Lavender and R. Nelson, eds., *Mapping intermediality in performance*, 1st edn. Amsterdam: Amsterdam University Press.
- Rosenthal, J. and Wertenbaker, L. (1972). *The magic of light: The craft and career of Jean Rosenthal, pioneer in lighting for the modern stage*. 1st edn. Boston: Little Brown and Company.
- Salter, C. (2010). *Entangled: Technology and the transformation of performance*. Cambridge, MA: MIT Press.
- Scott, J. (2011). Dispersed and Dislocated: the construction of liveness in live intermedial performance. *Body, space & technology journal*, [Online] 11(1). Available from: <http://people.brunel.ac.uk/bst/vol11/> [Accessed 2 Mar. 2017].
- Sheets-Johnstone, M. (1979). On movement and objects in motion: The Phenomenology of the visible in dance. *The Journal of Aesthetic Education*, [Online] 13(2), pp.33-46. Available from: https://www.jstor.org/stable/3331927?seq=1#page_scan_tab_contents [Accessed 2 Mar. 2017].
- Sheets-Johnstone, M. (2010). Kinesthetic experience: Understanding movement inside and out. *Body, Movement and Dance in Psychotherapy*, 5(2), pp.111-127.
- Sicchio, K. (2014). Project MUSE - hacking choreography: Dance and live coding. *Computer Music Journal*, [Online] 38(1), pp.31-39. Available from: <https://muse.jhu.edu/article/542300> [Accessed 2 Mar. 2017].
- Soja, E. (1996). *Thirdspace: Journeys to Los Angeles and other real-and-imagined places*. Cambridge, MA: Blackwell Publishers.
- States, B. (1987). *Great reckonings in little rooms: On the phenomenology of theatre*. Berkeley: University of California Press.

- Stern, N. (2013). *Interactive art and embodiment: The implicit body as performance*. London, United Kingdom: Gylphi.
- Svankmajer, J. (2014). *Touching and imagining: An introduction to tactile art*. I.B.Tauris.
- Svoboda, J. (1996). *The secret of theatrical space: The memoirs of Josef Svoboda*. 1st edn. New York, NY: Applause Theatre Book Publishers.
- Trimingham, M. (2004). Sehr geehrter Herr Schlemmer.... *Performance Research*, 9(1), pp.81-98.
- Trimingham, M. (2012). *The theatre of the Bauhaus: The modern and Postmodern stage of Oskar Schlemmer*. New York: Routledge.
- Vasseleu, C. (1998). *Textures of light vision and touch in Irigaray, Levinas, and Merleau-Ponty*. New York: Taylor & Francis.
- Wechsler, R. (2011). Artistic Considerations in the Use of Motion Tracking. In: S. Broadhurst and J. Machon, ed., *Performance and technology: Practices of virtual embodiment and interactivity*, 1st edn. Basingstoke: Palgrave Macmillan.
- White, G. (2015). *Applied theatre: Aesthetics*. London: Bloomsbury Academic.
- Wilfred, T. (1947). Light and the artist. *The Journal of Aesthetics and Art Criticism*, [Online] 5(4), pp.247-255. Available from: http://www.jstor.org.chain.kent.ac.uk/stable/426131?seq=1#page_scan_tab_contents [Accessed 2 Mar. 2017].
- Youngblood, G. (1970) *Expanded cinema*. London: Studio Vista Ltd.

Appendices

Dynamic Light Structures

The aesthetic and performative qualities of solid light scenography for performance and installation

Table of Contents

Table of Contents	ii
Table of Images	iii
Appendix A <i>Kynaactions</i> audience questionnaires	1
Appendix B <i>Etched</i> audience questionnaires	51
Appendix C <i>On Slow Violence</i> participant questionnaires	115
Appendix D Transcripts of <i>OSV as Choreographic Tool</i> observations and discussions	167
Session 1 – Learning the system	167
Session 2 – Choreography	173
Session 3 – Choreographic reflections discussion	184
Appendix E Further discussion on the method and tools used to create Dynamic Light Structures	192
Appendix F Limitations	206

Table of Images

Image A - Visibility using a Fresnel. Created using Capture <i>Argo</i>	192
Image B - Visibility using a Fresnel with haze. Created using Capture <i>Argo</i>	193
Image C - Down light created using a hard focus profile fixture. Created using Capture <i>Argo</i>	194
Image D - Light wall created through profile shuttering. Created using Capture <i>Argo</i>	195
Image E - Performer interacts with physical light structure. Created using Capture <i>Argo</i>	196
Image F - Multiple fixed light structures. Created using Capture <i>Argo</i>	197
Image G - Mac Quantum Profile with circle gobo. Created using Capture <i>Argo</i>	198
Image H - Simple <i>Isadora</i> line graphic generation	203
Image I - <i>Isadora</i> line generation with OSC position control	203
Image J - Simple OSC control mechanism in <i>TouchOSC</i>	204

Appendix A *Kynaactions* audience questionnaires



Kynaactions Observer Questionnaire

The projected light distracted me from the dancers

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to focus on both the dancers and the light projections

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I could see what the audience member was trying to do with the projected light

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

It seemed more like an experiment than a performance

Strongly Agree

Agree

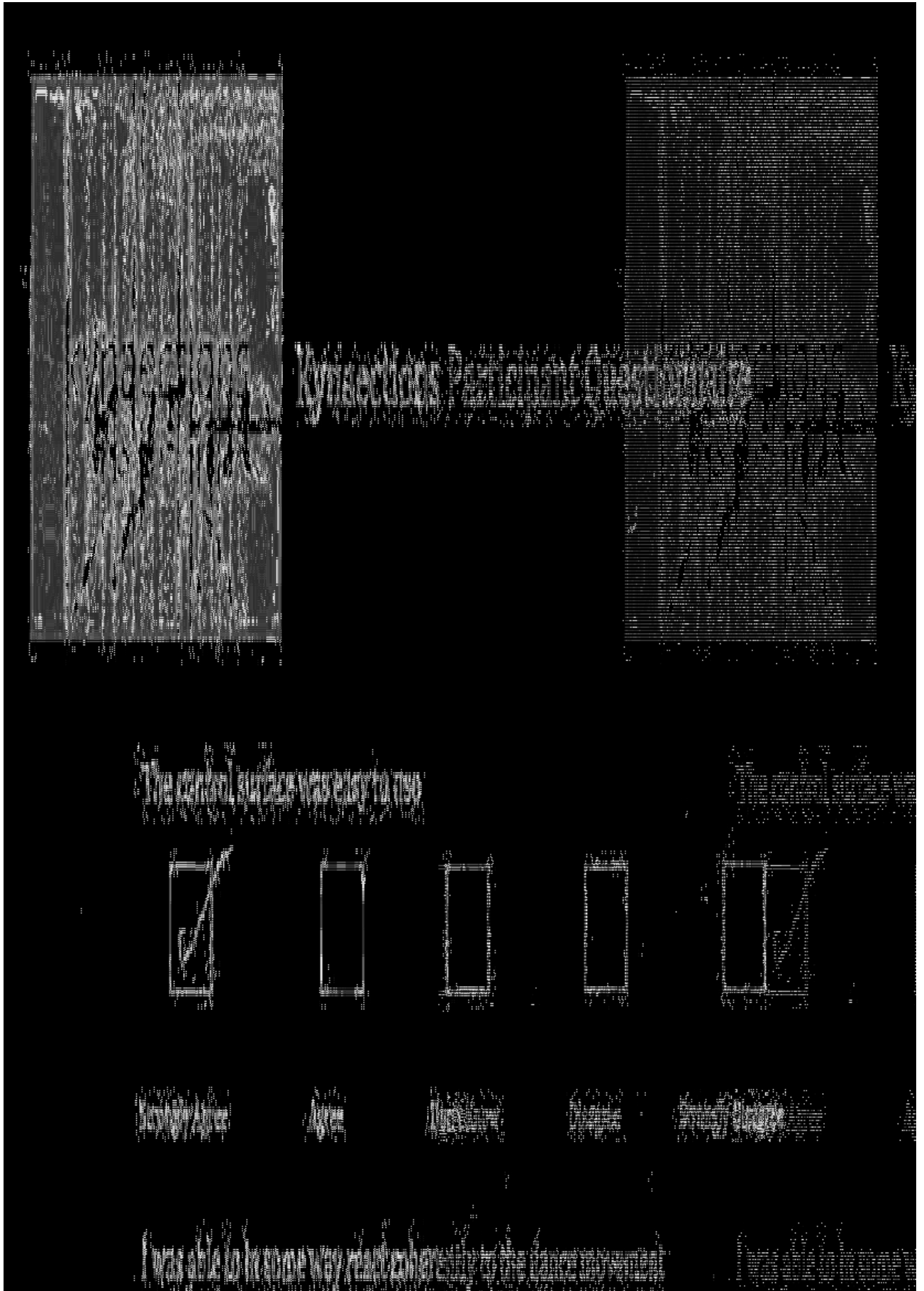
Don't Know

Disagree

Strongly Disagree

Please feel free to add any other thoughts:

It looked like a performance, however with a rehearsed choreography and light would obviously make it stronger





Kynaactions Observer Questionnaire

The projected light distracted me from the dancers

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to focus on both the dancers and the light projections

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I could see what the audience member was trying to do with the projected light

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

It seemed more like an experiment than a performance

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

Please feel free to add any other thoughts:

You weren't distracted as the dancers interacted with the light. Almost as if the light was another dancer.



Kynaactions Participant Questionnaire

The control surface was easy to use

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to in some way react coherently to the dance movement

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

My interaction made a positive contribution to the performance

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

My interaction was an enjoyable experience

Strongly Agree

Agree

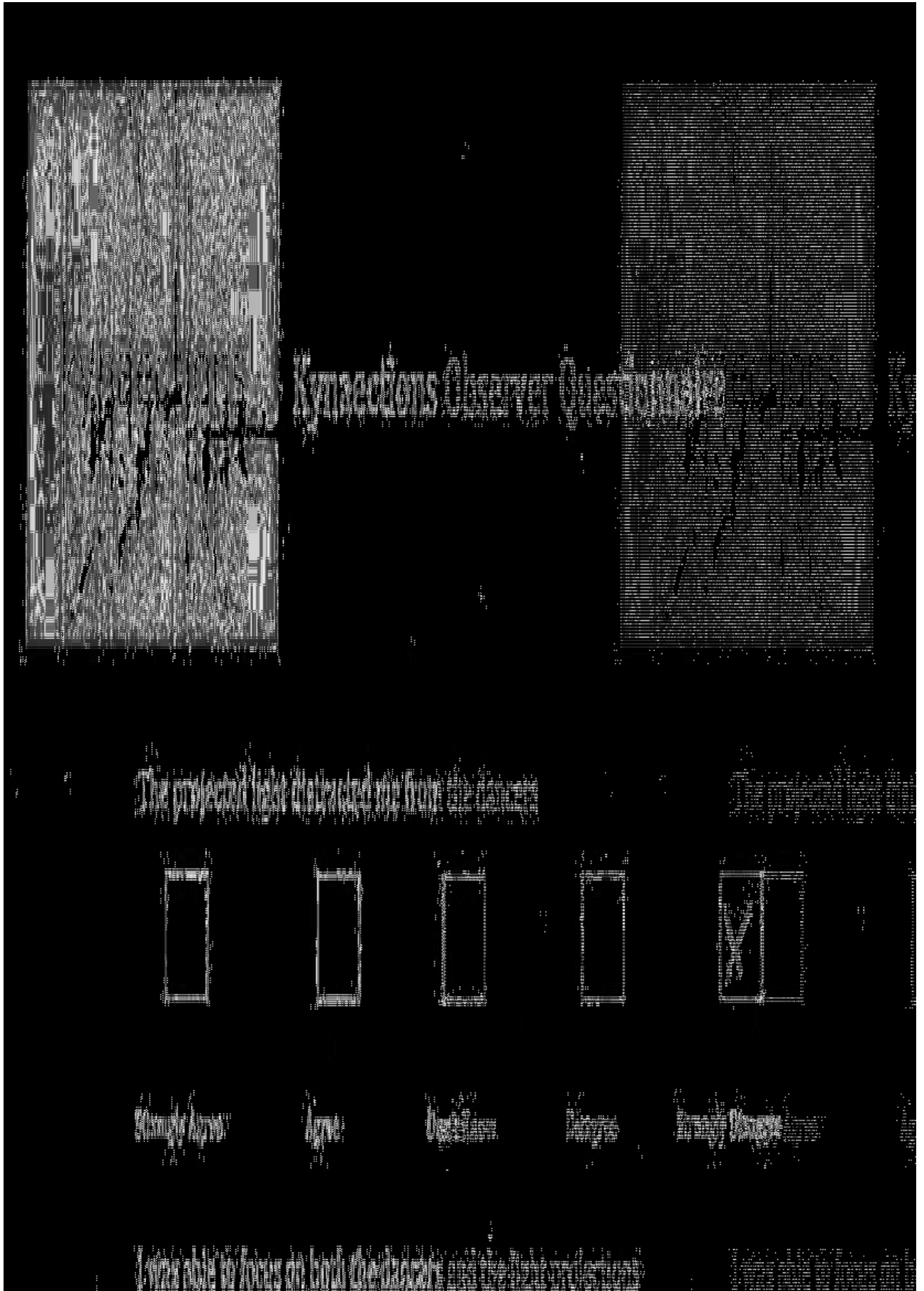
Don't Know

Disagree

Strongly Disagree

Please feel free to add any other thoughts:

It was interesting using the different tools within the programme, it is a shame they cannot be used at the same time i.e. lines + Squiggles

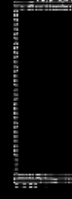
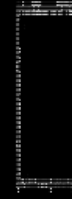




Kynaactions Participant Questionnaire



The control surface was easy to use



Strongly Agree

Agree

Disagree

Disagree

Strongly Disagree

I was able to in some way react collectively to the dance movement

I was able to in some way



Kynaactions Observer Questionnaire

The projected light distracted me from the dancers

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to focus on both the dancers and the light projections

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I could see what the audience member was trying to do with the projected light

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

It seemed more like an experiment than a performance

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

Please feel free to add any other thoughts:

It was so exciting to watch! It felt so raw and intense - It was interesting to see light as a 3D thing with the haze.
I wish the lights stayed on longer.

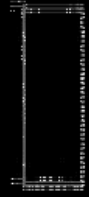
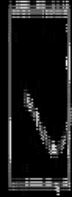
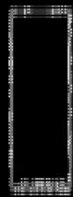


Kynaactions Participant Questionnaire



The control surface was easy to use

The control surface was



Strongly Agree

Agree

Don't know

Disagree

Strongly Disagree

Agree

I was able to in some way react coherently to the dance movement

I was able to in some way



Kynaactions Observer Questionnaire

The projected light distracted me from the dancers

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to focus on both the dancers and the light projections

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I could see what the audience member was trying to do with the projected light

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

It seemed more like an experiment than a performance

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

Please feel free to add any other thoughts:

Very innovative. Perhaps you should make it a little more obvious that the light is ~~proper~~ interacting with the performers movement and placing.



Kynaactions Participant Questionnaire

The control surface was easy to use

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to in some way react coherently to the dance movement

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

My interaction made a positive contribution to the performance

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

My interaction was an enjoyable experience

Strongly Agree

Agree

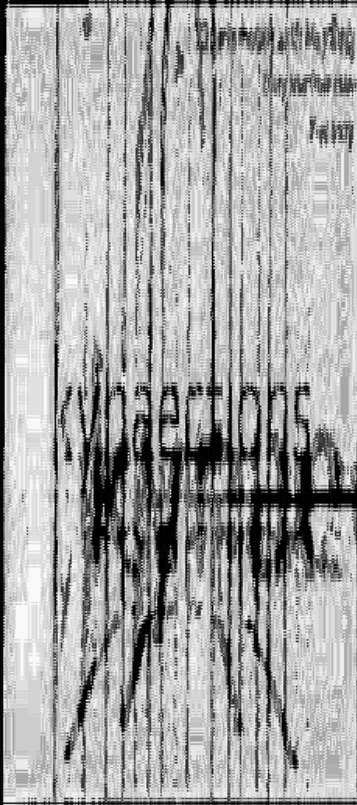
Don't Know

Disagree

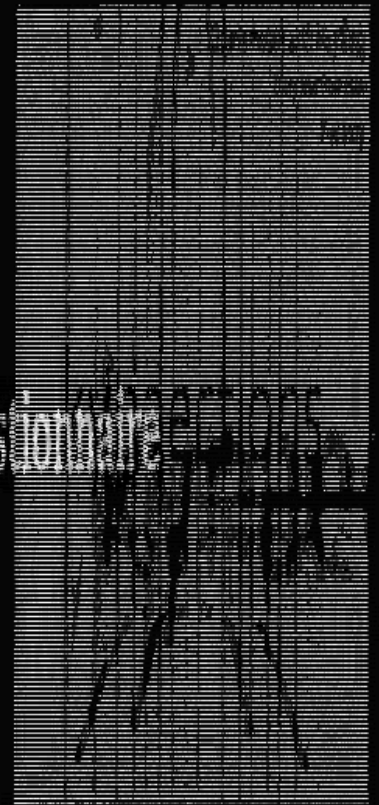
Strongly Disagree

Please feel free to add any other thoughts:

Would love to be able to explore more varied ways of creating shapes, or using shapes or images etc. in this sort of way and to push the boundary further.



Kynaactions Observer Questionnaire



The projected light distracted me from the dancers

Strongly Agree

Agree

Don't know

Disagree

Strongly Disagree

I was able to focus on both the dancers and the light projections

I was able to focus on b



Kynaactions Participant Questionnaire



The control surface was easy to use

The control surface was

Strongly Agree

Agree

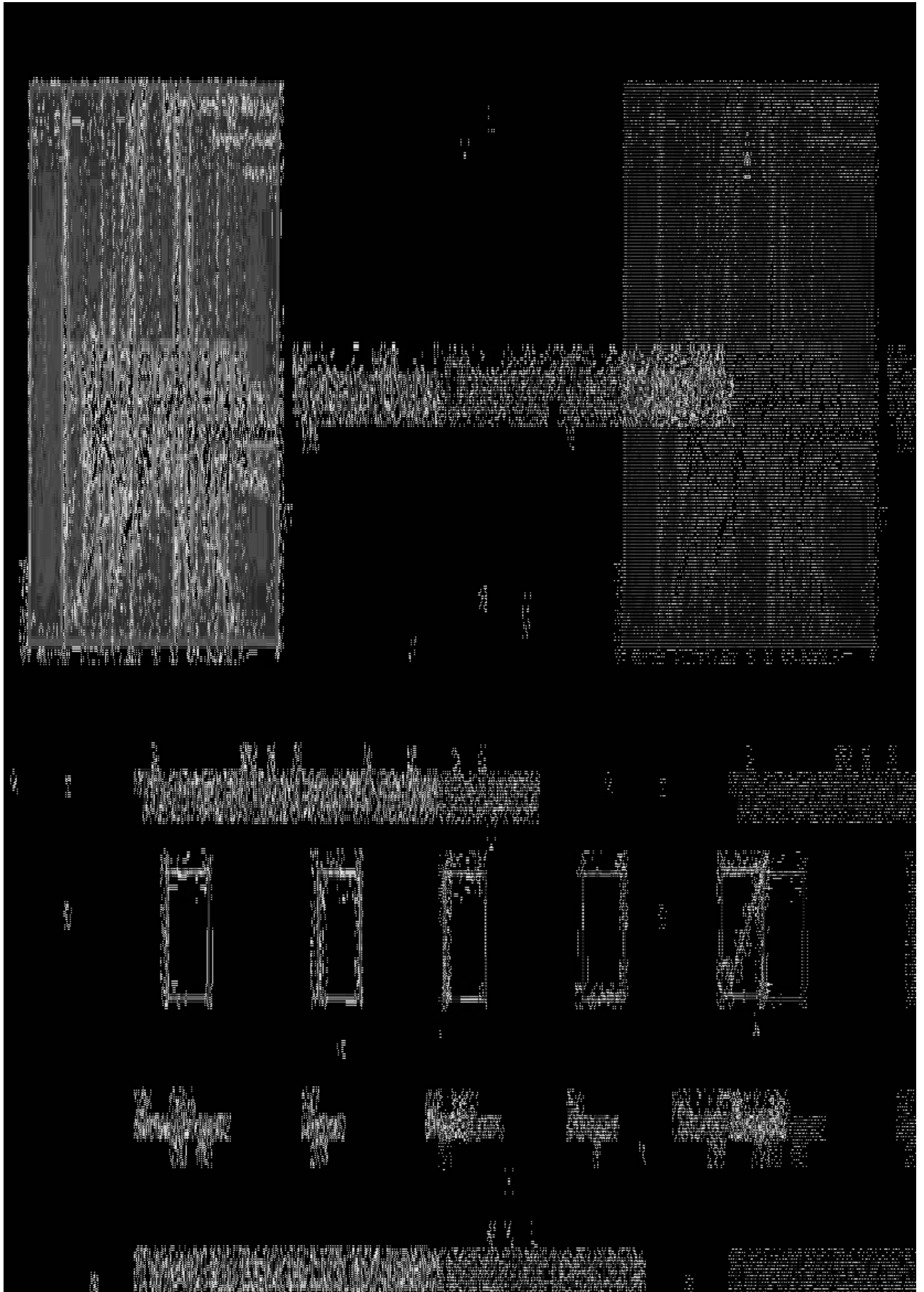
Don't Know

Disagree

Strongly Disagree

I was able to in some way react coherently to the dance movement

I was able to in some w





Kynaactions Participant Questionnaire



The control surface was easy to use



Strongly Agree

Agree

Don't Know

Disagree

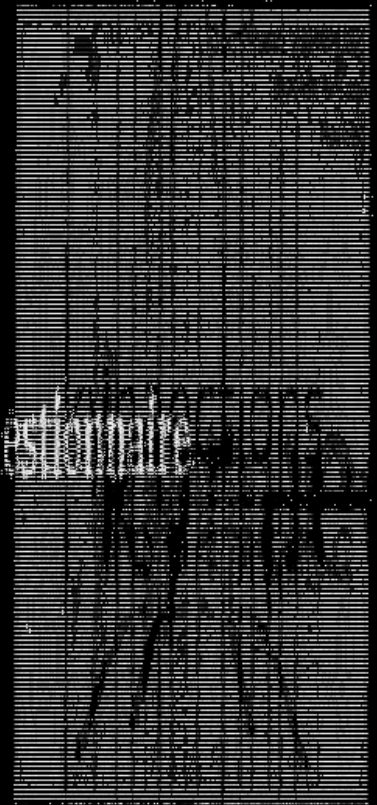
Strongly Disagree

I was able to in some way react coherently to the dance movement

I was able to in some way



Kynaactions Participant Questionnaire



The control surface was easy to use!

