A Critical Inquiry: Paintbrush to Pixels; Developing Paradigms In The Production and Consumption of New Media Art.

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STATEMENT:
This research was undertaken under the auspices of the University of Wales: Trinity Saint David and was submitted in partial fulfilment for the award of a Degree of PhD in the Faculty of Art and Design of the University of Wales.

2017

Abstract

Art represents our culture, and our current culture is largely dependent on technology. However, artworks created and exhibited with digital technologies have not been as perceptible so far within contemporary arts institutions as traditional analogue art forms. This thesis instigates a critical investigation into the development and values of technology-based art works utilizing qualitative interpretations of the data. Whilst this rapidly changing field is problematic in terms of a conventional conclusion, the principle aim is to explore whether an improved understanding and awareness of new media art is required as a result of the paradigm shift caused via the permeation of digital technologies across art practices. The resulting new methods of production, distribution, and consumption within art require updated models of critical engagement.

An appropriate paradigm shift in respect of institutions, curators, and artists will aid the integration and awareness of new media art into the broader art world. Whilst my hypothesis implies an argument for a greater presence of new media art in arts institutions, I conclude however that it is better suited to alternative modes of exhibition, such as festivals, craft labs, and workshops, as a shift from traditional art paradigms means they no longer require traditional structures of display. New media based art would truly benefit from greater awareness through a developed lexicon, education, and reportage. The balance between the institution, and growing trends such as festivals and commercial applications has been identified as key.

If art forms utilising new technology do not also utilise the new expressive language it affords, then they will merely be seen as replicating old forms, rather than developing new and revolutionary ones. New media's role within art is through a progressive discourse, which is still to fully reveal its place and relationship with mainstream contemporary arts. Based on an extensive critical survey and a probing investigation into the current parameters of new media arts this thesis seeks to contribute to that discourse.

Acknowledgements

This thesis is dedicated to my loving parents Cathy and Lawrence, brother Dean, wife Sian; and is for the future creative prospects of my children Ellie and Charlie.

The completion of this work would not have been possible without the continued advice and support of my supervisors Dr Karen Ingham, Dr Howard Riley, and Dr Paul Jeff, and the generous support of the University of Wales Trinity Saint David.

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Opening Quotes

The art challenges the technology, and the technology inspires the art.
(John Lasseter in Iwerks: 2007)

Electronic tools and media have shattered the very paradigm of cognition and representation we have been operating under since the Renaissance.
(Lovejoy: 2008:13)

Preface

Hypothesis

The main hypothesis of this thesis is that for new media art to improve its appreciation with both curators and audiences it needs to cultivate a progressive paradigm shift, one that includes new modes of exhibition and dissemination, as well as utilises appropriate and contemporary modes of creativity. These new methods of production and consumption regarding new media art must demonstrate innovative emergent models of engagement and interpretation that break with the status quo, as currently exercised in the showing and reading of traditional analogue art forms within our institutions.

This hypothesis will be tested through a large-scale critical survey of so-called new media arts and their integration thus far into current art practice and its dissemination. Further, the thesis will aim to draw conclusions from this major survey of ideas and methodologies pertaining to new media arts in order to signpost a more appropriate and recognized direction for the future integration of these innovative and contemporary art practices.

This thesis was stimulated by my interest in new technologies and new modes of creativity. My MA in Visual Communication work focused on the relationship between art and advertising. Whilst completing my major project I became increasingly aware of the influence of technology over creative practices and the developing modes of consumption for creative content. However, whilst there has been a considerable shift in how work is created, there appeared be limited exposure in galleries and arts magazines. For example; during my early literature review I was

disappointed to find that many journals, including Arts Review, and Map, only featured new media art (a term which I discuss in detail later in this preface) in the back of the publication, and this was often not a regular feature. Many articles and web searches that mentioned art termed as digital art presented work that was rarely more than Photoshop fantasy illustrations.

When looking for art works in gallery spaces in the early stages of the literary search there appeared to only be a few specific locations where this work could be found. Galleries such as FACT[1], Furtherfield[2], and the BFI exhibition space[3], were established for new forms of media and technology related art, but these were specialist and were aimed at an audience that already had an appreciation for creative technology. Popularised galleries such as the Victoria and Albert (V&A), Tate, the Saatchi gallery, and White Cube, were interested in contemporary art works, but rarely ones utilising technology. Tate Modern featured the work *Fearful Symmetry* (2012) by Ruairi Glynn, which was essentially built from new media, but it appeared more magical and supernatural than technological. It also had a physicality to it, and an ownership of space that many new media pieces do not achieve. The Tanks[4] were a new space, which are the foundation for a futuristic tower expansion to the Tate Modern gallery. However, the perception of new media work being screen based is dated, and much of the work that is pushing the boundaries uses coding and computer sensor technology to manifest itself as physical sculpted pieces. This was often the case at the Victoria and Albert museum's *DeCode: Digital Design Sensations* (2009) exhibition, which I will discuss in depth later in this thesis.

I became concerned that arts institutions appeared to be slow, or at worst, reluctant, to embrace technology-based art. My literature review revealed that whilst the exploration of this medium was developing nearly as quickly as the technology being utilised, there were substantial issues impacting upon its collection and curation. I was not alone with my concerns as increasingly academics and practitioners had begun to comment on similar themes:

> Is the apparent fact that New Media criticism seems to either be exclusive, disparate or unseen the fault of the writers, the superstructure eliding it, or perhaps the 'medium' itself? (Lichty: 2013)

There are likely to be a number of issues effecting new media art's presence within arts institutions. Those that I noted initially were that firstly, it is a transient medium in many cases, being available for only a limited before it is taken down or become inactive. Secondly, the methods of archiving continue to be developed and are not wholly defined. Finally, there is the instability of the medium that renders it problematic for curators, collectors, and archivists, by changing form or compatibility with newer systems. The rapidly changing field of technology during writing this thesis was a challenge, and this is reflected in my conclusion and the decisions made in relation to lexicology and medium specificity.

> The acceleration of technological development in contemporary society has a direct impact on our everyday lives as our behaviours and relationships are modified via our interactions with digital technology. As artists, we have adapted to the complexities of contemporary information and communication systems, initiating different forms of creative, network production. What part do we play in the evolving techno-consumerist landscape which is shown to play on our desire for intimacy and community while actually isolating us from each other. (Garrett and Catlow: 2013)

The problems that I initially identified led to the hypothesis that an improved understanding and awareness of new media art requires a paradigm shift towards new modes of exhibition and appreciation to have parity with other art forms. Identifying new methods of production and consumption within new media art require emerging models for engagement, in addition to the traditional paradigms of analogue art forms. By proposing such a paradigm shift, this radically restructures what Pugh and Phillips (2002) termed the "background theory" of the whole discipline. The problem has been approached and analysed in an original way, so that anyone coming to this field will benefit from my findings.

When researching further and looking internationally, some arts institutions and governments appeared to be more supportive of the emerging medium. I will discuss the fluctuating prominence of technology-based art between nations, as part of the issue of equality of new media arts exhibition and its presence in the art world.

I will explore why the medium should have parity with other, more traditional forms of creative expression. Therefore, the research for this thesis focuses upon the current and potential position of new media art within curation, collection, and its promotion. By identifying conflicts between traditional approaches and the emerging requirements of this evolving medium I will suggest a new model for its integration and engagement. This will include approaches to curation, collection, and the terminology to be used.

This thesis has a strong technological perspective for two specific reasons. Firstly, my background is new imaging and interaction technology. I have a particular skills base

in experimenting with new technologies and ascertaining their potential for practical and creative applications. Secondly, I am intrigued by the impact of new technology on the creative act. There is a position of freedom in the creative arena that allows new technologies to be explored and new processes developed without the restrictions of industry, politics, and social structures. There is a substantial drive in this thesis to explore the impact of technology on creativity, exhibition and audience experience. I will demonstrate how the intersection of art and technology is able to develop new ideas, processes and models for artists and institutions. The impact of this intersection will inform my conclusions to this thesis.

Technology plays an increasing role in revealing more about the human condition and the world around us through its ability to be harnessed for research into medicine, ecology, geology, and a range of other sciences; as well as observations made of its role in communication. Art already refracts a vision of the world through the eyes of artists. The intersection of art and new technology is an exciting prospect for what it may be able to facilitate. Therefore, this thesis will frequently make reference to emerging technologies, particularly within the field of digital imaging.

Digital technology has caused a deep change in the modern world and this echoes through the stages of the artwork including exhibition and archiving. Therefore, understanding the technological aspects will reveal more detail on the wider reaching implications of this shift and may inform the structure of future models. The art works discussed here are the result of new technology and reflect technological developments. I am particularly interested in work that is influenced and informed by the developments in technology, particularly how emerging technology is adapted and

turned into a creative medium. This also accounts for my use of the term *new* in new media, as I am specifically interested in the new and emerging technology. I would argue that this is from where the most dynamic work originates from; when new forms of creativity arise from unexplored and emerging mediums, which release a creative and conceptual potential.

Although technology within art is not new, and I explore some work in a historical context, I am less concerned with existing artwork, and I am particularly excited by the work that is yet to be developed as the result of exploring a new visualisation technology. At the time of writing this thesis there was a particular focus in the digital imaging industry on creating ultra high-resolution images. Images that were so densely packed with pixels that individual pixels could not be seen by the naked eye, and immersive forms of three-dimensional imagery, such as screen and projection technology, were making their way to mobile devices, as well as in fixed locations such as the multiplex. Whilst I make reference to, and review through cases studies, art works from a long ranging timeline, I have used examples that demonstrate some of the key moments in new media art's history, and indicate the depth of the impact which technology can have on art and creativity.

The examples discussed in the chosen case studies range in technological sophistication, and indicate how the available technology of a given time can influence our understanding of its creative impact, and cause long term repercussions for how we think about art. Democratisation of art has been accelerated and strengthened by technology and is more available for creation, and more accessible for distribution.

To critically foreground the evolution of technology, particularly new media, and its relationship to art I will make my introductions to this thesis by first exploring this relationship, which whilst not mutually exclusive, has benefitted from one another, and has been a considerable, if undervalued, driving force for one another.

If we consider technology within art to be a device or process that develops and progresses our ability to create, then tools from the paint brush, to the kiln, to the stylus, to the three-dimensional scanner, to the Microsoft Hololens[5] have all developed our ability to create, interact, and view works of art. In some instances the creative tool has been developed from an unrelated technology, which has been repurposed to fulfill the needs of the artist, either specifically or experimentally. The evolution of technology is one of experimentation and a careful balance of meeting needs and fulfilling desires. The pace and ownership of technology is limited by money in many cases, technological understanding, and developing the strengths of previous advances.

Art shares a number of similarities and links to technology's approaches; however, it differs in that it is not influenced by the same financial implications. They both thrive on experimentation and fulfilling the desires of those that create it. They require knowledge and techniques that have been developed and refined over time. Art's role of interpreting and representing the world is linked to technology's ability to distribute and facilitate that activity. At the intersection of art and technology traditional skills, practices, and modes of understanding are articulated with a new voice, which enhances the established concepts with current and evolutionary messages. Artwork is often a reflection of our time and current understanding of the world. As a result, art is

increasingly exploring the effects of technology on the human condition due to the substantial shift in the prevalence of technologies, and their impact on our development. Whilst technology is the cause of concern within this thesis, it may also provide the answer to solving its own problem.

Structure of Research and Paradigms

Issue	*Positivism*	*Postpositivism*	*Critical Theories*	*Constructivism*	*Participatory*[a]
Nature of knowledge	Verified hypotheses established as facts or laws	Nonfalsified hypotheses that are probable facts or laws	Structural/ historical insights	Individual and collective reconstructions sometimes coalescing around consensus	Extended epistemology: primacy of practical knowing; critical subjectivity; living knowledge
Knowledge accumulation	Accretion—"building blocks" adding to "edifice of knowledge"; generalizations and cause-effect linkages		Historical revisionism; generalization by similarity	More informed and sophisticated reconstructions; vicarious experience	In communities of inquiry embedded in communities of practice
Goodness or quality criteria	Conventional benchmarks of "rigor": internal and external validity, reliability, and objectivity		Historical situatedness; erosion of ignorance and misapprehensions; action stimulus	Trustworthiness and authenticity including catalyst for action	Congruence of experiential, presentational, propositional, and practical knowing; leads to action to transform the world in the service of human flourishing
Values	Excluded—influence denied		Included—formative		
Ethics	Extrinsic—tilt toward deception		Intrinsic—moral tilt toward revelation	Intrinsic—process tilt toward revelation	
Inquirer posture	"Disinterested scientist" as informer of decision makers, policy makers, and change agents		"Transformative intellectual" as advocate and activist	"Passionate participant" as facilitator of multivoice reconstruction	Primary voice manifest through aware self-reflective action; secondary voices in illuminating theory, narrative, movement, song, dance, and other presentational forms
Training	Technical and quantitative; substantive theories	Technical; quantitative and qualitative; substantive theories	Resocialization; qualitative and quantitative; history; values of altruism, empowerment and liberation		Coresearchers are initiated into the inquiry process by facilitator/researcher and learn through active engagement in the process; facilitator/researcher requires emotional competence, democratic personality and skills

Figure 1. Research Paradigms Matrix- Inquirer Posture (Denzin and Lincoln: 2005:196).

Paradigms Used Within This thesis:

- Participatory
- Constructivism
- Critical theory et al

Identifying the research paradigms in which my thesis was to be conducted enabled me to develop its structure and focus. The modes of inquiry, which were appropriate for each of the paradigms the thesis spanned, guided and informed the methodology, as well as defining my position on a number of key issues. My hypothesis and its research methodology shared a synergy in that they both focused on exploring the developments and consequences of a paradigm shift. The methodology for the modes of critical inquiry that have been utilised was based on the structures of the chosen research paradigms. My inquirer posture, which fluctuates between chapters, is located within three main research paradigms.

Here I will present the rationale for the chosen research structure and paradigms, and will detail how the research paradigms and areas of activity have influenced the methodology of this thesis. I will also detail the epistemological and ontological position of this thesis.

I have adapted the PhD writing guidance of Phillips and Pugh (2002:58-73) to form the structure of this thesis's methodology. The area of focal and background theory frame the introduction and conclusion, and are frequently referred to as they not only enabled me to focus on current issues within the field of study, but ensured the thesis responded to my hypothesis and its rationale. The background theory was based on an extensive and on-going literature review. This ranged from art journals, to media theory, to cultural theory; to the reviewing of artists and new media art exhibitions.

The preliminary background theory was conducted by a literature review of the current theories of how new media art is perceived and the issues that impede its integration.

The contributions of seminal figures within new media and new media art were discussed and evaluated. The area of value and a required paradigm shift in current curatorial processes were identified as a theoretical weakness in existing critical theory. Additional and more focused theory was reflected upon as part of each chapter's specific investigation.

During the literature search and the process of planning my approach to writing this thesis I worked on three key areas of activity that formed the focal theory.

The first area of enquiry examines technical, methodical, and social developments within the field over the last thirty years. It set a limit of approximately the last thirty years as the rapid and increased development in computer technology since the early eighties has substantially impacted upon the kind of work I am discussing, more so than much of the work before this time. This encompasses a particular focus on the theoretical understandings of the relationship between art and technology, and how this has evolved. It also discusses the current dialogue and issues surrounding the way that new media art works are thought to differ from traditional forms.

Within the second area of inquiry the observational case studies that were conducted enabled me to define a new taxonomy and paradigm for the classification, curation, and critique of technology based art. These have been developed from existing positions and understanding from a range of sources both theoretically and pragmatically. They will also provide qualitative evidence that will form the basis of my theories.

The third area of inquiry developed the summaries of each chapter and enabled me to design the processes that could be potentially adopted. The developed theories and taxonomies further expand on the observational case studies by sharing my findings through a lab experience that involves curators and gallery managers. This process facilitates the reflection of relaying my theories to the areas my hypothesis is most concerned with. This process also provides summative evidence for my conclusion.

Whilst research paradigms within the arts discipline can be problematic to identify with, as they are developed out of the technical and social sciences, this thesis found that relationship to be advantageous. One of the first paradigms that informed me of my inquirer's posture was Constructivism, as I am a passionate participant whose motivation within this thesis is to improve the understanding and position of new media art. As such an advocate, this thesis presents a unifying voice for the range of critical and practical concerns to which this field is subject.

Whilst my thesis is within the field of arts research, and my main paradigmatic influence are Denzin and Lincoln's (2005) *The SAGE Handbook of Quantative and Qualitative Research*, there is a benefit to exploring the paradigms of other research fields. For example, Gary Thomas, author of *How To Do Your Research Project* (2010:73), details the two social sciences research paradigms that were useful for me to consider throughout this thesis. These paradigms are Positivism and Interpretivism. Positivism was not appropriate for my thesis as it only allows the world to be studied objectively and my research required opinions from a range of qualitative sources and experiences. It uses general accounts to inform specific points. Positivism also removes the researcher's own value position from the work.

Interpretivism as a paradigm appreciates that knowledge is everywhere and is socially constructed. This is important to the hypothesis, as it requires the interrogation of a co-constructed understanding of which the audience is a key part of the relationship in the exhibition of artwork.

Interpretivism allows for all forms of information to be valid as knowledge. This has been particularly important when exploring the plethora and variety of data sources which have enabled me to compare a selection of opinions, and which interpretivism enables specific accounts to inform each other. This paradigm takes into account the researcher's own value position to inform the research. This was particularly pertinent given my position as a tutor of digital art and new media. My own experiences and opinions formed the hypothesis, but have developed postulates throughout the interpretation of new information.

Interpretivism is important to my research, as when it is applied to analysing data it considerers that information is: "Not straight forwardly perceivable because it is constructed by each of us in a different way." (Thomas: 2010:75) This resonates with the idea that there are a number of perspectives over the application of new media within art, and when considering the taxonomy and lexicon further it acknowledges that: "with words and events carrying different meanings in every case. An entirely different mind-set and set of procedures is needed to inquire into it." (Thomas: 2010:75). As I have discovered during my literature review a new mind-set is required when exploring the issues surrounding new media art.

The term Interpretivist was previously used by Denzin and Lincoln (1994:536.2) as a research paradigm in their first edition of the *Handbook of Qualitative Research*. However, by the third edition this term had been reduced in importance and replaced by a more detailed range of paradigms that encompassed the requirements of a number of disciplines, including the emerging and developing area of art research.

Issue	*Positivism*	*Postpositivism*	*Critical Theory et al.*	*Constructivism*	*Participatory*[a]
Ontology	Naïve realism—"real" reality but apprehendible	Critical realism—"real" reality but only imperfectly and probabilistically apprehendible	Historical realism—virtual reality shaped by social, political, cultural, economic, ethnic, and gender values; crystallized over time	Relativism—local and specific co-constructed realities	Participative reality—subjective-objective reality, cocreated by mind and given cosmos
Epistemology	Dualist/objectivist; findings true	Modified dualist/objectivist; critical tradition/community; findings probably true	Transactional/subjectivist; value-mediated findings	Transactional/subjectivist; co-created findings	Critical subjectivity in participatory transaction with cosmos; extended epistemology of experiential, propositional, and practical knowing; cocreated findings
Methodology	Experimental/manipulative; verification of hypotheses; chiefly quantitative methods	Modified experimental/manipulative; critical multiplism; falsification of hypotheses; may include qualitative methods	Dialogic/dialectical	Hermeneutical/dialectical	Political participation in collaborative action inquiry; primacy of the practical; use of language grounded in shared experiential context

Figure 2. Research Paradigms Matrix- Ontology, Epistemology, and Methodology (Denzin and Lincoln: 2005:195).

Denzin and Lincoln's *Handbook of Qualitative Research* (2005) details research paradigms and their theoretical and practical issues (Fig.1), as well as the ontological, epistemological, and methodological parameters (Fig.2) defining each paradigm. This thesis utilises three of these modes of research paradigm to investigate its hypothesis. The most influential paradigm has been the Constructivism mode. This has structured the questioning by enabling a clear route to the formation of a developed taxonomy and proposed a future structure for new media art.

The ontology of my thesis is most closely aligned with constructivism's relativism. Through the investigation of qualitative experiences of new media art I will explore the

idea that engagement is relative to previous knowledge and appreciation of the new opportunities that technology offers. It is possible that a negative view of technology is relative and a direct influence on the perception of artwork created with it. It is, therefore, conceivable that whilst the uptake of new media art in arts institutions is relative to the development and social integration of technology, that it is distanced and delayed by financing and lack of interest. The evidence will be formed from a position of specific knowledge, which is sourced from the current situations effecting artists, curators and galleries.

The participatory paradigm has been most valuable for developing a future structure for galleries, curators and educational institutions, although this was not until the later chapters. The epistemology of my inquiry is grounded in interviews with curators, and first-hand experience of art works in the medium of new media. This will inform an adapted and developed approach to my investigation and recommendations.

In addition, the participatory paradigm was key to informing the methodological approach to gathering qualitative data. The proposed structures, to be implemented by galleries, were developed from what was found to be most prevalent in the field. A glossary of terms has been adapted from the recent history and critique of the art form to be used as part of the educational process within the galleries. The paradigmatic approaches of constructivism and participatory are embedded within the issues of this thesis.

The nature of the knowledge used and discovered in this thesis emphasises the importance and primacy of practical knowing, critical subjectivity, and embodied

knowledge. The knowledge is accumulated from communities of enquiry such as interviews with curators, case studies of practising artists, academic engagement at conferences, and through the running and evaluation of a workshop event.

The authenticity of the knowledge was not only important to ensure its quality and validity, but it also became a catalyst to determining the areas of highest priority. The quality was derived from theoretical positions of recognised sources, as well as from first hand experiential data. Events such as a research driven the creative lab would allow for knowledge to be accrued, as well as providing the foundation of a propositional stance to transform the current processes and situation.

Whilst Denzin and Lincoln do not cover value as an issue within the participatory or constructivism paradigms; it is something that has great currency within this thesis. I would posit that existing value structures could be adapted or reconsidered with the intention of making value structures contemporary and reflective of the current creative and social climate. The ethics of this research are clear. They do not attempt to challenge moral issues and equally do not intend to deceive. The ethics are neutral and focused on process and progress towards a revelation that will become part of the original contribution to knowledge.

Structure of Thesis

This thesis is informed by a number of modes of inquiry. The chosen research paradigms inform the structure of data gathering and the methods in which it is interpreted and conceived. The hypothesis has been investigated and responded to

through a methodical approach. The chapters formulate the tiers of the research and postulation, whilst the methodology of my investigation has been informed by the epistemological position and has been structured in response to the research paradigms my thesis resides within.

The interviews that have been conducted provide a qualitative approach to understanding the concerns and areas of required improvement amongst the curators of galleries and developing a model for how new media arts practice is viewed, moreover it demonstrates the issues surrounding a preoccupation with traditional craft and a misunderstanding within museums and galleries in Wales.

As a nation, Wales has a proud creative and cultural heritage, which is internationally recognised. Traditional arts, and particularly crafts, are predominantly the artistic product of Wales, alongside performance. Wales provides an interesting model for the strength and sense of identity from the arts. Whilst there appears to be a preoccupation with materials and processes from the traditional crafts, there is the potential to embrace new mediums quickly and efficiently. The digital is currently particularly poorly represented in Wales. Emails and interviews with curators have provided a realistic account of what the issues are, as well as the aspirations for the future. It has become evident that galleries are willing to engage, but financial, practical, or philosophical limitations are preventing them from being as experimental as they might otherwise choose to be.

This thesis establishes and reinterprets the historical realism of the issues surrounding new media art's relationship with the gallery. Values that have become crystallised

over time have been redefined to allow for new approaches to be considered and assimilated by this willingness to engage. The work deals with the relativism of constructed realities, locally, nationally, and internationally. The local aspect, which refers to South Wales, will form the bases of an experiential and propositional approach through the existing gallery system, one that is largely independent and able to adapt more quickly. However, as a model it can be scaled up to long standing institutions. The approach will be one that is developed from a language grounded in a shared experiential context.

The *Background and Focal Theory* chapter appropriates and postulates the concerns of the thesis. Through discussing established critical theories in new media, new media art, and the mediation of the image, I demonstrate the foundations of why new media art faces considerable challenges it terms of its medium and its current level of appreciation. Through an understanding of how the arts have been affected by the changes to its medium during the twentieth century I determine what factors are effecting the integration of new media art. Knowing the conditions of conceptual visual representation highlighted the developing processes of its heritage, ontology, and value.

Chapter Two, *Defining and Identifying Value in Digitally Mediated Artworks* develops an understanding of current and potential perceptions of value in new media art based upon the critical theory focuses of Chapter One, and the experiences of engaging with new media art in Chapter Three.

Chapter Three, Virtual Touch: *Virtual Reality As Fine Art Space* will identify the paradigms of value that are most pertinent to new media art. Existing value structures are examined and articulated as an evolved taxonomy of value. Again, the paradigm of critical theory becomes prominent.

The third chapter, *Virtual Touch: Virtual Reality As A Fine Art Space,* investigates how increasingly new media art works are created, exhibited and archived in an all-digital environment. This cultural change has affected the perceptions, and therefore the values of art work. New media art is on an evolutional journey, which is a contemporary, and possibly shortened version of the journey the art world has already experienced. Technological and sociological developments have forged the material and conceptual pathways of new media art into what they are today. How the virtual plane is currently appreciated will directly influence how the work it contains is understood and therefore valued in the future.

This chapter explores how the creative act and the changing perception of art amongst its audience have positioned new media art in the place it exists today. Through the fundamental elements of new media art and its emerging philosophies, I determine how the virtual touch could be an important function of new media art for creation and experience. At this point in the thesis the inquiry shifts to one of constructivism, whilst theoretical and experiential knowledge are refashioned as a new co-constructed reality.

The fourth chapter focuses on digital culture and how the theory of the information society could be of benefit for developing a route map for the wider adoption of new media art. Social network and new forms of connectivity and communication have the

potential to expand the field of new media art collaboration and dissemination. In the age of new media and mobile technologies the notion of art patronage is being challenged, and whilst it continues to be influential a new democratised model is emerging as a result of new technologies.

The fifth chapter focuses on curation and explores the prospective heritage issues for new media art. How it is dealt with today will affect its value in the future. Understanding its relationship to our historical hierarchies, commerce, and social development will support its role in the history of art and culture. The use of interviews here was key to understanding the curators' context for the perceived issues and potential models to be more widely adopted. At this juncture the paradigm has now changed to span the constructivist and the participatory modes of inquiry.

The conclusion to the thesis identifies the original contribution to knowledge by recommending that new structures of taxonomy and paradigms are required, and for arts institutions to incorporate them. The "Importance of the thesis to the development of the discipline" (Phillips & Pugh: 2002:61) is that the gallery and art world has been provided with a new paradigm to consider in its processes, and festivals and lab events are emerging as a more complimentary space.

The structure of the thesis makes use of case studies after each chapter. This allows the focus of each chapter to be illustrated with a critical enquiry into key new media art works and practitioners that provides a detailed range of qualitative data.

The rational for using cases studies as highlighted in *How to Research* (2010):

1. Case study data is drawn from people's experiences and practices and so it is seen to be strong in reality.
2. Case studies allow for generalizations from a specific instance to a more general issue.
3. Case studies allow the researcher to show the complexity of social life. Good case studies build on this to explore alternative meanings and interpretations.
4. Case studies can provide a data source from which further analysis can be made. They can, therefore, be archived for further research work.
5. Because case studies build on the actual practices and experiences, they can be linked to action and their insights contribute to changing practice. Indeed, case study may be a subset of a broader action research project.
6. Because the data contained in case studies are close to people's experiences, they can be more persuasive and accessible.

(Blaxter et all: 2010:74)

The case studies and the rationale for inclusion are: *Camille Utterback- Literary and Temporal Interactive Spaces* provides an overview of how new media art can be successful both with an audience and also commercially; *The Allegories of Life, Religion, and Space Through The Virtual Touch of Char Davies* demonstrates the potential of creating work in a fully immersive virtual world; *Alife- Christa Sommerer and Laurent Mignonneau* explores an area of tension between our understanding of reality and nature and the simulated, and where they intersect; *Lab Craft* is a celebration and exemplar of how traditional art, craft and design approaches and be complimented and updated with digital technology processes. The case studies cover a range of issues that affect new media art from creation, to exhibition, to archiving. These issues are of international and historical significance, and will help to focus the potential implications of a paradigm shift and will provide evidence for the discussions taking place in their preceding chapters.

As I have posited in my hypothesis there is the need for a paradigm shift within the traditional art world as their current paradigms are now inappropriate. This has led me to identify and develop a new paradigm structure. The hope is that it will enable the accommodation of new practices that are derived from practical knowing. The spanning of paradigms has been particularly useful as it increased the potential for how I was able to engage with such a dynamic subject. There is also a parallel between the hybrid and merged research paradigms of the new media art form.

It is this re-evaluation of paradigms that this thesis will highlight. When a new art form or medium is presented it is necessary to evaluate the current paradigms appropriateness to ensure it accurately reflects their conditions. The disruptive effect of photography and cinematography's arrival changed the traditional outlook on representation, and now new media technology is doing the same, but requires a better understanding through paradigmatic structures. Margot Lovejoy, digital artist, historian of art and technology, and Professor Emerita at Purchase College, New York State University, considers why a new paradigm is needed:

> A new paradigm for art was needed which would better reflect the consciousness and conditions of the times. As we have seen, the moving image with its ability to reveal entirely new structures of a subject, its coordination of all angles of view in a complex juxtaposition of edited images moving together in time, brought into the field of representation a powerful new consciousness – transforming medium and tool.
> (Lovejoy: 2008:34).

Lexicon of the Thesis

There is a long history of art experimenting with new technologies and developing a convergence between mediums. The relatively short history of artwork created digitally has presented some of the most challenging ideas about what art is and where it might be heading. From creating an image using computer code, to fully immersing the viewer in an interactive multimedia experience, the work has appeared more experimental than mainstream. Whilst the range of applications for technology within art has expanded, confusing alternative versions populate the terminology and taxonomy that describe it. However, whilst reviewing current terminology I will be considering that "categorical distinctions can be relaxed" (Shanken: 2010:361) in order to determine a term that more accurately represents the artwork I am discussing. Edward Shanken suggested this idea when he was discussing the problem of terminology in *Art in Information Age* (2001), allowing him to "draw parallels between seemingly diverse practices offering new insight into contemporary art." (Shanken: 2010:361).

To ensure that the term I would be using in this thesis to reference the artwork was consistent and accurate I had to be clear about the topography and taxonomy of the artwork I was specifically investigating and how it was defined. A glossary of terms and definitions I developed during this thesis is provided in the appendices. Here I will detail the nature of the artwork the thesis is concerned with, and explore the issues surrounding the choice of a term for this medium.

There have been many discussions within the art and academic arenas about the labelling of new art mediums. This has been of a particular concern for emerging technologies, which appear to be unstable in respect of their longevity and accessibility as a medium. When discussing terminology with Ruth Catlow of Furtherfield she agreed that there were some issues, and stressed that when asked what she did, she simply replied that she was an "artist" (Catlow: Interview 2013). I asked Catlow if she was comfortable with the term new media art and she was although she personally favoured "Media Art, Networked Media, and Digital Culture" (Catlow: Interview 2013). She noted how to people outside of the debate how it must seem "insane to be worrying about the terminology in such detail" (Catlow: Interview 2013). Whilst she agreed that it was worthwhile refining its terminology, there was a "tribal" (Catlow: Interview 2013) approach to some of the terms in use, and as a result there was no one term.

> The word "art" can conjure up a vision of objects in an art gallery, showroom or museum, that can be perceived as reinforcing the values and machinations of the victors of history as leisure objects for elite entertainment, distraction and/or decoration - or the narcissistic expression of an isolated self-regarding individual. (Garrett and Catlow: 2013)

Works of a digital origin have been particularly problematic within the context of art world terminology. The most common term to date has been new media art.
"In the late nineties and during the first decade of this century the term "new media art" became the established label for that broad range of artistic practices that includes works that are created, or in some way deal with, new media technologies." (Quaranta: 2012). However, its relevance is challenged by its relevance as we are now at a time when digital technology is no longer new, and all forms of technology were once considered 'new' (Gitelman and Pingree: 2004:xi).

The work I am discussing in this thesis can be broad in terms of its constituent parts, creative processes, and where the final medium is frequently heterogeneous in appearance. The work can appear to be a sculpture, interactive piece, screen based, or time based. As well as visually, the work can also be acoustically driven through programmes or external influences. The reductionist method to describe it would be as a convergence between art and technology.

To nurture a greater understanding of new media art and aid its integration I demonstrate the relationship between new media and traditional practices within art, craft, and design, highlighting their common approaches and concerns. To make this point I will define them, their contributions, and similarities. Traditional ideas of art, craft and design utilise established forms of technology to create their work and their advancement is made through the development of techniques and concepts. Art in its traditional form explores expression through practices such as painting and sculpture. Craftwork focuses on creating objects using materials and repeatable processes of with links to batch production, but retaining uniqueness through creativity and variety. Design's emphasis and motivation is on composition and commonly with practical use or purpose for guidelines. New media has become increasingly embedded varying amounts in the processes of these forms of creativity at various stages of their production.

> In much of the new media art I see, the technology is in the foreground. With some craft practitioners, I see more of a balance between the presence and agency of the materials they use to drive ideas, and technology is many times integrated in a way to enhance a sensory experience beyond the actual object. Technology as a new materiality in craft is present, but not in

> the foreground as much as new media art which seems to have another agenda.
> (Wilson: 2011)

Consistently tone and identity from the artist help to form the uniqueness of the artefact. These art forms progress our understanding by illustrating statements about humanity. Art forms utilising new media explore the boundaries of humanity's ability to create and evolve, particularly with the technology of the time, and also make statements about humanity through its determination to develop new forms of creativity. These new forms enable the opportunity for greater understanding and conception of where we are going. There is considerable confidence within the sciences that technology will increasingly improve our environment and species. There is a differing rate of development between the traditional art practices and technology as they increasingly move in different time frames. Traditional work evolves within more widely understood boundaries. Technology appears to be limitless in what it will achieve.

The skills acquired when developing as a traditional arts practitioner are more of a known quantity. The skills will increase and improve, becoming more focused and nuanced. Due to the intersection of art, craft, and design being fundamental to new media art's interaction and acceptance, I have made a case study of an exhibition by the Arts Council called *Lab Craft*, which exclusively showcases the best examples of how the implementation of digital technologies into the areas of craft and design can evolve a long standing and traditionalist area of creativity. It demonstrates the results of a major paradigm shift with craft and design as it is taking place. Within the thesis this example of intersection is most interesting within craftwork as this has been more resistant to technological change. However, I will not be focusing on craft or industrial

design during my research as these areas deviate from the artwork I consider to be a new and emerging form as a result of digital technology, and design in particular has made a much quicker and less resistant shift to the digital through areas such as graphic communication and Computer Aided Design (CAD). In giving evidence for the implementation and advantages for the use of technology in art I periodically will refer to other areas of digital imaging such as films and video games. This will provide examples of how the technology is being explored for visual media and also how it is already finding its way into aspects of culture outside of fine art.

There are also similarities between video art and the journey that new media art is currently taking. As a medium, video (formally film) is linear more straightforward to comprehend when compared to what modern digital technologies can involve. Its journey can provide a number of lessons in the way in which it was handled, accepted and now exhibited and archived. Of concern to new media art is the misconception and mishandling that appears to have taken place within video art:

> Video art's fate in the museum offers a dire warning to Internet art. The gallery and the museum did come to embrace video but generally by remaking it as video-installation, displaced from the TV monitor onto large-scale projections, spectacle being purchased at the price of losing mass-production and wide distribution. Video became something that resembled a traditional fine art object. (Stallabrass: 2003:119-120)

Stallabrass has fallen foul of this neglect of the purpose of the artwork himself. He defends this situation by considering that you learn by doing, and at the time it seemed the advantages offered by displaying little-known work in a mainstream institution outweighed the disadvantages. Within the context of my hypothesis it highlights that potentially, by trying to gain parity, it may undermine what is unique about new media.

My research to date has identified that there is little consistency in the use of terms such as new media art, digital art and virtual art. The terms are used as fluidly as the medium they refer to. This is due in part to the rapid development of this kind of work; moreover, it makes the historicising and archiving difficult to manage, as well as creating confusion amongst institutions.

> The history of the field has included the namings of "computer art", "cybernetic art", "unstable media", "emergent media", or art "that you can plug in". (Graham:2005)

There is a plethora of terms that are frequently used in reference to the kind of works I am concerned with. The current list of art types includes the following terms and their definitions can be found in the Glossary at the end of this thesis:

- Electronic
- Virtual Reality
- Interactive
- Net
- Time Based Media
- Kinetic
- Glitch
- Transmedia
- New Media
- Medium
- Multimedia
- Hybrid
- Generative
- Unstable Media
- Intermedia
- Digital

This list includes very general terms, as well as some very specific ones. There are trends within mediums and terminology to consider, however within the context of this thesis the term would ideally include, although not be exclusive to, the following areas which I perceive to be inter-related:

- Artificial Life
- Immersive
- Networked
- Experimental
- Virtual
- Interactive
- Programming

These are areas that have been poorly represented in mainstream art exhibition, and are often viewed as unstable or experimental, as well as avant-garde.

Terminology is important for the long-term documenting and understanding of art forms, but it has an additional value when funding opportunities require justification and explanation. A survey of terms frequently used for funding decisions would provide an insight into the institutions understanding and direction. There are two ways the terminology could be presented, as a term that can be understood by casual viewers, as well as experts, or as a critical term.

Currently it would appear that it depends on the institution or funding body, differing from project to project. Ideally everyone would use the same terminology so there is clarity and parity between institutions using it. This would also allow new members of these institutions, including artists, to have more confidence in where their work is positioned. The thesis will also consider the issue of pigeonholing artists, and consider that some practitioners prefer to be called artists rather than new media or digital artists.

Here I will present the case for a number of the terminologies identified and discuss why they could qualify, and more importantly why they do not. Of particular concern is the relation and balance between art and technology.

Frank Popper[6] is one of the few art historians to have been documenting and debating the rise of technology based art since its emergence. He began to write about kinetic art in the 1950's, an art form that was born out of the convergence of sculpture,

interactivity, and new technologies. Whilst there are still a few artists and a museums that deal specifically with kinetic art, it has almost entirely evolved into what Popper is best known for, electronic art. Some may refer to it as robotics, however it has evolved from kinetic art's materials and discipline.

With new electronic media, Popper has been fascinated by the effects of technology, specifically electronics, on the participatory and aesthetic nature of art since the 1980's. In recent years he has become interested in how art has become what he calls virtualised. This is more of a conceptual term rather than an art practice. Popper defines (2007) virtual art as including all the art made with the technical media developed at the end of the eighties. One important aspect of virtual art is the exchange between human and computer allowing immersion into the image and interaction. It also recognises that there is increasingly a lack of physicality to new media artworks.

Electronic art continues to be a popular term due to its broad inclusion of all electronic technologies old and new. The Lansdown Centre for Electronic Arts demonstrates that the term still has currency. The centre describes itself as:

> The Lansdown Centre is in the forefront of teaching and research in areas where computing and digital technology are combined with creative activity. We exploit the transformative potential of digital technology.
> (Lansdown Centre for Electronic Art: 2009)

To define electronic art, it makes use of electronic media, but more broadly, it refers to a wide range of technology based media and increasingly this is becoming digital. It is related to information art, new media art, video art, interactive art, internet art, and

electronic music, among others. I would argue that electronic art laid the foundations to what we now see as new media art.

The term electronic art has become associated with computer art and digital art, which are mostly closely aligned with artworks generated on computers, through the evolution of technology. However, electronic art does have a much broader connotations linked to kinetic art and the sculptural aspects of technology embedded within physical pieces. This can therefore lead to artworks that include any type of electronic component being referred to as electronic art.

This broadness provides an opportunity for music, dance, architecture and performance to be considered as or include electronic art. There are similarities here to multimedia art, where different mediums work together, although electronic art tends to include more sculptural qualities and networking technology associated with computing, while multimedia is almost exclusively a blend of audio visual content through a digital platform, such as a CD-ROM. Electronic art has a long established precedent of being an interdisciplinary field; artists often collaborate with scientists and engineers when creating their works. Often this is the only way to realise a project due to its disparate fields being converged.

Ars Electronica is a festival and a center which is "a year-'round setting for presentation & interaction, and the Futurelab as in-house R&D facility extend their feelers throughout the realms of science and research, art and technology" (Ars Electronica: 2009). When Ars Electronica was established in 1979 as a festival, it was at a time when a substantial cultural shift and a digital revolution was on the horizon.

However, it was also at a time when new technology was limited in terms of accessibility, affordability, and moreover what had been invented. Home computing was limited in terms of processing power and artists had to work with institutions that had invested in new computing technology for research. “Ars Electronica has been investigating the consequences of the Digital Revolution—an upheaval that has morphed constantly over the years without the slightest diminishment of its dynamic power” (www.new.aec.at). At this time electronic art was the most suitable term available. By the mid-nineties the term new media had dominance over anything related to computing. Another organisation’s title that has supported the term electronic art is ISEA International[7] (formerly Inter-Society for the Electronic Arts). However, it is now known as ISEA and therefore does not promote the term electronic so prominently.

I would suggest that whilst electronic art has covered some of the works this thesis is concerned with, it is limited in its contemporary scope as a valid term. It is however, very beneficial when discussing the art historical aspect of works that evolved out of kinetic art as a result of electronic technology. It appears that galleries utilise this term without fully considering its links to new media and its historical context. It is a term that to some is more accessible as it has a period of time in use. Electronic art also presents itself as an archaic term. So much of modern society is based around electronic devices. In much the same way the term digital is now reaching a tipping point where it is past ubiquity and is becoming increasingly redundant as so much of the communication and creation we carry out is digital.

Media art is a long established term that among other institutions is used by the New Art Trust[8] international gallery collaboration. This is a misleading term for this thesis as it encompasses time based media works, which are almost exclusively film and video. Interactive and generative digital media is not considered to be in the same category. I decided this term is inappropriate to my research as it has already been clearly defined as time based works that are video and installation based, and many of the pieces this thesis examines are not reliant on traditional media. The Tate also lists the following terms in their glossary (Tate Gallery: 2008)- digital art, new media in art, net.art, software art, and browser art. In some cases these are very specific terms, linked to the delivery method or developmental environment, that are constitute parts to the kinds of work this thesis explores.

Initially the term hybrid art, a category dedicated specifically to today's hybrid and trans-disciplinary projects and approaches to media art, appeared to be appropriate. Its primary emphasis is on the process of fusing different media and genres into new forms of artistic expression as well as the act of transcending the boundaries between art and research, art and social/political activism, art and pop culture. Hybrid art's complexities of constitute parts and form can defy the categories of festival awards. I did not deem the term to be appropriate for this thesis as it was too broad and was a term for defining the eclectic nature of contemporary art that purposefully sought to blend differing mediums into a unified artwork. This is also a similar process to syncretic art, where the motivation is the contrasting of mediums. Hybrid art does not have to include digital media and therefore is not appropriate for this thesis. Jurors look very closely at how dynamically the submitted work defies classification in a single one of the festival categories of long standing.

Intermedia appears to be an appropriate term to use for the mixed media convergence that the work I have looked at encompasses. However, it is a better description of the current processes and grey areas of re-appropriating and transference of techniques from past media to new. “Artworks may be created with newer or older networked and time-based media such as video, radio, computer technologies or the internet. They may involve performance or discussion, straddle a variety of media, or even fuse media in the creation of new hybrid, Intermedia forms” (Tate Gallery: 2010). The form has a specific history grounded in new media, sound and performance, which makes it a term that falls within the broader practice, I am researching here.

New media art is an art genre that encompasses artworks created with new media technologies, including computer graphics, computer animation, virtual reality the Internet, interactive technologies, robotics, and biotechnologies. The term differentiates itself by its resulting cultural objects, which can be seen in opposition to those deriving from old media arts (i.e. traditional painting and sculpture). This concern with medium is a key feature of much contemporary art, and indeed a number of art schools are beginning to offer a major in new genres, or full degree programmes in new media art, such as Surry University[9]. New media concerns are often derived from the telecommunications, mass media and digital modes of delivery the artworks involve, with practices ranging from conceptual to virtual art, performance to installation. Professor Beryl Graham at CRUMB, explains the confusion that can occur in the understanding of the terminology applied to the art form in the context of the technology:

> Namings in common current use tend to settle around "digital art" or "new media art". The former tends to have a very broad definition of any art using digital technology, and tends to be more inclusive of art/science or art/technology approaches. "new media art" tends to have its roots in the art traditions of video or lens media, but is prone to confusion with the commercial new media (interactive quiz shows and the like). This name, of course, may itself date relatively quickly, but is used here as the accepted art-world term.
> (Graham: 2005)

For *Current: An Experiment in Collecting Digital Art* exhibition at the Harris Museum and art Gallery in Preston, there was a public call out for work to be exhibited and collected. Considering this was in 2011, within this call out there were a number of terms used to describe the same discipline: Digital art, creative use of new media technology, and new media art. Although the title of the exhibition used the term digital art, the exhibition statement uses another term: "Harris' mission to establish a nationally significant collection of new media art" (Harris Museum & Art Gallery: 2011). If the collection is to be nationally significant then the term new media will also be of significance, and not chosen without careful consideration. The exhibition was also a case study, and opportunity to debate and focus on the issues surrounding the collecting of art using digital technology. This may be why the term digital art was used in the first instance.

When Anglia Ruskin University opened a new art gallery for digital content in May 2011 it was the first of its kind in the UK[10]. The news articles from the media and the University itself were careful not to give the medium a definitive title. They focused on the space being for contemporary art and digital works, and paid particular attention to the specifications of the technology that was going to be in the space. This helped to gain attention through the spectacle of the latest technology to a broader audience.

Christiane Paul discusses a similar range of work to this thesis under the term digital art. Whilst this would suggest that there is differential tension between terms Paul does explain the hierarchy of the medium and its varied components:

> The terminology for technology art forms has always been extremely fluid and what is now known as digital art has undergone several name changes since it first emerged: once referred to as 'computer art' (since the 1970's) and then 'multimedia art, digital art now takes its place under the umbrella term 'new media art', which at the end of the twentieth century was mostly for film and video, as well as sound art and other hybrid forms.
> (Paul: 2006:7)

Digital art commonly refers to art created and presented in digital form. It is more specific than computer art where any work in which computers play a role in production or display is included. Digital art can be purely computer-generated, such as fractals, and algorithmic art or taken from another source, such as a scanned photograph, or an image drawn using vector graphics software using a mouse or graphics tablet. Though technically the term may be applied to art done using other media or processes and merely scanned in, it is usually reserved for art that has been non-trivially modified by a computing process (such as a computer program, micro-controller or any electronic system capable of interpreting an input to create an output); digitised text data and raw audio and video recordings are not usually considered digital art in themselves, but can be part of a larger project. In an expanded sense, digital art is a term applied to contemporary art that uses the methods of mass production or media.

It is worth noting during this debate over terminology that others in the field have found the lack of specificity and fluidity of terms problematic and confusing. Mark Tribe and Reena Jana explain in *New Media Art* (2006) that, "New Media Art and older categorical names like "Digital art", "Computer art", "Multimedia art" and "Interactive art" are often used interchangeably." (Tribe and Jana: 2006:6-7). He explains why he chose the term new media art in the introduction to his book on the subject:

> We use the term new media art to describe projects that make use of emerging media technologies and are concerned with the cultural, political and aesthetic possibilities of these tools. We locate new media art as a subset of two broader categories: Art and technology and Media art. New media art is thus the intersection of these two domains.
> (Tribe and Jana: 2006:6-7)

"To start with a definition of 'new media art', my own working definition is art made with, and for, digital media, including the Internet or computer-controlled installations" (Graham: 2005). The term new media is problematic because when it was coined, the technology, devices and methodology were new and developing. When considering the term new media art one might question what is *new* about new media? There are a number of reasons that new media is still an appropriate term, and they are succinctly detailed in the second edition of *New Media: A Critical Introduction* by Martin Lister (2009):

> First, new media are thought of as epochal; whether as cause or effect, they are part of a larger, even global, historical change. Second, there is a powerful utopian and positive ideological charge to concept 'new'. Third, it is a useful and inclusive 'portmanteau' term which avoids reducing 'new media' to technical or more specialist (and controversial) terms. (Lister et al: 2009:11)

Web based organisation Rhizome[11] has made considerable contributions to the development and awareness of technology based art. Originally established as an email list by Mark Tribe, to connect and inform those engaged in the subject of art and technology convergence.

> Rhizome is dedicated to the creation, presentation, preservation, and critique of emerging artistic practices that engage technology. Through open platforms for exchange and collaboration, our website serves to encourage and expand the communities around these practices. (Rhizome: 2011)

However, the way in which Rhizome describes its activities as "emerging artistic practices that engage technology" (Rhizome: 2011) could suggest a level of uncertainty over the medium; and the open ended, non-committal terminology, could be seen as a point of concern, particularly as organisations like Rhizome are so close to the practice. This may not be a negative observation; Rhizome could account for its lack of specificity as its name suggests that the work is still underground, and at the very early stages of something that cannot yet be formally identified, and is yet to come to fruition. The terminology, as yet undefined, requires this openness to encompass many forms as the medium develops and settles on a ubiquitous title.

When Rhizome reported on the opening of a new art venue in New York, in October 2008, it described the space as being "A Big New Space for New Media" (Olson: (2008). This was partially because new media is a recognised term, and it is perceived to be understood by a majority of people involved in art. It may also be because of the lack of certainty of a description for the work, as there is no definitive term. The space referred to in the article was the Experimental Media & Performing Arts Center (EMPAC). The facility "embodies state-of-the-artness and its affiliation with the highly regarded research university, Rensselaer Polytechnic Institute, ensures that the

installations, performances, and concerts presented there will always be ahead of the technological curve...work that emphasises immersion, interactivity, and time-based media" (Olson: 2008).

Additional options I have considered are phrases such as experimental media. It is not a widely used term, but is broad enough to allow a wide variety of work to be included. Equally the term may be too broad to be used specifically in critique and archiving. The main problem with the term experimental media is that it could include new materials, such as papers and plastics, as well as new electronic technologies. Technology art, or new technology art, may be closer to the materials being used, but they are very practical and unwieldy terms. If adopted, I would also suggest that either of these titles would remain appropriate in the long term as they reflect the mediums constant state of flux and upgrade, and allow for the addition of new techniques and variants within a single descriptor.

As a fine art term new media should only be used to describe work that is using the latest in audio-visual and computing technology. However, over the last twenty years the term new media has become heavily associated with computer based projects, more specifically, those using the web or CD-ROMs, and can therefore sound out-dated to some observers.

There is further evidence that this term is not only still valid, but that it will continue to adapt:

> 'New media' has gained currency as a term because of its useful inclusiveness. It avoids, at the expense of its generality and its ideological overtones, the reductions of some of its alternatives. It avoids the emphasis on purely technical and formal definition, as in 'digital' or 'electronic' media; the stress on a single, ill-defined and contentious quality as in 'interactive media', or the limitation to one set of machines and practices as in 'computer-mediated communication' (Lister et al: 2009:12).

For the foreseeable future the developments in technology-based artworks will be considered to be a progression of existing media, rather than a disparate medium altogether. In favouring the term new media art, the word new will refer to the avant-garde nature of the work, whilst the word media allows for a range of audio-visual content that will be created and or presented through the work. In addition, the inclusion of the word new has some connotations that could continue to support this idea of continued relevance:

> There is a strong sense in which the 'new' in new media carries the ideological force of 'new equals better' and it also carries with it a cluster of glamorous and exciting meanings. The 'new' is 'the cutting edge', the avantgarde', the place for forward-thinking people to be (whether they be producers, consumers, or, indeed media academics) (Lister et al: 2009:11).

An artistic issue that raises the question over the viability of the term new is that many of the areas it covers have been part of the artistic process for centuries. "The qualifier of choice here-'new-points to the fleeting nature of the terminology" (Paul: 2006:7). The term *new* may be considered fleeting and even unfounded if techniques have been established for some time, but I posit here that *new* reflects the constant updating and

self-renewal of a medium whose specificity is new technology. This is an approach where the properties of its components and final form can change, and its methodology is to explore the implications of emerging technology both practically and culturally.

To provide some accuracy over the terminology I have chosen, I have looked at some of the unifying qualities of new media, and art exhibition, to draw upon them as a way of validating a current term that is adequate for this thesis, and the requirements of institutions. As a model of what might constitute new media art I have looked at Steve Dietz's taxonomy of modes for new media art. Dietz is founding Director of New Media Initiatives at the Walker Art Centre in Minneapolis, and has placed new media art in terms of "behaviours" (CRUMB: 2009). He details the three unifying behaviours of new media art works as: Connectivity, Computability, and Interactivity. In 1999 these were the characteristics of digital art works that posed the most new challenges to curators. Since then Sarah Cook from CRUMB[12] (Curatorial Resource for Upstart Media Bliss) has identified three "art historical equivalents of Dietz's categories, and has named them Collaborative, Distributable, and Variable" (Graham: 2005). These demonstrate that terminology is comparable to recognised art history, and there has some strength in continuing as a mode of reference.

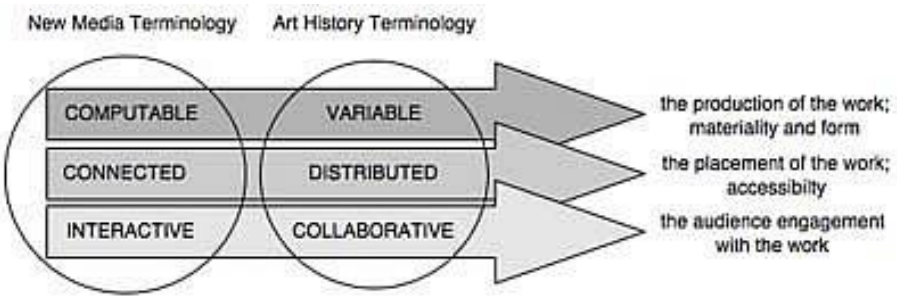

Figure 3. Sarah Cook's taxonomic diagram (Cook: 2004:45)

These are familiar qualities in the work this thesis investigates. Computability is a core feature of much of the work I am looking at as the processing and generating of audio and visual information. Connectivity and interactivity are the two areas that have changed dramatically over recent years. Wireless and high speed networking on many devices has enabled new processes for creation and exhibition. Modes of interaction, such as motion sensors and mobile computing, have become more complex and varied, whilst at the same time becoming more familiar and affordable. The level of interactivity in the work I am looking at ranges from passive to immersive. Therefore this behavioural term may be restrictive as a taxonomical process within my thesis. It is important to establish that the term new media art is not going to be used to highlight only the work using the very latest technology for the sake of it, but work that changes our understanding of the world because the technology of our time has facilitated arts progression.

> The art most recently known as "new media" changes our understanding of the behaviours of contemporary art precisely because of its participation in the creation of a cultural understanding of computational interactivity and networked participation. In other words, art is different after new media because of new media--not because new media is "next," but because its behaviours are the behaviours of our technological times. (Graham & Cook: 2010:xiv)

The work referred to as new media art it will constantly see its medium specificity change as a result of constantly emerging and developing technology. This may inherently cause the term to have a meaning that is somewhat fluid over time, but will inherently retain its core values. This term will therefore be broad in terms of medium, and refer to the practice and choice of materials being at the vanguard of what is current. These rationales for appropriating the terminology of new media art are generally semantic, and may be at the core of the problem I am investigating. This

thesis aims to use appropriate terminology for dissemination of its recommendations for curatorial, archival, or educational purposes. If there is confusion and meta-terminology to discuss this complex field, then the education and understanding is likely to be hindered. This may also support and intensify any negative views of these works.

This quote, from a post on the Art F City website, which creates and archives critical discourse, and commissions ambitious artist projects, summarises where we currently are with the term and practice:

> The advent of the Internet and of consumer electronics consistently changed the way artists addressed new technologies, turning contemporary new media art into something completely different from the idea of art supported by the new media art world, and something at odds with this very name. This change produced the major shift that made the distinction between the two worlds become more and more blurry, and that made many "new media artists" abandon the ship of new media art to look for a better understanding of their work in the contemporary art world.
> (Johnson: 2011)

For the purposes of my writing I will use the term new media art to discuss pieces of work as an umbrella term. When appropriate I will use sub-category terminology that is specific to the medium in question. I will return to the issue of terminology and taxonomy in the conclusion, and re-evaluate this term in response to content of the chapters and case studies, and explore the possibility of offering a more conclusive, potentially new, term that updates the lexicon of the medium within the art world.

Chapter One: Background and Focal Theory

> By 1999, it had become increasingly apparent that the "wound" of exclusion and ghettoization confronting the historiography of art and technology and the practice and criticism of new media art required an explicit suturing strategy. (Shanken: 2010:361)

Within this field of study advancements in digital technologies have altered the culture of how we create and view works of art. Networked and mobile devices are increasingly common ways for people to view art. It has even become a popular hobby for many people, without formal arts training, to create digital images with cameras and edit them on the computer. Does this digital technology qualify as a new artistic medium, and if so how are we going to engage with it in the future. An important question raised by critic and academic Claire Bishop is: "Whatever Happened To Digital Art?" (Bishop: 2012:436). Whilst it is increasingly popular for artists to experiment with technology, and Net.art gained some popularity in the nineties, it does not appear to be at the forefront of popular contemporary art.

> Cast your mind back to the late 1990s, when we got our first e-mail accounts. Wasn't there a pervasive sense that visual art was going to get digital, too, harnessing the new technologies that were just beginning to transform our lives? But somehow the venture never really gained traction. (Bishop: 2012:436)

Whilst new media art has never stopped being produced, it appears to have taken a back seat to more physical and traditional medium specific art forms.

> So why do I have a sense that the appearance and content of contemporary art have been curiously unresponsive to the total upheaval in our labour and leisure inaugurated by the digital revolution? While many artists use digital technology, how many really confront the question of what it means to think, see, and filter affect through the digital? How many thematize this? (Bishop: 2012:436)

In response to my hypothesis I will postulate reasons why new media art is not tackled in the foreground of popular art audiences, and what the effect of the digital layer of contemporary art practice may be. New media art could be perceived to give the impression that it is not engaging with a general audience, or at least that it is more comfortable in the academic and niche events arenas. However, it does not appear to be a question of a lack of content to exhibit.

> There is, of course, an entire sphere of "new media" art, but this is a specialized field of its own: It rarely overlaps with the mainstream art world (commercial galleries, the Turner Prize, national pavilions at Venice). (Bishop: 2012:436)

Here I will detail the key theories underpinning my hypothesis and its rationale. With the background theories of established experts I will illustrate how the development of technology and its related creative practices have positioned new media art within a contemporary art world context.

This chapter provides the background theory and focal theory of the thesis. Background theory, as described by Phillips and Pugh means to: "be aware of the present state of the art: what developments, controversies, breakthroughs are currently exciting or engaging the leading practitioners and thus pushing forward things in the subject" (Phillips & Pugh: 2002:59). Here you will find that key and emerging as well

as established theorists and critics are discussed to give a foundation to the subject. It is important, particularly in such a rapidly changing field to review emerging issues, as theses are the ones likely to require attention when consider the future of new media art. In particular, “identifying trends in research activity” (Phillips & Pugh: 2002:59) will direct me in my investigative themes.

Within the focal theory we “establish the nature of your problem and set about analysing it. The generation of hypotheses, if appropriate, the examination of others' arguments, and the use of your own data to push forward the academic discussion” (Phillips & Pugh: 2002:60). This enables me to refine my area of research and establish avenues of enquiry, which will lead me on to discovering additional data and theories relating to “the development of the discipline” (Phillips & Pugh: 2002:61).

Background Theory

Art has always had a relationship with technology; “Technological development and artistic endeavour have always been closely related in one way or another, whether in a linear sense or a paradoxical one” (Lovejoy: 2008:13). As new tools have been developed and resulted in new forms and methods of creativity. Most notably the methods of interpretation and mediation have become more technological. “Invention of technological tools for representation affects the way the world is seen, how events are interpreted, and how culture is formed” (Lovejoy: 2008:13). The brush, the chisel, and the camera are as much a form of technology as the computer. They are the tools of their time, as the computer is the tool of our time.

The concern of this thesis is that there appears to be a reticence or oversight of the adoption and engagement with new media art within arts institutions. Charlie Gere has documented the integration of new media art into galleries whilst working with the Tate and has made the following observations of the situation:

> In Britain a generally pastoral and anti-technological attitude had prevailed in the arts since the nineteenth century, though there were exceptions such as the Vorticist movement in the early twentieth century. (Gere: 2004:5)

Christian Paul also echoes these concerns:

> Museums are not deliberately excluding them. Rather, these institutions, founded in and for conditions of art production and reception of the late nineteenth century, are not properly equipped to show such work, not, at least, as it is presently constituted.
>
> I do blame particular institutions for a failure of perception and action. (Paul: 2004:24)

These comments illustrate my concerns, and motivate my rational for approaching this subject. Within this thesis I will explore the complexities of arts institutions changing their own conceptions of New Media's place and purpose, will suggest why there has been this failure of perception. I am also concerned that there is a negative perception of the intersection of art and technology as acknowledged by Stuart Mealing:

> There is an undeniable frisson about the words ‘art’ and ‘computers’ since they stand at the gateways of seemingly opposite worlds, guardians of opposite values and standards. Their juxtaposition calls into dispute embedded notions about art, about creativity, about consciousness and thus about the human condition. (Mealing: 2002:5)

In addition, there are those who will be concerned that: “an unconstrained medium

would have little identity" (McCullough: 1998:200), thus undermining its potential value and contribution to the art world.

Whilst technology has become more electronic and digital, it still remains true that new tools and processes enable new forms of creativity.

> Tool types have a bearing on the nature and structure of artistic production and conceptualization. Each tool offers its own possibilities, its own strengths and weaknesses. Each is characteristic of a particular epoch, and its marks are a reflection of that period. (Lovejoy: 2008:31)

The development of the computer's processing capability has been dramatic in its progression from the mechanical, to electronic, through to microprocessors. Each generation has reduced the size, enhanced the ease of use, and increased the processing power of the computer. In the context of this thesis the major advancements I am most interested in are the shift from simple text based monochrome displays to multicolour graphics and the development of the graphical user interface, as well as the interconnectedness of the modern computer in all its forms.

The necessary processing power to deal with workable size and quality of image was not commercially available in the early nineteen eighties[1]. In fact it did not become more commonplace until the mid-nineties. This did not, however, dissuade artists from experimenting and commenting upon the output of the now rudimentary machines. Artists often experimented with the output generated by their chosen computers and electronic systems. Sonic art was the first to emerge as it was ahead of the visual processing power of computers. Electronic works also developed out of Kinetic art,

which did not originally intend to utilise computers, but the evolution of electronics has made it inevitable.

Processing power, accessibility, and functionality of the computer have grown in a multitude and variety of ways over the last thirty years. Not least in terms of mobility and being networked regardless of location. However, contemporary art still appears to be in an avant-garde period as far as digital works are concerned. One reason for this may be that technology is constantly evolving. It may also be due to a form of inexperience in the field due to its infancy, although this may be more so in the area of institutional structures rather than its production. “One of the ironies of net.art is that, despite being supposedly responsive to current developments, it repeats the gestures of previous avant-gardes” (Gere: 2004:10).

As technology and its determinists march forward at an alarming pace, many are still documenting and analysing the events of the recent past before it blurs into a technological mash-up. It is vital for the future of new media art that those coming to appreciate its history understand that whilst it is comparatively young, it has experienced a rapid change in its features and form; something which is likely to continue for the foreseeable future.

“New Media culture is steadily creating its own culture that is pervading all aspects of society, including the art world” (Lichty: 2013). Often the artistic statements embedded within an artwork are focused on the way in which new technologies affect contemporary culture and society.

Unfortunately, the role of technology in society often receives a negative portrayal or is reduced to a service, such as hacking bank details or e-mailing newsletters. Interestingly systems art, which it is linked to, is where artists reacted against art's traditional focus on the object, with the aim of making their art more responsive to the world around them, seems to have been suppressed or forgotten about. However, as a concept it is very useful to new media art, where the artwork often attempts to communicate to an audience through contemporary means, as well as appropriating its technology.