Strongly Agree

Agree

Disagree

Strongly Disagree

Strongly Disagree

I was able to in some way react coherently to the dance movement

I was able to in some way

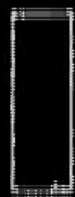


Kynaactions Observer Questionnaire



The projected light distracted me from the dancers

The projected light distracted me from the dancers



Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to focus on both the dancers and the light projections

I was able to focus on both the dancers and the light projections



Kynaactions Observer Questionnaire

The projected light distracted me from the dancers

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to focus on both the dancers and the light projections

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I could see what the audience member was trying to do with the projected light

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

It seemed more like an experiment than a performance

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

Please feel free to add any other thoughts:

Everything was very surreal, the music along with the lights and dancers, created something incredible.

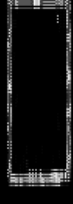


Kynaactions Participant Questionnaire



The control surface was easy to use

The control surface was



Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to in some way react coherently to the dance movement

I was able to in some way



Kynaactions Observer Questionnaire



The projected light distracted me from the donors

The projected light distracted me from the donors



Strongly Agree

Agree

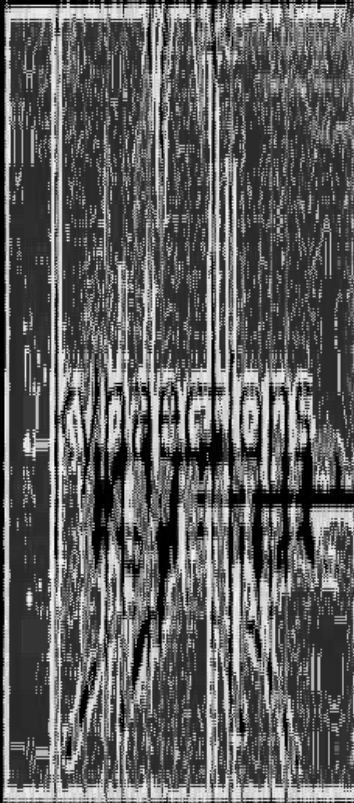
Disagree

Disagree

Strongly Disagree

I was able to focus on both the dance and the left reflections

I was able to focus on both the dance and the left reflections

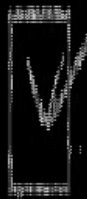


Kynaactions Participant Questionnaire



The control surface was easy to use

The control surface was



Strongly Agree

Agree

Disagree

Strongly Disagree

Strongly Disagree

I was able to in some way react robustly to the dance movement

I was able to in some way



Kynaactions Observer Questionnaire

The projected light distracted me from the dancers

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to focus on both the dancers and the light projections

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I could see what the audience member was trying to do with the projected light

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

It seemed more like an experiment than a performance

Strongly Agree

Agree

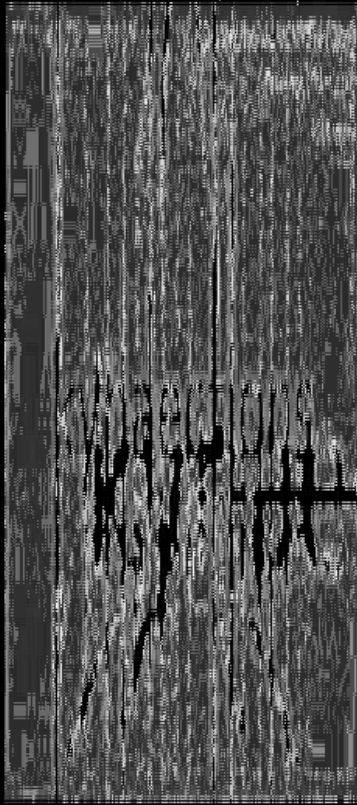
Don't Know

Disagree

Strongly Disagree

Please feel free to add any other thoughts:

obviously very clever yet a brilliantly simple idea. Nothing over the top + excellent production.



Kymaactions Participant Questionnaire



The control surface was easy to use



Strongly Agree

Agree

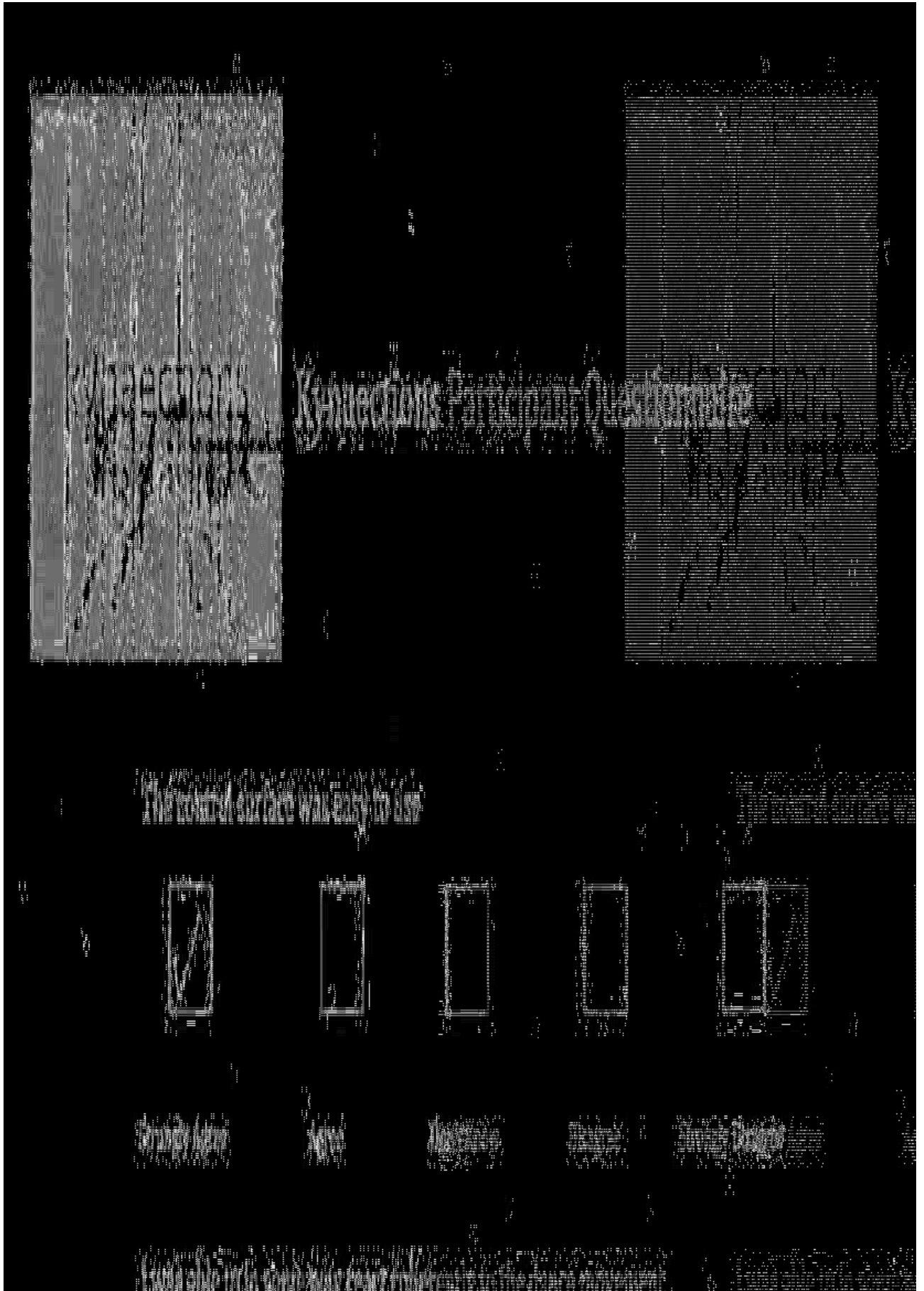
Neutral

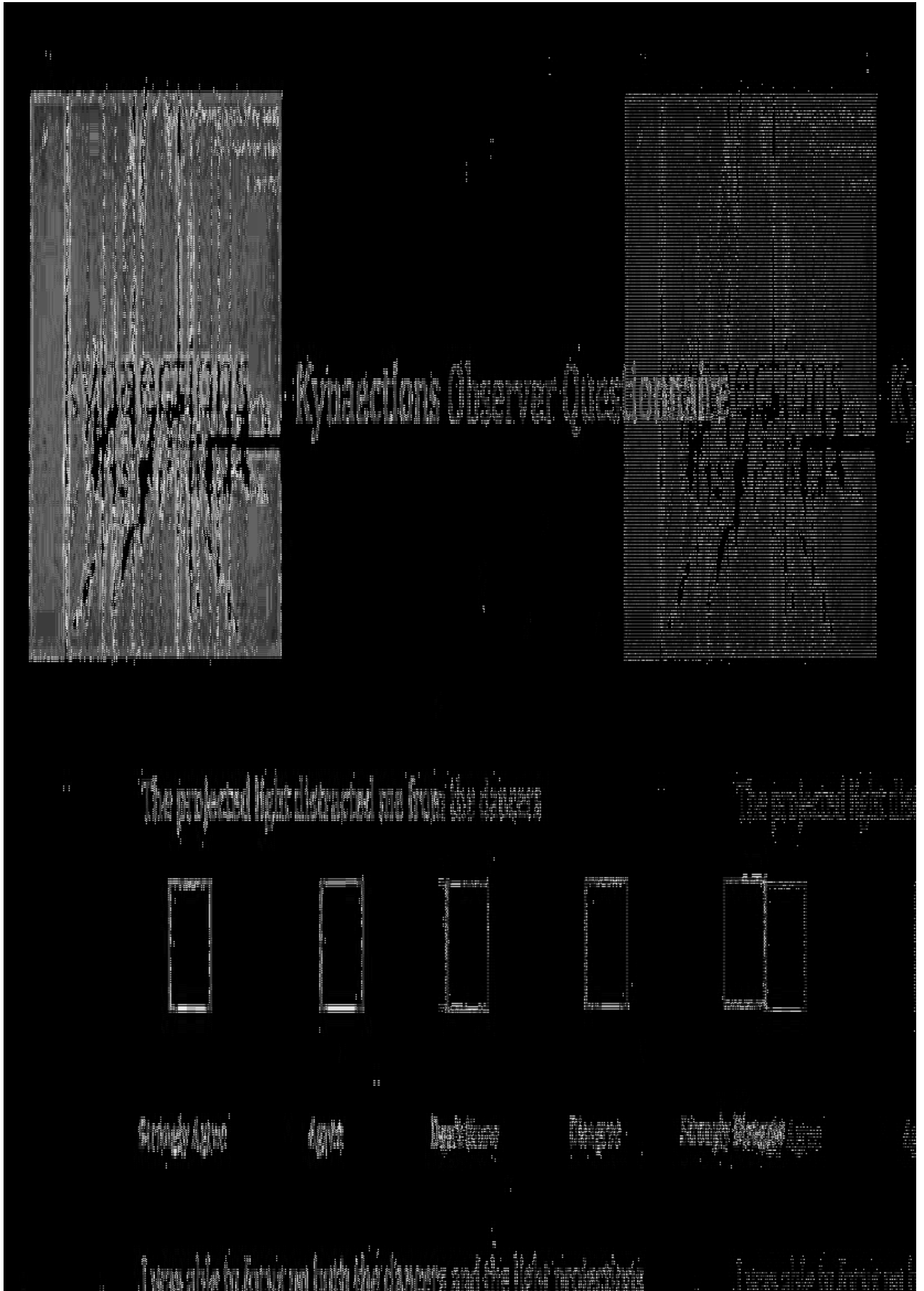
Disagree

Strongly Disagree

I was able to in a new way react to movement in the dance environment

I was able to in a new way react to movement in the dance environment







Kynaactions Observer Questionnaire

The projected light distracted me from the dancers

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to focus on both the dancers and the light projections

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I could see what the audience member was trying to do with the projected light

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

It seemed more like an experiment than a performance

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

Please feel free to add any other thoughts:

Yes distracted from dancers but in a way
which added rather than detracted.
Nothing wrong w/ experiments! but did
seem ~~more~~ less rigid(?) than isolated performance

Kinaesthetics Participant Questionnaire

The control surface was easy to use

Strongly Agree

Agree

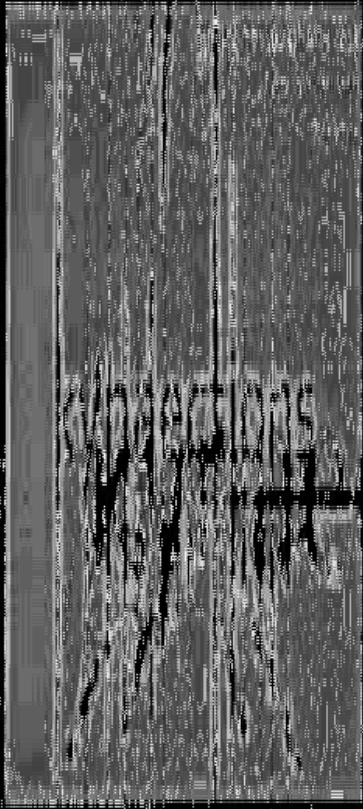
Neutral

Disagree

Strongly Disagree

I was able to in some way react/interact to the dance movement.

I was able to in some way

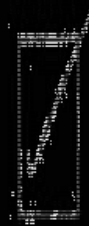
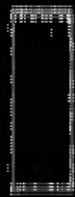


Kyriac's Observer Questionnaire



The projected light illuminated the front

The projected light also



Strongly Agree

Agree

Disagree

Strongly Disagree

Strongly Disagree

Unable to answer the question and/or the item is irrelevant

Unable to answer the question and/or the item is irrelevant



Kynaactions Participant Questionnaire

The control surface was easy to use

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to in some way react coherently to the dance movement

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

My interaction made a positive contribution to the performance

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

My interaction was an enjoyable experience

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

Please feel free to add any other thoughts:



Kynaactions Participant Questionnaire

The control surface was easy to use

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to in some way react coherently to the dance movement

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

My interaction made a positive contribution to the performance

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

My interaction was an enjoyable experience

Strongly Agree

Agree

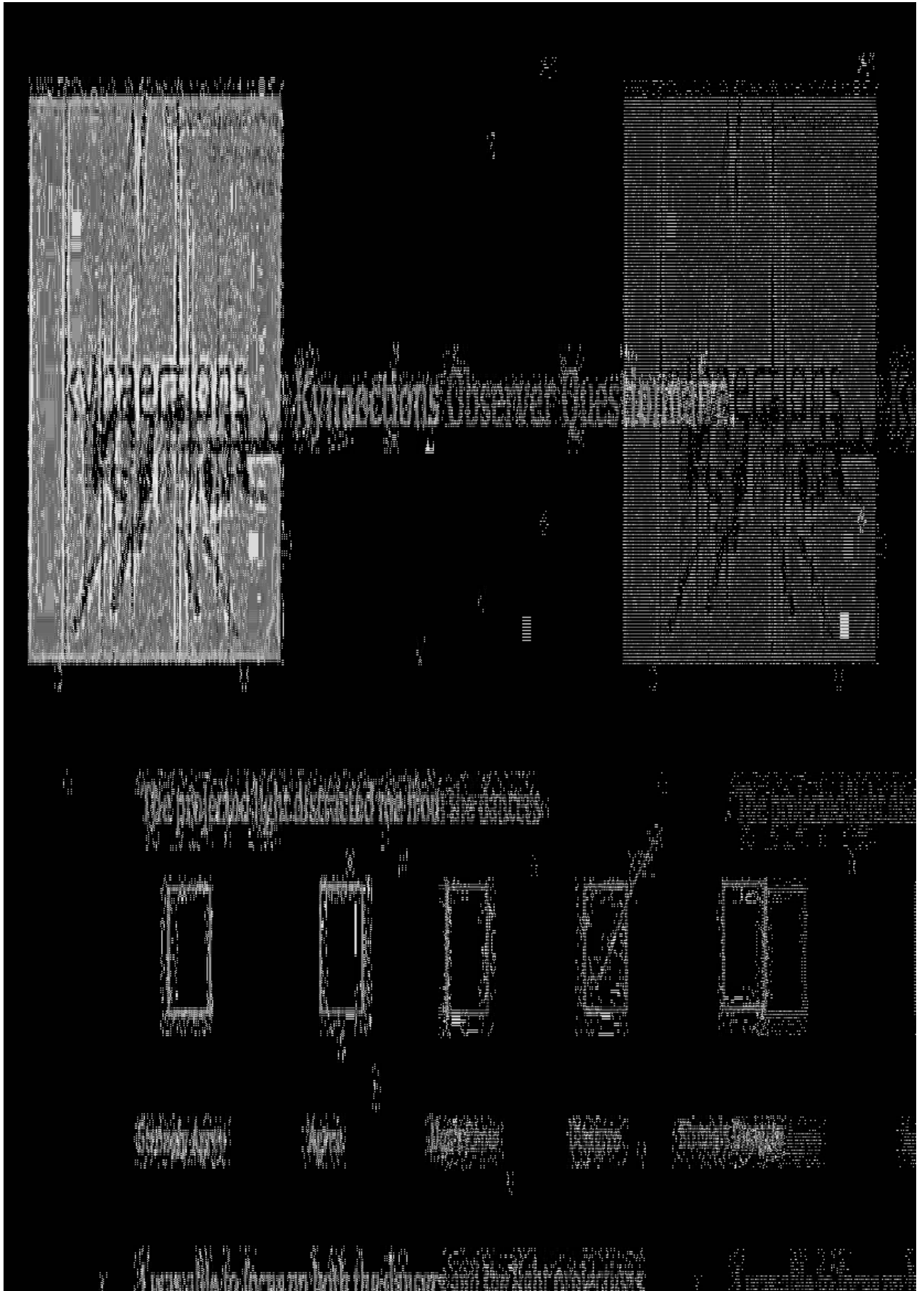
Don't Know

Disagree

Strongly Disagree

Please feel free to add any other thoughts:

I really like the use of light as a visual stimulus, the use of colour could deepen this technique.