> The early 1970s represented the apparent disappearance of systems art, and its supersession by other approaches. Its failure, if it can be so described, can be put down to a number of factors; the quality of much of the work itself; the failure of the exhibitions to work as intended; a rejection on the part of artists of the collaborations with industry necessary to realise projects and exhibitions; a suspicion of the technocratic pretensions of systems art and of cybernetics with its roots in the military-industrial-academic complex; and of technologies such as computers as the means of perpetuating an instrumental and scientific view of the world, and particularly in light of their use in the Vietnam War and elsewhere; and finally, difficulties in collecting, conserving and commodifying such work.
> (Gere: 2002:7)

The ways in which artists use technology within their work are constantly changing as a result of rapidly changing technology. Therefore I will be reflecting upon key artists and the new media technology affecting their work, as well as a number of critical theories regarding the art world's engagement with new technologies. Critics are usually unappreciative, uninterested, or unsure. One of the issues that I plan to address with this research is that technology-based works are generally dismissed, and rarely gain the respect and interest that possibly they should. This contributes to a lack of engagement, and a clear perception of this field by those with influence. In reviewing a

conference lecture by artist and academic Simon Penny, in 2003 at Cornell University, Sheila Yasmin Marikar reminds us that:

> Before a work of art can promote thought, however, it must be perceived. Penny urged faculty and students "to get to know the digital arts," for only by becoming intimately familiar with the genre, "can we appropriately integrate it into society."
> (Penny: 2005)

However, in her own summation of the situation, Marikar believes that digital technology within art has progressed much greater acceptance than I posit in my hypothesis:

> The twentieth century saw art move from the canvas to the computer. Digital technology earned the status of paint, plaster, and pencil and became a mode of artistic expression. Since its birth, the digital arts have become a major influence in the art world and society as a whole. Graphic design and computer gaming are the two most common forms of digital art that have captured the attention of people in and outside of the artistic community.
>
> The influence of computer-generated art on society awaits in-depth exploration.
> (Penny: 2005)

In the last fifteen to twenty years computers have become common place in schools, universities, and at home. However, this is a very short period for an art form to have been able to mature. New media works do not yet have the luxury of nostalgia, or at least the same range, like other technologies, i.e. vinyl records, typewriters, or cameras. There is the additional risk for artists of falling for the lure of the gimmick.

For as long as emerging technology is still subject to the "spectacle" (Debord: 2006) of the new, it will always be tempting for artists to use new processes as a way of gaining attention. There is a fine balance between the work focusing on the new technology,

and being a means to an end. There is also tension over whether they can ever be separated when exploring the potential of new technology. One perception would be that if the unique qualities of the technology are not present in the work, then the platform of delivery becomes one of convenient distribution. It is also important to reflect that issues such as image quality cannot be the primary consideration in a works characteristic and value as this is constantly improving, and the debate around the relationship between art and technology is far more complex. The concept of a digital piece is still an important factor, and one that may demonstrate that technology-based-art has a place in the art world.

A key issue that will be drawn out of this research is the language used to discuss technology-based art. It appears that the titles and descriptions still seem to be confused and clumsy within the art and media worlds. As I have explained, some believe that new media it can only be new for a finite amount of time. Photography was considered a new medium, however, it took some time before it was considered seriously as an art form. It is now ubiquitous in its use both in the art world and domestically. When a medium's first made available, it is difficult to fully appreciate its full potential. It has to be used and experimented with before it reaches a high level of creative understanding and complexity. It is possible that some would argue that new media art has not existed long enough to reach a level of maturity expected in an exhibited art form.

The computer has developed exponentially over the last thirty years. Whilst the film based camera system took around thirty years to become acceptable as a creative medium, the digital upgrade in photography and cinema has happened much more

rapidly, building upon, rather than rewriting their history. The stills camera didn't perceivably change until digital cameras were available to consumers in the early nineteen nineties[2], however it was adopted widely within ten to fifteen years. This change was accompanied by digital image manipulation through software such as Adobe's *Photoshop*. The camera technology had not fully matured before it was declared an acceptable art form, and it was also able to embrace change once the control of the technology was at an appropriate level for professionals. Cinema also remained relatively unchanged for almost a century. Movies were shot on celluloid, cut, printed and projected. The most dramatic developments in its form were in the early part of its existence with the introduction of sound and colour. These provided new creative possibilities and shifted the aesthetic of film.

> Interactive media have special qualities. They avoid the linear sequencing of a film or novel. They allow instead a less linear choice system structured into the work which is designed to function only through viewer action. The viewer will be able to understand the work's meaning or its conceptual structure only by exploring the many layers and margins which form the context of the piece.
> (Lovejoy: 2008:168)

The forms of production and distribution technology shifted more substantially in the nineteen eighties when the domestic enthusiast could film onto magnetic tape with an analogue signal. This has lead to the development of digital film production and online distribution. This has had a less noticeable impact on aesthetic (discounting 3D), and more so on modes of engagement with the art form.

It took Hollywood, a large, historical, and commercially driven institution, a number of years to start using digital cameras on mainstream movies, such as *Once Upon A Time*

In Mexico (Rodriguez: 2003) (filmed in 2001) and *Star Wars Episode II: Attack of The Clones* (Lucas: 2002). Whilst the main driving force behind the change in format within entertainment was largely financial, it soon became clear that there were artistic advantages to this physically and procedurally new medium. The images were flexible in ways that celluloid just could not match. Scans of the negative, which are slow and can require cleaning up, had to be made before any effects could be placed on top. The workflow of compositing was sped up by the transition to digital, as well as the other possibilities of manipulating the image. At the turn of the millennium it was only the most pioneering filmmakers that were using this new technology. Experienced filmmakers, such as Martin Scorsese, didn't start to use digital cinema cameras until 2011. This was only at a point when the storytelling (for *Hugo*, 2011) required the flexibility of digital image capture, and interestingly when it had more of the qualities of film, "Everything we do in HD is an effort to recreate the look of film." (Bernstein: 2015).

Arguably computer based works are more complicated than other artistic works due to the nature of their hyper hybrid media. Work usually encompasses a variety of media including photography, video, audio, and computer generated imagery. The defining of this medium is complicated further by the way in which viewers interact with the works. Are they passive or interactive experiences? How immersive are they, are they projected onto a screen for a large audience, or are they single user three-dimensional (3D) goggle environments? Increasingly works are also independent of galleries and dealers. Online exhibition has partially removed the role of the Saatchi's of the web art world. However, Charles Saatchi tried to take a stake of the digital domain in 2006 by creating an online space for artists to upload their work and profiles to his main gallery

web site[3]. Outside of the potential issue of over-influencing the field, this space does provide a community and a platform of social function giving, potentially, a democracy to the artistic form of the work. As Lovejoy describes most new media artists were at last able to avoid facing the issues forced on them by the radical intervention of photography and cinematography:

> These issues had to do with creating a new social function for their work, a new subject matter, a new way of seeing and experimenting with new art forms and of dealing with questions of the copy as opposed to the value of the original. Instead of facing these issues, they developed a doctrine of l'art pour l'art, that is, a theology-based idea of a pure art, one which canonized it as a spiritual entity which lay beyond categorization. (Lovejoy: 2008:34)

Ruth Catlow, who co-founded the Furtherfield[3] gallery in London in 1996, has been fortunate in receiving small scale funding from the Arts Council for England since 2005. In 2011 Furtherfield relocated to Finsbury Park, a move that has given the gallery a new audience and gained support from Haringey Council. The council provide the venue, and Furtherfield provide the public programme. Formerly a sculptor, Catlow has built Furtherfield's reputation around a clear focus on networked media.

> Furtherfield's mission is to explore, through creative and critical engagement, practices in art and technology where people are inspired and enabled to become active co-creators of their cultures and societies. We aim to co-create critical art contexts which connect with contemporary audiences providing innovative, engaging and inclusive digital and physical spaces for appreciating and participating in practices in art, technology and social change. (Garrett and Catlow: 2013)

In Catlow's paper on the work of Furtherfield at the *Coding Cultures* (2007) event in Sydney, she notes the difficulty of working in the field of media art and digital culture and the "gated gallery spaces of London" (Rimini: 2007:22).

A recurring theme in this thesis is financial implications of technology. Juilian Stallabrass addressed this in detail in relation to net.Art in 2003.

> The older traditions of art production, promotion and marketing did not apply, and artists, art historians, curators, and the art establishment, trained to operate with these traditions, found it very difficult to recognise these projects as being art. Net.art challenges the concept of art-making as a more or less solitary and product-producing activity". (Stallabrass: 2003:114)

Internet Art: The Online Clash of Culture and Commerce (Stallabrass: 2003) was written at a time when art online was changing, the first phase of its life was ending. In the early days net.art was a specific art movement, but overtime it became subsumed by new media art which took for granted that the Internet had become a component as it was so pervasive and fundamental. During the Internet boom of the nineties artists were discovering the creative space of the Internet through image, hypertext links, and code. Work could be collaborative and free of material costs. "The Internet art is bound inextricably to the development of the Internet itself" (Stallabrass: 2003:10-11). When net.Art first emerge as a creative medium, it soon became clear that it could play a social and political role. This is one of the anchor-points that should be recognised and highlighted in order to express the value of new media art.

Focal Theory

The focal theory of this thesis asks the specific research questions of: can new media art have parity with other art forms; and what are the emerging models for engagement? These questions are rooted within the field of enquiry, and the answers for which, will come from theorists in the fields of creative technology, and cultural theory.

I have prefaced this thesis by questioning, "What is new media art?" (Graham & Cook: 2010:2), and then by responding with a discussion on the lexicon of this field. Whilst the terminology is still responding to the rapidity of the technological and cultural advancements the postulate that new media art is the engagement with new and emerging technologies enables me to refer to a broad range of work as well as suggesting a use for the lexicon in future research.

Throughout this thesis I will be discussing the work of theorists including: Edward Shanken, Beryl Graham, Sarah Cook, Roy Ascott, Margot Lovejoy, Jay David Bolter, Richard Grusin and Charlie Gere. They are among some of the key theorists currently commenting on the dynamics of technology and its effects on society and culture.

Many of the ideas that they discuss are developed from the ideas of media theorists Marshall McCluhan, Guy Debord, and Clement Greenberg. They are all concerned with the modes by which spectators are accessing the qualities of an artwork; such as its concept, aesthetic, and value. Put more generally, the experience of the medium.

> As in "Art in the Information Age," many of these art historical recuperations directly confront discourses…they draw parallels between systems aesthetics and other, more authorized methods in order to identify continuities and erode categorical distinctions between the historical and current discourses of new media and mainstream contemporary art. (Shanken: 2010:362)

Within new media art, the medium in terms of aesthetics and modes of interaction is so varied that it does suggest one reason why critics are finding it difficult to label and discuss.

> Interactive media have special qualities. They avoid the linear sequencing of a film or novel. They allow instead a less linear choice system structured into the work which is designed to function only through viewer action. The viewer will be able to understand the work's meaning or its conceptual structure only by exploring the many layers and margins which form the context of the piece.
> (Lovejoy: 2008:168)

Media theorist Lev Manovich (2001) raises the point that when cinema was being invented and first implemented, no-one was taking notes and interrogating the justification for the formulation of the medium. It then resulted that film theorists in academia developed the language of the medium much later. It is worth noting at this juncture that the academics were predominantly from the field of English literature.

With this in mind Manovich fears that the same mistakes will be made again, and that the language we currently use will later be refined and unrecognisable in the future. I would suggest that the technology has been established as medium for enough years to be tackled with some accuracy. There may be further developments that affect the shape of this language, as Manovich points out when discussing the language and form of the Human Computer Interface; but to ensure the artworks of the present are

accurately discussed and recorded we need to have a common language that gives a widely recognised value to these works. It will be valuable to make predictions and also to leave scope for future developments. Manovich describe this emerging language as a "cultural meta-language" (Manovich: 2001:93).
It would therefore be beneficial to consider how contemporary new media art will be accepted and categorised in the future.

If you consider that Marcel Duchamp's *Fountain* (1917) was avant-garde at the time it was produced, then if it was re-created today it would not be avant-garde, because it has already been done. This notion may have some bearing on the way new media art will be classified in the future, particularly if works can be classed as avant-garde at present.

> The mind of any age is the eye of that age. Consciousness of the way the world is understood changes at different moments in history relative to the available knowledge of that period. (Lovejoy: 2008:13)

It is possible that representation by a human mediated through analogue technology is more acceptable than mediation through the digital. Whilst digital cameras may be an exception to this as they fundamentally rely on lens based mediation digital mediation appears to be more synthetic, less real and less human. It is particularly important to note that the term digital art frequently refers to the digital synthesis of analogue art processes, such as brush strokes and paint splats. It is also possible that culturally we have been so engrained with the traditions of analogue art forms for such a long period that it will take a paradigm shift for the appreciation of new media art works to be on the same level of appreciation.

Mediation takes place in the artists mind as well as in the technologies method of representation. The camera obscura was a problematic term as it suggested reality was being obscured by an intermediate factor and thus was not an accurate representation of reality. Indeed, the original camera obscura relied on a small hole to project an image on to a surface allowing it to be traced.

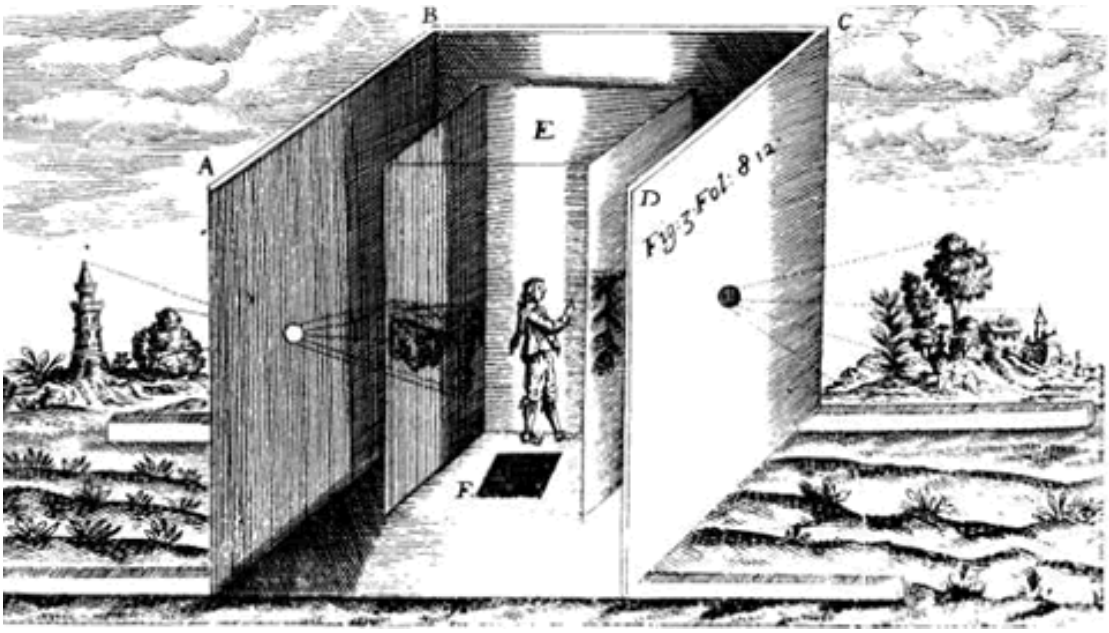

Figure. 1. Early Camera Obscura, from A. Kircher, Ars Magna Lucis et Umbrae, 1645.

Here, the mediation of the obscura resulted in the image being reduced in size and upside down. The processes of tracing added to the number of times the real subject was mediated. Importantly for this thesis, the camera obscura was a new technology, process, and methodology for representing the world and our ideas about it. It was being developed nearly four hundred years ago and demonstrates that there has long been an interest in merging technology with art for the benefit of the final artefact.

The purpose of invention was to simplify and give greater detail to re-mediation. The digital has had a similar benefit. For example modern image sensors are now much more sensitive and detailed than film. However, that is usually where new media art's drive for accuracy ends. A majority of truly new media art explores the limits of the technology. For example, hacking can produce politically motivated works that highlight the fallacy of technology's security. Glitch art illustrates the hidden systems that enable consumer electronics. Here are two definitions of its origins and aesthetics:

> What constitutes a glitch can be contradictory—some can be genuine errors, others merely noise. What they all have in common is a broken appearance interrupting, for a moment, the seamless design of human media consumption, an embrace of encryption entropism. (Knowledge: 2013)

> Describe the 'glitch' as a (actual and/or simulated) break from an expected or conventional flow of information or meaning within (digital) communication systems that results in a perceived accident or error. A glitch occurs on the occasion where there is an absence of (expected) functionality, whether understood in a technical or social sense. Therefore, a glitch, as I see it, is not always strictly a result of a technical malfunction. (Menkman: 2011:9)

Of consideration is whether this new creative practice could be described as avant-garde, as the term refers to "art that is innovatory, introducing or exploring new forms or subject matter." (Tate Gallery: 2008). This may be complicated by the constant evolution of technology, but the practice of experimenting and pushing the boundaries of new technology could be the avant-garde part of the practice.

In addition to the dilemma of terminology, creative technology has now been capitalised and many creative process once considered avant-garde have been

packaged as a product and sold as a commodity. “The glitch aesthetic is now mainstream, appearing in *Wreck-It Ralph* (Moore: 2012), *Adventure Time* (Ward: 2010), *Man of Steel* (Synder: 2013) and even *Skyfall* (Mendes: 2012), and when we see it we immediately recognize it” (Knowledge: 2013). The wider knowledge and experience brings with it benefits of a new language and mode of shared engagement. Tools not intended for this form of creativity are now being applied to new creative endeavours:

> The polygon glitch…is more sculptural. Polygons are used to model 3D graphical environments in real time (particularly for video games), resulting in a carefully constructed realism that often breaks down momentarily, which means that polygon glitches are familiar to players and developers alike. Tools that were originally designed for 3D construction and online game environments have now become interactive canvases for creative or accidental sculpture, a pseudo-Vorticism. (Knowledge: 2013)

The 1968 London ICA show *Cybernetic Serendipity* was the first exhibition in the UK for entirely computer-based applications for poetry, sound, sculpture, and graphics. However, as we entered the 1970’s, exhibitions that included computer based art often received negative comments. Whilst reflecting upon these exhibitions Lovejoy describes some perceptions as being: “fearful of the use of a mechanical device such as the computer for the making of art” (2008:174). Critics were particularly hostile towards the 1971 show *Art and Technology* in Los Angeles as they saw it as technological “corporate art” (Lovejoy: 2008:174).

Whilst the view point of some has been negative, and reductive of the features and potential of technology based art, one example being:

> Hultén commented in his catalogue essay for the Machine Show, "since the computer is not capable of initiating concepts, it cannot be truly creative, it has no access to imagination, intuition and emotion". (Lovejoy: 2008:174)

Others, such as Jasia Reichardt, have provided a more balanced view, which reaffirms my belief that there are artistic qualities within this complex relationship between art and technology:

> "The possibilities inherent in the computer as a creative tool will do little to change those idioms of art which rely primarily on the dialogue between the artist, his ideas, and the canvas. They will however increase the scope of art and contribute to its diversity" (Lovejoy: 2008:174).

Whilst considering a term for the art form, I am also considering how and if it fits into existing art world structures. Could new media artwork be described as being modernist with an avant-garde ideology? "Modernism is characterised by a deliberate rejection of the styles of the past; emphasising instead innovation and experimentation in forms, materials and techniques in order to create artworks that better reflected modern society." (Tate Gallery: 2008). This is a strong characteristic of the mode of operation for artists using new technology within their work. However, we have also seen a move away from modernism in the form of post-modernism in response to events such as war: "The Vietnam War and its aftermath of instability and fear of technology signalled a rupture with modernist philosophical ideals and optimism about the future" (Lovejoy: 2008:175). If you were to consider that we may be coming to the end of the post-modernist era, which was a reflection on our understanding of established structures; then where are we now?

One might suggest that due to the development of new technologies we are now retracing the ideologies of the avant-garde movement; or even that the avant-garde is irrelevant as we are in a constant state of working with the new due to the rapidity of technological developments. It would be an oversight to suggest that artists have only recently been presented with a constantly developing technology. If we consider the developments of various artistic practices that are now commonplace, and are referred to as traditional, we can see a clear development of progress and technique over time. For example; painting techniques, from cave paintings all the way through to the airbrush, photography evolving from silver nitrate exposure sheets all the way through to digital SLR's, then it becomes clearer that the art world is treading familiar ground as far as digital art as an evolution is concerned.

If you then consider that this current technology has only been developing seriously over the last thirty to forty years, then it would suggest that there are many decades of improvements and developments to be made.

> Criticism focused on whether photographs could contain "the soul and essence to be found in true art." The poet/critic Baudelaire regarded the presumptions of the new art form as corrupting (much as electronic media are seen today): "It must return to its real task which is to be the servant of the sciences and of the arts but the very humble servant, like printing and shorthand, which have neither created nor supplanted literature. (Lovejoy: 2008:27)

Whilst the power of the computer and its associated peripherals are constantly growing and changing, it has left creative people in a state of constant drive for the future. Experimentation and a look into the future are still a common focus of technology-based artwork. Whilst the accessibility of technology means that anyone can attempt an

experimental work, few people, if any, have truly mastered the potential of this developing and relatively new medium.

Science and Art most notably began converging in the renaissance period when a number of new sciences such as anatomy, perspective, mathematics, and chromatology were integrated. The knowledge and science of the age allowed artists, such as Leonardo Da Vinci, to conceptualise their work in new philosophical way.

Photography of the late 1800's imitated classic paintings by posing a nude model with props reminiscent of the Renaissance period. This was intended to connote that the images were more artistic and therefore acceptable. This was however evolving into a new aesthetic where reality and definition set the photographs apart from paintings.

Whilst the cost and accessibility of most art forms eventually meets the average consumer allowing the general population to engage with art production, it is the critical and philosophical abilities of the artist that sets the work apart from the amateur. This is a key point because if the philosophical approach is sound, then the medium should be less relevant, unless it is the focus of the point being raised.

> In the early 1970's the computer was still cumbersome, outrageously costly and with limited access for artists. It was still better used as an analytical tool for formal modernist conceptual works rather than as an interactive medium. As a result, it became stigmatized as a medium for art production and receded into the background without its potential for the arts being fully realized in the onrush of developments which now took place. (Lovejoy: 2008:175)

In 1984, Gene Youngblood, wrote the paper *A Medium Matures: Video and The Cinematic Enterprise* on the then emerging possibilities of merging the technology, practices, and languages of the computer, video and cinema. He looked forward to the 1990's when he believed that the price of a powerful super computer would have fallen substantially enough for a large majority of the public to afford one. This, he felt, would allow the true aesthetic potential of the digital medium to be realised. "Finally accessible to autonomous individuals, the full aesthetic potential of computer simulation will be revealed, and the future of cinematic languages...will be rescued from the tyranny of perceptual imperialists and placed in the hands of artists and amateurs." (Youngblood in Druckrey: 1999:48)

There is certain a level of accuracy in this prediction; if you look at digital cameras, computers, and *YouTube*, as examples of this transference of power and democratisation. However, if the imperialists were the people that persisted with applying traditional creative methods to new media works, then do they still exist, and if so who are they?

More recent writers such as Jay David Bolter and Richard Grusin have commented on how the view of Youngblood is clearly modernist. They believe the work of Clement Greenberg, although dated in some respects, is still leading the approach to new media theory. Greenberg's theories on the role of the medium would suggest that a cutting edge medium, which is opening up new horizons, is a modernist one. His writings on the avant-garde status of film, photography, painting and sculpture in the twentieth century have some similarities with new media artwork.

In 1967, Marshal McCluhan wrote *The Medium Is The Massage:*

> Our official culture is striving to force the new media to do the work of the old.
>
> These are difficult times because we are witnessing a clash of cataclysmic proportions between two great technologies. We approach the new with the psychological conditioning and sensory responses of the old. This clash appears in transitional periods. …a common failure: the attempt to do a job demanded by the new environment with the tools of the old. (McCluhan: 1967:94)

This concern of mixing tradition with cutting edge is echoed by Youngblood, who, in 1984, believed that the way we currently use new media does not yet allow it to reach its full potential. It is possible that for a medium to be significantly new it must make a radical break from tradition.

In the early seventies, alongside Gene Youngblood, there were a number of other writers, including Douglas Davis, Jonathan Benthall, and John McHale, who commented on the future of art and technology. There seemed to be a strong sense of promise in the marriage of technology and art. Photography and film had now proved themselves as a form, and computers and communications technologies were hinting at innovative possibilities. Have we now realised the aesthetic and unique qualities of new media art as they were predicting? “The full aesthetic potential of this medium will be realised only when computer artists come to the instrument from art rather than computer science” (Youngblood: 1984). We are currently in a transition period, where new media technology is becoming a consumption platform for the masses, and increasingly a creative tool for artists. So given Youngblood's prediction we are on the verge of discovering new media's aesthetic potential.

Sunderland University is currently running a post-graduate programme and project through CRUMB, that deal with the issues of new media art curation and distribution. I will be drawing upon the knowledge of Sarah Cook, Ele Carpenter and Beryl Graham, at CRUMB, to gain a clearer perspective of the ways in which digital artworks are being treated by the public and the galleries.

When discussing new media it is worth considering that frequently the journey from creation to consumption is largely digital in its process. This means that the work only ever exists in hyperspace. Galleries such as the *Walker Art Centre* in Minneapolis have installed an interactive booth that serves as a method of exhibiting new media work. The booth can be moved in a clockwise or anti-clockwise motion to navigate forwards or backwards through the available pages of work. Jeffery Shaw made a similar installation with *Net.art Browser* (1999) as an attempt to bring Net.art into the gallery environment. The project was linked to the *Center for Art and Media* (*ZKM*) in Karlsruhe. The work itself, although technologically networked, it was sculptural and physically interactive as it moved along wall-mounted tracks to pick up the names of prominent net artists and then display them on screen as a live web page.

Throughout this thesis I will be reviewing a range of art forms linked to new technology that inform the debate on new media art's integration with the art world, and places it within an art historical context. For example; it is possible to reflect on the use of interactive art as far back as Marcel Duchamp. His *Rotary Glass Plates* (1920) forced viewers into a specific position to ensure complete viewing. However, the influences and developments that took place between the 1920's and the more

electronically attentive 1970's, are too broad and numerous to look at here. It is worth noting here the interdisciplinary model of the *Fluxus* group, which, although it took place the decade before (circa 1960-1970), it saw the work advance in relation to technological developments of the time. The performance and dissemination is a particularly interesting part of their model, as festivals and live events were the primary way to experience their work, and this was intentionally so.

In his book *The Language of New Media*, Lev Manovich makes a point which can be linked to the way in which the critical and art worlds may negatively and unfairly view and comment on technology based art. He states that "… the allegedly unique principles of new media can already be found in cinema. Subsequent chapters continue to employ film history and theory as a means of analyzing new media." (Manovich: 2002:11)

He frequently refers to processes and features of film that are now present in new media works. Whilst this is true to a point, due to the nature of evolution, it is denying the more recent technology the benefits of its digital nature. Film could generally be classed as a passive medium. However involved we get with the story or the characters we watch what is unfolding before us and can do nothing but wait until the end to fully understand the narrative. Even if the narrative has been presented in a non-sequential way.

The digital era has afforded us the benefit of non-linear access to information. Traditional films can't really benefit from this development because of their passive linear nature. There have been attempts to create interactive movies. For example,

Silent Hill (1999) and the *X-Files* (1999) on *Playstation One* in the late 1990's attempted to give control of the narrative and its defining events over to the player. Outcomes were pre-programmed, and the users' interaction merely created the grooves of the story's finer details. The writers had of course designed the plot and limited number of outcomes long before the programming even began. These limitations of the cause and effect were largely due to the limitations of the technology.

In the *X-Files* game it would have been a logistical nightmare to film enough outcomes with the expensive actors. *Silent Hill* was a fully computer generated game, but the movie like sequences were all pre-animated. Even the in-game movements that were controlled by the player were limited to pre-set actions. Whilst I do not want to diverge into discussing entertainment packages, it is worth noting that the technology used in new media art is often similar, even to the point where in some cases games consoles is the shared medium, such as Cory Arcangel's *Super Mario Clouds* (2002).

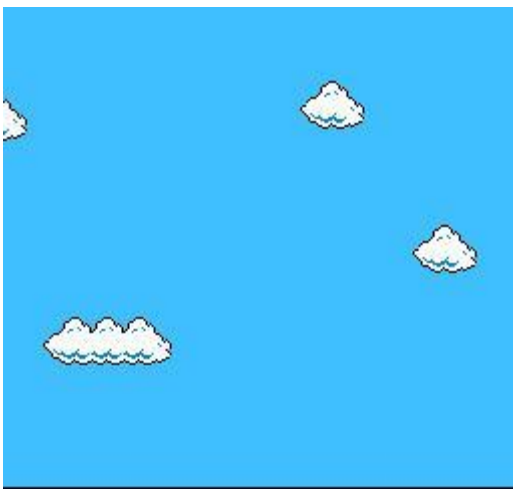

Figure 2. Cory Arcangel 2002, *Super Mario Clouds* Microchip/Modified NES Cartridge

While associations between the two practices could be perceived as negative, they contribute towards answering my hypothesis as they have a relationship, which often borrow many aesthetics and functions to one another.

With the dawn of the High Definition revolution, and it respective technologies and media, Warner Bros. Studios attempted to gain the interest of sceptical consumers by introducing Navigational Cinema. This was essentially an interactive feature that allowed the user to make decisions for the characters throughout the film. The choices could have an immediate impact or a further reaching affect later in the film. This proved very challenging for the actors, director and writers. *Return To House On Haunted Hill* (García: 2007) was the first HD DVD and Blu-ray film to attempt to implement this technology. As this was a straight to DVD film the studio could afford to be more experimental. As well as being supported by visual effects producers Joel Silver (*The Matrix*: 1999) and Robert Zemeckis (*Death Becomes Her:* 1992), the actors were relatively unknown, so they were less expensive than the original cast (Geffory Rush and Famke Janssen). This meant that the various re-shoots and alternate views could be filmed at a relatively low cost.

The commercial consumer technology and entertainment sector is currently going through a dramatic revolution enabled by networked and interactive media. It is changing the way that people use computers and information forever. The companies are however being cautious, and are implementing their new technology slowly. Along with miniaturization, which has been happening ever since computers were scaled down from an entire room to a single cupboard of wires and data reels, the methods of interaction with the computer have been evolving. The mouse was, until recently, the

greatest leap in human computer interaction when it arrived in 1975, although it did not ship with computers as a standard until 1980. Humans had come another step closer to integrating their thoughts with what appeared on screen. Since then the mouse itself has changed very little. The graphical user interface has however continued to become more sophisticated.

Developments in interaction have seen the evolution of immersive virtual reality, which has yet to become a standard. Pen tablets, smart boards, digital airbrushes, and direct drawing on the screen have become commonplace to new media artists. The Apple iPhone, which was released in 2007, revolutionised the mobile phone. As well as seamlessly integrating a phone, organiser, media player, web browser and Google Maps system, the iPhone boasted a fully functioning touch screen. A method of interaction that was less ephemeral than a mouse and more intuitive than a stylus. This technology was soon mimicked by other mobile phone manufactures.

At the 2008 International Consumer Electronics Show in Las Vegas, Bill Gates of Microsoft gave his predictions on the future of interaction with the computer. He believes that computers and their displays will increasingly become integrated with our daily lives and environments. Through virtual holographic displays, touch screen, and even bodily gestures we will find using a computer more intuitive than ever.

The success of the Nintendo Wii (2006) and XBOX Kinect (2010) suggests that consumers want to be more immersed in the gaming environments they are exploring. The more immersed a person can be the greater the sense of realism. The success of virtual reality through 3D goggles may have been stifled because it was too much too

soon. As well as the goggles being uncomfortable to ware, the environments were disorientating and unnervingly artificial. The consumer release of Google Glass[4] in 2014 may see the beginning of a new wave of interest in development for 3D environments and augmented reality. The Google Glass system is an extremely lightweight and elegant solution to the issue of ugly and oversized head mounted display units.

All of these issues regarding immersion, experience and control are highly relevant when looking at new media art and its creation. The closer an artist can get to the medium, the fewer barriers they encounter then the easier it will be for the creativity to flow. Until now the focus of many works has been on the limitations and difficulties living and working in a digital world. I predict that will all change with the implementation of touch screen and virtual interfaces that does not appear to be so virtual.

Steven Spielberg's version of *Minority Report* (Spielberg: 2002) by Philip K. Dick (1956) shows Tom Cruise effortlessly navigating through what we would consider an over whelming amount of visual data. The information is displayed in a highly ordered fashion, but the order does not have to be linear. Events, characters, items, and time-based viewing angles can all be used as a method to organise the information that is being fed by the psychic abilities of a "pre-cog" (Speilberg: 2002). Cruise's character effortlessly glides his hands across moving images, expanding, reducing, or removing the information. The intuitive and highly responsive navigation matches his working style in order to be able to identify the killer before the event has taken place.

The barrier of fighting the mouse to point at the bit of the screen that you wish to zoom in on, and then clicking until it gets to the scale that you want, is removed. Its current counterpart is the pinch to zoom feature, which is part of the primary navigation of Apple devices including the iPhone and iPad. An intuitive gesture with your thumb and index finger moving together or apart allow the user to focus on the part of the image they whish to see.

At 2008's International Consumer Electronics Show, Microsoft demonstrated its new table based interface Surface. Its navigation is more natural than any other interface, but because of its futuristic nature leaves current users feeling uncomfortable. One process has the use place their mobile camera phone on the table and watch all of the new pictures spill out onto the table. The user then rotates, repositions and resizes the images with their fingers, as if the pictures were really on the table. This emerging technology makes Decker's voice activated image processor in *Blade Runner* (Scott: 1982) (again based on a Philip K. Dick novel) seem clunky and limited.

Whilst the Wii games console has been designed for entertainment, it does have a few creative surprises. The Wii uses a revolutionary wireless control that, as well as inferred signalling, uses accelerometers to relay the player's movements into the game. The console allows users to edit photographs and create multiple avatars that can be released into the Wii community, music-sequencing games have been released, and early on a drawing tablet and game were released[5]. All of which invite creativity in the user, many of whom do not come from an arts background, and consequently open up the link between technology and creativity to a broader audience.

The experience of using a Wii is a strange but surprisingly immersive one. When you first turn the console on and hold the wireless remote you feel foolish and uneasy. You can't imagine how playing a game by waving a simulated bat in the air might work. The Wii controller and the emotions generated through game play are real, but everything else is virtual. However, it does work. It becomes second nature and the brain adapts to the remoteness very quickly. The game play is more intuitive than anything else before. Much like the touch screen controls of modern phones and mobile media players the barrier between image, function and thought has been lowered.

The obvious and logical next step for screen navigation is retinal monitoring, where the computer tracks the movement of your eyes to interpret your commands. The other possibility is that brain activity might remove the barrier completely by having instructions interpreted directly from your thoughts. The data output might not even have to be displayed on a screen. It could be directly broadcast into your brain, much like a daydream. These are just some of the potential ways in which artists could find themselves interacting with a computer to create artwork that could be viewed as a new form.

Overview of Relevant Research and Theoretical Bases

The work of media theorists such as Clement Greenberg, Raymond Williams and Marshall McLuhan was produced in the developing media landscape of 1960's, which included mass production and television. Since that time computer technology and digitisation has changed the way we communicate. Whilst Williams (2003) and McLuhan (1994) predicted many of the advantages and disadvantages of new technology that are present today, they could not have foreseen the way in which creativity and technology have become a part of communication for so many people. Greenberg will provide great support in understanding where our current appreciation of the medium originates, and how artists' relationship with digital media as a medium has developed.

Gene Youngblood's conceptions on the evolution of cinema form the initial theories of this research as he is one of the main theorists to recognise that there may be a time when new media works can be created within a new language of expression, and aesthetics. Along with Douglas Davis, Jonathan Benthall, and John McHale, he produced papers and books in the early seventies and mid-eighties just as the term new media was breaking away from film and photography, and being used in reference to electronic or computer driven works. Other key contemporary theorists referenced in this thesis include Margot Lovejoy, Mark B.N. Hansen, Oliver Grau, Christiane Paul, and Charlie Gere.

The more artists that embrace new technology the more understanding will need to be at critics', curators and artists' disposal. Whilst some critics attempt to comment on the latest digital work, they admit themselves to being unsure of what they are supposed to

say. An article in *Art Review* in 2007, by Regine Debatty, began with the following paragraph:

> Writing about artists who are engaging with new media in their work leaves me with a certain margin for error when commenting and interpreting innovative pieces. This recent field of creative endeavor is still waiting for more critics and theoreticians to define its rules and merits. (Debatty: 2007:112)

This is alarming as Debatty is Art Review's main reporter for mixed media, and therefore writes about new media art, and indicates a lack of confidence and certainty about their knowledge. However, Debatty does highlight the need for more informed critics and theoreticians, which indicates part of the solution to this issue.

There are currently issues that concern me over why digital artwork does not appear to gain the same level of interest as other more prominent traditional art forms. For example, popular culture is not yet aware of any great digital artist. Work carried out by organisations, such as the *Hothaus* (Gibbons and Winwood: 2005) series of presentations and artworks, and its subsequent papers, have gone some way into expanding the consideration and understanding of this relatively new art form.

Artists such as Paul Granjon have gained some recognition for their technology based artwork, but this is predominantly for work constructed, and tangible, in the real world as opposed to cyberspace.

The research of Cook, Carpenter, and Graham at Sunderland University will be crucial to my understanding of where new media art stands currently in terms of exhibition,

curation, archiving and viewers experience. They contribute to CRUMB, an international website and mailing list for new media curation.

Exploring the concept and implications of value was always going to be influential, it now appears to be key to understanding the current status of new media art. By exposing and discussing the value led paradigms of new media art I will be able to propose a rationale for why art using new technology appears to be on the fringes of contemporary art.

The way in which new media art is valued socially may be influenced by the way artists use it to remediate existing concepts of value. With a greater understanding of how value is currently conveyed, and how it could be represented in the future, it may help it to become more widely accepted and recognised by society.

I will be using the term value as an umbrella term for a selection of socially accepted ideological value systems. Some of these systems may be specific to a small group or work of art. The taxonomy of appropriate values will need to be identified. I have so far considered the following possible ideological value systems:

- Belief Systems
- Cultural Heritage
- Truth
- Environment
- Political
- Cult/Fetish

Established social structures project their values onto creative objects via the artist. By identifying current and historical perceived cultural values it will enable me to contrast them against the developing paradigms of new media art. The intention would be that this will uncover at least part of the reason for new media art to be subject to a different level or type of appreciation to other art mediums.

As technology becomes more humanised, and therefore more invisible, it may be perceived as less avant-garde and become more conventional as a creative medium. There may be a question of trust hanging over the use of computers in art. If art is about the freedom of thought and expression, then any perceived negative impact upon these ideas is likely to dissuade people from computer based art. However, there may be an issue of reliability when working with computers. Particularly with the media hype of the Millennium Bug, and the constant political condemning of illegal online activity, a level of distrust may surround the reliability and trustworthiness of the medium through this negative association. Another concern may be that traditional value systems are absent in these new art works. If great artists are valued for their skills as a thinker and practitioner, then the automation in computing challenges these ideals as it threatens to replace them.

Chapter Two: Defining and Identifying Value in Digitally Mediated Art

> The discipline is a new one; a medium perhaps still waiting for its time. As with the early years of photography, it once aped more established media and sought comfort from its own technology, but its very existence has also provoked some of the most stimulating questions of our time. (Mealing: 2002:5)

Introduction

This chapter will identify paradigms of value surrounding new media art today. To answer my hypothesis, I will explore value systems that are key to understanding some of the issues surrounding new media art. Traditionally many art forms have become a commodity and measured by their financial success. Whilst this is an issue that is influential upon the art world, I will mainly focus my definition around aesthetic and intellectual values. I am particularly interested in promoting the social benefits of the digital medium as an art form.

I propose to examine exchange values and identify cultural value, as well as ideological systems that have been established or are emerging and are identifiable within new media art as a means to promoting it. Through discussing established new media theory I will explore the digital mediation of the image. I will demonstrate the underpinning of the variety of challenges new media art faces. Through a developed understanding of the relationship between the artworks aesthetic, medium, reading, and cultural values, I will be able to determine what factors might be affecting the integration of new media art.

Appreciating the conditions and modes of image representation will inform the developing processes of its heritage, ontology, and value. There will also be a focus on

the difficulties and strengths of using new media art to convey messages of value through the appropriation of traditional art practices. An embedded arts practice heritage will be demonstrated with the interpretation of socially established value systems in this relatively new medium. This altered understanding may enable critics, galleries, and art viewers to develop a new appreciation for new media art.

New Traditions

Steve Dietz, a curator of new media art at the Walker Art Centre, writes in his foreword to *Rethinking Curating* (Graham & Cook: 2010:xii), of a conversation held in 1996 with director of the Walker Art Center in Minneapolis, that typifies the misunderstanding and lack of appreciation for this complex medium. He recalls how this particular gallery director thought net art just was "not visually compelling" (Graham & Cook: 2010: xii). Dietz's response was that "net art was not about looking like a painting or any of the other more traditional artworks normally presented at the Walker" (Graham & Cook: 2010: xii). Dietz reinforces this distinction by explaining that "new media art involves interactivity, networks and computation and is often about process rather than objects" (Graham & Cook: 2010:xii). New media art is not about synthesising traditional practices.

If the creative disciplines within new media art are not predominantly about objects and formalist aesthetic values, then how do we define and explore its medium and aesthetic? The physical object, followed by its referential and reproducible image, is the most commercial aspect of an artwork as it allows it to become a commodity that can be traded. If it has no tangible physicality and is often transient, then what ability

and methods does it possess for exchanging value? The emerging paradigms that can impinge on the of value of new media art will be explored more thoroughly in the next chapter, as here I wish to explore the intricacies of this evolving practice's materials and behaviours linked to value. Why is there a need to understand the medium in the context of its wider acceptance? "new media art is like other contemporary art, but it also has particular characteristics that distinguish it from the contemporary art" (Graham & Cook: 2010:1). There is a rationale for its importance as it has become a point of contention that I would argue is contributing to new media art's limited status.

To understand the challenges that face the acceptance of new media art I will begin by focusing on the principal issue of it as a medium and its specificities, which could be considered as influences on its reception as a relatively recent medium. Clement Greenberg (1965:193-201) has argued that what was unique to a particular art coincided with what was unique about the medium it deployed.

Digital media are rarely static media like print or painting where these suggest movement through visual gestures, they can be multimodal including: animation, interactivity, networked connectivity, and artificial life behaviours. If new media artworks are to be considered as part of a unique discipline, how does it relate to the technology of the medium? "Electronic tools have a hidden point of view, far more complex than that which is built into a brush, a printing press or a camera" (Lovejoy: 2008:31).

Walter Benjamin was writing *The Work of Art in the Age of Mechanical Reproduction* (1999) at a time when technology was analogue and mechanical, but his conceptions of

the effect of new mediums and processes on the visual arts now appear more profound than ever and hold immense significance when analysing the emerging technologies of new media art. During the course of this chapter I will explore his ideas of mediation and the key issues he believed to be affecting the value of the image in a time when proliferation, duplication, and distribution were all converging and developing on a mass scale. I would suggest that one of the many issues affecting the lack of wide-spread acceptance of new media art is that of interaction. Elements such as computers, interactive screens, and robotics are often perceived in a negative way, and can form barriers to the engagement with the work. Spectators are still more familiar with passive art experiences than interactive ones.

The artwork may appear too complex to engage with, suggesting it may require specialist knowledge or too expensive to create, curate, and maintain; or even perceived as toys. The presence of technology may exclude some viewers with traditional art world expectations and suggest it is art for someone else; perhaps someone technical, although this may be unfair speculation. In addition to these preconceptions and suspicions of technology within art, I would also highlight there might be a concern for traditionalists that new media art, the dematerialization of artwork threatens the established values of traditional artworks. The dichotomy that new media art is experiencing is the progression of Benjamin's concerns over the effects of mechanical reproduction on the value of art versus the new benefits creates. "On the one hand, the image culture reduces the importance of physical objects; on the other, it generates many new forms of individual knowledge and production." (McCullough: 1998:44).

I support the importance of embracing new forms of expression, and posit that this is what new media in art facilitates. The traditional physical objects may change in how they are valued, but this should not be a reduction in value. If the status of traditional media relies on their physicality, the restructuring of the value systems is only likely to increase in frequency with the development of new technologies. Some artworks may be exempt from this threat, as they possess a value that has been acquired over time and is of cultural significance. These are often social and historical influences that cannot be erased and ensure the work retains a level of value even if it is not in vogue. A point that Benjamin (1999:214) makes regarding the historical aspect of an artwork is that a reproduction lacks a presence in time and space. There are changes in physical condition and ownership over the years that cannot be attributed to a copy.

Whilst being affected by issues such as data corruption, obsolete hardware, and component failure, they are not as romantic as the original faded wooden frame, or cracked oil paint. The aging process and historical significance is embedded over time. In recent years there has been some effort to encourage a sense of nostalgia towards older computers and games consoles. It is currently difficult for this to have any substantial meaning beyond a certain group, as the history here is only thirty years or so. Paintings can have a history of hundreds of years; in which time a variety of culturally significant and nostalgic meanings can be established and imbued.

New media art is at a disadvantage in this respect as particularly digital works do not offer these kind of cultural and nostalgic values. I will discuss these cultural values and their relationship with history in greater depth through Baudrillard's (2005) *System of Objects* later in this chapter.

As a creative medium the digital is extremely, and increasingly, complex in its constituent tools and range of delivery options. It is a fluctuating medium, which is also influenced by its transient characteristics. Whilst this complexity and broadness can make the medium difficult to negotiate in terms of taxonomy and paradigms for curation and archiving, it allows the medium a fluidity, which affords it unique values, which I will present in this chapter as part of the case for a greater acknowledgement and appreciation of new media art. Malcolm McCullough, author of *Abstracting Craft: The Practiced Digital Hand*, postulates that:

> Because a type of material distinguishes a particular class of tools, the ensemble may be referred to on the whole as a medium. When the tools are complex, when the artefacts produced are abstract, or when tools provide the only means of access to the medium (all common conditions in high-technology), it can be difficult to say where a tool ends and a medium begins. But we can say that under skilled practice even these tools become transparent, and that a sense of a medium eventually emerges. (McCullough: 1998:193)

We can see in an example such as David Hockney producing digital art with an iPhone and iPad (Hockney: 2009) that this tension is very apparent; and whilst it does generate uncertainty about the links between tools and medium, it does not need to be negative in its implications. This tension often questions the medium and conception of artwork. Today new media art instantly suggests that as a medium it is digital in creation and output. Whilst this may not have always been true it is increasingly difficult to escape as progressively, computers influence more of our world. The discipline suggests, and increasingly requires, the use of a computer to create and access the work.

I postulate that the eventual invisibility of the digital medium will allow it to flourish in the mainstream. Whilst there will always be an appreciation for the mastering of a

medium, there is greater value to be gained from the experience and message the art work conveys. A technology and medium that has achieved invisibility means it has gained acceptance though proliferation. This requires time, exposure, and ubiquity. What is concerning for new media art, is that its digital medium is already ubiquitous at an unprecedented level, yet within art it fails to attain the same level of invisibility.

Digital visualisation and mediation surrounds us for much of our daily lives, from the television, to the computer, to the mobile phone, to the electronic billboard. It has also had the time to develop and increase its exposure as it has been experimented with as an art form for over fifty years. Whereas many modernist or post-modernist styles were accepted in less than twenty years, this has not been the case for new media art. However, to their advantage was the fact that they were predominately stylistic variations of the same, well-established, mediums. This suggests that its limited exposure as an art form is a possible cause for its lack of visibility as a creative medium. If the work is not being exhibited and recognised in the mainstream, then it will continue to be generally overlooked and underappreciated.

More so than any other medium, digital has been challenged to demonstrate that it can respond to the creativity of artists and convey meaning to the audience. If it fails to achieve this, or takes too long in doing so, then it is likely that it will not be adopted in the same manner or scale as traditional forms.

When looking at a painting the brush strokes are present, but it is possible that we do not constantly consider them as they are now taken for granted. Their power in the tension between the surface texture qualities, and the illusory depths and stimulation of

"visual delight" (Wollheim: 1987) may now have faded for the average viewer. For new media it is still possible, that even with its unprecedented level of ubiquity, it manages to generate a sense of visual delight through its constantly changing properties and forms.

The skill of painting is something that not everyone can master, but one that everyone can comprehend. The digital process of new media has two levels of understanding; one where the viewer understands that the work was created with a camera, and shown on a screen; the other understands the technological aspect of how the image was captured on a sensor, manipulated with a specific software, compressed to a set format, and scaled to a chosen output device. Whilst there are artists and viewers in both camps, the former is a basic and surface level understanding that can lack appreciation for the skill and craft required. It is the latter knowledge base however, that allows the artist to be a master of their medium, and the critic a master of their analysis. However, engagement with the artwork is more important to the masses than the technical understanding of its constituent parts.

There is an on-going question over the categorisation of new media art that makes its curation and critique problematic. To the artist, and possibly the viewer it does not matter whether the work is classed as avant-garde or modernist, but for art history recording the rise of new media art it may be crucial to its place in the art history of the future.

Beryl Graham and Sarah Cook document how a *Rhizome.org* debate in 2006 questioned the avant-garde status of new media art:

> New media technologies are an intrinsic part of contemporary culture- from cell phones to Web Browsers- and so art that engages with new media is by necessity the most current and avant-garde art form. (Graham & Cook: 2010:27)

During this debate Marc Garrett challenged this view with the following statement:

> If media art is only measured by its supposed 'cutting edge' of technology I would personally find it all pretty boring. For me, it's the context, the communities that use it, the fact that it is free (almost) from historical control. (Graham & Cook: 2010:27)

I would suggest this unresolved debate, within the art world and academia, over what category new media art falls into, has had a negative effect on its progress into mainstream art. Graham describes new media art as being interdisciplinary and although artists and curators cannot agree on whether it is an avant-garde form of art, it does exhibit avant-garde tendencies. However, through its engagement with existing practices and traditions, and desire to progress the established art forms, it could be considered as modernist in form. At odds with the suggestion that new media art is part of an avant-garde movement, I am reminded of a publication by Rosalind Krauss (1986:39) famously entitled: *The Originality of the Avant-garde and Other Modernist Myths*. Which suggests that the avant-garde is not a single event, but the area of creativity that happens on the fringes of known traditions.

Transparent Aesthetic

Theorist Anna Munster, who writes about virtual art aesthetics believes: "One of the main problems for articulating a digital aesthetic is that mutability seems immanent to

computation" (Munster: 2006:151). Twenty years ago one may have been able to successfully argue that new media art had a unique visual aesthetic. Digital images appeared to be poorly synthesised versions of our world as they were limited in colour, resolution and often incorporated a style that was a medium specific quality of using a computer. However, since the development of Photoshop, Illustrator, and other image manipulation software, their graphical capabilities have improved to the point where they have lost the unintentional digital aesthetic, even to the extreme where they have exceeded the field of human visual perception. In addition, new media art is such a broad field of component parts that it shares many qualities with other multidisciplinary art works. However, some have suggested because of its perceive aesthetic difference, that it should have its own categorisation that separates it from established art forms:

> Peter Weibel argued in 1991 for the advent of a new, technological aesthetic that separates the age of media art from traditional art. 'The Industrial revolution and its technologies have created a historical situation in which issues of truth, authorship, originality, etc., are no longer tenable as aesthetic categories. They are replaced by notions of simulation, signs, media, etc., which are most strongly articulated by new media art.
> (Broeckmann in Graham & Cook: 2010:29).

If it is possible to identify the unique aesthetic qualities that constitute part of its medium specificity, then how do they contribute to its value and categorisation? In the early days of computer-based art, the aesthetic was largely a result of the limitations of the hardware. Today the visual styles are a conscious choice that augments the concept. An art reviewer being particularly severe on the aesthetics of new media art may describe many pieces as suffering from being too baroque. This suggests the works are excessively complex and ornamental, perhaps even confusing, or to conceal their

meaning, but overtly unnecessary. Another potential criticism is whether the influence of a Cartesian co-ordinate system limits the creativity and aesthetic to mathematical dimensions? “The rationalist legacy of the Cartesian system is driven by the desire to erect truth upon a pure essence-rational thought-that has been detached from anything that would disrupt its clarity” (Munster: 2006:44).

From a perspective outside of new media art this may appear to be the case, but to the knowledgeable critic or artist this is only a small part of the contemporary discipline. Even when restricting practice to it, it has the flexibility of three dimensions and therefore has at most, the same limitations as the real world materials; sculpture for example. Virtual Reality has potentially fewer limitations as the manipulation is not of a tangible material and is in a parallel environment, which is not subject to the same limitations, such as gravity, mass or cost. It does, however, depend on its context, and not all works will be based in a Cartesian framework. The digital aesthetic is rapidly disappearing, may be one of the factors that made new media art not only visible as a medium, but also formed part of its uniqueness.

> It would be strange to criticise a painting because you could see that it had been made with a brush and paint, yet computer-generated image are often criticised for being “too computery” or because “you can tell they’ve been done by a computer”. This implies either that there is merit in concealing the origin of the image - that the computer is not a worthy tool for the creation of images - or that the computer generates a particular (implicitly unsatisfactory) type of image. (Mealing: 2002:5).

To criticise digital art for looking too much like its self is not only unfairly discriminating, it is also overlooking the importance and relevance of its aesthetic as a stylistic choice by the artist. The early aesthetic of the digital image was unique, as it

was unlike any other medium in the way that sampled colours and shapes via a matrix of highly ordered pixels. Originally photographs that were digitised were not as visually faithful to the original as chemical prints; because the sampling technology was limited to monochrome and a greatly reduced matrix content. Similar limitations applied to work originating on the computer, but these were not forced limitations, unlike Matisse's decisive creative lack of detail and colour palette.

As computers have advanced to reproduce millions of colours and pixels for each image whether it originated from the analogue or digital, the classic style of pixel art has become a discipline of its own. There appears to be a nostalgic factor in the appeal by artists to work with graphical limitations, as well as a challenge not unlike that of creating a tiled mosaic. The digital aesthetic in contemporary work is a stylistic and conceptual choice, but as Stuart Mealing describes, in his study of the relationship between computers and art, these aesthetic qualities can unintentionally portray a weakness which I, along with the artists, would argue are misguided preconceptions based on a limited understanding of how the medium has progressed over the last twenty years:

> Perceived manifestations of computer generated imagery include - a lack of evidence of hand skills, absolute precision, a clear mathematical basis for the composition, palette limitations of tone or hue, a geometrical quality of line, a regularity of shapes and objects, limitations of an output device (e.g. Scale, resolution), pixilation, and a clinical 'cleanness' of image. (Mealing: 2002:5)

"Advances in technology have led...to vulgarity…" (Huxley Cited in Benjamin 1999:240). Early computer graphics could have been perceived as a form of vulgarity given their crude and unrefined representation. It is also possible that embellishment,

from the addition of components for visual effect, could be an agent for digital media to announce itself and differentiate from traditional mediums. Not merely as a stylistic choice, but as faux medium specific quality, an imitation indexical mark, similar to the brush strokes on a painting. This would of course be in contemporary works that have a greater range of choices over their medium's aesthetic than thirty years ago. Munster (2006:151) argues that aesthetics in digital works can be more productively analysed through a set of developing and potential baroque styles rather than through classical ones. She also points out that aesthetics as a baroque event is emergent rather than disciplinary and is articulated through a focus upon a differential mode of perception and sensation. Munster supports the wider argument for a new philosophy for new media art by suggesting a new mode of analysis.

To gain a better critical understanding and definition of what this new mode of analysis might be, I will more closely explore Benjamin's own concerns of mechanical technology's effect on the value of the artwork. This effect is going to be referenced throughout the thesis, as his views, and those that followed, have influenced the way in which critics and galleries approach the presence of new technology in art practice. It will also help to identify the new philosophy that arts institutions must embrace.

In *The work of Art In The Age of Mechanical Reproduction* (Benjamin:1999), Benjamin is concerned with the effects of limitless reproduction and distribution with reference to quality, quantity and context of location. New media art, and digital works, are at the core of this concern in this thesis, and are being challenged by the new potential of the uniqueness it can provide. Benjamin (1999) details that whilst the work may be reproduced as a facsimile of the original, what is lacking in mechanical

reproduction is the aura of the original. “That which withers in the age of mechanical reproduction is the aura of the work of art” (Benjamin: 1999:215). To have the actual materials that were crafted into shape by the artist, over a representation of the original, is what is most valued. With works such as oil paintings, the textures and layers are indexical of the way in which the artist formed the image. In a photographic reproduction, this concept is weaker as viewers rarely see the actual negative. Therefore, their experience is always at least a generation away from the original, but it has been accepted.

Damien Hirst has not suffered financially from not always being the hand that crafted the work. In this case it is the concept and the cult value that help to massage the financial value. Mechanical reproduction also raises the question of authenticity. Whilst this may be a serious concern for traditional works whose financial value relies on its original authenticity, it is something that is less of a concern with electronic files. Whilst legally there may be an issue of intellectual copyright, in terms of experience its content is not affected.

It is worth considering that many artists, such as photographer Gregory Crewdson, have the test prints of their digital works destroyed, as the sold prints are strictly limited in number. Therefore, these images have the same value structure as photographs. The value of the original photographic negative is considerably greater than any of its subsequent prints. Generational copies also decrease the value of the print, as it is further away from the original. With digital art the original data that forms the image has no more financial or cultural value than any of its duplicates. However, artists such as John Maeda have tried to capitalise on limited edition CD-ROM of their

work utilising scarcity and authenticity to assign value. New media art installations carry more status here because they implement real world events linked to something tangible. Whilst replica installations can be built and toured, there is some concern over how close they are to the original exhibition event. In any case their delivery is still dependant on the viewer attending their site.

A web-based exhibition is a much greyer area. Elements of the exhibition can be duplicated and distributed limitlessly, but there can only ever be one original site. As Benjamin (1999:214) comments: "Reproduction enables the original to meet the beholder halfway". This is truer than ever in the digital age. The Internet and digital distribution allows anyone with access the opportunity to view unsurpassed amounts of artwork from the comfort of their home. Obviously this dilutes the effect of viewing the work in its intended context. The distance between the viewer and the artwork allows them to become a critic without revoke.

Benjamin (1999:215) believes "that which withers in the age of mechanical reproduction is the aura of the work of art." Whilst this might be a concern for medium specific works, which are then being represented through a different medium for reproduction purposes, new media artworks have a different approach, as any reproduction is usually through the same medium as the original.

Events from artists such as Stelarc and Char Davies carry the artist's aura through their performance. Digital works do not necessarily rely on, or require, the artist's aura through presence of their marks. The work is often aesthetic and conceptual and can exist for its own purposes. Its purpose is not always to deliver a sense of the author's

greatness. If this does happen, then it is through multiple channels: including theme, style and tone.

In relation to his famous observation noted above, Benjamin also talks about "the liquidation of the traditional value of cultural heritage" (1999:215). Whilst this is an issue that I will cover in depth in chapter three, it is important to mention here as this could be interpreted as a negative statement. One might read it to mean the traditions and fabrics of cultural heritage were being destroyed, leaving nothing of worth for future generations. In relation to my hypothesis I would interpret it as that which we currently consider to be valuable within cultural heritage will change. Rather than disappearing it will become as he says liquid. It will adjust to satisfy the needs of the current society and will be a reflection of what has been learned and accepted to be important over the time.

Through this liquidation new works and forms can be included and considered valuable that previously would have been seen as redundant to what the notion of heritage traditionally meant. Future generations may choose their cultural inheritance as a result of this liquidation. The liquidation of culture could mean the breaking down of traditions and establishments, be they religion, myths, practices, or history. It would seem that Benjamin suggested that mass reproduction would corrupt and damage our heritage. On the contrary, artists such as Andy Warhol and Roy Lichtenstein exposed the methods of mass production, consumer culture and print methods. It is possible to look at a change to cultural heritage as a chance to expose new media art's potential and allow new avant-garde work to be embraced more fully.

“The uniqueness of a work of art is inseparable from its being imbedded in the fabric of tradition” (Benjamin: 1999:217). Here, Benjamin refers to the work being rooted in the established paradigm of its practice and medium, however, a matured artist can develop the practice to the boundaries of their ideas. What is important here is that new media based artwork has a very young tradition of around twenty five years, and is now revealing a new paradigm from which to work within. Within Benjamin’s notion of mechanical reproduction, originality is not possible, nor the intention. However, new media art often manipulates the concept of reproducibility. With over thirty years of evolution new media art can be argued to now have formed a tradition within materials, context, and expectation. Its roots lie in technology, sociology, creativity, reflection, and pushing the boundaries of what we understand technology to be capable of. With the slowly increasing volume of artists choosing to work with new media art, and the duration it has been developing, it can be said to have a strong tradition that allows for a great degree of uniqueness. The main threat that could affect this potential uniqueness would be imitation. Genuine imitation as duplication of another artist’s work would be unacceptable in any discipline. For technology based artworks the risk is that if they are not seen to be cutting edge, they could be misinterpreted as an imitation of what must have gone before, or that its conceptual values might be shallow.

I would argue that new media art should qualify for having a tradition as it has many skills that have been developed and passed down from pioneers to aspiring artists that were looking for a new mode of expression. The skills may have been passed down less conventionally through magazines and web tutorials, but there is a macro art history that could be written about the evolution of new media art. There are

established methods for approaching a project when using digital media. However, as the medium and the notion of its capabilities develop, then the tradition becomes more historic, and the new forms of expression take precedence. Through the tradition the form evolves to represent the contemporary.

When Benjamin (1999:226) described the: “equipment-free aspect of reality becoming the height of artifice, and immediate reality becoming an orchid in the land of technology”, he touched on an issue that is more integral and problematic to new media art than perhaps it was to print based reproduction. To some technology can form a barrier to engagement. Technology is still not completely invisible. The notion of an equipment free version of reality is still a desirable place to create artwork, but it is no longer the question of it being equipment free, rather than appearing to be through invisible technology. Virtual reality pretends to provide this, but the presence of a head set negates this possibility. Full and total immersion can only be achieved through the equivalent of a dream like state where we accept what we are presented with as reality as there is nothing to indicate it is anything but reality.

Benjamin appeared to be concerned that increasingly artworks were about reproduction technology, and that this was eclipsing the traditional mediums and their creative skills. Particularly in the 21st century technology is becoming increasingly invisible. This is due to exposure, as well as miniaturisation and evolved design. Whilst many works attempt to be transparent and deny their medium, it can never be total as the screen interface will always be present no matter how high its resolution. Although used to its advantage, its focus on self-referential critique could be distracting it from greater potential.

Figure 1. Holodeck, as first featured in Allen, C. (1987) *Star Trek The Next Generation: Encounter At Far Point*.

Truly immersive virtual environments suggested in science fiction, such as the Holodeck in *Star Trek The Next Generation* (Allen: 1987 (Fig.1) or the Matrix in *The Matrix* (The Wachowski Brothers: 1999 (Fig.2), where there is an exact representation of our reality, may be the only way this will ever be possible. Popular science fiction is important to new media art as it can propose structures for how technology will be implemented and engaged with. It also softens the general population to the idea that technology can be creative as well as destructive.

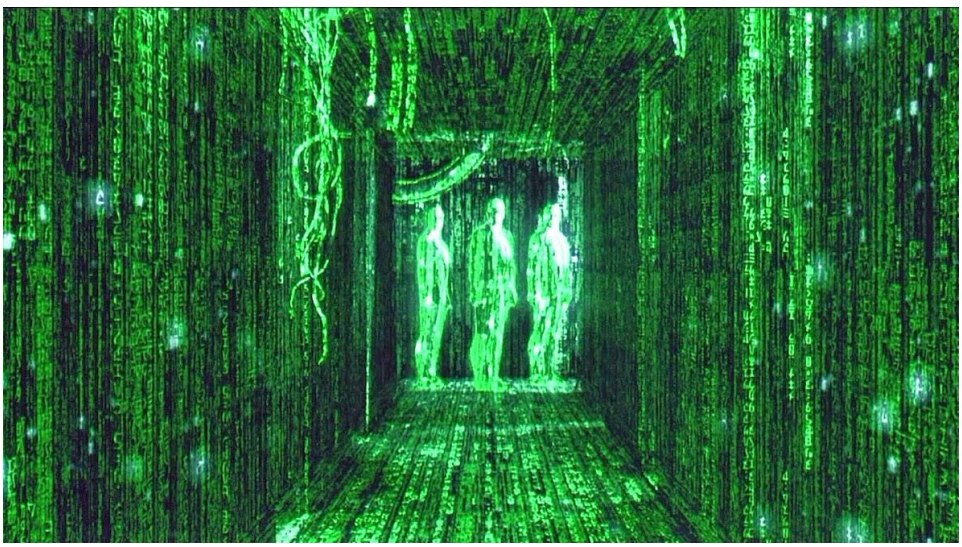

Figure 2. Structure of the Matrix being revealed as code in *The Matrix* (The Wachowski Brothers: 1999)

Positive and Negative Associations

Upon reading Benjamin's *The Work of Art In The Age of Mechanical Reproduction* (1999), I noted aspects that serve as a warning and reminder that technology brings with it properties that can have a negative impact on culture and society. The following statement by Walter Benjamin supports my own concerns, and those espoused so articulately by theorist Theodor Adorno in *Dialectic of Enlightenment* (1972), which I will discuss in more detail in Chapter 4, that any negative perception of technology can in part be attributed to its association with war.