Kynaactions Observer Questionnaire



The projected light distracted me from the dancers

The projected light distracted me from the dancers



Strongly Agree

Agree

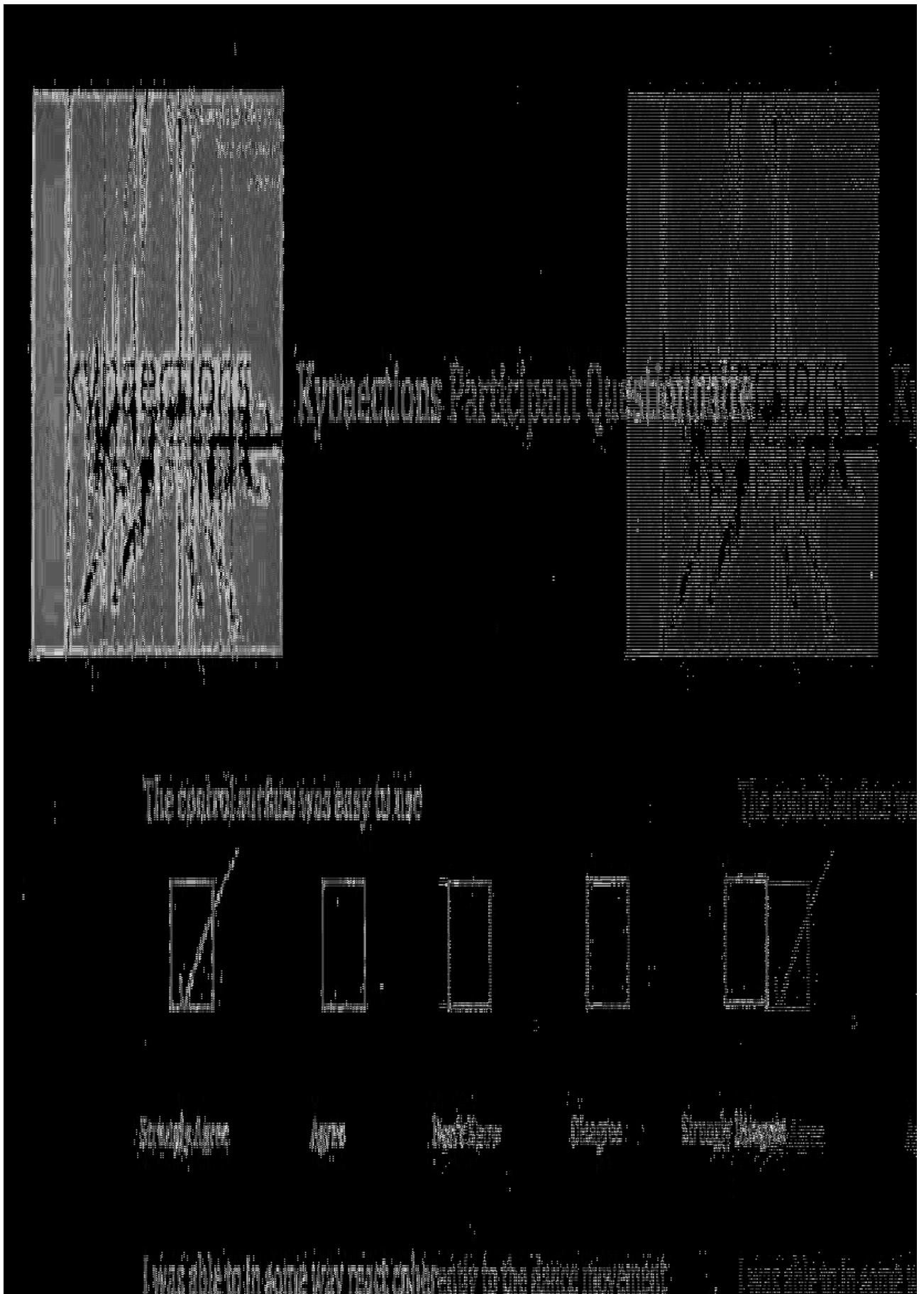
Don't Know

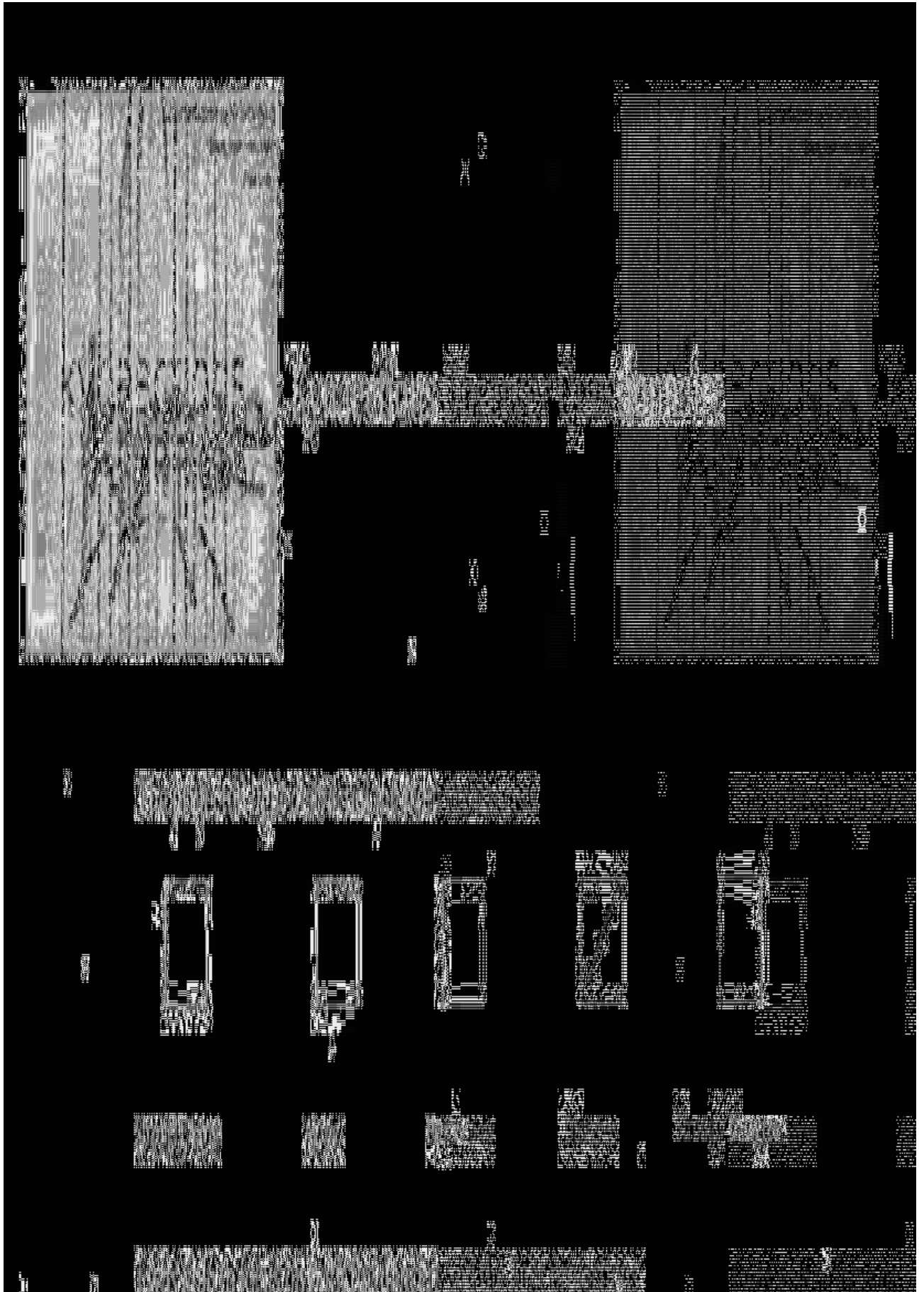
Disagree

Strongly Disagree

I was able to focus on both the dancers and the light projections

I was able to focus on both the dancers and the light projections







Kynaactions Participant Questionnaire



The control surface was easy to use

The control surface was



Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to in some way react coherently to the dance movement

I was able to in some way



Kynaactions Observer Questionnaire



The projected light distracted me from the dancers

The projected light distracted me from the dancers

Strongly Agree

Agree

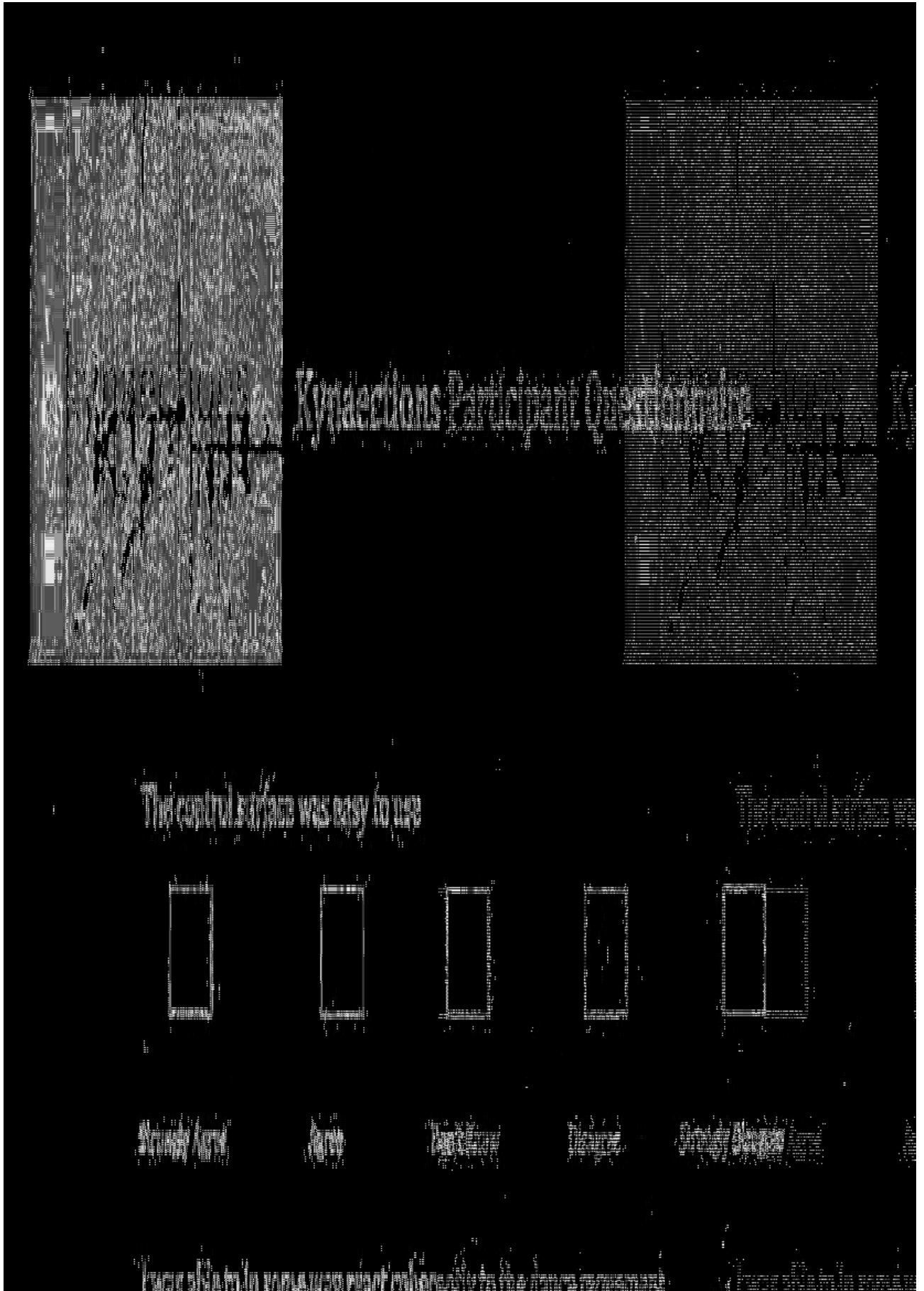
Not Sure

Disagree

Strongly Disagree

I was able to focus on both the dancers and the light reflections

I was able to focus on both the dancers and the light reflections





Kynaactions Observer Questionnaire



The projected light distracted me from the dancers

Strongly Agree

Agree

Don't know

Disagree

Strongly Disagree

I was able to focus on both the dancers and the light animations

I was able to focus on both the dancers and the light animations



Kynaactions Participant Questionnaire



The control surface was easy to use

The control surface was

Strongly Agree

Agree

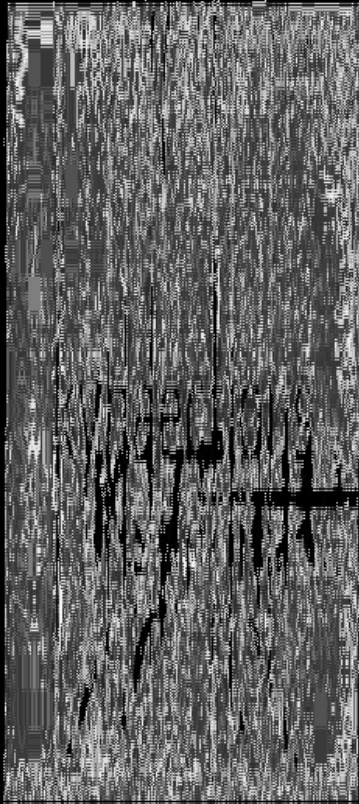
Don't know

Disagree

Strongly Disagree

I was able to in some way react coherently to the dance movement

I was able to in some way



Kynectious Observes, Questionnaire



The projected light distracted me from the display

The projected light distr

Strongly Agree

Agree

Neutral

Disagree

Strongly Disagree

I was able to focus on both the display and the live participants

I was able to focus on b

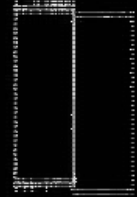


Kynaactions Participant Questionnaire



The control surface was easy to use

The control surface was



Strongly Agree

Agree

Don't know

Disagree

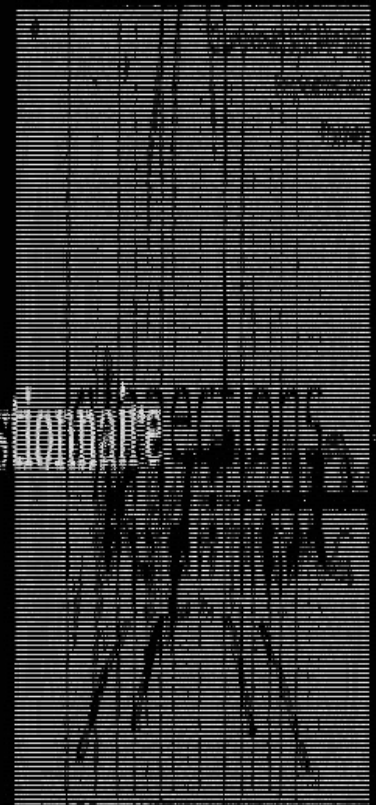
Strongly Disagree

I was able to in some way view or enhance the device performance

I was able to be aware of



Kynaactions Observer Questionnaire



The projected light distracted me from the dancers

The projected light distracted me from the dancers

Strongly Agree

Agree

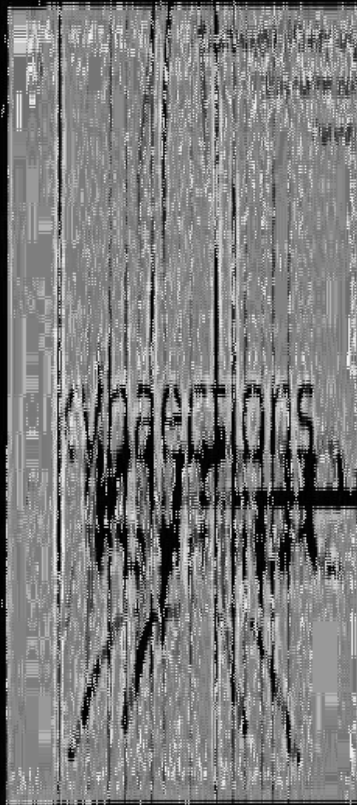
Disagree

Disagree

Strongly Disagree

I was able to focus on both the dancers and the light projections

I was able to focus on both the dancers and the light projections



Kynaactions Participant Questionnaire



The control surface was easy to use

The control surface was

Strongly Agree

Agree

Disagree

Strongly Disagree

Strongly Disagree

I was able to in some way resort effectively to the same movement

I was able to in some way



Kynaactions Observer Questionnaire

The projected light distracted me from the dancers

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree

I was able to focus on both the dancers and the light projections

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree

I could see what the audience member was trying to do with the projected light

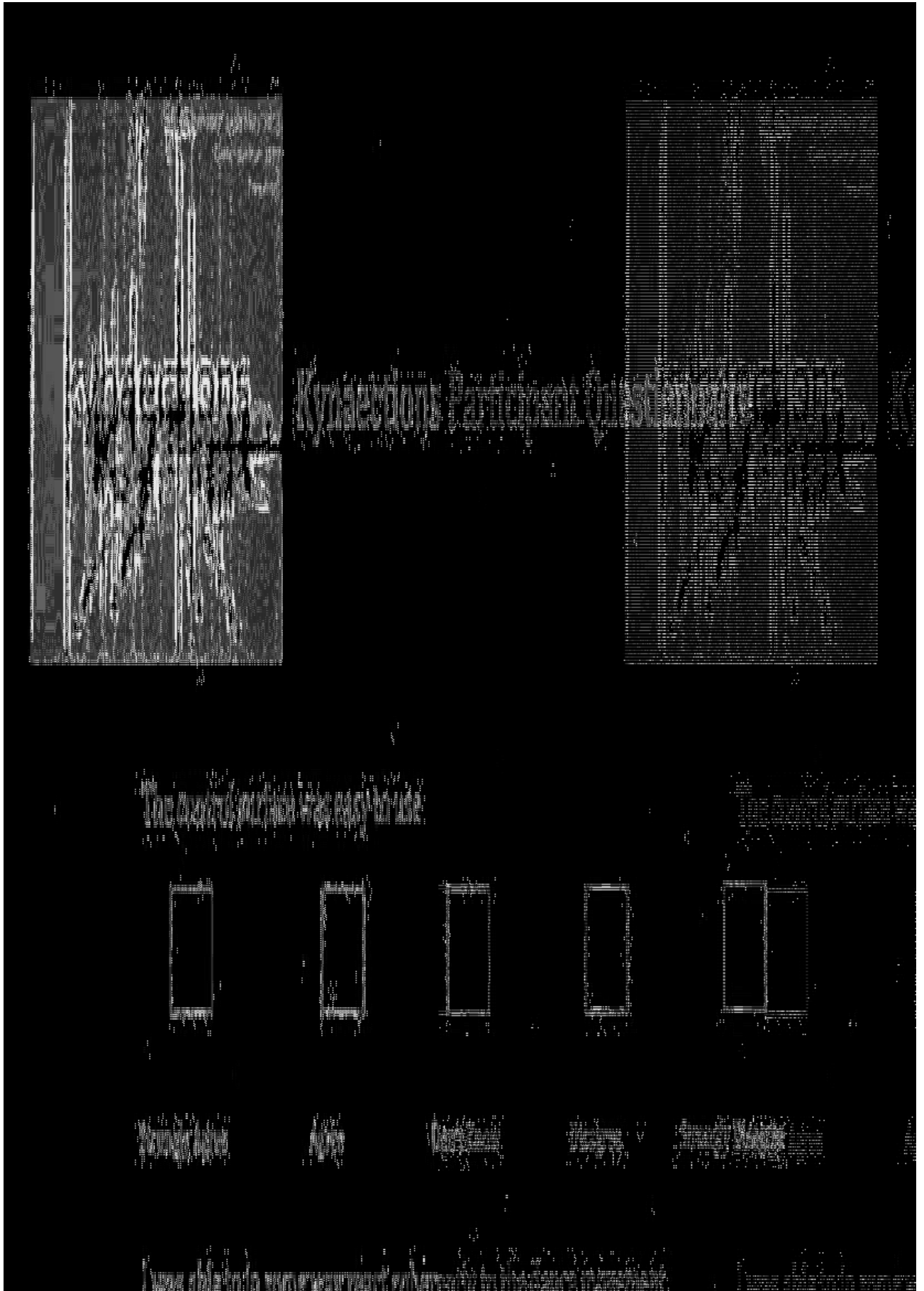
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree

It seemed more like an experiment than a performance

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Strongly Agree	Agree	Don't Know	Disagree	Strongly Disagree

Please feel free to add any other thoughts:

Amazing idea and concept, And Brilliantly executed the choreograph and light combined was just Beautiful! I would be happy to have just watched the light show it was amazing!!!





Kynaactions Observer Questionnaire



The projected light distracted me from the dancers

The projected light dist

Strongly Agree

Agree

Don't Know

Disagree

Strongly Disagree

I was able to focus on both the dancers and the light reflections

I was able to focus on b



Kynaactions Participant Questionnaire



The control surface was easy to use

The control surface was



Strongly Agree

Agree

Don't know

Disagree

Strongly Disagree

I was able to in some way react coherently to the dance movement

I was able to in some way



Kynaactions Observer Questionnaire



The projected light distracted me from the dancers

The projected light dist

Strongly Agree

Agree

Don't Know

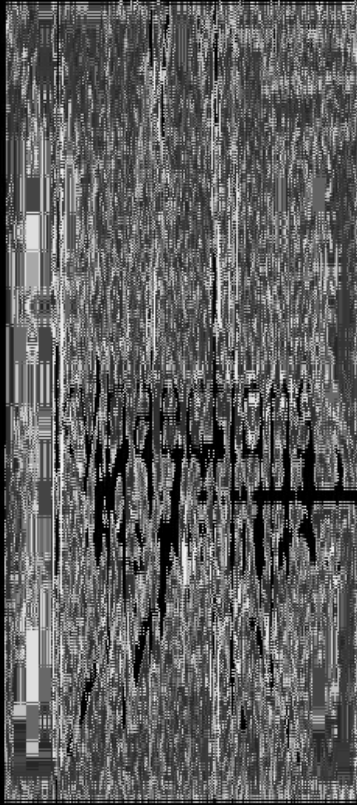
Disagree

Strongly Disagree

Agree

I was able to focus on both the dancers and the light projections

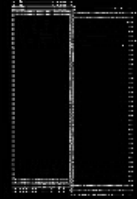
I was able to focus on b



Kynaactions Participant Questionnaire



The control surface was easy to use



Strongly Agree

Agree

Disagree

Strongly Disagree

Strongly Disagree

I was able to in some way react coherently to the dance movement

I was able to in some way

Appendix B *Etched* audience questionnaires

Some Questions about Etched

Thank you coming to see the performance.

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

it created a more *depth* lighting range that
manipulated the space much more
than what conventional lighting can.

it crea
manip
than w

5. Describe the ways in which the performer interacted with the light structures.

when he saw the light created a image when
whereby the audience were inside it, the
performer created a different dimension
by coming through the light

6. Are there five words that spring to mind when thinking about the performance?

unreal, combination

Some Questions About *Matched*

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

Conventional theatre lighting usually enhances the on stage performance but the flexibility of the light from data projectors allowed it to participate in the drama as well as illuminate the actors.

5. Describe the ways in which the performer interacted with the light structures.

The performer reaches to be light in the first section reaching high however her eyes fixed. She breathes it as solid that to be penetrated in middle section acted as a canvas

6. Are there five words that spring to mind when thinking about the performance?

Some Questions About *Etched*

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

Completely altered the dimensions of
the space.

Worked fantastically with desks
(and on the body)

5. Describe the ways in which the performer interacted with the light structures.

with the hands coming through
the solid light projection and the
haze
the colorful lighting at the stage
influenced the enjoyment and
dancing.

6. Are there five words that spring to mind when thinking about the performance?

Beautiful, electric

Some Questions About Elchead

Thank you for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from 'conventional' theatrical lighting.

EXTRAORDINARY
feel part of the light
in the light - bathed
part - immerse part light/pause
leaves

5. Describe the ways in which the performer interacted with the light structures.

5. Describ
structu

6. Are there five words that spring to mind when thinking about the performance?

6. Are the
perfor

EXTRAORDINARY
STUNNING
AMAZING
BOLD
EYE

Some Questions About Stoked

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

• Lights up the performance yet it can be manipulated live. The light encourages the audience to become a part of the performance by immersing them within the space lighting creates a designated space to

5. Describe the ways in which the performer interacted with the light structures.

Live performance → Stealing of prosthetics

Interaction between movement of light structures + choreography

Movement through light structures

6. Are there five words that spring to mind when thinking about the performance?

Immersive thought-provoking

Some Questions About *Stoked*

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

More expansive, didn't feel so programmed, & they were using the light like a performer

5. Describe the ways in which the performer interacted with the light structures.

6. Are there five words that spring to mind when thinking about the performance?

Intense, colorful, evocative

5. Describe the ways in which the performer interacted with the light structures.

6. Are there five words that spring to mind when thinking about the performance?

Intense, colorful, evocative

Some Questions About Etched

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

Opaque. A wash of light. Loved how it created a 3 dimensional set.

Incredible impact.

Created not just an atmosphere but

5. Describe the ways in which the performer interacted with the light structures.

Seductively

Sensitively

As if they were other beings.

As a way to move into new spaces.

6. Are there five words that spring to mind when thinking about the performance?

Impact.

Sinister.

Some Questions About Pitched

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

The light was a performance in it's own right rather than purely as a background.

The light created physical spaces that you wanted to touch. It suggested your mind. You knew the space was just visual rather than solid but

5. Describe the ways in which the performer interacted with the light structures.

She affected the light.

The light became the performer
(usually the other way around)

Judi complemented the light.

6. Are there five words that spring to mind when thinking about the performance?

Glance

Some Questions About *Richelieu*

Thanks for coming to see the performance.

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

The light was more versatile and able to express mood well as illuminate. It was clearly integral to the performance.

5. Describe the ways in which the performer interacted with the light structures.

Moving through the light structures, and dancing in the light. The size and shape of the light helped determine the interaction.

6. Are there five words that spring to mind when thinking about the performance?

Visual, simple, not clutter, novel, and abstract.

Some Questions About Etched

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

The use of light from projectors gives a more direct and focused approach. In conventional lighting there ~~are~~ is a more limited capability as the fixtures can't give us much focus or broken up light.

1. During the
projector
light
The use
and
is a
give

5. Describe the ways in which the performer interacted with the light structures.

The performer often used the light as a prop. She used parts of her body as an extension in the light.

6. Are there five words that spring to mind when thinking about the performance?

Creative, Interpretation, thought-provoking, Inspiring

Some Questions About *Blacked*

Thanks for coming to see the performance.

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

I felt more involved in the performance!

5. Describe the ways in which the performer interacted with the light structures.

Open felt like she was going under water and drowning with the beam of projectors.

6. Are there five words that spring to mind when thinking about the performance?

enclosed,

Some Questions About Michael

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

Shapes were created to create an atmosphere within the shaped box rather than just lighting the stage to illuminate the performers

5. Describe the ways in which the performer interacted with the light structures.

using each manikin to
moving through the light

6. Are there five words that spring to mind when thinking about the performance?

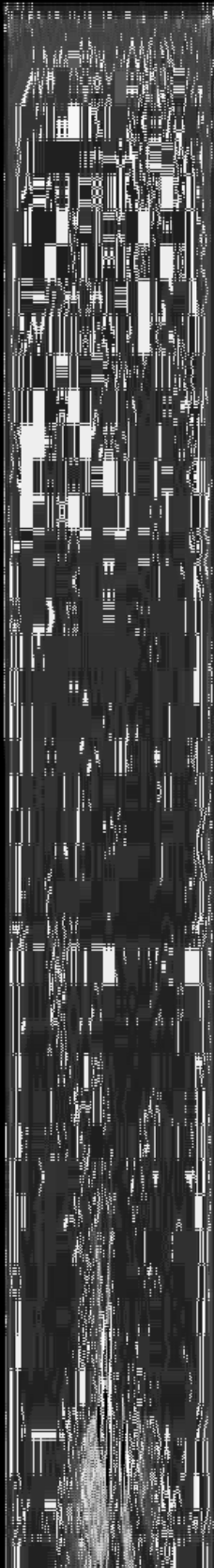
Liquid sound

Some Questions About Stetson

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

1926 SILVANOVA



5. Describe the ways in which the performer interacts with the light structures.

5. Describ
structu

6. Are there five words that spring to mind when thinking about the performance?

6. Are the
perfor

Some Questions About Etched

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

Precision and creativity

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

Precision

5. Describe the ways in which the performer interacted with the light structures.

By poking through it
What kind of a gesture
is this?

6. Are there five words that spring to mind when thinking about the performance?

gl. fixed. home. inter.

5. Descri

By
What
is

6. Are the

gl
fixed
home
inter

Some Questions About Etched

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

Was very 3D like lighting, felt you were actually on the stage with the cast. Very powerful lighting indeed.

5. Describe the ways in which the performer interacted with the light structures.

The performer was very controlled and in sync with the lighting. I especially enjoyed jumping in ~~front~~ ^{front} of the lighting and when it looked like the performer was a ghost coming out of the grave.

6. Are there five words that spring to mind when thinking about the performance?

Alive

Some Questions About Stretched

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

The audience was more immersed and felt part of the story, because it extended past the stage.

5. Describe the ways in which the performer interacted with the light structures.

Very fluidly overall. It varied in pace,
As though they were banners at points,
Or as if they ^{were} liquid.

6. Are there five words that spring to mind when thinking about the performance?

- Abstract - Chilling

Some Questions about Staked

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

It created a more intense atmosphere for the audience.

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

It created a more intense atmosphere for the audience.

5. Describe the ways in which the performer interacted with the light structures.

She put her arms, legs + hands through it as well as moving around the beams as they were obstacles.

6. Are there five words that spring to mind when thinking about the performance?

obstacles

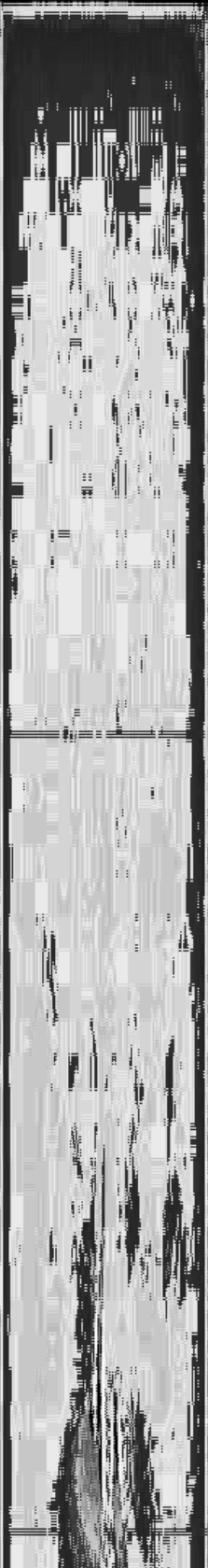
immediacy

Some Questions About Stated

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projection. Describe how this light differed from more 'conventional' theatrical lighting.

The key difference was the ability of the projector light to produce various shapes on stage. The simulation



5. Describe the ways in which the performer interacted with the light structures.

Moved with and around the structure and generally interacted with the light of a lamp and a performer it's on stage

6. Are there five words that spring to mind when thinking about the performance?

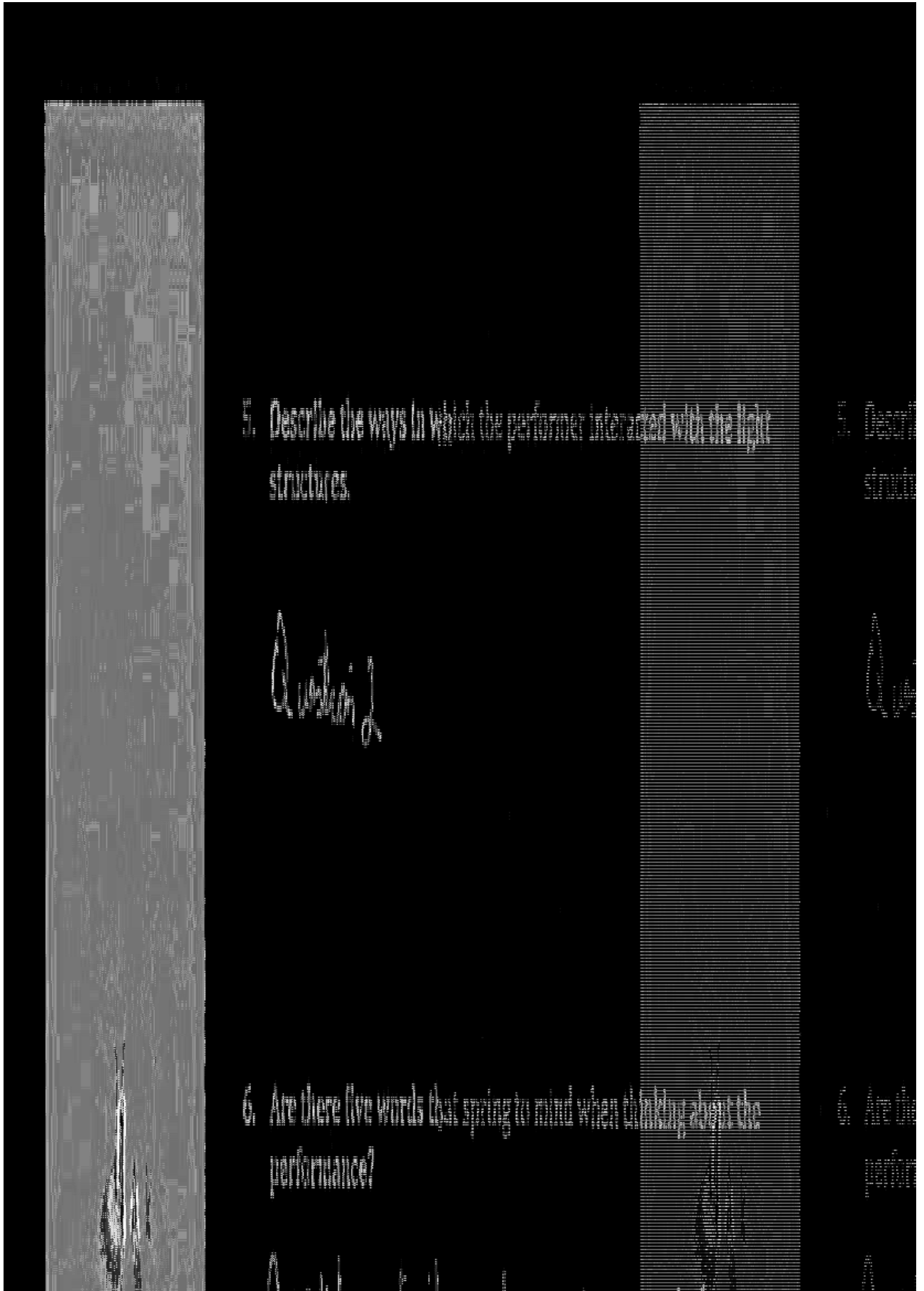
shaded

Some Questions about Richard

Thanks for coming to see the performance.

1. During the performance, heavy use was made of light from video projectors. Describe how this light differed from more conventional theatrical lighting.

There were times when the light was intense, controlled by me as the performer. When the light was dim, the light was soft and warm.



5. Describe the ways in which the performer interacted with the light structures.

Constantly

6. Are there five words that spring to mind when thinking about the performance?

Constantly, fluid, dynamic, expressive, powerful

5. Describe the ways in which the performer interacted with the light structures.

Constantly

6. Are there five words that spring to mind when thinking about the performance?

Constantly, fluid, dynamic, expressive, powerful

Some Questions About Etched

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' electrical lighting.

It made the space more expandable

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' electrical lighting.

It made the space more expandable

5. Describe the ways in which the performer interacts with the light structures.

She adapts to the space to her own opinion. She

6. Are there five words that spring to mind when thinking about the performance?

Amazing

Some Questions without Answers

Thank for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

There were distinct rays of light, which were used to create shapes and spaces, quite unlike the broad-range lighting used conventionally.



5. Describe the ways in which the performer interacted with the light structures.

The performer tested the boundaries of the light rays, allowed them to fall onto her and watched her glow out around her skin.

6. Are there five words that spring to mind when thinking about the performance?

Color, motion, light, dark, space

Some Questions About *Stoked*

Thanks for coming to see the performance.

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

The space was just *stoked*. What was highly immersive about it is that the sounds created on stage could change anytime in the most unexpected ways.

The light was not consciously accompanying. It was loudly and coexisting.

5. Describe the ways in which the performer interacted with the light structures.

In most of the case it was a relationship of water and sound with the lyrics unconsciously. The lyrics were not understood in a particular way in the act. The light was used as an atmosphere. The actor actually enters on stage and plays a role.

6. Are there five words that spring to mind when thinking about the performance?

Deliberate, in, out, of, the, light, structure, relationship, water, sound, lyrics, unconsciously, understood, in, a, particular, way, in, the, act, the, light, was, used, as, an, atmosphere, the, actor, actually, enters, on, stage, and, plays, a, role.

Some Questions About *Etched*

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

It was more focused and engaging.

The light really became a performer, instead of just illuminating other people or props.

5. Describe the ways in which the performer interacted with the light structures.

I felt the performer generally was trying to 'fight' the light. She cut through it, broke it, distorted it way as if it were an enemy.

She was strong and although the light was she very powerful, she was determined to digest it.

6. Are there five words that spring to mind when thinking about the performance?

Power

Determined

Strong

Power

Some Questions About Richard

(Thank for coming to see the performance)

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

IT STRUCTURED THE SPACE + CREATED A SET

5. Describe the ways in which the performer interacted with the light structures.

FOLLOWED / USED THE PATTERNS

MOVEMENT 'SOLID' LIGHT WITH FORM + PROPS

6. Are there five words that spring to mind when thinking about the performance?

CONTRAST HARMONIC RESPECTIVE, HARMONIC

Some Questions About Etched

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

More like the effect attributed to layers of rock concert!
Such clean beams of light.

5. Describe the ways in which the performer interacted with the light structures.

Describe structure

6. Are there five words that spring to mind when thinking about the performance?

Are there performance

Some Questions About Etched

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

The lighting was in you, around you, through you.

He never wanted to touch light
He didn't believe in shadows but

5. Describe the ways in which the performer interacted with the light structures.

- Dominating
- being controlled by
- in/within breaking through
- pushed to one side

6. Are there five words that spring to mind when thinking about the performance?

- Invasive Immersive

Some Questions About Etched

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

• gave me an immersive experience
• offered astonishing responsiveness

1. During the
projector
'conventi

• gave
• offered

5. Describe the ways in which the performer interacted with the light structures.

sensitively

Describe structure

Sow

6. Are there five words that spring to mind when thinking about the performance?

1. Central
2. Sweet
3. To
4. Sub



Are there performance

Some Questions About Etched

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

5. Describe the ways in which the performer interacted with the light structures.

The performer drove the lights
and the lights drove the performer.

6. Are there five words that spring to mind when thinking about the performance?

①
②
③
④
⑤
@PASTY

Describe the
structures

The performer
and the lights

Are there
performer

1st class

Some Questions About *Etched*

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

While conventional theatrical lighting is often used to illuminate a performer or the ~~stage~~ set, the lighting in this work created objects, shapes and planes as an aesthetic ~~element~~ and active element.

2. The light projected through the haze created light structures in the performance space. Describe the varying roles these structures had throughout the performance.

I had a strong sense of it interacting with the ^{backstage} ~~performance~~.
They created in-between, backstage areas and structured the space 3 dimensionally.

3. At what point, if any, did you become aware of a link between an iPad controller and the projected light structures?

Only when Andy stood up

4. The performance space was thick with haze. Do you have any thoughts on its impact on the audience, or its role within the performance?

The haze was there to allow the light to bounce off it, there for giving the light a 3d surface so that it can manifest as a shape in the space.

5. Describe the ways in which the performer interacted with the light structures.

Describe the
structures

6. Are there five words that spring to mind when thinking about the performance?

Are there
performa

Some Questions About Etched

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

It had a completely different purpose. Or maybe not. Conventional lighting serves to light the stage and indicate changes in time, place or set mood. This lighting also created a mood but it also added another dimension to the performance space and actually shaped/reshaped it.