> The destructiveness of war furnishes proof that society has not been mature enough to incorporate technology as its organ, that technology has not been sufficiently developed to cope with elemental forces of society (Benjamin: 1999:235).

If this negative association between war, technology, and creativity is occurring amongst arts institutions, then this could be one of the factors that have led to a lack of engagement and understanding between contemporary critics and galleries with new media art. However, as Charlie Gere notes, there are positive influences on creativity to emerge from the technological developments of war:

> The needs of nuclear defence in particular, and military funding more generally, had led to the development of the computer as an interactive visual medium, rather than simply a 'number cruncher'. Along with other technological developments this produced an increased interest in the possibilities of such technology as a tool for art.
> (Gere: 2004:6)

Whilst Benjamin postulated on the issues surrounding the analogue reproduction of artworks such as paintings, there are similarities to new media art's case that have been exaggerated by the digital. These issues, which are of similar concern to my own, may

have negatively influenced the perception of technology-based work. Benjamin was concerned that reproducibility would lessen the artistic and cultural value of the artwork. It would mean that any sense of uniqueness and cult value would be lost on the representation of an artwork that could be displayed anywhere. The lack of control over the artworks placement would mean its original context and history could be lost in its new form.

New media art could be seen as being vulnerable to this problem. Certainly many works, particularly on screen digital pieces, could be easily copied and distributed instantly, without degradation. Instead of being a vulnerability, this is a strength and uniqueness of the medium. It means that the content and the concept are all that are ever important. The idea of the original is not such a concern. Context of viewing environment may be an issue for the artist as this is not controllable.

As I have already discussed, within photography, and celluloid film, there is a financial value placed on how close to the original the print is, with the original cell that captured the light being the most valuable. In this case the romantic idea of the cell having trapped part of the original subject is an influential force. This is similar to the value of paintings and sculptures where the artist is present in the works through their direct contact in creating the work.

In the debate over the original video has sat somewhere in the middle. The videotape can have one tape considered as the original, but the material it holds is not as tangible as it requires electronic equipment to view the images. It can also be reproduced with minor generational imperfections. Film can at least be held up to the light. The

medium's qualities are also more visible as the individual frames that form one second of film can be viewed in unmediated sequence. In new media art it is possible that there could be some heritage and historical value placed on the actual hardware used by a new media artist, but when an artist may use several computers, as well as other equipment, it may prove more practical to document this rather than archive the items. Artworks tend to be viewed differently depending on when they were produced. In many cases technology can influence this perception. Styles can reflect the period they were created in, and the level of artistic development socially can then be read from artworks. New media art can age perceptively more rapidly than other works due to its relationship to technology.

A concern for new media art, which is similar to most contemporary artworks, is that it does not have a traditional ritual or original use value, unlike Greek statues, for example. As Benjamin (1999:217) demonstrates, a Greek statue can mean different things, at different times, to different groups: "An ancient statue of Venus stood in a different traditional context with the Greeks, who made it an object of veneration, than with the clerics of the middle ages, who viewed it as an ominous idol". Perhaps this happens today with new media art, but in a more compressed and simultaneous manner. He does go on to say that "both of them were equally confronted with its uniqueness, that is, its aura" (Benjamin: 1999:217). Benjamin (1999:217) believed that "the unique value of the authentic work of art has its basis in ritual, the location of its original use value". For new media art its ritual is abstract and only present as part of a repetitive and necessary process. It rarely has an original use, although its medium has many associations.

With the integration of computers into the functioning of society they have now become like a vital organ, and should that relationship cease to function then modern society would come to a standstill. In some cases computers have become so integrated and invisible that they are taken for granted. Artworks, such as Mark Napier's *Shredder 1.0* (1998), take their inspiration from frustrations or opinions in the real world. *Shredder 1.0* exemplifies and parodies the hyper-textural qualities of the modern web browser. By collating disparate information the work takes on an aesthetic quality that in another context would be an unwanted distraction causing confusion.

Due largely to the rapid and constant advances in computer technology new media artworks can seem dated after even only a few years. Particularly artworks that utilise stylistic themes from the period they were created can seem to be more simplistic than current works. It is unusual to find works that are not affected in this way. Graphics based pieces suffer the most from becoming outdated as resolutions and processing power increase. Sculptural and physical works, such as *Telegarden* (Goldberg: 1995), which use networked robotics, age more slowly. Typically, these pieces feature work that is highly conceptual and are aware of their aesthetic position. The artist is aware that their graphics may appear dated as they may have less colours or pixels, or the physical equipment appears less sophisticated than expectations. This is integral to the work. When pixels are made obvious due to their size it is a modern equivalent of Roy Lichtenstein's process of working with Benday dots.

Digital reproducibility and distribution allows art to be designed to take advantage of this for its own purposes. Benjamin (1999:218) comes to the conclusion that if authenticity of the original is then not an issue, the work is not based in ritual, it is

based in politics. “The technique of reproduction detaches the reproduced object from the domain of tradition” (Benjamin: 1999:215). This may be the case for an oil painting, or a fresco, but it becomes less true when you look at photographic reproductions. If we refer to the earlier idea that multiple-copies and generations sequentially reduce in financial value, it must be accepted that these are benefits, as well as flaws, to something that is part of its medium specificity. I would argue that new media art has developed its own form of ritual and this may have been at odds with the politics of the art world when they first became prevalent.

If new media art were to be reproduced in a medium that it was not originally intended, for example a screen based piece being printed, then it too would suffer this detachment from its original meaning and intention. As we have seen, in some cases, reproduction is part of the uniqueness of the medium. It is new media’s ability to retain its authority and meaning regardless of duplication quantities that make it unique. This provides extra benefits when considering archiving and exhibition practicalities.

> The painter maintains in his work a natural distance from reality, the cameraman penetrates deeply into its web. There is a tremendous difference between the pictures they obtain. That of the painter is a total one, that of the cameraman consists of multiple fragments which are assembled under a new law. Thus, for contemporary man the representation of reality by the film is incomparably more significant than that of the painter, since it offers, precisely because of the thoroughgoing permeation of reality with mechanical equipment, an aspect of reality which is free of all equipment. And that is what one is entitled to ask from a work of art. (Benjamin: 1999:227)

In response to this I would first say that this statement supports the development of a technological direction within art in order to realise and reveal our creative imaginations and potential. It demonstrates the benefits of implementing new

technology into the visualisation process. What it also means is new media art is the next successive stage in the development. Where film allows the subject to investigated and present at a macro level, electronic media, such as new media art, allow us to enter at the micro level and beyond. The core issues can be explored through a medium, which appears to have no limits as it is constantly developing. Through interaction and exposure new media artworks can reveal unconscious states of concern. As Benjamin puts it, 'optical unconscious'. We live in a time of technology driven existence. It should therefore be explored artistically to help us understand its further reaching implications.

"The history of every art form shows critical epochs in which a certain art form aspires to effects which could be fully obtained only with a changed technical standard, that is to say, in a new art form" (Benjamin: 1999:230). Whether this can be applied to new media art remains to be seen, but if it does happen then what are new media art's aspirations as a new art form? Whilst ideas may reach beyond what is currently technically possible, the medium has potentially endless possibilities as it is constantly developing. In many cases, the drive to meet the aspirations of ideologies drives the technology forward and in new directions. That said, this statement helps to identify new media art as a new form that is enabling a type of art that painting and photography could not achieve. It may be that to fine art traditionalists the use of technology in art is idolising it in a way that removes humanity from a very human act.

Benjamin wrote about how a viewer can become absorbed into a painting in a way that makes the medium disappear. He believed that the rapid succession of images in film distracted the viewer as well as arousing them through the mediation of film. This may

have been the perception as it was a new medium, however, modern culture now expects moving images such as video.

A painting cannot achieve transparency, as its textures, frame, colours and abstract motionless representation are all irremovable layers between the viewer and the narrative. Benjamin (1999:227) appears to contradict his point about immersive paintings by writing that a painter "maintains a natural distance from reality". If this is true, then the immersion is more dream-like and not the photo-realistic immersion of film.

As Benjamin points out, there is an inseparability of technology and reality in the medium of film. With its efforts to become an invisible medium, it exposes and highlights its aesthetic. He considered that it was possible to get past mediation to "an aspect of reality which is free of all equipment" (Benjamin: 1999:227), which may become increasingly true in some cases of new media art. This is possible if we consider the invisibility of the screen as most of our lives are mediated through a screen. When taking photos and viewing them. Film events, live events at a distance, historical events, information readout. Whilst new media art may lack some of the analogue qualities of film or painting there are now many computer programmes that attempt to remediate these medium specific qualities. What new media art has the potential to enable is a truly new medium that can remediate previous art forms. The digital has now superseded analogue technologies in its ability to accurately capture images of the world. The scepticism over its ability has been disproven in film and photography, and the digital is now widely used as the primary format in a number of creative fields.

As Marshal McLuhan (2001:94) wrote: “our official culture is striving to force the new media to do the work of the old”. The way we read the world, and therefore art, is heavily based on the developed ideas of the old masters: such as perspective, layering, direction of narrative, and semiotics. Being the re-articulation of concepts and techniques through a new medium, I would like to spend some time here looking at the implications of remediation on the processes of new media art as a medium particularly in its case as a new medium. Benjamin was one of the first to conceptualise this term when he talked about the mediation and immediacy of artwork through new mediums. He was concerned with the transfer of techniques used in painting to that of film and developing mass media.

Remediation happens when work created in a new medium mimics a previous medium’s specific visual techniques and qualities. This can be intentional illusion or a result of subconscious influence. Techniques such as layering, lighting, composition, and medium specific qualities are recreated in an illusionary and mimicking fashion. This differs from re-appropriation, which conceptual artists usually make reference to, as the visual language and methodologies are still present rather than the traditional names having their meaning changed for a new context.

The term remediation, which has evolved along with the mediums it discusses, was first used in the context of new media by Paul Levinson who saw it as the “anthropotropic process by which new media technologies improve or remedy prior technologies” (Bolter and Grusin: 2000:273). Within the context of this thesis I will be using the definition developed by Jay David Bolter and Richard Grusin (2000:44-50).

Theirs is more electronic-technology specific than Benjamin's concept of mediation, although this will also play a part. I will demonstrate how traditional and contemporary values can be remediated through new media art. Through the remediation of value systems I will address the postulate that there is a phobic response to new media art, and that this response stems from the perception that if it is new, and relies on equipment that not everyone understands, it must somehow be complicated to understand.

"The content of any medium is always another medium" (McLuhan: 1994:8). Remediation has two parts that deal with the visibility and invisibility of its medium and that which it mediates. In simple terms a photorealistic painting is the remediation of a photograph. Features such as lighting, textures and composition are copied exactly with the hope of leading the viewer's eyes beyond the medium and into the subject without a barrier. Many web sites remediate newspapers and magazines in terms of style, layout, and content. Hyper-mediation allows them to distinguish themselves from traditional formats through video, audio and interactivity.

To define these terms further we can describe Transparent Immediacy as the medium not being the focus. The medium should be invisible, and in many cases is denied. The content of the concept is the desired destination for the viewer's gaze. It serves only to relay the concept, narrative and visual language. It serves the equivalent purpose of the mounting board, as a pose to that of the canvas or picture frame. Bolter and Grusin define immediacy as a set of beliefs and practices that can vary over time. The common feature being a belief in a contact point between the medium and what it represents. Immediacy can be the light reflected from an object onto film, or the

perspective in a painting. The viewers of a film know that what they are watching is not the real object in front of them, but the detailed representation of our reality means they can believe there is a truth to their experience. Until the realisation of the Holodeck, this invisibility will always be difficult to achieve; and here we are again reminded of the importance of Benjamin's equipment free hopes.

Hypermediacy transforms the medium from not only the display method for the concept, but also into the focus and driving force behind the conception of the work. Images are mediated by the artist, via the medium's qualities, into a narrative and interactive structure that can make the content abstract from its origins. Since the beginning of the twentieth century this function has increased in appearance through works by those such as Dada and the post-modernists. In new media terms work is often mediated through systems of metaphors, such as desktops, windows, and pages. Hypermediacy is most suited to the non-liner, random access nature of new media. However, it has also featured in graphic design and pop art such as Warhol and Lichtenstein's fascination with print techniques. Whilst both parts of remediation can be traced back through a long history, they have only been able to realise their potential since the development of electronic visual technologies such as the video screen.

Bolter and Grusin's interpretation of Benjamin's *The Work of Art in the Age of Mechanical Reproduction* (1999) is concerned with new opportunities and they do not believe that reproduction will ultimately be detrimental the aura of the work of art. Rather than destroy "the aura of the work of art remediation refashions it into another media form" (Bolter and Grusin: 2000:75). They believe that Benjamin was suggesting that, through mechanical reproduction, removing the aura makes "the work of art

formally less mediated and more immediate." They also consider, along with Howard Rheingold's "political significance of mediated communication" (Bolter and Grusin: 2000), that Benjamin's argument that reproduction technology is politically enabling has a great deal of potential for delivering a new kind of democracy in the age of the internet. *Remediation* was first published in 1999 when the Internet was still relatively new and un-policed. Since then governments and large corporations have locked down much of the Internet through encoding and monitoring, and therefore suffocated the free spirited ideologies of its founder Tim Berners-Lee.

If new media were borrowing and assimilating conventions of more traditional mediums through remediation, then it would be reasonable to suggest that these artworks have had a syncretic effect on their components. Syncretism is the attempt to amalgamate disparate or contrary practices, cultures, and ideas. Particularly within new media art it can be demonstrated that this is not only a common practice, but is part of what defines its medium. As a heterogeneous medium, which is more complex than traditional mixed media, new media art often has a syncretic approach to the selection of component mediums and conceptual approach.

Sci-art in particular lends itself to the syncretic art methodology and it has matured out of the developments that took place when kinetic art evolved into new media art. Syncretic art is similar to hybrid art. In a relationship of linear processes the syncretism bring the disparate parts together and the hybrid is the harmonised results that become the established art form. As McLuhan (1994:47) recognised, it is the intensive hybrid exchange and strife of ideas and forms that the greatest social energies are released, and from which arise the greatest technologies. We undoubtedly live in what Henry

Jenkins calls a "convergence culture" (Jenkins: 2006), which means that hybridity for many aspects of creativity is inevitable. Particularly as information and display technology continues to converge there cannot be a single stable medium for new media art. There may never be a single medium and it may be part of its specificity is its flux.

The relationship between disparate constitute parts may be a challenge for traditionalists, but there is an even more radical development that digital media has enabled, the simulacra. Although the concept of the Simulacra, dates back to the 16th century, and therefore cannot be exclusive to new media art, it excels, above all other mediums, at realising its potential. At a time when a majority of mobile phones are released with a touch screen, and an increasing amount of media purchases are made over the Internet, it could be suggested that society increasingly prefers the representation to the physical.

Simulation and Reflection of Society

Whilst this preference may be subjective, there are an increasing number of cases where there is no original referent. For new media art that is screen based this is what gives it its creative freedom, but as an artefact of fine art it makes it difficult to consume. The simulacrum is possibly one of the greatest areas of tension for the new media art sceptics. It refers to imitation, and unlike remediation, which is very open about its hereditary qualities, it can be perceived to conceal a true identity; for example, a realistic brush affect in Photoshop. There are two forms of simulacrum described by Jean Baudrillard (2010:3): to dissimulate is to pretend not to have what one has; to simulate is to pretend to have what one does not. The negativity associated

with these modes may influence the overall perception of new media art. Evidence of negative perceptions were raised about virtual reality by Joanna Buick:

> VR seems to provoke a hostile reaction from some who see it as irresponsible and disconnected from reality. The fact is that it is part of our reality and will become a greater part. It is, I believe, one of the responsibilities of artists is to deal with whatever artefacts the culture produces and to find artistic meanings in it and for it (Buick: 2002:111).

It may be the simulation of reality that some find hard to relate to, but this no different in purpose to photorealism in painting. A photograph or a film are a moment of reality, but it is a moment that has already passed and been documented. It may be that some see it as a repeat of a fight for technological succession. "Where digital imaging allegedly poses an apocalyptic threat to photography by collapsing the authority of photo realism, so photography at its inception seemed to pose an equivalent threat to painting by cornering the market on realism" (Kember: 1998:2).

What makes new media art particularly challenging when attempting to summarise its aggregate elements as a defined medium is that only part of its constituency is tangible. This in itself is problematic as the technology is constantly in flux as new technological developments shift the possibilities of creation and distribution. Whilst the medium is broad, there are ways of defining fixed points of reference. Graham and Cook strategically define so-called "new media as a set of behaviours, not as a medium" (Graham & Cook: 2010:xiv). If we consider behaviours as one of the fixed points for a moment we can expand on its interrelation to new media art's ontology. Graham (1996:6) describes the *Serious Games* exhibition, which she co-curated in 1996 as: "Not a show about new technology, a show about interaction".

Identifiable behaviour sets within new media art that relate to interaction are Engagement, Constraint, and Appreciation. These forms of behaviour and interaction could become part of a model for valuing new median art with their own unique attributes. I have already alluded to the progressively diminishing constraints of the medium so I will focus here on the engagement and appreciation, which are intrinsically linked. Engagement with new media art is not only through viewing, but also increasingly through affective interaction. "Just as a medium must provide a context for skilled action, so it must provide a context for developed interpretation" (McCullough: 1998:203). Appreciation is developed from the quality of the experiential value. "If it is to be anything at all, a medium must have sufficient effect on the senses in order to command our attention. It must stir our imagination. This quality of engagement is personal" (McCullough: 1998:196).

Within the creative arts it is important to remember that experience is relative (here I am describing the personal and subjective experience of the individual), so then what does the museum director, a painting critic, or gallery patron bring to the understanding of the new media art work? This will be explored in greater detail in chapter 5; and here I will explore subjective influence upon new media art through the work of Marshal McLuhan.

Marshal McLuhan (1994:7) said of pre-computer creative mediums that: "The personal and social consequences of any medium - that is, of any extension of ourselves - result from the new scale that is introduced into our affairs by each extension of ourselves, or by any new technology." As an industrial development that not only represents the society that created it, an information society, electronic media has become this

extension of ourselves. It is now the dominant form of communication, self-representation, and social and financial mediator. I would suggest that the appreciation for new media art can come from understanding its historical development, but more so from its individual qualities, messages and engagement with the participant. For some there is a determinist approach to using technology within art that results from what McLuhan (1994:46) identified as a reciprocal and cyclic relationship between humans and technology where its normal use sees both modifying one another. McLuhan (1994:47) also noted how the age of electronic media is also the age of the unconscious and of apathy. Whilst many may not be fully aware of the reciprocal relationship between humans and computers, engagement with technology has become one of the most interactive and rapidly developing areas of modern society.

Partly due to consumerism and its ubiquity, there is a very cohesive and established modern understanding of technology's place in society. This understanding is not without its problems as society now associates technology with many aspects of everyday activity. Whilst some artists can use this to great effect, it can complicate and confuse the message of the work. In a similar approach to pop art, there needs to be a deeper level of understanding and appreciation of the medium's qualities and merits in order to objectively and critically view the work. If an audience has a subjective experience when viewing new media art and is distracted by the technology, and this then impacts on the wider perception of the medium as a result, this is unfair to the individual worth of each work.

What has become apparent to Munster is the significance of changing focus from the artwork's aesthetic to the projected influence of the participant on the medium's

aesthetics. This is the notion of “ethico-aesthetic” (Munster: 2006:152). Munster describes it as a dimension of digital culture that questions the effects of connectivity in terms of foregrounding, cutting short, or enabling our capacity to engage with others and their differences in interfaces, environments and artefacts produced. It also allows us to create differently so that engagement with differences and others might be actualised in an economy of connectivity. This unusual technique for analysing the typical aesthetic qualities of new media, such as virtual reality, interactivity and dematerialisation, is beneficial to my investigation as it demonstrates it is possible for the artist to become the mediator of the powerful, and unlimited potential of, electronic media and create a subjective experience. Whilst there are different approaches that can be cultural or stylistic, within new media art these form the basis of a more universally understood macro-taxonomy of art. Manifested as a form of standardisation within a medium, similar to the structures within painting, but as with painting, one that has been collapsed away from everyday perception. The ethico-aesthetic allows work to be created without being forced into a class. Instead work is assessed based on its capacity to engage with different cultural groups**;** engagement that reaches beyond the technological boundaries.

In addition to revealing the new layers of aesthetic that could be decoded from a new media artwork, there is also the level in which the work is received and appreciated that could reveal more about the current value of new media art. Just as Benjamin highlighted with traditional artwork, new media art could also be received on two plains. “Works of art are received and valued on two different planes. Two polar types stand out: with one the accent is on the cult value; with the other, on exhibition value of the work” (Benjamin: 1999:218). With large-scale immersive or sculptural works of

new media art there is a necessity to real world exhibition. The value of exhibition is the tangibility and uniqueness of the experience. The cult value of work is something equally unique, but less tangible. It functions to increase the artistic value of a work, and demonstrate its self-importance, and to defy the art system in a Dada, anti-art sense. A transient and underground presence of an artwork can make it seem rare, and enable it to sustain its uniqueness, potentially indefinitely.

As I have previously mentioned, new media art can possess a cult value, but what implications does this have for it as an emerging medium? "Today the cult value would seem to demand that the work of art remain hidden" (Benjamin: 1999:218). The popularisation of art has led to the freeing of art practices from traditional ritual and has increased the potential for the exhibition and capitalisation of artworks. However, as a result of new media art's cult status, its galleries and journals are all specialist and it is infrequently seen in a mainstream, or non-specialist, national galleries. "Showing Internet art also allows arts institutions to claim to be reaching an audience outside their usual remit" (Stallabrass: 2003:119).

The Tate Britain hosted a number of new media art shows in the early nineties, but this disappeared from their schedules as quickly as it arrived. Surprisingly Tate Modern is low key in its public facing support to this maturing art form. There is evidence of Tate supporting art based in new mediums in the form of occasional academic lectures on the subject of new media art; a programme that ran between 2008-2010 called the *Intermedia Art*, and *Matters in Media Art*[1] that is part of the international initiative of the New Art Trust. The consortium project, running from 2003 to 2015, between the New Art Trust, Tate, Museum of Modern Art (MOMA), and San Francisco Museum of

Modern Art (SFMOMA), claims to be: "A multi-phase project designed to provide guidelines for care of time-based media works of art" (Tate Gallery: 2013). If the Tate is working in partnership with other institutions on preserving this art form, why is it not foregrounding the exhibition of new media artworks to the public?

> There are many difficulties in its collection, curation and display; there are other forms of art practice that have equal claim to Tate's attention; and its historical and contemporary importance may not be obvious.
> (Gere: 2004:9-10)

Whilst the resurgence in collaboration between science and art has aided the inclusion of this kind of work in galleries, it appears to have been in more traditional areas such as sculptural materials, for example Carston Höller's *Test Site* slides at the Tate Modern in 2006. Here the reality of the physical experience of falling was import to the engagement with the piece. Stelarc has been at the foreground of this intersection, and in particular has embraced the practice of using bio-technology research into his creative practice in pieces such as *Ear On Arm* (2003-onging). Whilst his artwork is largely performance led, this merging of electronic technology and biology may be an uncomfortable notion for some. To many the idea of grafting an ear onto your arm, or connecting your brain waves to an arachnid like vehicle (*Exoskeleton*: 1997), is not only disturbing, but reminiscent of the fictitious work of Dr Frankenstien. The number of people choosing to have cosmetic surgery is currently increasing every year, but whilst these operations are unnatural, most of the outcomes appear relatively natural.

What is disturbing for people about Stelarc's work is that ears do not normally grow on arms, and people do not normally have probes and microchips inserted into their body, except for invasive medical procedures. This kind of medical procedure is increasingly

the only way for some people to see or hear. People have sympathy for that, and that fact alone may help it to become more accepted. What seems to be taking time for audiences to adjust to, is that it can be classified as art. It has already taken a considerable amount of time for contemporary art (post-modern onwards) to the reach the point where it is covered in schools and considered as a serious art form by a broad section of society.

Digital screen based works are particularly well suited to cult status on-line. Works can survive and grow artistically by being shared and distributed through small networks of association. This can form an independent arena of critique, expression and education. With web sites such as Flickr.com the intention is for the work to be seen and recognised by as many people as possible. This is something that reproduction has brought to art, and something that new media art has been a catalyst in enabling. The ability for unskilled individuals without the knowledge of tradition to create art works means that there are now only rare cases of artwork being produced for self-development and true cult purposes.

To aid the argument for the digital and the virtual to be considered as a medium in their own right it is worth referring to Baudrillard's (2010:3) analogy where the simulation of an illness produces some of the real symptoms. As an idea that has evolved with visual language simulation is seen as the current state of the simulacrum. The notion of value has a plethora of possible interpretations depending on the context. For the purposes of my research I will be defining the categories of value that I am most concerned with. Whilst the potential range is broad, it will serve as guidance to the ontological assessment of the chosen works of new media art in the case study.

Predominantly within this chapter I am concerned with medium's value systems that can have an influence on the social and cultural acceptance of an artwork. I am also interested in exploring and applying Baudrillard's four methods for an object to obtain value: functional, exchange, symbolic and sign. The thesis as a whole will be demonstrating how an enhanced and more dynamic understanding of the value systems of new media art will afford it greater acceptance. I am proposing that through an understanding of values that have parallels to more traditional art forms, then this relatively new form can gain a more widespread appreciation.

If we take value to mean an ideological system that is specific to a social group, then the cultural specificities will be taken into account. However, until they make themselves apparent through interrogation at the point of the initial case study, they will remain limited in their development. The initial case study will serve as a benchmark for identifying and developing the taxonomy of value with new media art.

A particularly dominant theme in creative practices is that of the environment. By environment I refer the space that the subject occupies, and the space that the viewer occupies. Often the environment of the subject is there to form part of the semiotic narrative. In the case of the gallery the viewing environment can be controlled.

Increasingly, however, the viewing environment is outside the traditional gallery and is therefore unpredictable and uncontrollable. The Internet and mobile web access have contributed greatly to this. The values that are placed on the environment vary depending on the period in time and the social group in question. If the real world is

still developing, then the virtual world of an artwork may serve a different purpose in the environmental expression of a developed society. The development of a society is reflected in the sophistication of its artworks.

As society and painting technology have developed, works produced have become more sophisticated in terms of semiotics. Renaissance perspective paintings are one of the earliest examples of remediation, particularly of spaces. Through the implementation of perspectives, artists created an illusion of depth. The narratives of religion, history, and mythology were played out in scenes of a social and environmental context. Surrealists such as Salvador Dali were able to show us the equivalent of virtual worlds. Environments that were impossible, yet were uncannily familiar. Whilst the intended ideology of an image cannot change, the interpretation and significance can. Philip James de Loutherbourg's painting *Coalbrookdale by Night* (1801), which depicts the progress and ideals at the dawn of the industrial revolution, now serves, in hindsight, as a warning to the damage that industry was causing to the Earth's natural environment.

Text Rain (1999), by Camille Utterback and Romy Achituv, was one of the first works to truly articulate the information overload that new media was causing globally. The letters, which form the words of a poem, are fully interactive. As the viewer walks in front of the projection screen their silhouette blocks and controls the falling passages of text. As the text builds up like snow the poem can be more clearly read. In a standard reading of this work it could be seen as representing the modern tidal wave of information that is now unstoppable. It adequately demonstrates the impossibility of containing all the passages of information that we encounter in our daily lives.

If we use the concept of remediation to discuss *Text Rain* we can see it remediates the concept of poetic sentences. It visually signifies the fluidity of creating and reading a poem. It is the hypermediacy of the work that enables it to demonstrate this fluidity. It could be suggested that the work also applies Transparent Immediacy, because the text is an illusion of the written word. However, the illusion of interacting with the letters is too fantastical to support this.

Pedestrian (2001-2002), by Paul Kaiser and Shelly Eshkar, shows a macro view of an industrialised society. Motion captured computer animations of people seen from above are projected onto the ground in busy city locations. This positions passers by as observers over this scaled down city. The macro city is filled with virtual inhabitants who can be seen going about their daily life. On occasion the inhabitants appear to move in formations like ants. Although this world is virtual, and the viewers are removed from it through lack of interaction, the inhabitants occupy the same space as the viewer. This leads to a sense of implication for the viewer in their macro lives. By walking over the image the viewers footprint and shadow invades their world.
This is a reminder of how overly populated and surveyed our world has become. Watched from above like an Orwellian character, the inhabitants all look the same and unexceptional. *Pedestrian* (2001-2002) appears to remediate CCTV. The motion capture provides a Transparent Immediacy that is only betrayed by its scale and position during exhibition. It cannot hyper-mediate because the content is too realistic. The medium is also not the focus, it is a means to an end.

New media art was born out of the evolution of Kinetic Art. Works, such as Marcel Duchamp's *Rotary Glass Plates* (1920), started to combine sculptures that were originally powered by their own, or a participant's inertia, with that of an electronic motor. Since then, new media art has been at the forefront of incorporating emerging technologies into its medium. This has naturally led to a reliance on computers. Arguably one of the most exciting developments for computing is the networking of devices. A single hub that can relay and control actions across the world remotely. Through networking *Telegarden* (1995), and *Teleporting An Unknown State* (1994-1996), demonstrate how digital technology and the organic natural environment can operate in harmony. In both works the plants that feature in the exhibition space rely on an internet connection, and a remote user, to keep them alive. By placing the plants in the gallery space the span between the gallery environment and the virtual environment are bridged. This echoes the transition in video art from the on screen space to projection onto three-dimensional spaces, such as sculptures; as pioneered by Nam June Paik and Bruce Nauman.

Ken Goldberg's *Telegarden* (1995) relies on web users to tend to the plants by controlling a robotic arm to water them over the Internet. Goldberg raises questions related to what he calls "telepistemology, the nature of knowledge gained through remote, mediated sources such as the Internet" (Tribe and Jana: 2006:46). Eduardo Kac's *Teleporting An Unknown State* (1994-1996) again relies on the web user, but this time for light to make the plant grow. The plant is positioned in a completely dark room with a web cam and projector mounted above it. As the user switches on the projector remotely the light feeds the plant. Originally the light was from a pre-set image. Over the years of development users could project images from their own

computer onto the growing plant. This meant that the plant was being fed by images of the skies of Tokyo, Rio, and Sydney, without leaving the gallery. This remote influence relies on the belief and trust that the environment at the other end is real. This concept is becoming more mainstream, as the combination of control mediated through a remote virtual version of the event, is how many medical operations and Mars Rover's are now being conducted. What is interesting is how these works predict the environmental and social benefit of using networked remote presence technology.

The use of environmental resources, as seen in the Lascaux cave paintings, is evident as remediation in *Telegarden* (1995) and *Teleporting An Unknown State* (1994-1996). Many cave paintings were created with the blood of the animal that had been killed in the depiction. So if we take the concept that the subject is also a part of the medium, then we can see this remediated in *Teleporting An Unknown State* (1994-1996). The light and the plant are the main focus of the piece. They are also the raw materials from which the work is produced. Both pieces of work deal with life and death. The cave painting is the result of a death and could symbolise the taking of a life to ensure the survival of another. *Teleporting An Unknown State* (1994-1996) relies on the participants to keep the plant alive. It is a shared responsibility amongst a social network. This responsibility is what makes the new media art so profound. The viewers of *Teleporting An Unknown State* (1994-1996) are participants in the piece's life support. Their input is influential in a god like way, and is an essential part of the medium. Interactions with both artworks make use of new media's hyper-mediated properties.

Another point of interest is that *Telegarden* (1995) is still running and viewable, where as the Lascaux cave paintings were close to the public in 1963. This was due to the excess carbon dioxide produced by the visitors causing deterioration to the paintings. In this contrasting example the viewer can be seen as a participant in the artwork's destruction, as well as its life support. Following this train of thought there is also a concern that museums are now moving the haptic experience away from the 'real' to the virtual via special on-screen interactive interpretations screens for public; the 'real' is now off limits and the virtual supersedes it. The growth in popularity and hype surrounding interactive guides and information points have led to numerous galleries moving their artefacts away from the viewer and instead confronting them with a virtual version of artefact with accompanying information.

Whilst these works rely on an element of the real environment, computer technology relies on a virtual parallel world. A limitless environment, which potentially does not require rules or values. However, artists and designers rely on known value systems being implemented so that the user will still recognise this new environment. It is here that the remediation happens. Society's real values do not need to function in the same way in a virtual world, but they seem to be inescapable. Events such as the recent arrest for the murder of an avatar in *Second Life* demonstrate the projection of our current ideological beliefs in to this other world. Values such as growth, development, and wealth all feature as goals in *Second Life*. The value placed in the use of a gallery space is also present in the art galleries of second life. Our desires for the future are also present. The ability to build a fantastical house, fly and even teleport are ways of realising fantasies in *Second Life*.