5. Describe the ways in which the performer interacted with the light structures.

Breaking the smooth beam, interrupting it.
Being a canvas for it.

Describe the
structures

Being a ca

6. Are there five words that spring to mind when thinking about the performance?

Are there
performan

Some Questions About *Etched*

Thanks for coming to see the performance

1. During the performance, heavy use was made of light from data projectors. Describe how this light differed from more 'conventional' theatrical lighting.

I felt, as an audience member like I was in a virtual simulation. It engaged me in the performance + distorted the '4th wall' the audience became part of the effect.

2. The light projected through the haze created light structures in the performance space. Describe the varying roles these structures had throughout the performance.

The performance of lighting.
— the light structures created an atmosphere, a body/contain of the image of acid.
- created own performance from screenshots.

3. At what point, if any, did you become aware of a link between an iPad controller and the projected light structures?

at the end when tunnel effect + drawing on limbs =

4. The performance space was thick with haze. Do you have any thoughts on its impact on the audience, or its role within the performance?

I thought it was a metaphor for the acid burning! identity tinkering + distortion of clarity

5. Describe the ways in which the performer interacted with the light structures.

6. Are there five words that spring to mind when thinking about the performance?

virtual simulation hyperreality
distortion
immersive
performance of light
absorption

7. If you had to describe the performance in one sentence, what would that be?

A performance of light distorting
the human body of a performer
and creating an environment of
virtual simulation for the
audience imagination to play
with it distort

8. Do you have any other thoughts on the performance?

Appendix C *On Slow Violence* participant questionnaires

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Intimidating, fascinating. The lights are interesting but its the sounds I found more of a connection to with.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

if you're standing @ a control pad there's a projector shining @ you so you are interacting even if its not deliberate as they shine onto the surface behind.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Fun, I gather some controls were more direct than others & that multi-actioned stuff isn't really my thing. I was more interested in the sound controls but didn't have enough time to work out how linked they

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

mainly as an individual but as the controls didn't respond the same way I became aware of the collaborative nature

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

A carefully controlled storm directed

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

For me it was more of a random process of rain with algorithmic patterns. though an obstacle to the light like a human being changes the ~~process~~ process to become even more random, like in chaos theory. Somehow like that you can be illustrated the slow violence. Also some beams were bending like they would like in crime matters.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

My first touch of the light had electrostaticity pinch to my fingers. If you move fast you see the 3 colours of light combined sometimes with white light (green, red, blue). It would be amazing with mandalas and the touch of light to make a sound.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

I didn't.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Yes. The 1st.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

"Random process of a storm"

"a crime in the rain"

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Intensive, playful, visually overwhelming.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

I would like to experience this again. I felt like my body created structures and interacted vividly with space. ~~Perceptions~~
space

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

The experience was fascinating and open an imaginary world ~~with~~ ~~light~~ of ~~opposites~~, darkness and light. So controlling them was ~~like~~ ~~creating~~ ~~tempo~~, ~~rhythmic~~ ~~to~~ creating tempo, rhythmic.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Both. It was nice to react to the light itself, or another people moving around and affecting the structures. It was like a constant reaction to movement and rhythm of the light.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Interesting, aesthetically beautiful, lively, spiritually appealing.



Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

The space was visually demanding but very overwhelming in a fantastical way.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

I really enjoyed controlling the light, I was trying to manipulate the space to see how the light affected the feel of the room.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

The experience was appealing and easy to use.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Occasionally changes would occur at similar times, changing the environment, these moments felt collaborative.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

five

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Attention + Sensory Demanding False
Nature Menacing Light Show. [Bravo!]

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Made Me feel like Dancing.
So I did, on my Crutches.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Yes, without crutches, on a Foggy Creek or
ship to shore.
Yes. Easy 8/10. 30 minutes.
Appealing Yes.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Once or Twice Briefly.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Folly Immersive Broody Interactive
Aurora / Beu realis.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

IMMERSIVE.
Experimental.
Fun!

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Played with the rotation of some light streams with unexpected results/surprises.
Yes!

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Controls were easy to use + follow them. I do have experience with music software + the visual layouts of these types of programs. 5-10 mins (could have stayed longer though!)
~~Yes, would have enjoyed it more as a group activity.~~

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Not sure about 'collaboratively' but certainly together, or against one another. It was more enjoyable as a group the second time around. The storm seemed to

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Intuitive Surreal Come together
Noisy Interactive not with more players!
Fun.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Immersive, intimidating, mesmerising

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Powerful at times, overwhelmed at others particularly when across from another controlling it.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Very easy to use, interesting at all times. The experience was appealing

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

At times I felt the lights were creating something whole.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Thrilling, interesting, intense, overwhelming.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Fascinating,
Incredible, Mesmerising

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Very clear, easy, with
an exciting results

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

30 mins
Easy to use with
a very interesting, surprising
outcome

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Indeed, complete strangers,
but found sense of unity,
also as an individual

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Intriguing Exciting
Headache

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

It was clear the control was elsewhere

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Yes. Slightly laggy.
Hard to work out how the light connected to the iPad

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Yes. I was the noisy one

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

It was violent.
Felt like a battle.
Personally I'd like a tighter control.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Dark, shot with strange flashes, jervish

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

I was a bit intimidated but maybe another time I'd put my head in the light.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

A few minutes on each one that was fine. Yes it was easy, and curiously appealing.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Yes I did - but it was also separate (like society)

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Macbeth King Lear Dada disco



Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Frightening once I realised I could partially control it.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

I stood, rather inertly, like a tree or a steel.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

I wanted to learn how it worked. It was easy, yes, but also complex.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

I was part of the space, present also absent as I wondered what was going on.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Frightening

Enlivening Like being eaten
 Opening Being above a storm
 Oral
 Bitter In a mouth

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

calming - accessible
for everyone 😊

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

yes - good to interact
with your creations
expand light / change colour +
rotate - yes / fluent one!

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

easy to access/control
about 20 minutes, yes!

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Very self involved but you
couldn't ignore others around
you - ie being mindful of the needs

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Sounds as they were
quite appealing.
Mindful, accessible,
collaborative, fun,
calming, immersive
experimental,

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Hmm... maybe in a festival setting?

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Played w/ the lights, the projectors

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Easy. Mostly played w/ gestures

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Yes, played around w/ a friend

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Boon!

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

interactive art display.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Experimented and tried to work out what I was controlling then had some fun interacting, Yes would do again

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Yes it was easy to use maybe experimented for a minute trying different layouts. Yes appealing

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Mostly solely.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

interesting, dark, original different.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

The plates were interesting to construct as you were "in" the structures and could feel immersed in the shape

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

I feel that the light of the projection was more controlled, made it difficult to ~~appear~~ be aware of the others in the room.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

INTELLIGENT DISCO

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

YES, BRIEFLY. IT WAS MORE INTERACTIVE WATCHING OTHER PEOPLE SO TO, LIGHT MOVING THROUGH THEM.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

CONTROL SURFACE WAS EASY BUT CONTROLLING THE LIGHT (CAUSE + EFFECT) TOOK MORE PRACTICE

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

I WATCHED OTHERS & TRIED TO FOLLOW BUT IT ALL SEEMED RANDOM. I LIKED THE ENVIRONMENT CREATED.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

THRILLING ENGAGING POWERFUL
MYSTERIOUS SNEAKY

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

~~was~~ immersive, overwhelming, full of sculptural light

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

I changed my position and viewed them from different perspectives - the biggest change was seeing the light source directly rather than observing them from outside.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

I experimented a few minutes. ~~It~~ On some iPads it was easier to see what affect you were having on the environment and it was more appealing when this was very clear

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

It was very difficult to tell what others were doing - so the experience was more ~~more~~ individual

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

intense, absorbing, engages-you - curiosity

* I kept trying to find controls to quieten it down, could have become more soothing + womb like with fewer bangs, but I think it could have been my 7 yr old doing the banging if it's not a standard back drop of sound?!

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?
Reminded me of my youth in the 90s, going to noise artist events with loud jarring noise + in yo face lighting - this is a good memory!

*A

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

In Control! Enjoyed moving planes of light together. Also lay down on the floor with my 3 yr old & we had a dance with the light too. If I wasn't with my kids I'd probably feel too self conscious to stand in the centre alone!
If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Took a bit of working out but very enjoyable - has occupied my 7yr old for ages, might have to leave him behind

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Not as an individual at all but sometimes against - not with others!

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Enabling, dreamlike, immersive, stimulating, intriguing

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

I LIKE THE INTERACTIVE ASPECT.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

FUN, ENGAGING, CREATIVE. ENJOYED.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

EASY TO USE, WASN'T SURVE HOW THE SOUND REACTED?

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

YES. COLLABORATIVE.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

ENGAGING AND ENJOYABLE EXPERIENCE.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

immersive
interactive
engaging
Sensative.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

we played, as if it were physical.
we lay down.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Very intrusive experience.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

at first solitary and intense.
became collaborative and dynamic.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Surreal, Shocking, Serene, disorientated,
Interactive.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Yes! It was relaxing
We pretended we were underwater.
All the time - Permanent installation please!

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Very easy but some basic info
could be ~~good~~ good
- on buttons for example -

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

No.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Absorbing, magical, easy,
mystical, fun.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

- Relaxing in Water
- Surprise gunshots/warzone
- Surreal

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

- It felt like you were playing with water in a river
- Makes you young again

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

- ~~It~~ Some basic information on control perhaps?

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

- No

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Serene, immersive, fun, orgasmic, absorbing

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

DARK. LIGHT. CLOSE. FAR. NOISE.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

YES. PLAYFUL - GEEKY - IDLE - CURIOUS.
TRIED EVERY IPAD - TRIED EVERY CONTROL!
YES!

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

EASY TO USE. JUST HAD TO WORK OUT
HOW EACH CONTROL AFFECTED THINGS BUT
THEN REALISED I WAS CONTROLLING A DIFFERENT
PROJECTOR!
AGES! YES!

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

MAINLY FOCUSED ON THE PROJECTOR
I WAS OPERATING

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

ELECTRICITY. ELECTRONICS.
SIMULATED NATURE.
ART-FUN.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

ATMOSPHERIC

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

FELT ETHERAL
WAS SOMEWHAT BLINDING

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

WAS EASY AND FUN

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

IT DID FEEL COLLABORATIVE

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

ATMOSPHERIC, ETHEREAL, CREEPY,
DISORIENTING, INTERACTIVE

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Trying to make sense of the features you see but then cannot feel and then trying to work out how to 'control' the features - then you notice the sands!

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

I kept expecting to 'feel' the light. I wanted to make it change, ripple by touching it but couldn't until using the iPad. None the only feature of any use and smiling it.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Took me some time to work them out - but then I really wanted to take control of them all. Easy to use once experimenting would like to stay in there (and take home)!

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

certainly thought I was being collaborative! Wanted to tell others what I was making happen -

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

sensory overload, swimming in light, wet, swirling, bemused, intrigued, fascinated.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Otherworldly

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

I did, it felt like exploring

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

I spent a while with each, and each was easy to work out. Each had a setting I preferred.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

I mostly wanted to control every iPad at once to make it look coordinated

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Fascinating

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

light projected in darkness
and controlled by the users with
iPads.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Yes. excited. Fun. Thrilled.
something that sounded like
a sun storm. Yes.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Yes. unclear at first but
after trial and error it
became clear.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

most individual but
eventually together.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

fun. exciting. playful.
scary. stark.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Dark fun in an adult creative play room.
→ not meant to sound how it does, sorry

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Yes - I love immersive theatre and haven't ever thought about a light + sound version. I loved feeling involved.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

I liked the idea of playing and being in control. I could have spent a lot longer but was aware of others wanting to take part.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

It was a collaborative experience without verbal communication which is a great way to interact

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Intensity
Immersive
Under water
Alone (in a good way)
Passive
Control
Dark

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Disorientated at first, but then strangely calm

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

yes. Powerful. Put my hand in the light like water!

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Easy to use. 10 minutes. very good.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Yes. Felt collective.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Calming
Intense
Dark
Moving
Powerful.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

uneasy - which was interesting in itself,
so all rather thought-provoking

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

not really -

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

yes to appealing
playful re controlling the structures

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

as individual

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

as above | uneasy
playful
thought-provoking

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

awe
amazing
confusing - weird
~~weird~~

shattered reality

interesting, but in a calm way

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

I would love to!

Interacting with them was strange. It was sort of magical - you feel as if it should have substance, but it doesn't

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

I found it interesting - a new experience

A hands on way to approach it that made it cool

I spent as long as I could in there. Walking through the light was cool

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

I saw that others impacted my light by doing things. There was a strange sort of anonymous friendship in trying to work together

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

interesting

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

felt sensory deprivation and over (hyper) stimulation.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Tried to construct a physical experience / compose physical music

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Straightforward - Engaging -

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

As a couple.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Sensory, physical, compositional, structure, order
chaos, ephemeral.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Fucking Awesome!
That was very cool 😊

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

YES! ~~I played~~
It made me feel as though the light were objects.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

We spent a ~~lot~~ lot of time
I would have loved to be able a very specific environment & be able to have control over all the iPads.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

✂ Difficult to work collectively, but would have loved to.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Tense Surreal Grounded.
Atmospheric Relaxing

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

intense, Captivating

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Yes - quite powerful! Tried to reach extremes i.e. very calm or very intense
would like to do this sort of thing again

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

About 10 mins with the iPad trying to control the light exactly. Was simple to use but complex to get exactly what you would
At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

wasn't really paying attention to those aspects, only on what my lights were doing

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

frightening
interesting
~~intense~~ insightful
powerful
memorizing

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

A little. I walked through it and tried to touch it. I also intentionally tried to alter my vision through the light. You feel part of the light - it slices through you. I enjoyed working with the projection around someone else's body - following their movements.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Strange experience at first. It took a while to work out which light structure I was initially controlling. Took me to the 2nd iPad to realise I was impacting on the sand - which I then focused on. Very easy to use. About 20 minutes. Very appealing. I would have spent longer.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

There was one moment with the two iPads next to each other which sonically I felt we collaborated on for a moment. I wanted to be solely interacting at some points.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

very different dynamic when 5 people are controlling vs. 2.

Enthralling, slicing, surprising, intense, absorbing.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Engaging / eerie / hazy
It makes you immediately curious

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Always want to touch them,
also to look at them from
different perspectives.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Easy, but also nice to have to
work out how to create structures,
how to move them. A change in colour
was a pleasant surprise.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Individual. But there were a
couple of moments when I interacted
with people standing in the middle of
the space

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

curiosity, colour, light,
dense, round, playful,
eerie



Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?
- initially confusing, then rewarding
MORE SMOKE NEEDS FOR IT TO BE
DISORIENTING

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?
-

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

QUICK TO PICK UP CONTROL SYSTEM
AMBIGUITY OF THE CONTROLS WAS APPEALING,
DRIVEN TO UNDERSTAND IT

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?
-

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

MILDLY DISORIENTING

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Grey Pope - light trap

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

• Not in to light ball. Translucent glow.
• Yes,

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

fairly easy. unsure what effects was having, if any at all

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

yes, but vague

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

gens / presence / calming /

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Happily disorientating

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

great, would like more
robustness with each projector/beam

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Very easy
-could be louder, more intrusive/uncomfortable

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

felt quite detached from other users

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



love you andy!

1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Amazing! Different, lighting the light
Everything normal seems weird in an awesway

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Yes, just putting my hand through the light just to break the perfect line of light

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

It was easy to use and easy to understand what button made ~~what~~ what, so much fun and interesting way of working with light

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Mostly individual but ~~was~~ was still able to see the others and what they were doing and everything together - don't even know how to describe so

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Amazing, different, difficult (planning behind) but easy (use wise) (fantasyish) awesome

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Multisensory, physical, wow!

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Yes, I felt I was moving the light as though it were a physical object. I would love to experience it again, I could play all day.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

It took a while to really work out how the sounds were connected to the light. The more I played with it the more I enjoyed it.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

I felt I was interacting with the projector opposite me at times.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Exciting, addictive, dramatic, interactive, multisensory

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Amazing, because it is not an usual environment everything that is normal seems weird (in a good way!)

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Yes I would experience this again because the light looked so perfect it was hard not to destroy it.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

it was very easy to use and it felt like we were only using it for a little while but actually was quite a long time.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

a bit of both because in the beginning it's hard to see what you are changing but once you figure it out everything makes sense and it does look like

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*? ← ~~the~~ ~~been~~ ~~u~~

Amazing, different, easy, fantasy like, pleasant!!!!

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

It was a bit intimidating and exciting at first, and really beautiful.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Did interact - it was fun and felt creative, relaxing and quite powerful. Tried to draw, make ripples that resolved into flat planes, control thunder. Definitely would do again.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

It was very simple working the i-pad, and fun working out which controls caused which effects. Spent 45 minutes to an hour - very appealing. Entrancing.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Collaborated with my friend, was ~~from~~ interesting noticing what others were doing, but it felt peaceful and solitary at times too.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Curiosity, Excitement, Relaxation, Creativity, Beauty

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

It was a imaginative experience, with exciting laughs and painethly my own imagination in 1940

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

It made me giddy and happy and yes I would like to experience it again

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Made me feel excited to control the light and they were easy to use. I spent most of my time manipulating the light and it was very appealing

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Yeah did that with my friend creating the interactions

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

loud, excited, intimidating, imaginative and awe-inspiring

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

weird
disorientating

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

yes changed the light
& projection on curtains

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

yes half an hour yes

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

with Mum

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

fun interesting. date!
disorientating. exciting.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Eerie and metaphysical. A communication among different sources interrelated to each other creating an artistic atmosphere.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

I would like to experience this again.

It made me feel creative and playful.

Once I grasped most functions it felt like a playground.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

The process took a while and especially actually realising the possibility of the negative space instead of the actual shapes on the backdrops.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

I were trying to experience it with others but found it quite hard, so I experimented alone.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Visually Appealing, Creative, Eerie, Playful, Extraterrestrial

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

interesting experiment. ~~the~~

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

just try to see which combination of controls would make me feel anything
Yes

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Yes.
5 mins each?

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Sort of.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

gunshot
water drops
wind
nose.
etc.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

A stressful yet fascinating world of lights.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Yes, I did several things
- Moved quickly towards the projecting light
- Moved my arms around
- Did a 360 turn

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Yes they took a small time to fully understand but after that were quite easy to use
The experience was very appealing and I spent 10-15 minutes in there.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Yes definitely felt the cooperation and the effect others had on my creation.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

- Fascinating
- Unique
- Sinister
- Beautiful
- Stressful

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Sensory exploration, deep meditative sound and light spaces. Communal, participatory experience. Confusing but peaceful. Chaotic harmony.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

yes. Walking through them, touching, photography taking

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

15-20 minutes, I think, lost track of time. Easy to use, but took time to settle eyes. Very addictive, mesmerising.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

A bit of both, sometimes focused in on what was happening but always aware of wider group and space

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Sensory, Furry, Absorbing, mysterious, calming

NB: Transcription Service available

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

A darkened room, around the edges of which shadowy figures are glimpsed. A black box lit by random shafts of purple light and hazy curtains of almost tangible glow.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

Interesting experience of being able to even almost instantaneous control; that was fun being able to manipulate light shapes also fun but even more fun to shatter them, rapidly and frequently. We so rarely get the opportunity to

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

It wasn't always immediately apparent to me what the controls did, but feedback was encouraged experimentation.

destroy anything with impunity. Clotell. I've been to a video game

Also: yes, I did dodge in and out of light curtains. It kinda benefits great fun. Experience with freedom and impunity.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

June and I had a fairly unsuccessful light-sabre battle, but mostly it was a solitary satisfying to create, demitish and re-build with freedom and impunity.

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Puzzling Transgressive
Compelling Creative
Involving/engaging
Empressive.

Some Questions About *On Slow Violence*

Thanks for coming to participate in the installation. Your thoughts are very much welcomed and will contribute greatly to my PhD research



1. This may be the sort of environment that you haven't been in before. Can you describe it in a couple of words or sentences?

Initially intimidating
Unsettling for first few minutes
Electrifying
Disorientating - in a pleasant way, in control of my own disorientation.

2. Did you interact physically with the light structures, and if so how did it make you feel? What sort of thing did you do? Would you like to experience this again?

- Yes - lay under the light plane (horizontal) and emerged limbs through the light.