Within *Second Life* it is difficult to identify any traditional social structures, as the world is fragmented and vast, with new possibilities being explored as a result of its limitless potential. For all the networking opportunities available, the limitless expanse of the environment means that projects like *Telegarden* (1995) are unlikely to succeed. There is also the knowledge that a real life form depends on your input. In Second Life the virtual outcome provides less impetus for engagement. Within new media art there are some artists that seek to remove the need to enter a virtual world by placing virtual elements within our real environment. As a bridge to this transfer, Charlotte Davies' *Osmoses* (1995) works on two levels. Immersants enter a virtual world via a bulky head mounted display. The world has similar values to ours. There are representational realisms of tress and water, sky and land. However, for all the familiar elements in this virtual environment, it also appears more fantastical unreal than our own. Colours are abstract, and the elements of text, code and transparency create a systematic vision of a dream world that represents the medium of the work. There is fluidity between the meta-layers of natural environments and data space. This is much like when Neo learns to see the *Matrix* (1999) for what is really is and then the accepted rules no longer apply to that environment. Simultaneously in the real world the exhibition environment has been designed to transform the movements of the immersant into a performance. On one screen the user can be seen making gestures that are effecting another environment, whilst their view into this other world is displayed on an opposing screen. *Osmoses* (1995) represents the desire to live a virtual life that can be exhibited in the real world.

Baudrillard's (2005) *System of Objects* provides a methodology for identifying and approaching cultural values that are placed on commodities in society. When the book

was written in 1968, mass production and consumerism had fully taken hold of America and was quickly becoming a fact of life in other countries, such as the UK. Artists such as Andy Warhol and Richard Hamilton had become highly aware and critical of consumer culture. Baudrillard's system can now be applied to the effects of digital production and distribution as the concerns over value are mirrored.

The four systems identified and detailed by Baudrillard are: objective, subjective, meta- and dys-functional, and socio-ideological. Whilst the former two systems will be referred to in relation to their impact on the antique status and atmospheric values; the latter systems provide a more closely related insight into the issues that are potentially continuing to affect new media art. Through the adaptation of these more culturally and aesthetically sensitive value systems by remediation the effects of value on the acceptance of new media art can be more accurately theorised later in this thesis.

History and Nostalgia

Here, I will comment on the relevance of the objective and subjective systems to new media art. One of the initial aspects that can help to aid the promotion and acceptance of new media art is nostalgia. Currently nostalgia in the digital world is limited to people around the age of thirty who have fond memories of trying to get to the next level of *Space Invaders* (1978) or *Super Mario Bros* (1985). Whilst this association with nostalgia may currently be causing a state of confusion and a hindrance, in the future the same sense of nostalgia generated by antiques could be aroused by new

media art. Material and component associations will be akin to iPhone users looking at the first brick mobiles of the mid 1980's. Contrasts in sophistication of technology will be humorous as well as providing greater appreciation for the technological challenges available at the time.

A key point to place the notion of nostalgia in context for new media art is that of "historicalness" (Baudrillard: 2005:77). Baudrillard describes the antique object no longer having any practical application and its role being merely to signify. If antiques are signifying the past then the process of remediating traditional techniques through new mediums should convey the same nostalgic values. It is possible that the visible presence of the remediating medium warps or distracts from this atmospheric value. However, if the new medium successfully remediates the same set of values as an antique then what are they? It is unlikely that the actual values can be remediated as it is the presence and accumulated history of the item that provides its real value as we have already seen Benjamin illustrate. Any sense of the same value would be illusionary.

When reviewing new media art in the context of established and historically grounded nations, such as the UK, the issue of appreciation and visibility becomes clearer. For example, new media art appears to thrive in younger nation democracies such as Australia, which are less burdened by the weight of cultural history and ideological elitism. This theme will be developed and rationalised in chapter four of this thesis.

Baudrillard expands on this theme, by discussing the technical object and primitive man. Whilst I am in no way trying to define the less educated members of society as

primitive, the structure for contrasting value within social groups is still of use when discussing class as it has a strong influence on education. To paraphrase Baudrillard (2005:87) he defines the object as virtue: the savage acquires modern technology, the civilised acquires ancestral significance. Whilst both practices can be observed at many levels of society, the significance of signified meaning in new technology and antique cannot be ignored. In a consumerist society the acquisition of new technology as a signifier of status is constantly growing. This is usually to signify financial and modernity status. The perceived identity of connoisseur of antiquities affords the individual a civilised and mature status that as well as financial prosperity also relays a sophistication that is held by the few. Baudrillard (2005:88) continues to say that underdeveloped people want power from the object, or rather what power can be signified. He also notes that social development is required for modern functionality and decor to be appreciated and implemented as devices.

"Civilised people want birth and value signified by their objects. These are desires that are lacking and can become fetishized" (Baudrillard: 2005:88). In countries such as the United Kingdom and the United States, where society is heavily influenced by the media, they are constantly reminded that they need more to make their life complete. Particularly over the last decade electronic technology based consumer items such as music players, DVD's, televisions, and mobile phones have all become fetishes in a sense. They have become a status symbol where the latest version is the pinnacle of social position. This of course has subgroups and variations within society. This is also flawed as most of the consumer items can be bought by anyone.

The fetish for consumer items seems to be subconscious or unquestionably accepted. For unapparent reasons this fetish has not continued to new media art by the majority. It could be that the social groups who have a fetish for electronic consumer items are not the same groups that are influencing galleries. In Austria the Ars Electronica group not only hold an annual Grand Prix and festival they have also recently opened their new centre in Linz, which is dedicated to new media art. The building is more than just a gallery. It is more akin to the Bauhaus, as it is a cultural hub, meeting place, and space for collaborative creativity. Whilst a number of countries hold media based art events, they tend to be more academically led, as they are less public and more niche in their audience.

Baudrillard (2005:88) reminisces on how the older members of society used to be beautiful because they were closer to God and richer in experience. "The technological civilisation has rejected wisdom of the old, but it bows to the solidity of old things, whose unique value is sealed and certain." To consider this social construct in terms of valuing a medium, which is both relatively young, and where authenticity and distance from the original can be ambiguous, hints at a concern that may be impossible to over come in the near future. The newness of the medium could evoke a sense scepticism over its uniqueness and apparent rejection of tradition.

This point continues to comment on the idea that, "Functional objects exist in the present, and that Antique is the suppression of time" (Baudrillard: 2005:79). This notion could be a serious challenge to the validity of and worth of new media art. It indicates that functional objects have a different form of value to those of antique value. Whilst antiques elicit emotions of nostalgia, current functional objects cannot.

Therefore, if a work of art is utilising a medium that has no nostalgic value what can its worth really be?

I would argue here that new media art is not necessarily vying for the same set of emotional and value based responses as traditional works. Its value therefore must come from its originality and geniuses in the way that Benjamin referred to it. This issue of biased value also suggests that the degree of integration that media technologies have in society may influence how they are valued. Whilst the retail cost of some technological items goes into the thousands, in most cases technology is priced for the consumer. In many cases the technology is of a very low cost, suggesting that the financial value of the components is low and that may be reflected in the value of the whole piece. The same could be said for the component parts of a photograph, painting, or ceramic sculpture. However, whilst their component cost is relatively low they can demand almost unlimited price tags that reflect the artist's and cultural status of the work.

"The historicalness of antiques is used to give meaning where it is lacking" (Baudrillard: 2005:90). To suggest that this is one of the reasons for traditional medium artworks to continue their retention of their high status would be controversial and dismissive of their importance on a country's heritage. It is of course not the sole reason, but it is possible for it to continue to play a part through nostalgia in acquiring value over time. If "the value of an object is a function of cultural and social determinants" (Baudrillard: 2005:96), then this supports the impression that certain groups can have greater influence over what is accepted and valued in the art world.

“There is an ideological significance to the value of these art works due to the objects they encompass” (Baudrillard: 2005:117). If the ideology of the influential group denies status to a particular medium or art form, or more realistically, attributes a bias to another, then its value will be affected accordingly. There appears to be a conflict between the practical specificity of new media art components (the computer) and its re-appropriation as an artwork (Baudrillard: 2005:100). This conflict could deny new media art its place through a basic misunderstanding of its intentions.

Summary

> Defining new media art via the medium has landed high-tech digital artwork and artists in a paradoxical political and cultural position (Munster: 2006:153).

If authenticity is in question when looking at new media art, an aspect that could be affecting its acceptance might be a perceived distance from the original. As the original cannot be identified it could be seen as an issue of historical and authentic integrity. Imperialistic and traditionalist critics could be urged to describe new media art the sin of the art world if they were to take Baudrillard’s (2005:80) comment on authenticity literally: “The older the object the closer it brings us to divinity”. Whilst critics would generally be wise enough to avoid this kind of language, it is clear that this opinion of age influencing value in art can have repercussions on newer forms.

The financial value of original works demonstrates the obsession that is focused on “the certainty of the origin, date, author and signature of the art work” (Baudrillard: 2005:81). The physical relationship between the author and object, mean marks of labour can confer value onto the object. It is possible that new media art is perceived as not being capable of attaining this value.

The fear of the digital is now disappearing as it becomes more ubiquitous, but also as it replaces analogue mediums without revoke. Key mediums such as photography and video have now become highly digitised as pioneers have proved its benefits including many of the analogue medium qualities. I have shown how the principles of new media art are similar to the renaissance perspective paintings. The work communicates and articulates the concerns of society to the society. Whether the work has a bias to Transparent Immediacy, or Hypermediacy, the remediation of traditional values is present in contemporary new media art. Many artists have practised under the values of the old art world. Therefore, their ideas have been formed from this mould.

In remediation the language of communication remains the same as its referent, although the vocabulary evolves. Therefore, the method of conveying the ideas will always be grounded in the language of representation. No matter how complex the technology involved, the message will always be the same. However, the greater the sense of realism, the more immersive and profound the message can be. New technology not only provides new modes of communication, but allows us layer the established language with evolving one. If the new technology allows the artist to remove barriers and access parts of the consciousness more directly, then the experience will be more immersive and engaging than was previously possible. The idea of looking at a painting, photograph or sculpture will seem antiquated compared to the intensity and clarity of this new art world, and potentially the more direct and stimulating way we will engage with it.

It is not unreasonable to assume that eventually new media art will acquire nostalgic

values, and be classed with a role of revolutionary importance. Remediation has thus far allowed me to critically view new media art through a new perspective. On its own it doesn't appear to be able to answer why new media art is still at the fringes of critics, galleries and journals interests. However, together with socially recognised value systems it will help to plot the issues of confusion and concern within new media art. Remediation is able to provide a structure for analysing the application of traditional value systems through a new medium. Further investigation may reveal why these traditional values, which should communicate clearly to contemporary audiences, are either being lost, or are not capturing their attention, as more traditional works continue to do.

Particularly digital and virtual artworks are inherently generated with a distance between the artist and the screen. Devices such as Wacom drawing tablets[2] and Surface Pro computers[3] have gone some way to closing this gap. This is particularly interesting in terms of remediation as the new medium of the mouse has been reverted to the remediation of the pen or paintbrush. Interactive works such as *Telegarden* (1995) compound the questions and concerns over automation, distance and artist's mark.

This distance may develop the misconception that the artist cannot leave their mark on the work. Whilst this is true in a physical sense, the artist's unique implementation of the medium is one of their most apparent marks on the work.

By its very nature computerisation is the agent of automation. If there is a general concern that, "Automation exiles man to the irresponsibility of a mere spectator"

(Baudrillard: 2005:118), then this misconception of the relationship must be exposed to be inaccurate. This may take years to become established, but would be most successfully achieved through demonstration and education. Baudrillard's (2005:119) idea of "esoteric satisfaction" and an absence of activity from the user compounds the concern that new media art's current position may be related to automation causing a stereotypical effect.

Whilst an over reliance on computer programmes could cause over automation, a good new media artist should develop an artwork based on its own conceptual and aesthetic influences. The relationship between artist and artwork here is more metaphysical and abstracted. However, the artist is still manipulating a medium to remediate what they want to express. This issue can be described as remediation being the attempt to retain authenticity and the myth of origin.

> It is a question of substituting the signs of the real for the real, that is to say deterring every real process via its operational double, a programmatic, metastable, perfectly descriptive machine that offers all the signs of the real and short-circuits all vicissitudes.
> (Baudrillard: 2010:2).

In Baudrillard's (2005:115) chapter on the Metafunctional and dysfunctional system of value, he marks another area that could be used negatively against new media art. He comments on the lack of purpose for gizmos. Stating that they have functions, but are non-essential items. If the components of new media art are viewed as gizmos then this sense of lesser value may be projected onto the work itself.

> One might overgeneralize that if traditional appreciation was within a medium, then modern appreciation became more likely to be of a medium. Traditionally, functional objects created within aesthetic traditions had used the embellishments of necessary components as a means of expression (McCullough: 1998:207).

I would argue that in the case of new media art, as happened with photography and other new discipline defining practices, there is still a perception of it as a future medium rather than contemporary one. This is back up by Steve Dietz "Art is different after new media because of new media - not because new media is "next," but because its behaviours are the behaviours of our technological times" (Graham & Cook: 2010:xiv). We live in a technological culture, so therefore its impact will be explored and accounted for later in this investigation.

Case Study: Camille Utterback- Literary and Temporal Interactive Spaces

Keyworks
Aurora Organ (2009)
Abundance (2007)
Alluvail (2007)
External Measures Series (2001-2005)
Drawing From Life (2001)
Liquid Time Series (2001-2002)
Crossing (2001)
Visual Resolve (2000)
Text Rain (1999)

Introduction

> I want to change how people think about their relationship to technology. I want to bring our physicality, our bodies (a large part of what makes us human) back into the equation. (Utterback: 2010)

Camille Utterback's work has been selected for a case study in this thesis due to its bridging of literary, temporal, and interactive spaces. Her work demonstrates that new forms of interaction can be developed as a result of experimenting with new technology. Her work allows for more familiar forms of media, such as text and video to be the voice of her work. She has also been one of the more successful media artists by extending the context in which work may be encountered such as hotels, where her work can be exhibited and experienced for much longer than would be possible in a museum exhibition. She has also been successful in receiving financial awards for her work and for selling pieces to progressive curators. Additionally, Utterback's work raises some interesting issues around our understanding of manipulation of the multimedia content by which we are now surrounded. Utterback has produced a range of work that demonstrates how accessible new media art has become. Pieces, such as *Text Rain,* have demonstrated how this art form can be valued, and even purchased for

permanent exhibition, and therefore require attention in the context of this thesis. Her work demonstrates that value and meaning can be negotiated at a variety of levels beyond the constituent parts.

Utterback's body of interactive work harks back to the traditions of Kinetic art, which was the precursor to, and experimental space of, new media art. She describes her work as "interactive video installations, and reactive sculptures." (MacArthur Foundation: 2010). This positions the work within the traditions and context of older art forms and serves as a method of de-alienation to those less familiar with new media artworks.

Particularly in her *External Measures Series* (2001-2005), it is possible to see the implementation of cause and effect through the incorporation of the participant's presence into the artwork. All of Utterback's artworks focus and interpret the interactions of the participants, in a variety of scales and implementations. Her work is characterised by its interplay between interaction, interpretation, and representation.

An indication of Utterback's critical and commercial success in the field of new media art is that she founded her own company Creative Nerve, in 2000, to develop commercial projects that were being commissioned as a result of her art practice. The output of Creative Nerve provides corporate, retail and museum installations that are not only extraordinary, but also directly and personally responsive to their clients.

As part of the research that went into the production of *Text Rain* (1999), Utterback became the co-inventor of a now patented video tracking technology. A month-long residency at Grand Central Art Centre in 2001 saw Utterback produce *Come To Pieces*

and *See / Saw* with Andy Chapman, which to date has been the most distinctly different work she has produced; whilst still retaining an association to the body and movement of the participant. In 2009 she was named as a MacArthur Foundation fellow, a recognition accompanied by a $500,000 grant to continue her work over the next five years without any constraints. The grant is awarded annually to accomplished individuals who have shown an exceptional creative talent and promise to achieve more.

Utterback is an example of an intersection where a computer programmer has also trained in the fine arts. Carl Goodman, curator of digital media at the American Museum of the Moving Image, says "Utterback excels at following her curiosity and that her work will stand up to scrutiny in the future, when the technology she's using will no longer be novel" (Technology Review: 2010).

Utterback also believes that like many other technologies at some point her interfaces will no longer be rare and unfamiliar:

> Physical-digital interfaces will not be novel, they will just be used. The appeal of my work lies not in the fact that it uses technology in a new way, so much as it allows the technology to disappear, and lets people enjoy a physically-based, human-centered experience. (Utterback: 2010)

Within this case study I will approach Utterback's work with a constant consideration of its pertinence to the approachability of new media art, as well as its importance to the medium's history.

Visual Resolve- A Journey From Text To Image

> In traditional art forms, the 'signature' and 'voice' of an artist manifests itself in aesthetics of visuals and execution. Every medium may have its specific language but in digital art, this language has a quite literal rather than figurative manifestation. (Whitney: 2015)

Figure 1. Camille Utterback 2009, *Aurora Organ.*

Utterback's aesthetic evolution is central to the understanding of her work. Whilst her latest work, *Aurora Organ* (2009) (Fig.1) is purely colour in motion through interactivity, her most recognised work is still *Text Rain* (1999) (Fig.2). There has been a clear progression from text-based work to image based work. The evolution mirrors that of computing; where the human computer interface moved from code entry on a monochrome screen, to a visually rich and dynamic desktop metaphor. Within the space of only two years and four works, Utterback's themes and visual styling have metamorphosed. This process can be partially attributed to advances in computer technology, but also to Utterback's own understanding of the technology at the back-end, the code, and the front-end, the projection and capturing methods.

Figure 2. Camille Utterback 1999, *Text Rain*. Text Rain installed in the lobby of the 21c Hotel.

Text Rain provided Utterback with a unique learning experience. The technology used to bring the poem to life was developed with the help of the more experienced new media artist Romy Achituv. Utterback's later works, such as *Drawing From Life* (2001) (Fig.3), are more visual than textual, but they build on the initial experiment of *Text Rain* to combine video, text and bodily movement. Whilst the movement of the text is reminiscent of the works of John Maeda (Fig.4), the inclusion of video can be traced back to Myron Krueger, one of the original interactive video artists.

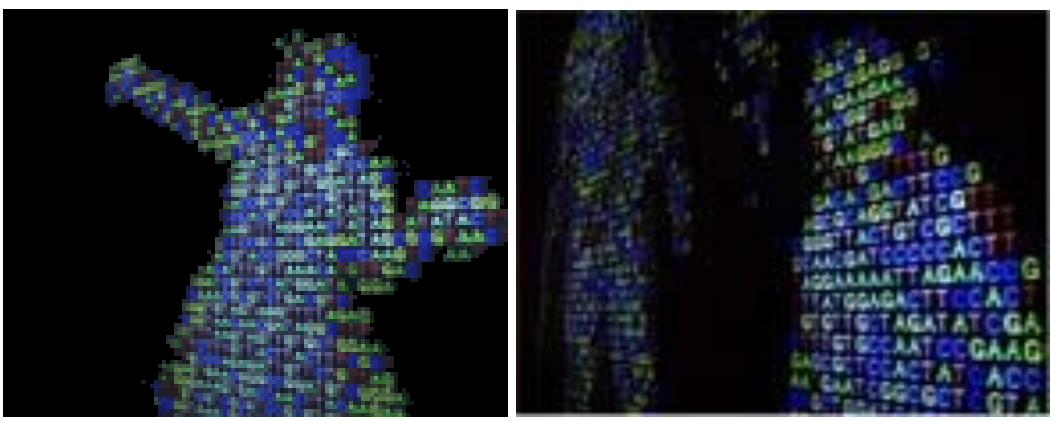

Figure 3. Camille Utterback 2001, *Drawing From Life*.

If “Much of the best work being produced today seems to fall between media” (Higgins 2001:49), then *Text Rain* qualifies as being one of Utterback’s, if not new media art’s, most important pieces to date. Language, and more specifically text, has been a defining characteristic of Utterback’s creative evolution.

Whilst she has moved away from text-based works towards more graphical and aesthetic centric work, *Text Rain* (1999) (Fig.2) is still one of the most exhibited and conferred pieces of new media art over the past decade. *Text Rain*, which was first exhibited at the Special Interest Group on Graphics and Interactive Techniques conference in 2000 (*Siggraph 2000*), is not only based on Evan Zimroth’s *Talk, You* (1993) poem, it also becomes an interactive embodiment of the way in which he describes the process of conversing as: “turning-with or -around, as in your turning around to face me suddenly...each part of my body turns to verb...limbs...loosening of syntax” (Zimroth:1993).

Text Rain is a kinetic poem, which positions the participant between two screens. One is a neutral background to aid the differentiation of silhouettes, and the other is the projection of the participant and falling text interacting. Silhouettes that are included within the projection are able to prevent the letters from falling further, and as they are accumulated along a surface such as an arm it becomes possible to read words.

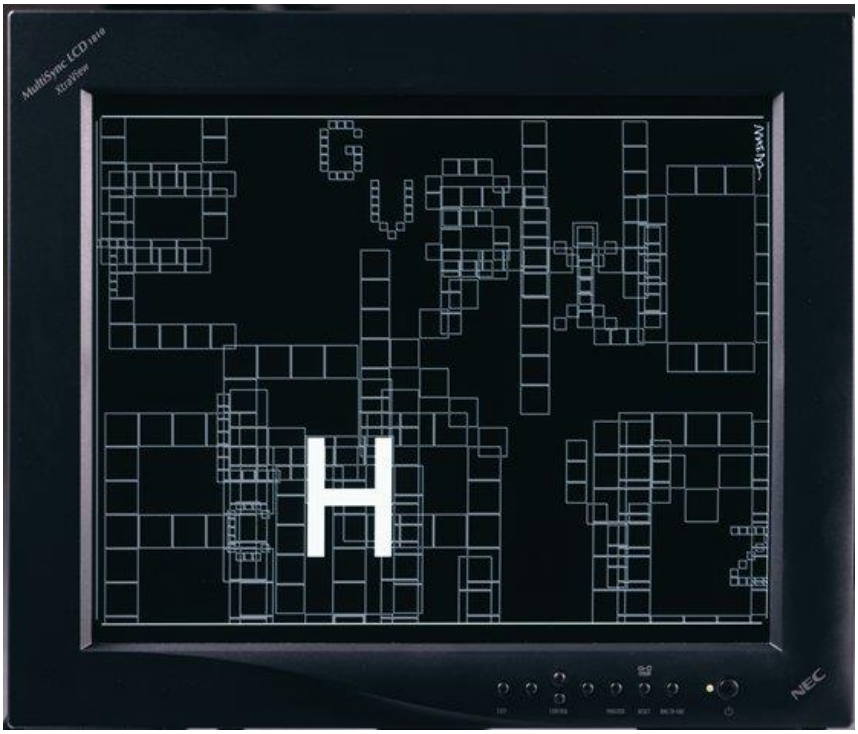

Figure 4. John Maeda 1998, *Tap, Type, Write*.

Whilst there had been numerous other interactive new media art works throughout the 1990's, due to the increasing developments and affordability of computer systems, at the end of the decade, *Text Rain* (1999), was a dynamically different piece of work due to its custom built video tracking system, and literary grounding. Works such as John Maeda's *Tap, Type, Write* (1998) (Fig.4), and David Small and Tom White's *Stream of Consciousness/Interactive Poetic Garden* (1998) (Fig.5), were also ground-breaking in a number of ways, but they did not capture the imagination of the audience in the same way as *Text Rain* (1999).

Tap, Type, Write (1998) was one of the first new media artworks to challenge our understanding of the relationships between typographic form and meaning. Whilst the characters on screen were interactive, it was via the traditional method of a keyboard. *Stream of Consciousness/Interactive Poetic Garden* (1998) allowed participants to use

their hands to disturb the flow of water where the projected text appeared to be floating, however, the interactivity appears limited in comparison to *Text Rain* (1999) as the piece is built around a small sculptured stream.

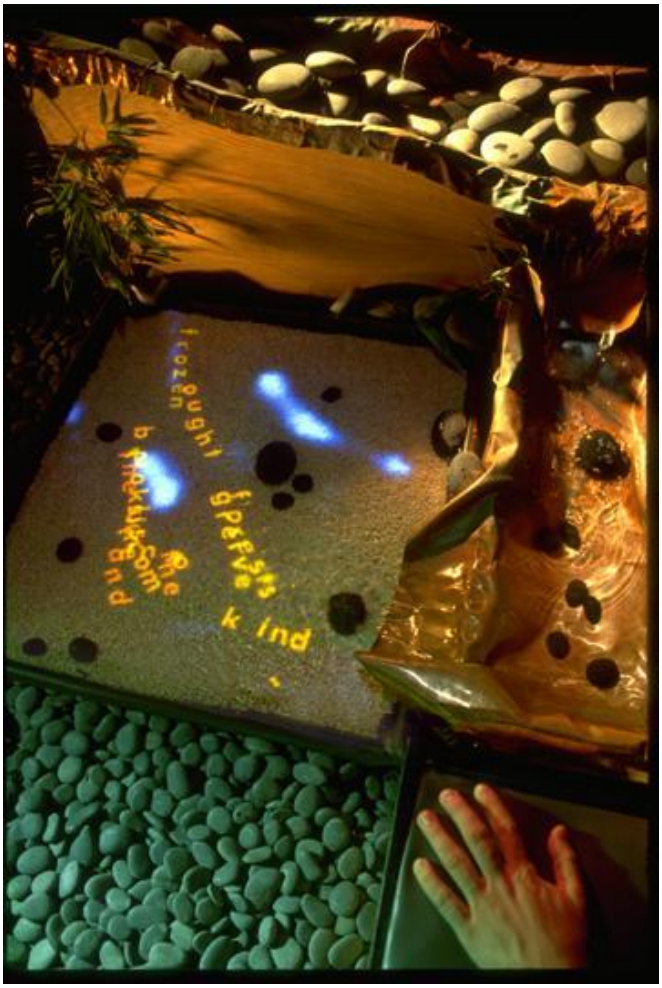

Figure 5. David Small and Tom White 1998, *Stream of Consciousness/Interactive Poetic Garden*.

Text Rain was particularly appealing, as participants already understood the interface. The flow of a poem and the falling rain were not only familiar, but also the convergence of the two allowed Utterback and Achituv to visualise Zimroth's poem in a specific and appropriate way. The poem developed a physicality as it was affected by the intervention of human bodies and tangible objects. An increasingly common and popular aspect of interactive new media art is the inclusion of live video. This usually

incorporates the participant within the visuals of the work, and can reinforce or play upon their vanity in attracting them to the work.

Francisco J. Ricardo discusses *Text Rain* as a Transmodal work of art in his paper 'Reading the Discursive Spaces of Text Rain, Transmodally' (2009). By Transmodal he is referring to mulitmodal digital works which transcend established conventions and forms. Ricardo's paper is concerned with the relationship between text and image, and that literature cannot escape being visualised whether it is imaginary or realisation, and that graphic accompaniment can be contaminating. He explores the modal structures of *Text Rain* and demonstrates that its transmodality is interrelated to the artwork's concept. The unique process of the poem being fragmented into individual falling characters is described as "neither entirely visual not textual, enveloped neither in an arrangement of lexical tokens nor in a visual stream" (Ricardo: 2009:59). We experience in this work the difficulties arising from removing the understood "baseline anchor" (Ricardo: 2009:59) of the text, but in doing so the poem and visual representation are freed, so neither has dominance, but both are significant. The intervention of the body as the dominant element into the space provides a new baseline for the text, and it is only in this way that words or partial sentences can be read.

The experience of *Text Rain* (1999) is multimodal as the work focuses the participant's interest in a number of stages. There is the initial discovery of the screen with falling text, closely joined by the realisation that their reflection is on the screen. The process then leads to discovering that the work is interactive, followed by an increasing level of interaction through experimental play. Given that *Text Rain* (1999) was produced at the

height of the dot com boom it poses an engaging demonstration of the digitisation of our world, specifically literature, and the speed at which we have become accustomed to cyberspace as the method of interacting with our cultural artefacts.

What *Text Rain* (1999) also achieves is a poetic illustration through interaction of the underlying building blocks of cyber-culture. Interaction which is achieved through visual representations created by lines of code. The physical mode of interaction emphasises and makes participants aware of their relationship to technology. Jay David Bolter and Diane Gromala, authors of *Windows and Mirrors* (2005) detailing the importance of the gallery space at Siggraph 2000, believed after trying *Text Rain* (1999) that; "As an experiment in the future of digital technology, it suggests that that future belongs to presentation and representation" (Bolter and Gromala: 2005:14). This appears to be the role of many new media art exhibitions, the work is an experiment, and the show is a glimpse of the future not the contemporary.

Reassuringly Bolter and Gromala (2005:14) identify that; "In our digital culture we are indeed coming to value computers for their capacity to present and represent". *Text Rain* (1999) was highly original on both accounts and that is one of the reasons why it has become so important to the definition and history of interactive new media art.

Ricardo reminds us that at the centre of *Text Rain* is literature. It is important to remember that electronic literature is still literature and that it is not "…so new in medium, content and form that no viable link can be made" (Ricardo: 2009:55). What Utterback and Achituv have done to the lexical medium is "re-mediate" (Bolter and Grusin: 2000) it. The remediation is quite extreme, to the point where the previous

medium is almost unrecognisable. The methods by which *Text Rain* deviates from the traditional are its ontological virtues. They allow for the participant to make the interpretation as opposed to the artist. Rather than a textual structure limiting the visual approach and potential of *Text Rain*, it becomes a historical origin to which the work only refers, thus allowing literary conventions to be skewed under the new rules of the virtual plain the text inhabits. The text is now able to operate in a collaborative manner, where it appears to be conversing with you, rather than talking at you. The modes of interactivity and interpretation within *Text Rain* are attributed to it being an experiment in interaction design. "Experience design is also contextual, in the sense that designs must both respond to and shape the many contexts (personal, physical, and cultural) in which they function" (Bolter and Gromala: 2005:25).

Outside of the traditional exhibition methods, the unique 21c Museum Hotel purchased *Text Rain* (1999) through Creative Nerve to fill and define its lobby. The hotel, situated in the middle of Museum Row, in downtown Louisville, is effectively an art gallery with beds in it. The *21c* specialises in contemporary art, which it has already spent several million dollars on, and exhibits it throughout the hotel complex in bedrooms and bathrooms, as well as the more traditional lounges, and a civic centre.

In September 2003 the Whitney Museum launched its second *CODeDOC* event in collaboration with Ars Electronica. Christiane Paul commissioned key new media artists including: Kevin McCoy, Scott Snibbe, Mark Napier, and Camille Utterback; to produce an art work which was the reverse of their normal process. Shown on the Whitney's *Artport* website (Whitney: 2010), the works focussed on the back-end code of software art in a coding language of their choice. Utterback described her

contribution, *linescape.cpp* (Fig. 6), as simple, and that it reminded her of string art from her childhood.

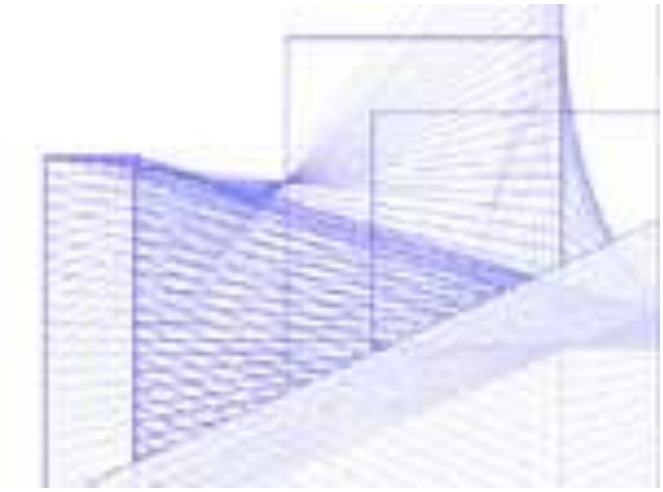

Figure 6. Camille Utterback 2002, *linescape.cpp.*

Whilst the final output may have appeared simple, the code was extensive, and featured mathematical calculations to generate the shapes and movement of the dots around the triangles. Utterback understands that "time and motion can create complexity out of very simple things" (Utterback: 2010), which is how *linescape.cpp* (2002) engages the participants' interest. This project is particularly important to the case of new media arts' perceived status. The raw code has been turned into the first instance of engagement for any viewer. The text file is opened onscreen, with the only discernible difference from regular coding language being that there are fully edited paragraphs at the top explaining the work.