• Directing the light planes at me (as central point) gave me a feeling of great peace, especially if the light appeared to travel toward me at speed. I hope that happens when I die! Seriously.

3. If you used an iPad, can you describe your experience controlling the light structures? Did you find the control surface easy to use? How long did you spend experimenting with the light structures? Was the experience appealing?

Very easy to use + enjoyable - gave a feeling of power.
Spent several minutes on each structure + repeated some a few times.

4. At any point, did you get the sense that you were working with others collaboratively to create a 'light environment'? Or did you experience the piece solely as an individual?

Yes - a light duel with opposite 'player'

5. Can you identify five words (or more!) that capture the experience of participating in *On Slow Violence*?

Thrilling stimulating Enchanting
Disturbing Captivating

Enlightening (learned something about myself - that I feel very secure + peaceful within planes of light).

Sonwa
Go Andy
x

Appendix D Transcripts of *OSV as Choreographic Tool* observations and discussions

Session 1 – Learning the system

End of the 45 minute exploration session (no discussion took place at all during that initial period)

Abby: It's so exciting

Andy: Exciting? Do you mind if I turn the lights on? Mind your eyes.... Ok very very hazy in here. OK that was 45 minutes, did it feel like it?

Aaron: No, really - it went really quick.

Andy: I wish I'd asked them how long they thought that was...

Set ready for discussion

Angela: So first of all one of you said that it went very quick, could you tell us about that?

Aaron: I just..., I just think I lost track of time. Every app that I went on and everything that I touched just... it didn't seem as long - it just went so quick. When we changed I think I changed about 20 minutes in, still got another 30 minutes, I'll get round them all.. already. As soon as I got to the other ones and you came in, I was like oh!

Andy: There will be plenty of time to play. You'll be able to get round to it.

Angela: How many did you all do?

All: Three

Angela: Yes we thought that didn't we?

Andy: OK, three station each and Abbey did four?

Abby: I did four yeah, because there are two there.

Andy: Of course... How easy did you find it to work out what was going on? Obviously I kind of gave you a bit of a demonstration with that one, so...

Ben: I think those two (pointing at stations 3 & 4), I found really easy to kind of like understand how they worked. But the one connected to this projector (station 2), it took me quite a bit of time to work

out what to do. You had to like hold the buttons and move the things to make the individual lines move. I worked it out, but it took time to go oh this is what this thing does..

Andy: Yeah, ok.

Abby: You see, I was completely the opposite. I thought that one (pointing to station 3) was really tricky to work and that one was easier (pointing to station 2). Because I was stood there and was like, before I saw them making this shape and how did they do it and why can't I make that shape? And why isn't that working? And I was like, I'll just keep doing what I'm doing.

Angela: So were you aware of the others or were you just focussed? So you were aware of what everyone was doing?

All: Nodding

Angela: (to Abby) So when somebody else did something you thought how did they do that?

Abby: I thought, ok that's really cool, I might try that when I get there and I was like, oh, I'm not making that shape, it's not doing that!

Angela: Because when we were watching you it didn't look as though you were aware of anybody else. It looked as though you were just aware of your own station.

Andy: It really did, I mean, were you talking to each other?

All: No, not really.

Andy: You weren't... we couldn't decide whether or not the microphone was picking up – because it's very noisy in here, we didn't know if that was just masking you guys talking to each other, or whether you were just completely silent which you were. And completely focussed on the thing you were doing at the time.

Angela: So why do you think you didn't talk to each other?

Aaron: I was trying to use my projections to go inside theirs...

Angela: Ok, so there was an interaction?

Aaron: Yeah

Andy: But they didn't know that?

Aaron: Yes!

Abby: (Talking to Aaron) Because we were opposite each other the whole time weren't we? And I didn't notice.

Andy: That's really interesting...

Angela: It is interesting!

Andy: It was incredibly interesting to watch...

Angela: It was – surprisingly! I predicted the complete opposite to what you did

Some general non specific chat then occurs

Andy: While you were playing around, were you having any kind of creative ideas? Thinking forward to what we are going to be doing after this, which is going to be incorporating you guys into the space, did you start to think about how can I use this – do you want to expand on that?

Abby: So especially for this one (pointing at projector 2), I was using it as sort of like a plane so I could go over it, I could go under it, on that one (pointing at station 3) there was like white lines through it and thinking I could go through that, I and was working on what I was doing on the screen and I was going ok maybe I could do this with the movement, rather than actually doing it I was thinking ok I need to understand what's going on on the screen and in the space...

Andy: So you were projecting yourself into the space?

Abby: Yeah. Rather than actually being in it, cos I thought I had to more understand what was going on I suppose.

Ben: With these two (pointing at stations 3 & 4), I was trying to make patterns where it had as much space between the light as possible. And I was thinking if we could get people in places where there wasn't light and use the light as barriers in between them, so it gives them like a set space to perform in and then change the colour of the strips relating to how they move.

Andy: Ok, relating to how they move?

Ben: So a colder colour would be a more restricted movement, whereas a warmer colour would be a bit more free. But they would still be restricted to their areas, which would be created by the light.

Andy: Ok.

Aaron: Yeah, I was thinking more of the sounds and how I'd react to the sounds. I could hear a lot of sharp noises and a lot of loudness in there. And with this projector specifically (pointing to station 1) when you turn it over and it becomes like lasers, and I was thinking of as if you were trapped in something [inaudible]

Angela: What was the sensory experience then? You've talked about sounds in terms of that embodiment theme being in the space, what did you think?

Ben: (to Abby) That one for you (pointing at station 3)

Abby: Yeah, when you stretch that one the noise really makes my hair stand on edge, don't know why. But then I was intrigued to keep doing it to see what would happen, and I was like, no it's happened again.

Angela: So it was uncomfortable?

Abby: Yeah. I noticed it after as well when you kept doing it (pointing to Ben) – please can you stop!

Ben: Because you made me aware of it I was purposefully doing it. When you turned the speakers down (talking to Andy), my ears felt really weird, cos they'd been used to the constant noise. Like when you walk out of a loud film or something and oh, there's no noise now.

Abby: It was really nice that there were moments when all of the sound suddenly stopped

Andy: It's quite relaxing isn't it?

Abby: And then something else really loud would happen, and I was like, oh... It was like a moment of pause or a breath. Just to collect everything.

Andy: Yeah that's a really good – a pause or a breath and it gives you a chance to just gather yourself doesn't it, cos it almost assaults you... Well, actually, it only does that depending on what people are doing on here. You know the power to manipulate the sound environment is within everyone's hands.

Angela: Could you maybe list the things that you found on each one?

Andy: What does this one do, I mean we looked at this one first.

Angela: What did you discover?

Aaron: (pointing at station one), this one is a like a shape of light that you can turn, very much you can tunnel it, so if you were to get lower you can see there's a tunnel in there.

Andy: Ok, what other things does it do? You've got the horizontal plane...

Aaron: Yeah, you've the got the shatter and you can turn it over and it turns into the beams of lights

Andy: So you can spin the whole thing and it turns 360 degrees and it splits up into a sort of fan of light.

Aaron: It's got the waves...

Andy: The ripple effect

Aaron: I found out that if you pressed the shatter, and then slide the bar, it comes into the shatter, so you can get that shatter straight away.

Andy: So you can do a quick change?

Aaron: Yeah.

Andy: Which might be very useful choreographically? Finding out what order to do things, which would be quite important when it comes to a performance. What about these side ones? They're mirrored, they do exactly the same thing. So what did you find out about those.

Ben: It starts as a fairly kind of straight kind of plane, but as you turn it, it splits into like a seven, and then that one (pointing at station 4), I spent a lot of time on that one, and as it kind of came out it almost, to me, kind of turned into wings and you can make it go like that (gesturing wings with his hands). If you changed the bar on the right (the bleach?), yeah that one, if you change that to go down and then change the colour, you can have like white beams with colour and if you keep going up with the bottom bar you can change it almost into like a star shape and then it starts to fragment the further you go.

Andy: And then finally there's the big button

Ben: Well it just breaks it!

Andy: And you get that explosion with the sound. Abby, you spent a lot of time...

Abby: With the one on the floor.

- Andy: What did you learn about that?
- Abby: There's a weather button and it projects the dots that you can see on the floor now. And as well there's the pad that you can make shapes on (draw?), yeah, and then you can mirror it and add wind as well. And I was looking at how – the limit of the space, as well, from it – like making circles and stuff to use as a boundary as if like someone had been like stuck inside it. And I was looking at how small I could make it, or if I could focus it on one specific point for a period of time, how quickly it reacted to my touch. I was thinking as if someone was laying on the floor and then being manipulated by the line being pushed...
- Connor: I don't know, I was just very confused a lot of the time. I don't know I didn't really understand what was going on to be fair.
- Andy: Which one did you spend most time on?
- Connor: being confused by? It was probably this one (pointing at station 3). It kind of made me angry a little bit, whenever I'd spin the rotation, I just wanted it to spin, but as soon as you get to like a quarter of the way round, the light would just disappear into this tiny little dot, and it was like – what! No it was good, and I worked out how to make a kind of like Japanese flag on there as well, like a world war two kind of red and white kind of thing on there.
- Andy: I know what you mean, the fan?
- Connor: That was fun.
- Andy: I think one of the things I was quite surprised about is that none of you said, Oh look it does this, come and have a look at this - There wasn't a great deal of interplay and I think if you (talking to Connor) were feeling frustrated by this – what does this do, has anyone worked this out?
- Ben: I managed to spell 'Hi' on the back wall using this projector (pointing at projector 2) by dragging the bars round and when I did it, I was like Look!

The group then explored the rest of the functions of the control surfaces practically.

Session 2 – Choreography

First 4 ½ minutes of the session were inaudible due to the installation soundscape being too loud.

6.16

Connor: Oh this bit, I thought you meant the thing on the floor...

Abby: No, no I don't go through this (popping up through the horizontal plane) This one and that one, so you can turn them straight..

Connor: Like that?

Abby: Yep, [inaudible] you see what I mean, now we've got a section we can go through into someone else's. (moving through a vertical plane) [inaudible]

Ben: Oh that would be something really cool to do... if we start off behind walls and then if someone shatters it as someone breaks through

Abby: That's nice.

Aaron: Put everything back to normal. Reset everything

Ben: Just shatter it

Aaron: (8.12) That still image there is nice to play with – to start with – rather than introducing everything so quickly

Abby: I think we're going to need longer than an hour

Ben: So is it only going to be us four or are we going to have people working the...?

Abby: We act as the people that change it and the dancers. It would be quite nice if we came over and...

Connor: Aaron on your one, you know when you kind of made it explode?

Aaron: Shatter? Like that?

Connor: yes like that. Why not have someone here and here (standing to one side of the ripple effect beams) and when it shatters have kind of like a... (demonstrates a backwards back arching movement within the beams)

Aaron: Yeah

Connor: ok

Abby: It might be quite nice if we got all of us stood here as well...

Connor: If everyone is stood here like this, pushing against it... and somebody offstage can kind of turn it.

Abby: I'll see how far it can go

[Inaudible]

Abby: Aaron what do you think? How does that look?

Connor: If we're standing back and pushing like that... as you turn it. I get what you mean. What does it look like from the front?

Ben: Actually Abby could you go and shatter the one over there?

Abby: When you say shatter?

Ben: Press the shatter button. The square one.

Aaron: It depends on what we're making this. If we're making this for an audience in the centre or an audience walking round.

Abby: I guess they'll be round the outside

Connor: what does it look like from the front?

Aaron: Yeah I mean you can't see what you're holding on to from the front. You can see... just.

[Inaudible]

Ben: Can we not do the audience in the round?

11:23

Abby: It might be nice to start off with if we all did some arms through it (motioning through the horizontal plane). See what I mean? Like really simple. [inaudible]

Connor: Imagine like a mirror.

Abby: yeah, exactly

Connor: So you go and touch it and then you can [inaudible]

Abby: I mean it looks nice from this as well. Try not to leave that bit though. If you go any further than here (motioning to Connor in the light), you lose any effect.

[Inaudible]

Abby: It's like on this side you can't go higher than here

[Experimenting with side projector movement]

Aaron: (from the front looking on) Can you go on the other side, so go on the other side.

More experimenting with movement among the side beams

Connor: It's so weird

Abby: That might be quite nice, just on his own in the space. Do you see what I mean, if we were all on a station

Connor: because then we could fade it in as well

Abby: Really simplistic

Connor: Because if we go back to [inaudible] and fade it up just before it splits

Abby: that's nice

Experimenting with movement

Abby: And there can always be a leg or something breaking through it from the other side

Connor: So as he goes through he shifts the light accordingly

Ben: Say I do that (manipulates a ripple effect on the back projector)?

Abby: yes

Ben: As you come through...

Abby: Sorry I wasn't ready. You get to the point where it cuts don't you. So we get to there... [inaudible]

Connor: It's hard to explain how I'm imagining this space, but imagine, you know *Inception* where the world is constantly folding. Have you not seen it?

Abby: What about that? If we add colour on your white?

Ben: But you can't see it [inaudible]

Abby: can you see it when it's white?

Ben: It's just because we've got the other one coming in as well. The white's more powerful isn't it?

16:14

Abby: (commenting on a horizontal plane split into fingers of light)
That's quite nice.

17:00

Inaudible (experimentation with floor work with limbs through a horizontal plane)

Abby: What would happen if we fade the two side ones out? Would it make it easier to see?

Aaron: Ok, come out Abby and stand to the side of it

Abby: Stand to the side of what?

Aaron: This projector. And walk in. (Abby walks to the centre of the horizontal plane). Stop. Connor, can you step in as well from the other side? (Connor steps in near to Abby). Not directly opposite, come up.

Abby: And we could do something together here (gesturing towards Connor)?

Aaron: I think contact ruins the effect.

Connor: Because it looks like Abby is really, really far away. With the light going 'in'.

Abby: Do you want me to step further upstage?

Aaron: A little bit. Oh no, come back

Abby: And then move?

Aaron: And then just really slowly, really slowly melt and leave a limb in the air – an arm, a head above the.. (they start to slowly melt down through the horizontal plane).. slower, slower

20:35

Ben: (somewhat inaudible, but playing with the horizontal rotation and switching from solid plane to striations) and so it gives the illusion that they've disappeared. And then you can do the thing at the back with the tracing.

Abby: Should we piece some stuff together? So what do we need from each side?

Aaron: I don't think anything from the sides yet

Abby: What are we starting with?

Aaron: This

Abby: As in us two stepping in? What side of this do you want me to be? Do you want us to slowly walk in?

Aaron: And really make that melting really, really slow

Abby: What do you want me to leave up there?

Aaron: Whatever you think – a shoulder, a head, back... anything. It's going to feel painfully slow

Connor: Are we going in at the same time?

Aaron: No, one at a time

22:50 (resetting system)

Connor: I didn't think you wanted sound?

Aaron: yeah, I think the sound's nice

Ben: So stretch all the way up fade all the way down?

23.59:

Ben: So as they walk in... (creates a 'bang sound')

Aaron: That 'bang' breaks you (and then starts to demonstrate the slow melting movement within the light plane)

Connor: So we'd have to start at these and we'd have to set that at the beginning.

Ben: Break it and then I can run over when they start to melt and then this goes through to there (manipulating the front iPad control to change the horizontal plane).

Abby: Does anything need to happen on that one? (pointing to that back iPad)

Ben: No I don't think so, because it looks really effective from the front. I don't know if you understand what we're doing because we've got the depth thing going on – it looks like you're so far away

Abby: Really?

Connor: Oh yeah it does

Abby: Aaron stand here (swaps places with Aaron). Oh that's really cool. So we walk in – 'bang' – melt to the floor

Ben: I think this would be best as a rotate (talking about the main horizontal plane movement). By the time it flips over [inaudible]. So then perhaps do the floor thing after that?

[inaudible]

Abby: Unless one of you comes in and makes the thing on the floor? Because I can then come out with Connor?

[inaudible]

26:41

Aaron: I don't want to bring everything in too quickly. If that makes sense?

Abby: It needs a quick shift, because we've just melted...

Aaron: If we set a rough time on it – go back to...

Abby: Melting?

28:07

Aaron: Do the 'rippley' thing that you did again

Abby: What we were just working on, when you do that we do really erratic movement and it comes back down again and we slow down again? When you shatter it, me and Conner were working on a really erratic movement.

Connor: And as that comes back down we start slowing it down

Aaron: Yeah let's try that

29:19

Ben: And you snap it back in 3,2,1...

Abby: I wasn't melted. And then we roll out

[inaudible]

Abby: What did it look like if we did the erratic movement when..?

Aaron: Yeah, yeah.

Abby: And then do you fade it back, so have time to..?

Connor: It fades itself down. If you start really fast as it starts slowing down, we slow down...

[inaudible]

30:52

Ben: I'll be here.

Abby: So if you go in as I come out?

Ben: If I press this and then aim for... And I'll slide...

Abby: No, sliding is too late. Your head got cut off by the light.

Ben: So I need to be down before I hit the light?

Abby: You need to be down before here (demonstrating)... Perfect.

Aaron: Can I have a look at that again Ben?

Ben: Is there like a shatter for this (reaching up through a plane)

Aaron: Yep (triggers it)

Ben: Yeah, as I push it up it shatters it

Abby: What about a ripple instead of a shatter.

[inaudible}
33:07

Aaron: Face the back. Now put your arms up like you're surrendering. Bend your elbows. Bring our hands into your head a bit more so they're straight.

Abby: It looks alright from the sides. Maybe it needs a moment of.. down and up again. Do you see what I mean?

Aaron: Yeah. When you're listening to the sounds Ben, what do you think of? I know you can't hear it very well...

Ben: It sounds like a dripping far away.

Abby: That was nice

Aaron: I feel like when we listen to this sound I feel like we're underground

Ben: Yeah, it's like a cave or something

Abby: That's nice Connor. Maybe after you've gone down and come back up again you lay down on the floor? Lay like you're just been chucked...

Ben: Like I've been chucked?

Abby: And then we could fade up the sides

Ben: I think purple would work nice, because we've got purple going on up there (gesturing)

Connor: Yeah, we've got purple on the floor.

Abby: If it was on purple already, we could just fade it from the beginning. Aaron, if we then stretched it really slowly..., Oh am I fading slower than you?

Aaron: I'm on maximum fade there

Ben: As that's stretching, I'm guessing some sort of like uncomfortable stretching out...?

Connor: I like that hand as it's coming up, like in pain

Abby: And then if I swap over to here (switches station). That's quite nice, a slow ripple as you're doing that. Aaron are you in there as well?

[inaudible]

38:52

Connor: It's kind of like, especially the way that Aaron's doing it, is like you're playing around in the sea, and the light is like...

Ben: You can get a slight ripple effect on that one

Abby: Only slightly. If I do it a little bit more... I think it would be really nice if you had actual contact. And you need to go now. Add another layer of body.

[inaudible]

Abby: Do you want to try from the start? Fade all that.

Ben: We start with the stretch don't we?

Abby: How far?

Ben: All the way up. Shatter one then shatter the other one.

Ben: I think we need another pair of hands.

Aaron: As soon as Abby comes in, give it like five seconds

[inaudible]

Abby: That's nice if you bang it again and then we slowly come out. As in out of the light. Why's there a line down here? I'm going through a line.

Ben: Er, yeah, we need to reset that.

[inaudible]

43:48

Abby: Wait for Ben to jump wasn't it, then you shatter it? Yeah and then Aaron, you run to the opposite one from me and fade up. Fade up and stretch as well. Why's mine got a wobbly line?

Ben: Are you on rotation?

Abby: I'm not on rotation at all.

Ben: That's not your one that's Aaron's one.

Abby: Oh!

Ben: That wall is Aaron's projector

Aaron: No it's not

Abby: So stretching, stretching, why's it doing that?

Ben: because you've got it rotating haven't you?

Abby: No I haven't. Stretching, stretching – of course it works now!

Ben: What were you doing?

Abby: I dunno! Stretching it! It doesn't like me.

Ben: Were you using this one, when Abby was stretching?

Connor: It's this one, it's this one.

Aaron: The movement from this one reacts these two side ones.

Abby: Right – ok I get it.

[inaudible]

46:02

Abby: And then Aaron comes in and I slowly start rippling. Aaron where are you going to come from.

Aaron: I'll be on this side

Abby: Aaron, slow down a little bit [inaudible] can you two make a connection with your hands above the light? That's nice... Connor come in...

Connor: And the if you explode all three of us can be like... AS you shatter all three of us can...

Abby: It won't let me shatter from there. Oh ok, so I'm like that, and then...

[inaudible]

53:52

Abby: I like it, but it depends on where the audience stand. From here you can't see it, but from the sides it looks really good.

Aaron: Just try swinging, just try swinging your whole body. Swing again

Abby: Connor can you take a step to your left

Aaron: Come forward, come forward a bit. Take a little step to your right

Ben: It's so disorientating

Abby: Ban take a step to your left. Do you want us to do it so you can see what we're trying to do?

Ben: You see I can't see Aaron at all really.

Connor: I can. I can see him when he comes in and out.

Abby: It looks nice though doesn't it? If I put the lights like this and come in with you. Aaron if you face Connor, I'll face Ben and we could... see what I mean. As you're in the space already... If Ben is stood there and I stand here and do with you.

Aaron: If you come underneath the light and swap places

Ben: So we go under this one. Do you want to go front or back? So we rotate

Session 3 – Choreographic reflections discussion

Interviewer 2: Shall we start with some instant responses? How did you feel about the process?

Connor: I thought it was interesting. It brings a whole new perspective to the way we were doing the movement. I mean stuff that say we had been just doing the movement in this kind of lighting, it would look – not boring – but at the same time, not very imaginative, but then with all the lights and dipping your arms under and stuff like that I think it makes the movement more imaginative and you can do a lot more with a lot less.

Ben: I imagined this as having like a set or like a 3D stage space if you know what I mean. Obviously a stage is 3D anyway, but yeah, it has height, depth, width and anything in between as well, rather than just what the audience would see. So, and because the light was always shifting, it was like having a constantly moving set or another person with you.

Abby: I think for me at first I found it quite difficult because there are so many options that we could have with each projector and then obviously we all have ideas of what we wanted as well, but then we all have to go well actually this projector can do this, how about this and sort of combine all our ideas together in a sort of choreographic creative process. It was quite tricky to start something and go, we're going to do this, this, this and this. Because there's so much scope that we could have.

Aaron: I thought that was quite helpful choreographically though, for ideas. It gave you a lot of ideas to play with and a lot of things you could do in that space with the lighting. Whereas if you were choreographing without lights in a normal space, you are there choreographing with one set thing, whereas with this, you've got four other different things that you can work with. And also movement wise as well, I feel like that in a set space without lighting in just a plain room, you're choreographing to one dynamic and one thing whereas again with this you've got the lights that are changing at different speeds, you've got different things that are moving, you've got the sounds. So choreographically I think it helps a lot. It really works.

Ben: I was going to say it's quite interesting for when you're performing as well, because you're not just performing but you're also being a tech at the same time. So you're having to do the lighting changes, you're having to think about, OK, this is how long I've got until the next lighting change and I need to get over to... from the stage space to the lighting in order to do that. And how much time do I have to do that?

Interviewer 1: Maybe we'll come on and talk about that a little bit more in a bit. I think I'd like to pick up on what Aaron just said. One of the things we were hoping to ask you and try and identify was how did that process differ from the process that you are used to? In terms of choreography, and I appreciate that you probably have all choreographed work in different ways, and all of you won't necessarily choreograph work in the same way every time you choreograph work. But if you could try and just maybe just articulate as much as you can how it differs for you?

Connor: I felt like it gave us more freedom, to... I don't know, just more freedom of movement. There were a lot more range of things we could do, than say just doing a normal dance. Because of all of the lights and using the lights and the way you move your body around it and in and out of different patterns we could have in the lights and how we could incorporate that into the movement.

Interviewer 1: It's interesting that you say that – more freedom and more range, because a lot of it is in the darkness and some people might look at that and say that's quite restricting.

Ben: I was going to say it's quite restricting, I mean yeah we are given a lot to be able to with this setup, but at the same time there's only so much movement you can see in the darkness and there's only so many things you can do going between lights. So yes whilst we've got a lot of stuff to be able to show with the light, the amount of movement we're able to do with that is reasonable restricted.

Interviewer 1: So there's a slight difference of opinion there between Connor and Ben. Connor you felt that you were able to present movement that you wouldn't have been able to present had you been in a...?

Connor: Not that I wouldn't have been able to present it, but just maybe that it was, it would get like a better reception with the lighting and using the lighting around that.

Interviewer 1: So you wouldn't necessarily have chosen the movements that you did then in a different scenario?

Connor: No.

Interviewer 1: Perhaps you would have discounted them as being...?

Connor: Yeah, as being plain or not very entertaining for people watching it.

Interviewer 1: So in that case it gave you freedom to explore those movements that in other scenarios you would have discounted?

Connor & Ben: [nods]

Interviewer 2: Were there any other challenges?

Connor: Nothing that we couldn't like work around. Nothing like, I don't know, we're never going to get past this

Ben: Yeah, we never had to not do something because we always found a way to be able to do it

Interviewer 2: So tell me more about solutions. How did you problem solve?

Connor: It was like massive brainstorming. Everyone was like, well maybe you could try this and if that doesn't work we did something with this light instead and then started piling all our ideas into one.

Ben: If for instance if that light interferes with these two, there was a particular point that we wanted straight lines and they were all going wiggly because of the back one, we were like, ok well how can we change the movement considering how we can't change the lighting as they'll effect each other. Stuff like that so it was more adapting to what we had to put up with rather than being, ok we're stuck, ditch that.

Interviewer 1: Ok, and I think you may have touched on this, but anything that you found surprising about what it allows you to do and I think Connor has probably just alluded to some of that but anything else that you might want to articulate? Anything unexpected in the process or surprising in the process, either about what you made or how you worked?

Aaron: I think I didn't realize how much we'd use level in it. Height, dynamics. And how much we used below the light, rather than above the light. It's very restricted above the light of that makes sense?

Interviewer 2: We noticed that didn't we?

Interviewer 1: We did notice that. That was a really nice piece when all three guys were under the plane of light and I think Abby you were controlling the kind of ripple effect. And most of it of course, you were rooted on the floor, but you did choose to do most of it underneath.

Abby: there was a really nice moment when Ben and Aaron's hand came out of the light, because when the audience are standing, if they're standing around the space that's all you can see, because

you couldn't see their body underneath the plane. So it was a really nice like... it was interesting to go around the room and see things from different perspectives in the room as well.

Aaron: I think now looking back, maybe rotating that level light to change our dynamics, rather than us adapting to the light

Interviewer 1: So you had a flat plane and you found yourself working under the plane, but then if you spun the plane to be vertical, you may have ended up working a slightly...

Connor: We did that, we were like moving our hand along the lights and we had a bit of a mirror effect going and we were pushing our hands against it and trying to keep it so that the light was between our hands and we were just like moving around.

Ben: I think we ended up not going with that because the audience couldn't see the light so well from the front.

Interviewer 1: Shall we talk about audience? It was one of the things we were going to ask you about and you've mentioned it a couple of times, so, yeah, your thoughts on how a work like this – if it were to be presented – how would you present it?

Ben: Personally I would stick it in just an empty room, like this and I would just have a door open and people could come in and walk around with the performance.

Interviewer 1: So it's more like a performance installation?

All: [nod] yeah.

Ben: I don't think it would necessarily work with a sit down audience, or have the audience prepared before it begins, I think it needs to start before the audience are there.

Interviewer 1: Why wouldn't it work from a fixed perspective?

Connor: Say we were doing it in there [gesturing towards another more formal performance space], so obviously it's getting raised, so people who are at the back are at the top are going to have no idea that when say us there are doing those movements underneath with just hands coming up – I mean all they'll see is the hands, and they'll disappear. And say if there was a bit when none of us put anything up and we're just moving underneath, they won't see any of that, they'll be just sitting there and just nothing. So I feel like they need to have the choice themselves to either duck under and have a look underneath...

- Aaron: I think there's a lot of placement with the projectors as well – how the projectors are placed.
- Interviewer 1: Yeah, because these aren't fixed remember. This setup is just how I had it set up for the installation that I did, but you can position them, the projectors, anywhere you want realistically.
- Interviewer 2: What about costumes, what would you do for costumes?
- Abby: I think maybe like all black. Because then the projection could be able to go onto it and when you have the colour you can see it clearly. Or maybe white, something very plain.
- Aaron: I don't know
- Interviewer 2: Black you'd get the silhouette, pretty much like you had today, or dark colours. What difference would a white costume make?
- Connor: I think you'd probably see, it would probably reflect more
- Abby: Again those moments where you're not supposed to be able to see, you'd probably be able to see them.
- Interviewer 1: So when you were putting this together, I just want to come back to this idea of audience perspective, did you have an audience in the round in mind?
- Connor: I think we started...
- Ben: I think it was more around there [gesturing in an arc to the entrance end of the room]
- Connor: Whoever was saying this looks good, this looks good, it was more when they were standing over here. And then as we were going round we were taking on different iPads and stuff to do different lights it was like actually if you're standing back here this looks kind of cool...
- Interviewer1: So this leads on to another thing that we would like to ask you about which was the delegation of roles. You've said here that you've had people performing and other people watching. In choreographic practice that you have done so far is that the case? Would you have somebody out sitting on the bleacher seats watching three dancers choreograph what they were doing, to tell what looks good or not?
- All: No
- Interviewer 1: But in this you are almost forced into that way of working.

Aaron: Yes you are

Connor: Yes as there's always someone on the lights

Interviewer 1: So tell me a little bit about that role. Tell me a little bit about how that divvied up. Was it always the same person who was giving a perspective or what?

Connor: I think it just depended on what part of it we were doing

Ben: Most of the movement came from the people in the space, but how it looked and how it was done was sort of provided by the people working the lights. So it was like where it would go, how it would go – but these people [gesturing to the centre of the space] would give the initial movement.

Interviewer 2: So who's the choreographer?

Aaron: I think it's just trying different things out.

Connor: Everyone had a bit of a shout at it

Interviewer 2: because if you're a technician and you're also a choreographer, or a dancer and a choreographer – you know it's interesting isn't it? This kind of multitude of rolls. I find that quite surprising.

Interviewer 1: One of the things we said before we disappeared upstairs was whatever you produce has got to be repeatable. And as dancers you're well used to remembering choreographic steps. How are you going to remember, or is it as easy to remember your other roles? Ben you talked a little when we first started chatting about how you're in the middle of a space performing and you've got to think, hang on a minute, I've got to be standing behind an iPad in 30 seconds. Does that just click with part of the choreography? Or how would you document that?

Aaron: yeah, I think it's part of the choreography.

Interviewer 1: It just becomes another step?

Aaron: Yeah

Ben: How I'm thinking about it – I said it to these guys earlier – I'm thinking of it almost as if I'm playing a game, when I'm playing that because as someone who plays lots of games I remember a lot of controls and how things work very quickly. So when I'm up there doing lights, I'm like ok yeah I now need to remember to do this because this goes in this particular order. Then when I'm on

the stage I transition to being a dancer and remembering steps. And when I come out of it again it's going back to ok now I need to remember this combination of inputs.

Interviewer 1: So it's almost a sequence of patterns that you've got to remember with your hands and a sequence of patterns you have to remember through your body – making a distinction between them.

Aaron: I find it just as much pressure doing the technician, in fact I possibly think that the technician's is a little harder because you have to precise everything, whereas if you were to dance, you can improv it - you can move through it. If you go wrong with the lighting, you're going to see - oh you've gone wrong there.

Interviewer 2: that's really interesting isn't it?

Interviewer 1: So a pressure then – a different kind of pressure?

All [nodding] yeah

Interviewer 1: because you all feel pressure as performers, but a different kind of pressure when you're behind those iPads? If we had an audience in here and we were performing it for the first time...

Abby: I think for me because at one point, them three were all on the stage, and I'm like –ok I know I've got to put one of them up in a minute but I don't know which one it is! So I did stand there for a good few minutes when we were rehearsing it like ok, definitely do this one, then this one. Ok but then that doesn't do that bit without that bit there...

Aaron: I think also doing this as well gives us an insight into the technicians and how it's like we can appreciate their role

Interviewer 1: Well you know that's my mission in life don't you Aaron!?

Aaron: Because a lot of people – dancers – don't really take the technician into respect

Interviewer 1: yes, it's a very different type of technical role, this. It's been built to be as transparent and as useable as possible. You picked up how to use this system in 45 minutes this morning with no instruction at all – well limited instruction. I couldn't teach you how to use the lighting next door in 45 minutes with limited instruction. It's a very different thing I think. And half the process is to enable different way of working, which I think we've seen today.

Interviewer 2: So could you identify areas of creative potential in this tool?

Ben: Would you be able to rephrase the question?

Interviewer 2: You were engaged in this creative process – where were your boundaries being pushed? Where is there further potential- what else can you see happening in the future with it, if you were given longer?

Connor: I could see us making a pretty long piece out of this just with all of the different things we could do with the lights and then adding in the different combinations you can have with the lights. And then different movements you can do with those combinations and you could make a pretty damn long piece out of it.

Abby: It would be interesting to see what it would be like with more dancers or more performers as well because then you could have more lighting changes during one set piece of movement or something.

Interviewer 1: yeah that's a very interesting point. I've got no idea what the optimum number of performers/ technicians would be in a space like this. Who knows what you would go on to create, should you wish to. What we didn't see so far was three technicians, one performer I don't think? And yes, that kind of combination, that switching out, of people switching out and that real kind of dynamic of dancer/ technician are just two different types of performer I think. Tech/ performer, dance/ performer something like that.

Appendix E Further discussion on the method and tools used to create Dynamic Light Structures

It is useful to have a visual idea of the ways in which conventional theatrical lighting differs from the light sources used within the three practical project pieces. This discussion examines the limitations of established lighting instruments when pursuing alternative imagery for the stage and challenges conventional wisdom over the control of light for performance. Image A demonstrates the effect of a conventional theatrical Fresnel lighting fixture. The fixture is built to produce a soft edged pool of light within a performance space and is frequently used to create an even wash of light across a stage space. In this respect it can be used to provide visibility for an audience, but also to contribute to the mood and atmosphere of a scene.



Image A - Visibility using a Fresnel. Created using Capture Argo

The position of the light demonstrates a front source position angled approximately 45 degrees vertically from the actor within the space. The McCandless (1953) method of washing the stage would see two fixtures focused in from 45 degrees along the horizontal plane, again at a similar vertical angle. This would produce a naturalistic image across the stage space with the light casting even and familiar shadows on the face and body of the performer. As mentioned, this is a method to create even and natural lighting, often seen in dramatic theatre to allow for visibility, mood, atmosphere, focus and sculpturing of the three dimensional form.

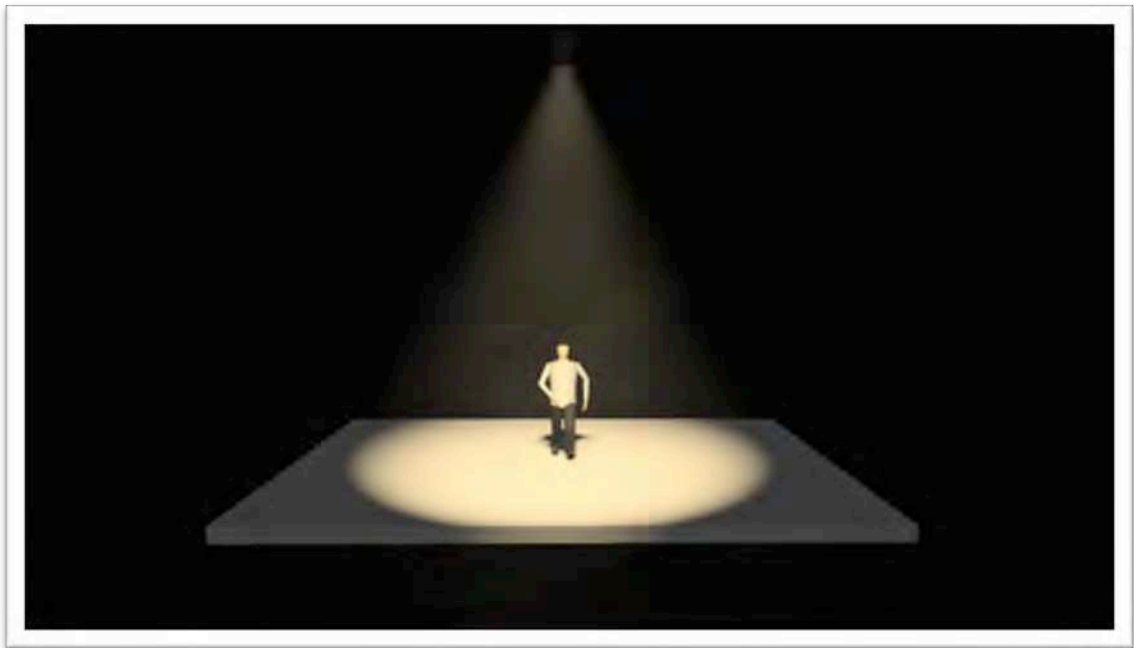


Image B - Visibility using a Fresnel with haze. Created using Capture Argo

Image B shows the same physical setup as Image A, but this time a degree of theatrical haze has been introduced into the space. The introduction of the haze conditions the space and reflects the light as it travels from source to destination. The resulting tangible light presence, so beloved of Svoboda, adds another further spatial dimension to the scene. The nature of the lens present in the Fresnel fixture is such

that the light produced will always have a soft edge, meaning that the resulting dimensional form of the light cone will have a diffuse and ill defined edge also.

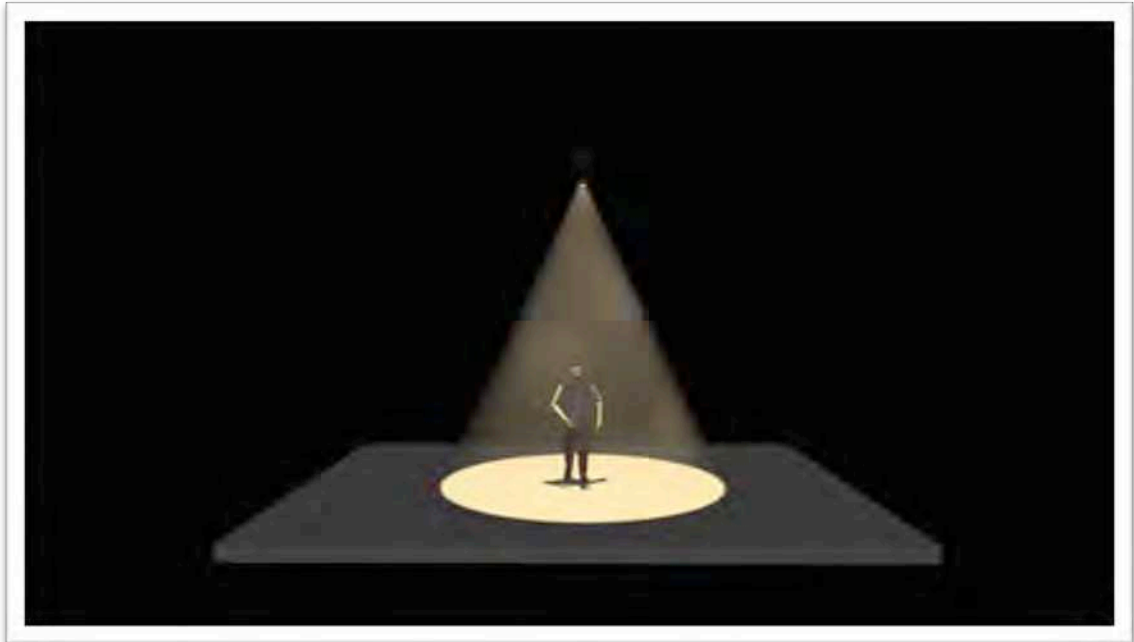


Image C - Down light created using a hard focus profile fixture. Created using Capture Argo

Using a different type of conventional theatrical lighting fixture affords the user a little more control over the quality of the light pool and visible light beam created when projected through haze. Image C demonstrates a generic profile fixture, the construction of which features two adjustable lenses. When positioned correctly, the resultant pool of light can have a very sharp, hard edge, and the emergent spatial form created is more defined compared to that produced by the Fresnel fixture. Furthermore, the profile allows the user to sculpt the shape of the light pool to a degree. By using four metal shutters (essentially moveable blades positioned between the physical light bulb and the moveable lenses within the body of the fixture), the scope of the resultant pool of light can be limited in a number of simple ways.