The rest of the text appears as C programming language that can be run on any Windows 98/ME computer. The artwork is viewed and activated by downloading and running the code on the participant's computer. This is an intense paradigm shift for

the method of viewing an artwork. It is the digital equivalent of having the *Mona Lisa* delivered to your door and set-up in your living room to view at your leisure.

"Code has also been referred to as the medium, the "paint and canvas", of the digital artist but it transcends this metaphor in that it even allows artists to write their own tools" (Whitney: 2010). With all of Utterback's work, unique codes and process have been written to realise a concept; in these instances the artist is creating their own tools, and as no other artist has access to them, it facilitates the uniqueness of their work.

The Body As Temporal and Aesthetic Control

Utterback's *External Measures Series* consists of six pieces of work that were produced over a four year period, including *External Measures* (2001), *External Measures* (2003), *Untitled 5* (2004), and *Untitled 6* (2005). *Alluvial* (Fig.9) could be called the seventh piece in the series as it utilises many of the process and technologies featured in the other *External Measures* works.

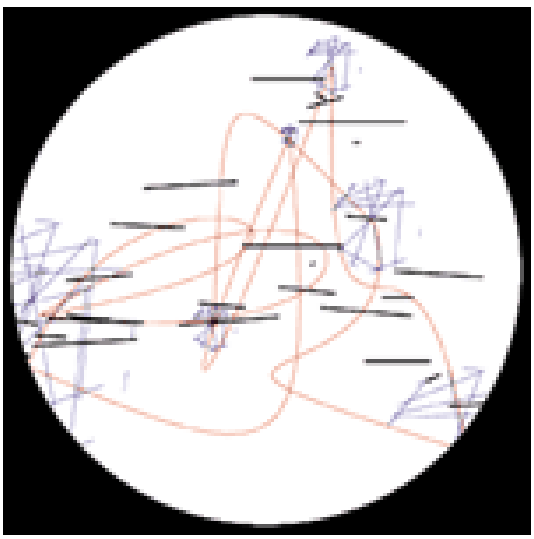

Figure 7. Camille Utterback 2001, *External Measures 2001*.

All of the works in the series utilise projected kinetic sculptures that respond to people's positions and movements. The original *External Measures* (2001) (Fig.7), is aesthetically radically different from the others: whilst many of the works transform activity within the exhibition space into painterly abstractions of the movement, *External Measures 2001* produces line graphics that can be likened to the flight paths of a large airport. The main controlling function is that the software articulates differences in speed or flow through the space in terms of the visibility of the drawn line.

Since *External Measures 2003* the aesthetics of the series have imitated the qualities of abstract painting. A combination of brush strokes and paint splashes as well as marks that appear to be handprints for the record of the human motion within the gallery. Whilst the visualisations have become more sophisticated the concept of the work has remained relatively unchanged.

The works that viewers are coming to see are actually the record of their visit and they become participants to the event. Whilst some viewers may not have been expecting this kind of dialogue with the space and the artwork, the series invites participants to interact more directly with the images being produced. *External Measures* (2001) was presented with a sense of visual remoteness, which is beyond the intention of abstract art, but is a side effect of the way in which the information has been interpreted. Other works in the series, such as *Untitled 5* (Fig.8), meet the intention of an aesthetic fluidity through more recognisable indexical marks.

Figure 8. Camille Utterback 2004, *Untitled 5*.

The complexity of the ways and volumes of information that are processed have changed to make the work more dynamic and detailed. What was clear from the beginning, but has been emphasised more by the end, is that *External Measures* allows a scenario where the screen is an extension of the human body. “The interactive medium provides a rich environment to explore the connections between physical bodies and the myriad of representational systems possible in the digital realm” (Utterback: 2010). This is more than the familiar relationship that most people have with a computer through a mouse, keyboard, or even tablet. Initially the participant unknowingly incorporates their physicality into the work by simply being present in the active space. Increasingly, through realisation and the subsequent experimental interaction, their entire body is stimulating the work’s output.

This kind of interaction is likely to become commonplace in many aspects of our lives, as our world becomes more virtual, and more interactive, through touch screens and gesture sensors. This technology is also being developed for robots, and for monitoring the movement of people in crowds and traffic on the road.

Utterback's work is regularly categorised as new media, however, I have already mentioned that the work often borrows its processes from kinetic sculptures. Therefore, what makes Utterback's work so important to the genre of new media art is that in many cases the work passes over a threshold of kinetic remediation and participatory involvement that redefines the boundaries of the medium of new media art.

> The onset of higher orders of technology- "robot, computer"- which allows us, by rendering older techniques outmoded, to grasp the inner complexity of the mediums those techniques support.
> (Krauss: 2000:53).

Rosalind Krauss wrote this in response to the concerns that Marcel Broodthaers had over the monomania and singleness of including technological objects in his art. Present day art institutions, that have yet to embrace new media art, could also be silently echoing these concerns; which is why events such as Siggraph and spaces like 21c will continue to be a more consistent home for art works such as Utterback's.

Krauss's point about new technology freeing us to investigate the inner complexity of media is particularly important when looking at the practice of artists such as Utterback for two reasons: firstly, the technology in *Text Rain* allows us to interrogate the structures of language and visualise the multimodal spaces we operate within today; secondly, works such as *Liquid Time Series* (2000-2002) enable a new avenue of exploration into the medium of video, which as a result of new technology, is still developing.

Figure 9. Camille Utterback 2004, *Alluvial.*

A number of new media artworks have manipulated the temporal qualities of film; *Horror Chase* (2002) by Jennifer and Kevin McCoy for example; but in the case of the *Crossing* (2001) and *Liquid Time Series* (2001-2002) (Fig.10) the software, by way of the participant's movements, "deconstructs the video frame as the unit of playback" (Utterback: 2010).

Figure 10. Camille Utterback 2001-2002, *Liquid Time Series.*

By moving forwards or backwards, left or right, in the physical world, a glimpse of the video surrounded by a ripple in time is revealed. By enabling the participant's body to become the means of temporal navigation it provides them with a unique encounter that could profoundly alter their understanding and appreciation of their relationship to the media they consume.

This is a form of deconstruction which is specific to the medium of video, as it relies on the relationship between the moving image and the understanding of temporal space; a virtual space enabled by recording and playback technology, which has been further enhanced by digital non-linear approaches to media. Most participants will be familiar with the process of fast -forwarding through a DVD, but there the entire frame is changing. In the *Liquid Time Series*, the viewable instance is only changed by the viewer's presence.

Further to this unusual approach is that the instance's time is moved linearly forwards or backwards from the current time in relation to the distance from the screen. Just as an object would appear to increase or decrease in size revealing or obscuring more detail, moving in and out of the image in *Crossing* (2001) has an illusionary affect which is the result of video tracking and algorithms written by Utterback.

Utterback's work has become a study of "how we use our bodies to create abstract symbolic systems" (Utterback: 2010). Within both works the participant's involvement in the work is inescapable; and after the realisation of the interactive methodology they become enveloped by the immersive nature of the interface.

Summary

Utterback positions her work as "an attempt to bridge the conceptual and corporeal" (Utterback: 2010).

What has become evident through the exploration of Utterback's work is that she rises above the interactive art cliché by focusing on the modes of interaction, aesthetics, and output, instead of simply placing an image of the viewer within the artwork, or creating a digital canvas. The viewer becomes the participant at the highest level as the work relies on their presence to generate the imagery and make them complete.

As an artist Utterback is particularly adaptable as she is adept at writing computer code to realise her conceptions. Language in the form of text is particularly important to Utterback, but language also manifests itself in the visual embodiment of the concepts and the bodies of the participants. In a number of cases, such as the *External Measures Series*, the modes of interaction allow the work to become an extension of the participant's body, and the visuals an exaggeration of their input. The works also challenge the participant's understanding of reality, temporal space and perspective.

Figure 11. Wowlab 2007, *Light Rain*.

When considering Utterback's work as a whole, it becomes apparent that her artwork, unlike many other products of new media art, which are the result of our current

understanding of technology's purpose in society, is an opportunity to reconsider technology in an enlightened manner. Artworks that are affected by this aging status become limited to the range of previous applications of the technology. Utterback does tend to develop concepts that are later imitated by other digital artists. For example, *Light Rain* (Wowlab: 2007) (Fig.11) not only titles itself in homage to the original *Text Rain*, but it also attempts to progress the technology and interactivity developed by Utterback with Romey Achituv. Unfortunately, Wowlab has produced a an unoriginal new media artwork, which rather than developing the concept replicates it, and has reduced it to a mere toy and removed the conceptual and emotive functions that the original broke new ground with. This imitation also indicates the possibility that Utterback's own work will be considered to have reached a peak, as the prolific quantities that have been produced over the last decade have begun to repeat themselves, both technically and thematically.

One way in which Utterback will progress the acceptance of new media art in the art world and society, could be her desire to "help people realize that when technology systems are designed well, they are really fun" (Technology Review: 2010). It is possible that the continued success and intrigue of *Text Rain*, as well as many of Utterback's other works, is because it is not "…an elite piece of art, but an experience to be appreciated by both construction workers and Ph.D.s" (Bolter and Gromala: 2005:25). The direct effect of the participants' input makes the work extremely attractive and pleasurable for general audiences. Utterback's work shares many similarities with modern computer games and marketing strategies. Many pieces of new media art can be mistaken for being mere entertainment; however, within

Utterback's work there is a clear conceptual intention driving the entire process from design, to coding, to exhibition.

As Utterback's work is almost entirely installation based, it becomes a unique attraction as this kind of work is still shown as a future medium, and not a contemporary one. The work appears to be an attempt to make the virtual plane of contemporary new media art physical, even if the final images may only appear on a two-dimensional screen. In the future "Perhaps these pieces will look like early daguerreotypes--lacking polish and definition" (Utterback: 2010).

Chapter Three: Virtual Touch- Virtual Reality As Fine Art Space

> Each thing acquires a palpable completeness yielded through haptic relations, through body and hand, but traced and confirmed by the eye. (Witkin: 2007:46)

When Marshal McLuhan wrote *The Medium Is The Massage* in 1967, it contained a key issue that typifies the issues facing new media art today;

> Our official culture is striving to force the new media to do the work of the old. These are difficult times because we are witnessing a clash of cataclysmic proportions between two great technologies. We approach the new with the psychological conditioning and sensory responses of the old. This clash appears in transitional periods. …a common failure: the attempt to do a job demanded by the new environment with the tools of the old. (McLuhan: 2001).

As part of my thesis on the status of new media art I have identified value systems as a problematic area for this relatively new art medium. To afford new media art greater acceptance I am exploring some of the challenges that face artists and curators. This chapter explores the most challenging feature of new media art, its immateriality, virtuality, and transience. It will also provide an insight into new media art's immersion and interactivity, and explore the role of emerging technologies within arts installations.

Although I discuss financial value of new media art within my thesis, I primarily focus on a qualitative approach exploring ideological value systems. As a mode for accessing and appreciating new media art I have considered the development of taxonomical paradigms from recognised social structures, such as: Belief Systems, Cultural

Heritage, Truth, Environment, Political, Cult, and Fetish. Whilst not all of these will be applicable to every artwork, some may provide useful structures when making my conclusions.

Virtual Reality

Immersion into other worlds has long been a fascination with artists. Renaissance painters, for example, used perspective tools to enable them to accurately remediate the perspectives of their subjects. The ability to control and manipulate the viewer's perception of reality enables artists to communicate the revelation of that which is most precious and difficult to overcome; that our place in this world is temporal and component, and all that we know is a perceived constructed reality.

Theorists such as Frank Popper, Oliver Grau, and Gene Youngblood have long paralleled the concerns and potentials of tradition converging with emergent technology. Cinema technology theorist Youngblood has believed since the late 1970's that the way we currently use new media does not yet allow it to reach its full potential. Since the emergence of affordable computers in the late 1970's there seems to have been a strong sense of promise in the marriage of technology and art. Photography and film had now proved themselves as an art form, and computers and communications technologies were hinting at innovative possibilities. With the expectations of the 1970's in mind, and the sense of a deferred future in the 1980's, have we now realised the aesthetic and unique qualities of new media art?

To put the concern of my hypothesis into context new media art historian Frank Popper (2007:184) believes that "Our culture now depends on the capacity to understand this

new image, to experiment and dream with it". This suggests that for our culture to grow it must embrace and explore this new space.

Youngblood foretold in 1984 (Druckrey: 1999:44) that in the near future the complex processes performed by the most expensive and sophisticated computer would be at the disposal of the average person. His prediction has now come true with digital cameras and home computers allowing everyone to be a self-titled artist. This may be just one of the many reasons for new media art being of a perceived lesser status than more traditional works. By theorist and curator Beryl Graham titling her 1996 technology in art exhibition *Serious Games* it may have confused the audience further as to the nature of this work. It may be seen as a plaything of the idle.

For many the idea of experiencing a work of art based on computers has been off-putting. People associate computers with office work or computer games. For many outside of new media art, the use of a computer as a mediator of the artwork is only commonplace in the researching of images. This preconception blocks the unknowing audience from accessing the work directly. Cinema did not suffer this problem of confusion as when it was first exhibited it was presented as very much a medium for documentation and entertainment. It quickly became a medium that creatively represented society in a creative or informative manner. There is still a sense of distrust over the purposes of computers and virtual worlds. The developments in artificial intelligence, links to bioscience, the military, and Hollywood representations have made the public suspicious of it.

Virtual reality has long been promised as the next generation of interaction and

immersion into computerised worlds. I would suggest that the continued lack of convincing, and realistic, environments that the 1990's had promised, is part of the cause for the poor up take of virtual reality art worlds. Although the realism of graphics, immersion, and interactivity has been disappointing to date, they have made a convex move towards the viewer, which could alter our ideas of immersion. The imagery of the computer is now coming out to meet us, rather than us go in to meet it. Steven Spielberg's version of Philip K. Dick's *Minority Report* (2002) demonstrated the contemporary approach to virtual media. The way we interface with virtual information has a need to be in our real space in order for us to consider we are in control of it. With the use of holograms and projectors the virtual becomes real, albeit a temporal experience. Illusionary interfaces that we can manipulate as if they were real and tactile. New devices and methodologies indicate that the virtual world is coming into the real world.

New media art can mimic the real world or place itself within the possibilities of its own endless medium specificity. The content of virtual worlds and virtual art are "understood as simulation, not fiction" (Youngblood: 1984:50). "The purpose of fiction is to mirror the world and amuse the observer: the purpose of simulation is to create a world and transform the observer" (Youngblood: 1984:50).

Haptic Qualities and Distance

For curators and collectors there are a number of concerns surrounding this kind of work. Does it really exist? How can it have any value if it is not tangible? Does its lack of haptic qualities affect its status as a piece of art? One notion that may contribute to this discussion is that millions of people have seen the painting of the *Mona Lisa* (c.

1503–1506). Whilst very few have actually touched the contours of its medium specific qualities, it is almost priceless. Society believes that it is real, thus giving the ability to obtain value. A virtual artwork appears to only exist whilst it is on the screen. It is also worth noting here that the painting has been endlessly digitised, reproduced, and manipulated. However, rather than reduce the value of the original painting, it has only served to increase the value of the original by an incalculable amount.

Digital cultural heritage is an issue that will become increasingly problematic unless it is tackled appropriately. When the National Waterfront Museum in Swansea was updated in 2006 it moved from having a real haptic experience where visitors could touch some of the artefacts, to replacing them with virtual simulations. This is one example of where virtual touch has been used to the detriment of the experience. The physical link to history is what was most important in the exhibition experience. With the physical link denied, the viewer is unnaturally distanced from their heritage.

Of particular importance to my investigation is the idea of immersion and what effect this has on the viewer's engagement with the artwork. "Immersion is characterized by diminishing critical distance from what is shown and increasing emotional involvement in what is happening" (Popper: 2007:181) The engagement with spatial submersion is potentially total. However, other factors could cause this totality to have a negative effect and thereby distance the viewer from the work in a way that traditional paintings and sculptures never could.

I am suggesting within my thesis that new media art's conceptual interactions are not significantly valued as they are often eclipsed by its aesthetics. Popper understands how to approach the potential values of virtual artwork:

> Virtual immersive spaces must be classed as extreme variants of image media that on account of their totality, offer a completely alternative reality. They offer the observers the option of fusing with image medium, which affects sensory impression and awareness. (Popper: 2007:182)

This is work now beyond the haptic sensations of texture and movement, but it is conducted in the tradition of conceptual and aesthetic artists.

Arguably, computer based works are more complex to analyse than other artistic works, in terms of meta layers of operation, due to the nature of their hyper-hybrid media. Work usually encompasses a variety of media artefacts including photography, video, audio, and computer generated. The understanding of this medium is complicated further by the way in which viewers interact with the works. Are they passive or interactive experiences? How immersive are they? Are they projected onto a screen for the many, or are they single user 3D goggle environments?

To understand the approach that artists take to a new medium, and their rationale for embracing it, we must understand the creative act. Marcel Duchamp describes the process of the creative act as:

> The artist goes from intention to realization through a chain of totally subjective reactions. His struggle toward the realisation is a series of efforts, pains, satisfaction, refusals, decisions, which also cannot and must not be fully self-conscious, at least on the aesthetic plane. The result of this struggle is a difference between the intention and its

> realization, a difference which the artist is not aware of.
> (Duchamp: 1957:77-78)

This distance between intention and realisation in electronic works is less likely to be an issue due to its flexibility and dynamic range. However, there is potential for this phenomenon and the creative process of a series of efforts, to occur when an artist is working with an unfamiliar emergent technology.

There is a danger that digital technologies can make users complacent. Users could become entrenched in a particular workflow and form repetitive, uninspired and unoriginal work. They could also come to rely on the features and filters of a single package thereby limiting their capacity to develop.

The digital environment in which new media works are created is intrinsically linked to the results of the creative act. When working in a digital environment there is a greater level of abstraction from the work than compared to traditional tangible mediums. For some artists this may be a seductive lure. This distance can also make the process feel more difficult to engage with. Software companies design their art applications to be intuitive to the traditional artist. They provide a synthetic experience of the real world alternative. This simulation of creating a painting digitally leads to works which remediate the assets of their mimicked medium. If McLuhan believed that our society was using new tools to do the work of the old, then it could be remedied by a new philosophy towards the new medium of new media art, as suggested by Mark N.B Hansen (2004).

If we are to consider the issues facing the acceptance of new media art and its key element of virtual reality art, then we must consider its context as a controversial medium. At the start of the 19th Century panoramas were controversial as an art form, largely due to their level of illusion. Two groups; those who valued the immersive nature of the paintings, and those who felt threatened by it, formed a division over the works. In this case, it was the majority who embraced its effect. They saw potential in its ability to "project their fantasies and visions of fusion with all-pervasive image worlds" (Grau: 2003:64). In 1800, the Institute de France reported that Robert Barker's invention of the *Panorama Rotunda*, in 1793, had brought art closer to its goal of a perfect illusion through its collaboration with science. Its effect was described as illusion total.

Johann August Eberhard was one of the critics that objected to this new deceptive medium; "I sway between reality and unreality, between nature and non-nature, between truth and appearance. I feel myself trapped in the net of a contradictory dream-world" (Grau: 2003:64). This would suggest that currently it might be that viewers and critics do not yet fully understand the dialect of the virtual world. The growing implementation of virtual worlds in our daily life may ultimately lead to a greater understanding of this relatively new language.

Surrealists have had the most creative enjoyment from warping our realities. Salvador Dali, Marcel Duchamp, and Maurits Cornelis Escher have all played with society's accepted notions of the perceived real and alternative realities. When these realties collide in their works the viewer is faced with an epiphany of their place in the world. Whilst illusion plays a part in their work, immersion is not the intention.

If we look at previous attempts at virtual worlds, such as the perspective Frescos of the Renaissance period, we can see an early effort to immerse the viewer into a divisive environment. When identifying the importance of initial attempts to create an immersive virtual environment Oliver Grau (2003:28) describes the ancient walls of Villa dei Misteri in Pompeii, "as an almost physical reality." By almost Grau is referring to the tension is the space between reality and virtual. If the viewers can allow themselves to be immersed fully into the effect, then it can become more real. However, the critical part of this communication indicates that the images are still paintings on the wall and therefore not real. This is one of the earliest examples and indications that society has long desired to expand their reality into a conceptual and virtual plain.

Grau (2003:27-28) refers to Erika Simon who describes how the totality of the immersion in the painting communicates to the observer from all sides; "The visitor to the chamber falls under the spell of the gaze directed at him from three areas, which rivets him for as long as he remains in the room." It is this lure of the spectacle that artists can use to direct the viewer into their version and vision of reality. As Guy Debord (2006:151) notes "THE SPECTACLE IS the acme of ideology, for in its full flower it exposes and manifests the essence of all ideological systems." With this considered, immersion in virtual reality has considerable potential to expose and realise the ideologies of our society, and could garner interest as a spectacle.

Brigitte Hundsalz (Grau: 2003:27-28) details the images in the space; "Three groups of figures can be distinguished: the mortals making preparations for the initiation, the

initiated mystes, and the group of guardians of the enigmatic Dionysian revelations, which includes the immortals." It is possible that, as with the power of positioning of the viewer on the same level as a God, the artist revels in positioning the viewer at a level that they determine. Duchamp played this game with his *Rotary Glass Plates* (1920). If there is a desire from the viewer to ascend to the same level as a god, then they do not appear to have found ascension through new media art yet. Otherwise, there would be an expectation that there would be more wide spread acceptance of it as an art form. It is possible that the viewer is uncomfortable with the sensation of total immersion. Or, is there a perception that the synthetic world is trying to replace the status of heaven rather than acknowledging and representing it?

A ceiling fresco such as *The Nave of Sant'Ignazio* by Andrea Pozzo in Rome, reinforces the relationship between viewer and God. Whilst already being painted above the viewer, on the ceiling, this fresco utilises perspective to create the illusion of an even greater height. This effect places God, and heaven, above and out of physical reach of the viewer; although the work still brings the vision of heaven within direct sight. Positioning the church as a window to God and placing the viewer under the gaze of God.

More practically, this illusion of height embellishes the church making it higher than was feasibly possible. This embellishment of space is something that could be attractive to artists, but potentially read as miss-direction by the viewer.

New media art is particularly effective at immersion, and through virtual reality the immersion is potentially total. "Immersion is undoubtedly key to any understanding of

the development of the media, even though the concept appears somewhat opaque and contradictory" (Grau: 2003:13). What is opaque about the concept of virtual immersion is that it makes the relationship between critical distance and immersion complex. This is largely, but not exclusively, affected by the viewer's disposition. As with cinema there must be a willing suspense of belief. Once a total immersion experience has taken place, the observer is then able to build upon this experience to understand the potential and motivation of the medium. The biggest problem has always been to create an environment realistic enough to encourage full cognitive and emotional immersion, rather than just sensory immersion. This may be why we are currently seeing virtual interfaces become more a part of the real world. The graphics that are used to interact with are synthetic versions, metaphors, of what we already know and understand, which provides us with the comfort of familiarity.

With a painting such as a perspective-based fresco, there is a limited immersion. The experience is purely a visual illusion. There is a natural barrier that the observer stays on the comfortable side of. With total immersion virtual reality there is unlimited potential for expansive space to explore. This causes the creation of an artwork to be much more complicated for the artist, and far more daunting for the viewer. Current video games design is already tackling the landscaping and management of expansive virtual worlds. The difference for artists is that for an effective experience, in most cases the viewer needs to be focused on a message or series of reflexive experiences. When the canvas is unlimited then the intended message can become lost, or at least very diluted.

Interaction

The growing phenomenon of virtual interaction with every day devices is pertinent as it may increase the acceptance of new media artwork. The Nintendo Wii and Apple iPad are just some of the devices that rely on innovative and simulated methods of interaction. In these cases, the virtual reality of the experience reduces the barrier between the user and the screen. In a similar way to the Wacom-Cintiq screen tablet, the interaction is less abstract. Whilst being a simulation of real world alternatives the interaction feels more direct and real than previous peripherals such as the control pad or mouse.

Along with miniaturisation and the increase in processing power the methods of interaction with the computer have been evolving over the last thirty years. Since the original light pen in 1969, peripheral input devices have developed to include mice, pen tablets, smart boards, digital airbrushes, and direct drawing on the screen. Electronic devices have become commonplace tools for digital artists, and have brought them another step closer to integrating their thoughts with what appears on screen.

The mouse was a radical change to human-computer interaction when it was first demonstrated in 1968 (Williamson: 2013). Since then the mouse itself has changed very little. The graphical user interface has, however, continued to become more sophisticated with more options for interaction and customisation as well as automation. It is only with the advent of multi-touch interfaces that the mouse has started to look as if it will become redundant. It is an effectively barrier free method of interaction, that is more ephemeral than a mouse, and even more intuitive than stylus.

In recent years the touch screen has been almost ubiquitous as the main interface for checkouts, kiosks, in-car satellite navigation and portable games consoles.

The success of the Wii, and motion additions to other consoles, has demonstrated that there is a desire to get closer to games and environments they are exploring. Much like the touch screen controls of modern phones and mobile media players, the barrier between image, function and action has been lowered. The Wii controller becomes an intuitive extension of your arm. The more immersed a person can be the greater the sense of realism. The success of virtual reality through 3D goggles may have been stifled because it was too ambitious in relation to the progress of the technology. As well as the goggles being uncomfortable to wear, the environments were disorienting and unnervingly artificial.

All of these issues regarding immersion, experience and control are highly relevant when looking at new media art and its creation. The closer an artist can get to the medium, the fewer barriers they encounter, then the easier it will be for the creativity to flow. “The digital tools utilized by artists are developing further, thereby encouraging artists to explore new practices where the body and the thought of the body are asked to play new roles” (Popper: 2007:187). Until now the focus of many works has been on the limitations and difficulties of operating in a remediated world. As I mentioned in the first chapter, I envisage this scenario will shift with the mainstream introduction of computer interfaces that do not appear to be so virtual. *Minority Report*'s (Spielberg: 2002) effortless navigation system is almost a reality in consumer electronics with the interaction of the XBOX Kinect and gesture controlled televisions where waving hands in the air controls the information being presented.

The abstracted position of the mouse navigating the screen has now become more natural as technology and design have caught up. The precursor to the interface of the Pre-Crime computer featured in the *Minority Report* (Spielberg: 2002) is the previously mentioned pinch to zoom feature. This level of interaction makes the thought pattern of the user more direct to the events on screen. For artists this can increase creativity through speed and organic flow of ideas.

A natural direction for screen navigation is retinal monitoring, where the computer tracks the movement of your eyes to interpret your commands. The other possibility is that brain activity might remove the barrier completely by having instructions interpreted directly from your thoughts. The data output might not even have to be displayed on a screen. It could be directly broadcast into your brain, much like a daydream.

Teleporting An Unknown State (1994-1996), demonstrate how digital technology and the organic natural environment can operate in harmony. In both works the plants that feature in the exhibition space rely on an internet connection, and a remote user, to keep them alive. By placing the plants in the gallery space the span between the gallery environment and the virtual environment are bridged. This echoes the transfer in video art of the screen space, into the three-dimensional space of sculpture, as pioneered by Nam June Paik and Bruce Nauman.

Eduardo Kac's *Teleporting An Unknown State* (1994-1996) relies on the web user, but this time for light to make the plant grow. The plant is positioned in a completely dark room with a web cam and projector mounted above it. As the user switches on the projector remotely the light feeds the plant. Originally the light was from a pre-set image. Over the years of development users could project images from their own computer onto the growing plant. This meant that the plant was being feed by images of the skies of Tokyo, Rio, and Sydney, without leaving the gallery.

This remote influence relies on the belief and trust that the environment at the other end is real. Already this concept seems a little dated, as the combination of remote control mediated through a virtual version of the event is how many medical operations and Mars Rover's are now controlled. What is interesting is how these works predict the environmental and social benefit of using telepresence.

Teleporting An Unknown State relies on the participants to keep the plant alive. It is a shared responsibility amongst a social network. This responsibility is what makes the new media art so profound. The viewers of *Teleporting An Unknown State* (1994-1996) are participants in the piece's life support. Their input is influential in a god like way, and is also an elemental part of the medium.

Whilst these works rely on an element of the real environment, computer technology relies on a virtual parallel world. A limitless environment, which potently does not require rules or values. However, artists and designers rely on known value systems

being implemented so that the user will still recognise this new environment. It is here that the remediation happens. Society's real values do not need to function in the same way in a virtual world, but they seem to be inescapable. Events, such as an arrest in 2008 for the *murder* of an avatar in an on-line game, demonstrate the projection of our current ideological beliefs. Values such as growth, development, and wealth, all feature as goals in *Second Life*. The value placed in the use of a gallery space is also present in the art galleries of second life. Our desires for the future are also present. The ability to build a fantastical house, fly and even teleport are ways of realising fantasies in *Second Life*.

For all the networking opportunities available, the limitless expanse of the environment means that projects like *Teleporting An Unknown State* (1994-1996) are unlikely to survive for a long period. There is also the knowledge that a real-life form depends on your input. In Second Life the virtual outcome provides less impetus for engagement; unless it is to do with earning real world currency.

Charlotte Davies' *Osmoses* (1995) functions as a bridge to transcend between the blurring boundaries of corporal reality and virtuality. Immersants enter a virtual world via a bulky head mounted display. The world has similar values to ours. There are realistic simulations of tress and water, sky and land. However, for all the familiar elements in this virtual environment, it also appears more unreal than our own as a result of its dream like qualities.

Colours are abstract, and the elements of text, code and transparency create a systematic vision of a dream world that represents the medium of the work. There is fluidity between the meta-layers of natural environments and data space. This is much like when Neo learns to see the *Matrix* (1999) for what it really is, and then the accepted rules no longer apply to that environment.

At the same time in the real world the exhibition environment has been designed to transform the movements of the immersant into a performance. On one screen the user can be seen making gestures that are effecting another environment, whilst their view into this other world is displayed on an opposing screen. *Osmoses* represents the desire to live a virtual life that can be exhibited in the real world.

Summary

When discussing new media art, it is important to note that frequently the journey from creation to consumption is largely digital and therefore intangible in its process. This means that the work only ever exists in hyper-space. Galleries such as the Walker Art Centre in Minneapolis have installed an interactive booth that serves as a method of exhibiting new media artwork. For new media art to be successfully integrated with the art world as a whole the curators need to appreciate the nuances of the new media art experience.

Issues of virtual touch significantly influence how the viewer experiences an artwork. Whilst the artist is affected by the virtual nature of the digital medium, they typically adapt its qualities to their advantage. The viewer currently doesn't have the experience of virtual art consumption. Whilst many aspects of societies information consumption are now virtual and remote (streaming television, online shopping, and reading news apps, for example), there is still a traditional expectation of what art should be.

What Eberhard expected, from a truly immersive medium, in 1805 was one that could; "transport transitory events and sounds, that is, a perfect illusion, that avoids the conflict between "appearance" and "truth" that can cause physical indisposition" (Grau: 2003:63). Whilst the technology can now challenge his criticism of lack of perfect illusion, the viewer may still not be ready for the expansion of the conceptual plain where our rules no longer apply.

What the notion of virtual touch contributes to my research is not that a virtual interface is problematic in itself; but that artwork that is virtual in existence, and dynamic in its engagement, may be problematic to those without the knowledge to interpret it. Therefore, it could follow that there is a fear of critiquing and curating new media art as a result of this limited knowledge and lack of ability to coherently interpret this relatively new art form.

Civilisations throughout history have left their mark in the real world. Is our civilisation destined to leave is monuments in the virtual world, or is its abstraction too great for the majority to embrace it? The transient nature of many electronic works may also affect their acceptance. Their limited visibility in the art world may result in a

lesser financial value, but it could also encourage a cult status and reinvigorate the illusion of the mystical.

If digital technology can become as invisible as the old technology did, such as a book or photograph, then the use of it as a medium will firstly have lost its "*shock of the new"* (Hughs:2009) element, and then will be reduced to just another medium. This will then allow it to be developed in more organic ways. Working in three, potently four, dimensions affords the artist the benefits of complete spatial and temporal manipulation, which is unique from any other medium.

As a close to this chapter I put to you the following paragraph, which demonstrates the transitional period we now currently find ourselves in, as well as representing the potential it possesses to change our world:

> As constituents of autonomous reality-communities we shall hold continuously before ourselves alternative models of possible realities. We shall learn to desire the realities we simulate by simulating the realities we desire, specifying, through our control of both medium and message, context and content--what is real and what is not, what is right and what is wrong, good and bad what is related to what and how. (Youngblood: 1984:50)

The focus of this chapter on virtual reality as a fine art space continues in the following case study exploring the work of Char Davies through some of the themes it has raised.