Image D - Light wall created through profile shuttering. Created using Capture Argo

Image D demonstrates the use of two shutters to limit the output light to a thin line. Through the haze, the resultant light form is that of a triangular 'wall'. The image not only presents a tangible light structure within the space, but also alters the balance of the mise en scène. The downward light position of the profile is not designed in the first instance to create naturalistic shadows on the face, even when fully presented as in figure 3. Because the resultant lighting is not present for pure illumination, as it is in figure 1, the final image becomes more of a collage between human and light form. The shuttered instrument can create silhouetted forms with limbs able to create deformations in the light structure.

Image E moves the performer behind the light structure and limits the human form heavily. At this point, limbs can appear as disconnected objects and the focus of the performer is the way in which the body can interact with the tangible light.

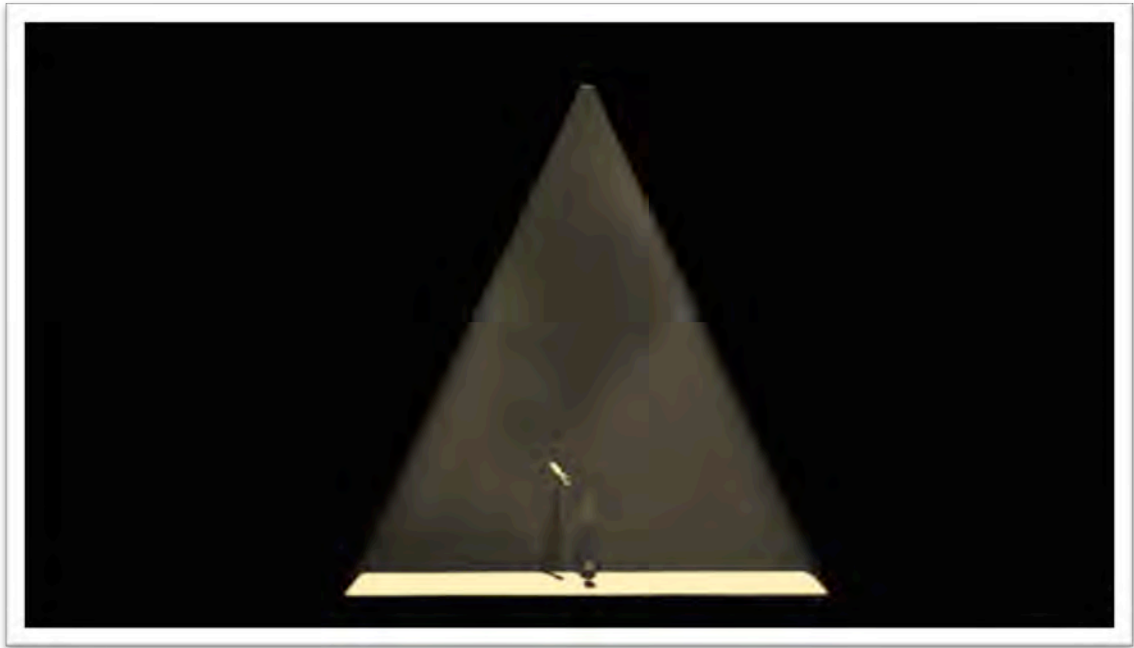


Image E - Performer interacts with physical light structure. Created using Capture Argo

The computer visualizations presented here describe a perfect environment that is quite difficult to replicate in the real world. Images A to C include a level of ambient light within the virtual performance space that can be naturally present in live environments. Full blackouts, as those shown in Images D and E, are hard to come by, with ambient light diluting somewhat the stark contrast between light structure and performer. This practical consideration was a real hurdle in the realization of the work in a live environment, and locations had to be chosen very carefully when preparing for live performance. Further efforts would then be made to maximize the contrast between lit and non-lit areas.

The conventional lighting fixtures considered to this point, specifically the profile type, seem to offer quite a suitable set of tools for the construction of light based performance work. However, by their very nature, they are fixed once set in place.

The image in Image E could not be altered save a change in intensity. A lighting control desk could affect a fade from zero intensity to full and the fixture could be caused to change state quickly or slowly, but the spatial form would stay the same. A number of similar fixtures could be used to create a variety of structures within the space. Image F demonstrates a three-profile setup, creating an open sided box offering multiple planes with which the performer can interact.

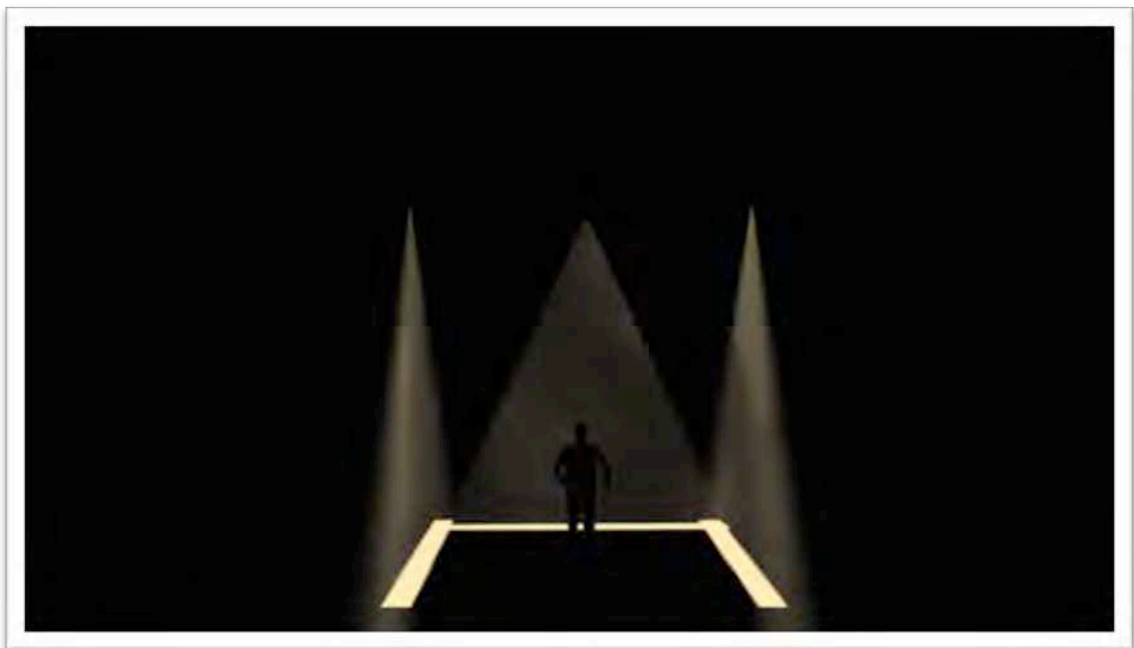


Image F - Multiple fixed light structures. Created using Capture Argo

Again a traditional lighting desk would now be able to control the intensities of each lighting structure individually, with more fixtures providing an increasingly complex and flexible combination of light planes within the space. The shutters inherent within the profile fixture are capable of creating lines, rhomboid and triangle shapes and so a combination of these could be used when building a light environment. The static nature of the instrument could be addressed by using a more complicated piece of

equipment such as the ETC *Source Four Revolution* luminaire¹. This fixture features a motorized yolk allowing the user to move the focus position through the x and y axes from the control desk. It also has an option to include a motorized shutter module, which would again offer another degree of flexibility and element of animation on the construction and presentation of the physical light structures. However, the resultant forms are still limited by the physical constraints of the hardware design and the traditional method of control. The same can be said for more advanced technologies. Intelligent lighting fixtures offer a number of present ‘gobos’; selectable shapes through which light is projected to create a pattern within the space. Image G shows a Martin *Mac Quantum Profile*² intelligent fixture with a circular gobo selected. The resultant light structure is a cone that be moved remotely through the stage space.

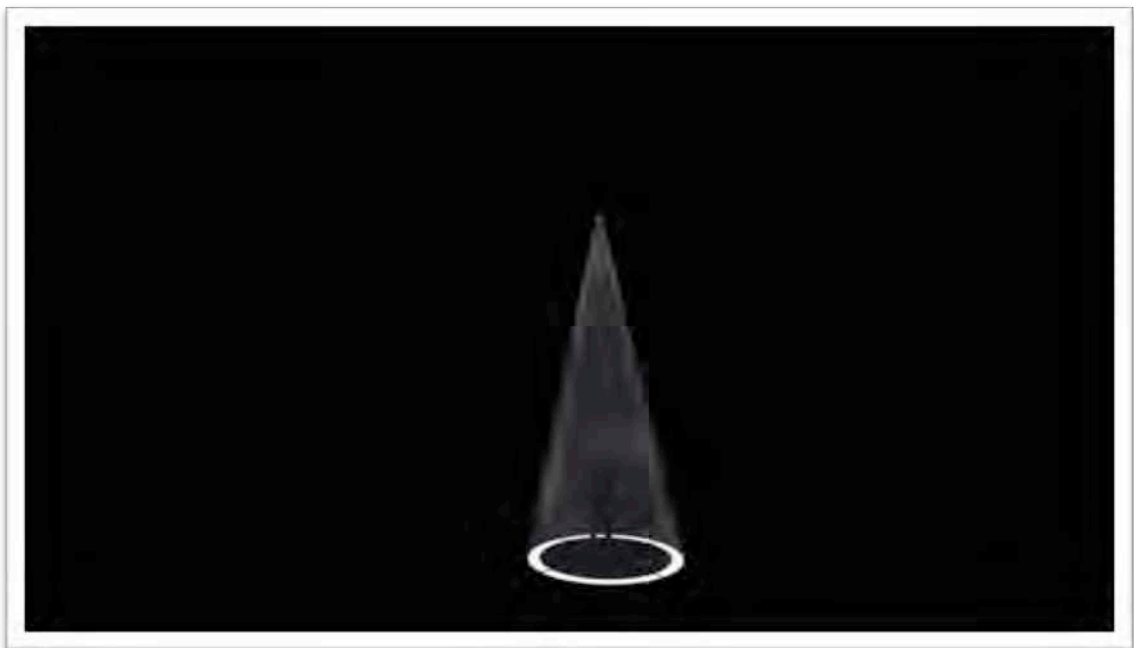


Image G - Mac Quantum Profile with circle gobo. Created using Capture Argo

¹ <http://www.etcconnect.com/Products/Lighting-Fixtures/Source-Four/Source-Four-Revolution/Features.aspx>

² <http://martin.com/en-US/Product-Details/MAC-Quantum-Profile>

A number of different gobos can be chosen using a range of similar fixtures. Combining these with convention profiles would be a way of exploring a range of light structures within a space. However, the user is still limited to the set of options inherent within the fixture design. The most recent development in intelligent lighting fixtures sees media servers feeding remotely moveable projection devices, such as the High End Systems *DLHD Digital Light*³. Ordinarily, these devices provide high quality, color textures and images to be projected into a performance space and are often seen at large scale musical events and television shows. They would allow for the development of user content, whereby shapes to create light structures within a performance space could change and deform over time. This would hark back to scenic images such as those created through the installation work of Anthony McCall. However, again, this would require production preparation that would culminate in a fixed output that would be repeated in the same way throughout every performance. Perhaps more problematic for the creation of experimental performance content, the cost of these devices run into ten of thousands of pounds at the time of writing. Despite the move in focus from traditional theatrical lighting to a more conceptual form of a theatre of images, it does nothing to promote the lighting designer to that of Hunt's (2011) *Lighting Artist*, with the facility to act and react independently of and in concert with a performer at the point of live presentation.

For this to happen, the data projector, with non-prescribed lighting function offers a blank canvas to the *Lighting Artist*. It is capable of projecting an image into space. The line created through Profile shuttering shown in figure 3 can easily be replicated by projecting a simple graphic image of a line through a standard projector. A simple

³ <https://www.highend.com/products/digital-lighting/dlhd>

circle with replicate the image presented in Image G. Just like the High End digital lighting system, the data projector is capable of playing back predefined animated content from a computer to create morphing structures for a fraction of the cost. The key to the flexibility of the data projector is its association with the computer. Anything that can be displayed on the computer can be projected and it is this simple construction that allows the Lighting Artist the live, real-time control over performance visuals that can be more limiting when using established lighting technologies.

Hunt (2011) challenges the linear, snapshot based method of the traditional 'theatre stack' of lighting cues. He suggests that the predetermined and pre-recorded combination of lighting fixture intensities that make up the lit scene on stage stifles the Lighting Artist. His proposal for manual, rather than computerized control of a number of fixtures over time, to constantly rebalance and develop the lit scene, puts the Lighting Artist in a more direct conversation with the performer on stage and the observing audience. As stated, conventional lighting control desks would have little use within a data projector based setup and so a more flexible control environment had to be sought. The word 'control' here is perhaps a little misleading as I was in no way looking to control the data projectors in the same sense that a lighting desk might control the panning movement or colour change capability of an intelligent lighting fixture. Aside from a few performance options, data projectors can either be turned on or off and so to imply that I was seeking remote control of the device itself is not the case. What was needed was control of the visual imagery to be projected – if a circle was needed, how could this be formed? How could I switch to a projected line

quickly and easily? Could these images be manipulated in real time, thereby providing animated light structures within a space?

The advent of the now ubiquitous touch screen surface opens up a range of possibilities for remote computer based control. Apple's iOS⁴ operating system together with the Android⁵ operating system for mobile devices provide platforms for third party developers to create applications for a world of purpose. Looking again at the music industry, iPads and other similar surfaces are now being used to manipulate electronic instruments as part of live performance, acting as remote controls for software recording programmes and as instruments in their own right. Applications such as Hexler's *TouchOSC*⁶ and Liine's *Lemur*⁷ provide a blank canvas for the user to create bespoke control mechanisms that communicate with a central computer through the Open Sound Control network communications protocol. These applications provide an ultimate flexibility in the performance development process. Hunt mentions hardware-based solutions to his live lighting control proposals:

Concert lighting consoles generally offer this facility via banks of sliders, but other interfaces are possible, such as a music keyboard (with echoes of Bentham's Light Console) or one of the numerous and often highly inventive MIDI interfaces designed for the manipulation of audio. (Hunt 2011, p.218)

However, I believe that these are limited, and to a large extent, still somewhat technologically deterministic with regard to outcome. Software control mechanisms have the advantage of allowing for a bespoke control system that relates directly to

⁴ <https://www.apple.com/uk/ios/>

⁵ <https://www.android.com/>

⁶ <http://hexler.net/software/touchosc>

⁷ <https://liine.net/en/products/lemur/>

the requirements of the work at hand. They can change and grow with the needs of the performance and guarantees that ‘the operator acquires a significant degree of artistic control over the lighting for the performance.’ (Hunt, 2011: 218). With this in mind, both *TouchOSC* and *Lemur* were used on a number of iPad control surfaces to control the projected dynamic light structures throughout the three practical pieces. In this way, both pre-rendered images could be sequenced and played back, as might be seen in traditional control methods, together with operator generated and manipulated structures that could act and react to performer movement and be a result of live aesthetic and artistic decisions that occur in the moment.

The final element that completes the performance system is that which generates the visuals to be projected. The touch screen surface can provide information that dictates elements such as position, size and shape of image to be projected, but it will not generate this image. Mark Conglio’s *Isadora* software, whilst not primarily a graphics programme, does provide a facility to create simple graphical structures. More importantly, it is capable of receiving and acting upon Open Sound Control data. Image H exemplifies a simple *Isadora* patch that generates a line graphic.



Image H - Simple *Isadora* line graphic generation

In this instance, the tool provides a graphic programming environment whereby the position, thickness and colour of the line, can be determined by the blue block on the left of the image. Once established, this generated graphic is passed to the 'projector' block, which is simply the physical VGA output from the computer running the software to the attached physical projector. The resultant graphic, displayed to the right is that which is finally projected into the stage space.



Image I - *Isadora* line generation with OSC position control

Image I develops the control capabilities of the environment. The four blocks identified as 'OSC Listener' wait for incoming Open Sound Control information and

passes the subsequent values to the position coordinates of the line graphic (thus the red connection lines from the value outputs to the various coordinate inputs on the line block). The position of the line is dictated by the start and end x coordinates together with the start and end y coordinates.

Finally, Image J shows a simple control, surface constructed using the *TouchOSC* application for an iPad. It provides a large square in which the user can place two fingers to define the position of the line generated within *Isadora*. As the user creates finger movements on the surface, the graphic responds instantly. The surface also allows for a simply colour change facility with the user able to scroll through a range of colours using the fader on the left hand side of the screen.



Image J - Simple OSC control mechanism in *TouchOSC*

The simple software based graphic generation and live control mechanism outlined here can be developed into something much more complex should the need arise.

Isadora can generate freely drawn graphics, meaning that organic shapes and flowing animated structures can be created, either drawn live by the Lighting Artist, or pre recorded and played back in a more conventional lighting control way. The key attribute of this system is that the process by which performance lighting is created shifts dramatically from the predetermined attributes offered by established hardware to something much more flexible and open for exploration. This is not to say that the lighting system does not have its limitations; clearly the projectors themselves are fixed and have a limit to their scope of projection. Wide angles lenses can be used to enhance the projection boundaries, but nevertheless, ultimately the physical light structures created as the graphics are projected through haze have boundaries and preset spatial limits, but the flexibility in terms of design opportunity and live participation offer a new direction for performance construction. The image of the static shuttered profile presented in Image D, would be replicated exactly by a vertically hung projector linked to the *Isadora* patch represented in Image I. However, this time, the line can move upstage and down, from stage left to right. It can rotate, it can be resized and it can change colour. With a simple development of the *Isadora* patch, it could split into individual beams of light, or it could morph into a new shape entirely, all under the live control of the Lighting Artist as they draw manipulable scenography into the performance space with a wave of a hand.

This projection based lighting structure method is not meant to replace conventional theatrical lighting. Rather it is an attempt to develop ways in which new image based theatre can be created.

Appendix F Limitations

The research practice was of course subject to limitations and practical considerations. Physical conditions of space played a huge part in defining what could and could not be done. Something as seemingly simple as access to a complete blackout would predicate the success of the visuals and the solidity of the Dynamic Light Structures. On occasion where *Etched* was performed through invitation the limitations of the performance space in this respect had a direct impact on the performance itself, something that was compounded by the boundaries of the technology used. Standard data projectors with wide angled lenses were affordable, but ideally much more powerful projectors would be used. Modern projectors with a light output of 10,000 lumens would make for a much more solid light structure visual, but both cost and space (the projectors are physically large) prohibited their use. Hanging projectors of this size and weight would also be expensive and potentially require a much more comprehensively structured rigging position.

At the time of the practical research, the control system based on iPad surfaces was entirely reliant on Wi-Fi connectivity. Whereas this didn't disrupt performances in general, there were a limited number of occasions when performing *Etched* where this connection would drop out leaving static stages and an inability to move the performance forward. The drops were always temporary, but inevitably disconcerting and seemingly random. A range of factors making communications problems difficult to diagnose and correct, especially when in unfamiliar surroundings, can disrupt Wi-Fi signal. Since these communication issues, physically connected solutions have become available offering a much more robust control system.

Gathering visual evidence of Dynamic Light Structures was difficult, due to the nature of the physical environment. Very low general light levels punctuated by areas of bright light presented difficulties for cameras in capturing video footage. This compounded by the plasticity of the environment with Dynamic Light Structures having greater or lesser solidity depending on the angle from which they are observed. This was most problematic during the *OSV as Choreographic Tool* project where the research relied to some extent on the examination of video and audio footage after the event. Audio capture was also difficult, as fixed microphones would record dancer conversation as well as installation sound generation equally making it very hard to hear conversational speech at times. The audio capture issues could have been addressed to some extent by issuing each dancer with a radio microphones, but this would have been cost prohibitive at the point of research.

The backbone of the entire Dynamic Light Structure system was also a source of limitation at times. Theatrical haze is a ubiquitous tool found within dedicated theatrical environments, but can be very difficult to work with away from such purpose built spaces. All the practical work undertaken was performed and installed within various Higher Education institutions and at all of them getting smoke alarms disabled was problematic, either due to time limitations for alarm systems to be disabled or cost implications for switching the systems. These difficulties are understandable as educational environments are not set up as theatre spaces in this respect, but it does pose problems with regard to the pedagogical implications of the research.