Case Study: The Allegories of Life, Religion, and Space Through The Virtual Touch of Char Davies.

Works:

Interior Body Series (1990-1993)
Osmose (1995)
Ephémère (1998)

The Artist

Char Davies has produced a body of only a few pieces over a twenty-year period, but she and her works are regarded in the new media arts community as some of the most important milestones in the development of Virtual Reality (VR) and digital imagery.

Davies' work deals with the otherworldliness of virtual reality. A field of human computer interaction that has been in development since the 1950's, but has never been able to deliver on its promises of a new world without boundaries. Davies' work explores not only the possibilities of a virtual reality, but its limitations and effects on our understanding of reality. Performance and interaction are a core feature in her work. She has been focused upon in this case study because she explores to the extreme the challenges of an artwork where there is no physical object, but which also relies on considerable technical knowledge and support to maintain its functionality. Following on from the previous chapter of virtual reality as a fine art space, virtual reality is a difficult concept for cultures where consumerism and materiality are embedded. Davies' vision of virtual reality and modes of interaction are a signpost to the future both in terms of destination and as a warning. Her work will inform the Conclusion of this thesis by detailing from her experience the issues that continue to face artists and their work in this medium.

Davies is a Canadian artist who was originally a painter and filmmaker. She began to experiment with computer graphics in the mid nineteen eighties in search of a medium that would allow her to escape the two-dimensional plane of painting. Before creating her first award-winning project she became the vice-president, and director of visual research, for Softimage. Softimage are the three-dimensional modelling software company that developed the technology used in films such as *Jurassic Park* (Spielberg: 1993).

Whilst at Softimage Davies was able to develop the technology required to generate the worlds she had imagined, but was unable achieve with paint. The first of her three most prominant works was the *Interior Body Series* (1990-93). As VR technology was limited at this point Davies was forced to exhibit her virtually rendered worlds as two-dimensional prints displayed on a large light box.

Davies has been able to utilise the creative and experiential ends of the immersive spectrum when adapting the Head Mounted Display (HMD) and VR space first developed by Ivan Sutherland in the late 1960's. Her knowledge of computer graphics, art, and film; and her vision for operating within virtual worlds, has provided a basis for some of the most original and sought after new media art in the last 30 years.

Figure 1. Head Mounted Display circa 1993

The work is “Characterized by her painterly aesthetic—of luminous transparency and spatial ambiguity—as well as thematically-entwined references to landscape and the subjectively-felt interior body” (Immersence: 2009). The final execution of *Interior Body Series* (1990-93) did appear to be a transitional state for Davies. Her painterly skills and knowledge were being adapted to a new medium. The new medium allowed unsurpassed opportunity and flexibility for layering, rendering and composition. Although the creation of the images may have evolved to a point where they could meet Davies’ needs there was not an appropriate way to exhibit them. As a result, the work was taken away from its native medium and presented in a less appropriate analogue two-dimensional environment.

This is frequently an issue of contention for artists that work within VR. If the original native medium of a piece is neither technically or financially available for exhibition the work has to be transferred to a new medium. Predominantly retrospective documentation is the most accessible way of disseminating virtual work. A wider audience access the work of these digital artists through books and static web pages as exhibitions are rare and often not toured or repeated. Video documentation of the experience is the closest most viewers will get to seeing virtual reality works.

To date a majority of people wanting to see Davies’ works will have experienced them as still images. These are captured from the Head Mounted Display (HMD) to demonstrate the environment’s design. There is a very poor quality short video clip on the internet, but this is not even on Davies’ own site, www.immersence.com. Unless you are fortunate enough to become a first-person viewer wearing the HMD, you can never truly know what the work is like.

The reproductions of other artworks that are not true to their medium can often convey the concept more accurately than the complexities and meta-layers of Davies' work. The print of a photographic cell, or a photograph of a painting, is a far less reduced experience than taking an immersive 3D environment and displaying as a 2D print. With a work like *Osmose* (1995) the experience of a still image, or even a video clip, can never fully articulate the intended experience. As with film the work is temporal in concept. Furthermore, it is a multi-sensory and interactive experience. These can never be justly represented unless experienced first-hand. When discussing her work Davies refers to these viewers as immersants when they wear the HMD.

Figure 2. Char Davies 1995, *Osmose*

This work is also the start of Davies developing her concerns of "challenging the bias of 3D computer graphics towards objective realism and linear perspective, and suggesting an experientially rich alternative" (Immersence: 2009). By reproducing the virtual worlds into a two-dimensional print Davies was not able to challenge these issues in an appropriate way.

By 1993 Davies had established what she wanted to say, and that virtual environments would provide the flexibility and dynamics to meet her ambitions. VR immersion had also been significantly developed in the last couple of years. Whilst it was expensive, and constantly evolving, Softimage provided the means by which virtual artworks could be developed. In 1995, a year after leaving Softimage, Davies exhibited *Osmose* (1995).

In a 2002 interview Davies admitted the following, which places her in a position you would not expect from an artist whose work is entirely virtual in content:

> I am not a techno-romantic. I do not believe in the techno-utopian view of VR, of cyberspace. The technology associated with this medium is not neutral - it has come out of the military / science / Western / industrial / patriarchal paradigm. And so by default, the technology not only reflects but reinforces dominant, values, unless deliberately subverted by the artist.
> (Gigliotti 2002 in McRobert: 2007:14)

Osmose was a ground-breaking art installation for many reasons, but not least its achievements in immersion. Works such as Scott Fisher's *Boom* (1995) and Jeffery Shaw's *Legible City (1989)* were also experimenting with the use of a HMD large screen projection to enter a virtual world. However, *Boom* (1995) and *Legible City* (1989) were so much less engaging than *Osmose* (1995) because their experience lacked the completeness of immersion that *Osmose* (1995) had achieved.

Whilst the environmental and navigational design appeared complicated on paper the experience itself was much more intuitive. It embraced many of the stylistic modelling and colouring techniques from *Interior Body* series (1990-93). It challenges the

perception of planes of existence and the state of temporal flux that our bodies are constantly in.

When designing *Osmose* (1995) Davies had a choice of technology that would allow viewers inside her worlds. In the mid-nineties HMD were perceived as the future of VR. Although these were bulky and uncomfortable they did allow for the viewer's peripheral vision to be covered by its internal monitors. There was also the potential to use virtual surround sound through stereo headphones that could be built into the headset. Until recently, VR has relied on motion sensitive gloves to allow the user to make contact with the virtual world and affect objects within it. In recent years cameras and computers have been programmed to detect and determine the movements and gestures of a user.

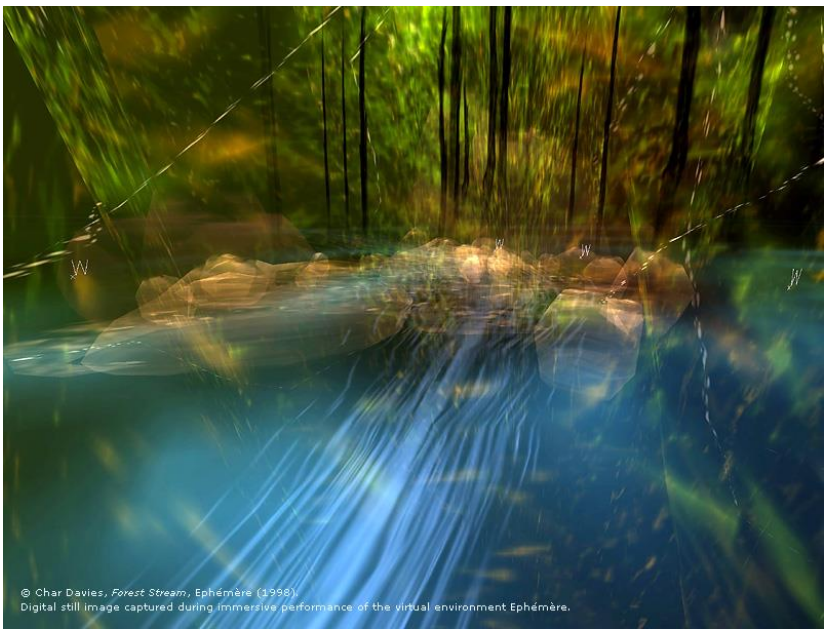

Figure 3. Char Davies 1998, *Forest Stream*, *Ephémère*.

An emerging technology that Shaw had experimented with was large screen projection. In *Legible City* (1989), Shaw placed a bicycle, which had sensors connected to the

computer generating the images, in front of the giant projection screen. As the viewer rode the bicycle the images on the screen moved to represent the journey the bicycle was on.

Another choice was the VR cave. This was a very experimental technology in the mid-nineties, but it was much closer to the ideal of total immersion, such as *Star Trek's* "Holodeck" (Allen, C.1987), or being inside in the *Matrix* (The Wachowski Brothers: 1999). You did have to wear the equivalent of polarised 3D cinema glasses, but this meant the user was not experiencing claustrophobia as a result of a weighty HMD. The big difference with the reality cave over the HMD is that the virtual objects are projected into real space rather than the viewer entering the virtual world.

A double-edged sword for HMD was that it provided real world sensory deprivation. Whilst this allowed the content of the work to have complete spatial control, if the viewer suffered from claustrophobia the HMD could be a distraction and cause a negative response to the core medium of the artwork.

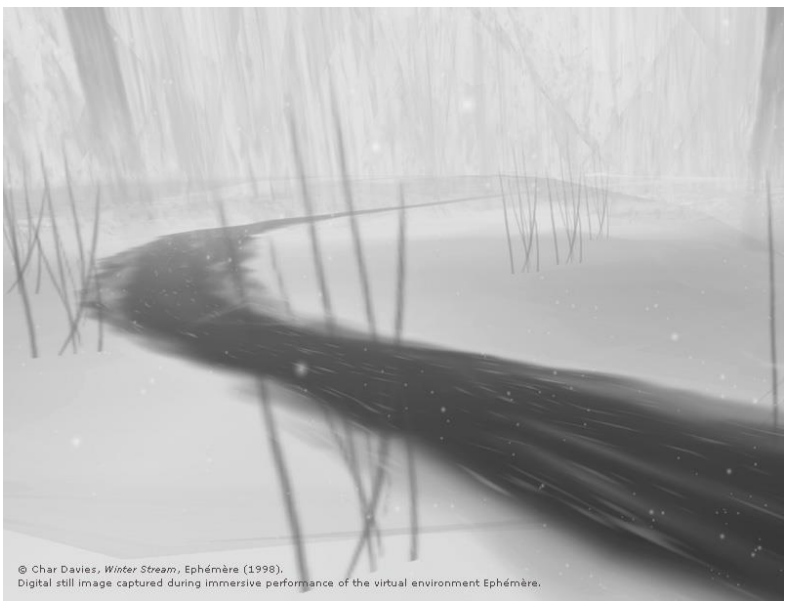

Figure 4. Char Davies 1998, *Winter Stream*, *Ephémère*.

Osmose (1995) succeeded where others had failed, total Immersion. *Boom* (1995) was a basic linear narrative passive presentation. The HMD took the viewer on a roller coaster 3D ride around the bottling process in a factory. *Legible City* (1989) was too cinematic in that although it was interactive, the visuals were presented in 2D. The immersion was not total as the audio and visuals did not completely surround the viewer, and this was apparent when viewing the piece. As well as total immersion Davies' attempts to move away from literal representation into something more surreal; images are impressionistic and almost cubist in form.

Boom (1995) suffers the same issue of lack of medium authenticity as Davies' original works, as the 3D presentation is removed from its native medium and projected onto a large 2D screen for the majority view. This was for the convenience of the gallery as there were extensive queues and not all the visitors would have been able to view the work on the two available headsets.

A Bookmark For New Media Art

Davies' work is largely considered by critics and academics as not only a success, but more so a vital contribution to the progress and evolution of new media art. New media theorist Oliver Grau (McRobert: 2007:67) believes that the status of *Osmose* (1995) is gradually emerging and is as important to media history as the films of the Lumiere brothers. In part this could be attributed to the timing of her work. It was all developed in the 1990's when computer graphics were emerging as the future of visualisation in entertainment, communication and business. It was also at a time when post-

modernism was reaching its maturity. Grau also attributes it to "its aesthetic utilization of new technologies of immersion and illusion" (McRobert: 2007:67).

The concept of immersion and what effect it has on the viewer's engagement with the artwork is critical to understanding why work, such as Davies', is not more uniformly acknowledged.

"Immersion is characterized by diminishing critical distance from what is shown and increasing emotional involvement in what is happening" (Popper: 2007:181). The engagement with spatial submersion is potentially total, and necessary for conceptually and experientially experimental conveyance. The work can mimic the real world, or position the viewer within the endless possibilities of their psyche.

As a medium VR offered Davies limitless potential. Apart from its expense, which was expected to decrease over time, it was a very seductive medium to creators and viewers. It made the impossible possible for viewers, as the graphics were more realistic than anything seen before. For creators, it provided flexibility for production and distribution. It can also be proposed that virtual work could answer the demands of a society who constantly relish the new.

When VR was first becoming immersive it promised visual richness and interactivity unsurpassed by any other medium. Works such as Davies' were the closest that it ever got to this ideology of full immersion into another reality.

As previously mentioned, virtual reality has received limited acceptance in part due to its lack of convincing reality. VR immersion was also never successfully commercialised due to its expense and lack of uptake. The military of the United States of America and the United Kingdom have also so far failed to successfully implement it in ground troop tactical equipment.

A vision suggested by science fiction was to equip troops with a Head Mounted Display that would provide another layer of information. The biggest drawback, of which there were many, was that it would remove the solider from the reality they were fighting and could result in their reaction times dropping significantly. The total VR immersion experience has been criticised as “disappointing to date”, by military advisor and academic Professor Robert J. Stone (2008).

Due to this lack of wide spread exposure it is still seen as unusual to many viewers. This may be why *Osmose* (1995) and *Ephémère* (1998) were so well received in 2002 when they were revived to tour galleries around the world. The environments and technology were reworked to modern specifications to allow more people to visit the work and experience them. One reason why Davies may not have achieved popular cultural appeal is that her work is seemingly introverted. Artworks that become part of popular culture seem to travel outward freely and radically to the viewers. They become embodiments of a time in society and as a result become iconic and historic. Art works that speak directly to society on mass and that can be easily consumed may always over shadow work such as Davies’ that are an individual’s experience.

Alternative Reality

> As constituents of autonomous reality-communities we shall hold continuously before ourselves alternative models of possible realities. We shall learn to desire the realities we simulate by simulating the realities we desire, specifying, through our control of both medium and message, context and content--what is real and what is not, what is right and what is wrong, good and bad what is related to what and how. (Youngblood: 1984:50)

When *Osmose* (1995) was first exhibited VR was still in its infancy. Virtual representation was limited to the domain of industry. It is likely that most viewers of the work were not completely familiar with the language and medium of VR. To most it was probably strange and unnerving. Today this unfamiliarity may be less of an issue, but the illusion that the virtual is another space, as in *Osmose* (1995) and *Ephémère* (1998), an Achilles heel for VR work.

When considering perceived reality, the insight provided by Plato's 'Allegory of the Cave' (Cohen: 2006) brought a new sense of importance to understanding Davies' work. In particular, the immersive works. There are parallels that are uncomfortable and position Davies' virtual worlds in the middle of an ethical quandary. Plato's cave describes prisoners chained in a cave viewing shadows that are presented by the guards as reality. This is all they know, so for them it is reality. This is however a constructed version of reality, as opposed to a copy of the outside world. Gilles Deleuze provides the following reading of Plato's cave analogy:

> Plato divides the domain of the image-idols in two: on the one hand the *iconic copies* (likenesses), on the other the *phantasmatic simulacra* (semblances). The copy is an image endowed with resemblance, the simulacrum is an image without resemblance. (Deleuze: 1983:47-48)

Information societies have become familiar with virtual representations of real world through digital imaging, and more fundamentally the visual language of signs. These have now become embedded in our reality. The issue here is that viewers do not want to be unknowingly tricked. When fictional entertainment is viewed it is with the knowledge that some, or all, or what is on screen is not real. Part of the enjoyment of special effects becomes admiring the quality, detail and realism of the simulated images. These effects are believable because the content of virtual worlds can be "understood as simulation, not fiction" (Youngblood: 1984:50). "The purpose of fiction is to mirror the world and amuse the observer: the purpose of simulation is to create a world and transform the observer" (Youngblood: 1984:50).

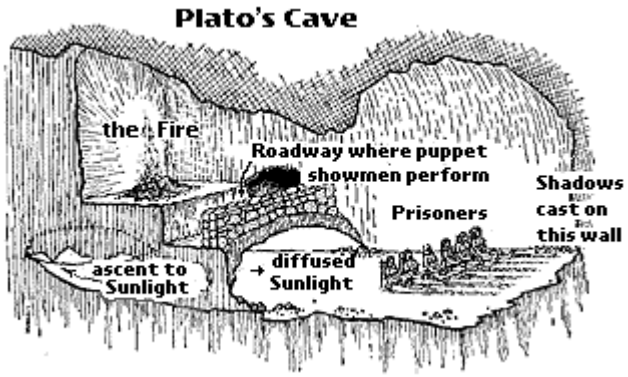

Figure 5. Warmington and Rouse (1999), *Plato's Analogy of the Cave*

The clearest, but most unnerving, parallel between Plato's cave and *Osmose* (1995) is in Plato's cave the prisoners are chained so that they could not change their view. Their field of vision was manipulated so the cave wall was the only view, and therefore appeared to be the only reality. In *Osmose* (1995) the viewer is isolated from the rest of the audience who must view the proceedings from an adjacent darkened room. In order to view the work the viewer is attached to a series of sensors and a HMD that effectively chain the viewer to the booth. The difference here is that the viewer has a

choice about the experience and knows what they are experiencing is temporal and false.

The prospect of this experience could mean that immersive works such as Davies' are viewed negatively. VR new media artists such as Davies are part of a struggle that seems to occur when a new medium appears to threaten the meaning or understanding of previous art forms.

> Media artists represent a new type of artist, who not only sounds out the aesthetic potential of advanced methods of creating images and formulates new options of perception and artistic positions in this media revolution, but also specifically researches innovative forms of interaction and interface design. (Grau: 2003:3)

Robert Barker's invention of the *Panorama Rotunda* (1793) brought art closer to a perfect illusion. Its effect was "illusion total" (Grau: 2003:64). However, the *Panorama Rotunda*, and works like it, caused a creative and critical division due to their high level of illusion. There were those who valued the immersive nature of the work, and those who felt threatened by it. The majority embraced its immersive effect. They saw potential in its ability to "project their fantasies and visions of fusion with all-pervasive image worlds" (Grau: 2003:64).

Johann August Eberhard was one of the critics that objected at the time to this new "deceptive medium" (2003:64); "I sway between reality and unreality, between nature and non-nature, between truth and appearance. I feel myself trapped in the net of a contradictory dream-world" (2003:64).

What Eberhard expected from a truly immersive medium was one that could 'transport transitory events and sounds, that is, a perfect illusion, that avoids the conflict between "appearance" and "truth" that can cause physical indisposition' (Grau: 2003: 63). Possibly what he felt was a lack of control, as well as an uncertainty caused by unfamiliarity. *Osmose* (1995) and *Ephémère* (1998) use the familiarity of a contemporary space to transport the immersant into less familiar ones to ease the process of transcendence.

Like a Greek Siren immersive works such as *Osmose* (1995) lull the viewer and attempt to make them forget that what they are viewing is representation of reality rather than reality. The willing sense of disbelief becomes vital to the operation of the work as it is more effective if the viewer believes in the world they are viewing. This gives the moments of transcendence more impact as the environment has been established as the 'real'. Transcendence is something we perceive to be spiritual and invisible to others in the real world. In *Osmose* (1995) this is actualised by the moment of the immersant's transcendence being televised. Although the audience can see the moment of transcendence take place, it is still abstracted from the immersant in a way that reinforces it as something spiritual happening to someone else.

Ephémère (1998) uses the seasons as an allegory for the journey the immersant takes inside her world. I would suggest that like Plato's allegory of a cave Davies' immersant work is an allegory of similar intent and purpose. As she states, she wants to make her immersive experiences subversive. The experiences subvert the immersant's perceptions of reality. They also encourage a different perspective on life. Whilst there

is inevitably a beginning and an end, the immersant can experience the world and therefore their life time within it in a non-linear fashion. Much in the same way as we would access memories, places and direct correlation between the bodily experiences and the environment could be experimented in the same or different ways every time.

When the experience comes to its natural or interrupted end it can be revisited anytime in the same way, or in a new fashion of approach. As with the idea of death in some cultures, death does not mean the end. The world will still exist after an individual's death, and an individuals *soul* will continue to exist in another world. The ability to revisit a world left behind positions the immersant in a situation that is akin to being a spectre who is able to walk the earth again after death. The immersive experience will be different for every viewer. It is unlikely though the sense of the experience or temporary life ending will be as traumatic as a real life ending. The knowledge that the experience is a temporal projection designed by an artist, and facilitated by technology, would make most users feel comfortable in ending the experience. They would be safe in the knowledge that they could visit it again. However, in this situation there is only a slim chance that every immersant will be able to experience the other world over and over again. With an exhibition that is so busy, and its life span limited to its exhibition period, it could disappear before the viewer gets another chance. It is interesting that through dedication and modern technology *Osmose* (1995) was resurrected through assimilation and reprogramming into modern computing systems. There is a suggestion that we may be more comfortable in embracing a world where we know it is temporal, artificial and designed by another. Although this has many similarities with the notion of God creating our world it may be that the certainty of the architecture of the worlds

of *Osmose* (1995) and *Ephémère* (1998) is more comforting or trustworthy that the unknown factors of a spiritual architect.

Transcendence

Osmose (1995) and *Ephémère* (1998) are constructed as layers. The original planning sketches show these layers to look much like the biology diagrams of a cross section of leaf tissue. These layers represent the unseen layers within data. The layers of these artworks consist of an outer layer of data. When penetrated through body movements and breathing, a virtual representation of the organic world is revealed. In *Ephémère* (1998) these are layered and represent a journey from life to death through the changing of the seasons.

While the breathing of the viewer draws them closer to the ends and depths of the virtual worlds, winter and death. They are taken on a journey of transcendence. They travel from their consciousness into their unconscious and into their inner psyche. The representation of the natural world is surrounded by the aura of something that could be called an "unknown God" (McRobert: 2007:67).

A telling trait of the evolutionary point of computer graphics is resolution. In particular the polygon count of the objects created in VR. The higher the polygon count the smoother and more realistic the shapes can be. To overcome the now basic limitations of what were then highly sophisticated computers, Davies made use of transparency to remove the work from would otherwise have appeared to be algorithmically generated shapes. As well as appearing to be a little more organic, the transparency also creates a

greater sense of transcendence. It reinforces the otherworldliness and spiritual possibilities. Shapes such as trees are familiar in their geometric stereotypes, but with *Osmose* (1995) their limited opacity cause them to appear to be between phases of solid and real, and imaginary and disappearing.

In the virtual world the ending of the narrative becomes the equivalent of dying. Death in the virtual world means returning to the real world as if it were ascendance to heaven. The original diagrams that Davies produced to represent the structure of the virtual world in *Osmose* (1995) indicate a clear hierarchy in the levels both the top and bottom layers are represented by walls of code. The centre of the structure is referred to as a seed. As the diagram moves from the top to bottom the immersant is taken through layers of spatial realms such as sky and heaven, the forest and earth, water and then the abyss. Davies designed ways of moving from the abyss directly to a clearing much higher up the hierarchy instead of descending to the lowest level of code.

Osmose (1995) described as a circle provides the best explanation of the movement around the structure. However, the cross-sectional cube resembles a geological diagram and is even reminiscent of an ant farm. What is clear from this diagram is the hierarchy that suggests a heaven and much darker level below earth which can be read as hell. Whilst most journeys through these realms can be a parallel to real life, there is also the potential to be in a state of limbo or even purgatory as constantly cycling between the layers of the forest, earth water and the clearing could become tiresome.

Physics of Reality

"Being supersedes doing" (Immersence: 2009).

On this journey many viewers can feel constrained by their rudimentary understanding of constructs of space. "Physicist Steven Weinberg points out, in respect to our Einsteinian and quantum constructions of space/time, that we are imaginatively constrained by these mathematical notions. He asks, "How can we get the ideas we need to describe a realm where all intuitions derived from life in space-time become inapplicable?" (McRobert: 2007:10). Our conditioning to believe the laws of physics makes it difficult for us to accept alternative methods of existence and spatial engagement. Subconsciously our engagement with the virtual world has been steadily increasing. This may in part be attributed to the initial highly abstract nature of interfacing with a computer to the now almost border-less presence, control and connectivity of the computer human interface device.

Australian academic Paul Thomas talks about the notion of "reconfiguring space" (Image 2.0: 2009). This is something that art and design have done for a long time. Davies' work is of particular interest to Thomas as it not only reconfigures space by its nature of immersion into a virtual world, but it also redefines it through the limitless potential of computer graphics.

The importance of self is also reconfigured in a virtual space. The immersant must have a strong sense of self to approach what happens to them in a limitless environment. Within the environments of *Osmose* (1995) and *Ephémère* (1998) the world becomes an extension of one's self as a result of Davies' navigational design.

Once a viewer enters a virtual environment, as with any environment, a certain amount of acclimatisation is required. The viewer must learn the rules of the environment. Even a fantasy environment has rules about what you can do, where you can go, and how you go about tasks. *Second Life* has adapted many of the feature developed for VR to enable its users to have an experience that is only partially a reflection of the real world.

In *Osmose* (1995) and *Ephémère* (1998) viewers are able to transcend layers in the virtual world. Whilst this may sound easy, in a world where any rules can be written, it is the result of many factors, like a form of meditation the viewer's body must be in a certain condition to have the desired form of transcendence. The sensor not only measures movement, but heart rate and breathing. The journey also has an inbuilt limit, which is disappointingly close to real life; once winter has been reached the user's life in the world is over.

Something that has excited users of on-line and virtual worlds is the expectation that they will never age, never change and never die. Their avatar or digital footprint will continue to exist longer after they have stopped using the system. In addition to this is the ability to present an alternate version of the self to the virtual world community. Again this means that the real world rules need not apply and any presentation of the inner identity can be assumed.

The realism and totality of the VR immersion can also be effected by a phenomenon known as Masahiro Mori's *Uncanny Valley*, which is based on Ernst Jentsch's idea of

the “psychology of the uncanny” (1906). The valley is usually based on the positive response from the viewer to whether something animated is alive or not.

The moment of the uncanny valley occurs when the simulation of a reality, usually a human, has become completely believable and the viewer has begun to believe what they are seeing is alive. At that point any form of distraction from the represented reality will cause the immersant to feel uncomfortable and cause the levels of disbelief to rise.

The simulations of the physical world elements in Davies’ work are not photo realistic as a result of the technological limitations, but within their context it is more appropriate that they were not. The world Davies created was not meant to be the imitation of the real world but another world. Human senses have yet to be convinced by a virtual environment.

Currently three-dimensional media technology is trying to make films and televised sports events more real by giving them depth. The depth is real as it is captured from reality. It is as real as a photograph, it just has a higher definition of representation. A side effect of the process of transference from 3D to 2D to 3D results in the content losing what makes it real. The genuine sense of depth and atmosphere is replaced by an unnatural depth of field. The issue is that the depth appears inside the screen and not in the space directly in front of the viewer. The resulting effect is still very similar to the early Stereoscopes. The presence of the technology becomes more of a spectacle than the content. Our eyes sense the trick, and we decide on whether to allow ourselves to

become immersed. The willing sense of disbelief used by the cinema for so many years is still required.

The techniques required for contemporary three-dimensional immersion are still flawed and occasionally the viewer's belief in the image is broken by a glitch in the presentation. Submersion into a VR world which is reinforced by artificial depth of field can be nauseating if it is presented unrealistically. This would be a moment where the portrayed reality becomes uncanny and the sense of total immersion is at risk.

Remediation

Davies' work has a wide range of influences, which, when you consider them, explain some of the thought processes she went through to develop *Osmose* and *Ephémère*. As Davies' PhD title suggests, *Landscapes of Ephemeral Embrace: A Painters Exploration of Immersive Virtual Space As A Medium for Transforming Perception*, she is exploring the virtual world with the expertise of a painter. The layers of the world are blended together like paints.

In the opening orientation scenes of *Osmose* (1995) the environment is revealed to be structured by a matrix. This matrix is a Cartesian grid, from which the immersant will be able to learn and calibrate to their new spatial surroundings through the intersecting planes. This matrix forms the scaffolding for the elements that furnish this virtual world.

Direct influences on her processes are shown in her project diaries, which include Martin Heidegger and Joseph Mallord William Turner. *Osmose* (1995) features extracts from poets Gaston Bachelard, Merleau-Ponty, and Rainer Maria Rilke's relating to perception, space, nature, the body, and technology. What makes these influences so important is that they have formed the basis of the structure and narrative of the environments. A trend during the emergence of computer based new media art has been to incorporate the words or structures of poetry. For example; *Text Rain* (1999) and *Legible City* (1998) were are based on interactivity and poetry. One rational for this could be that it provides a means of language or structure to give these potentially endless worlds a narrative, even if this is only loosely interpreted by the viewer. It can help provide an unseen limit that forms the rules of the environment. Perhaps by utilising the familiar interface of flowing passages of text the user feels more comfortable viewing *Text Rain* (1999) than with the full immersion of *Osmose* (1995), or *Boom* (1995).

In VR the environmental rules do not have to adhere to the science of the real-world, but this can help if the artist is trying represent it. The flow and metaphors of poetry can provide a more fluid and fantastical world. This is much like journeying into *The Matrix* (The Wachowski Brothers:1999) or *Alice's Adventure's In Wonderland* (Carroll:1865) where it seems familiar and should be bound by the laws of physics, but the potential of the human imagination is enabled in this almost limitless world.

Performance

> Ephémère depends on the body's most essential living act, that of breath—not only to navigate, but more importantly—to attain a particular state-of-being within the virtual world. In this state, usually achieved within ten minutes of immersion, most immersant's experience a shift of awareness in which the urge for action is replaced by contemplative free-fall. (Immersence: 2009).

As well as the individual experience of immersion, there is also a more theatre like performance which is presented to on-lookers via a video projection of the journey being taken in the virtual world and a silhouette of the immersant's movements. The immersant, who would most likely forget about the audience as they moved deeper into the new world, would become a performer. Their bodily movements, which are usually an unspectacular part of everyday life, become accentuated. Their performance originates from their means of navigating the virtual world in a manner that is more exaggerated and artificial than in the real world.

Whilst their movements have consequences, they are not as life altering as in the real world. The viewer may enter an environment that they are not happy with, or end the experience altogether. They can return to the real world and restart the experience if they desire. Their movements reflect the decisions we make in life. The choices we make affect the points we reach in our life. Often we cannot re-attempt a decision we have made. In Davies' and many VR worlds, an experience can be replayed many times over with different choices resulting in different experiences and destinations.

Davies planned in great detail the cause and effect of the immersant's bodily conditions on the virtual environment. These included: sight, hearing, voice, balance, gesture, breath, heart rate, buoyancy, perception of space, and perception of time.

These works move humanity closer to a truly flesh and blood interface. Instead of our decisions of view, movement, and direction of travel being altered through the abstracted means of a keyboard, mouse or control pad these works use our intuitive nature to move our bodies. These bodily movements are our natural way of exploring our environment. Through the HMD the viewer's vision, and subsequently consciousness, are temporarily immersed in an alternate reality. By channelling the breathing of the immersant by way of sensors on a vest into the changes that take place in the environment the very essence of what keeps us alive is transferred into the power of the artwork. The human body externalises the conditions of the VR environment conducting the unreal into the real.

Subversion

One of Davies main desires when creating virtual works is to subvert the conventional reasons for generating VR. "She does not want to duplicate reality or to mimetically represent hard-edged appearances of the world" (McRobert: 2007:13).

Osmose (1995) takes you on a journey that is a subverted aggregate form of structures we recognise to be established and rigid. Although the constituent parts are familiar, the ways in which they intersect, and the viewer transcends between them, make the experience highly unrealistic, and it challenges the notions of what we believe to be true and fundamental to our world. This is culturally exciting, as with previous art movements, such as post-modernism and the situationists, we have come to understand that structures can be exposed and changed; and that there is often alternatives or

parallels to what we have previously believed. This concept was the very premise of *The Matrix* (The Wachowski Brothers:1999).

Osmose (1995) and *Ephémère* (1998) are divisive in segregating the audience as a mass into the individual and the others. The others have the overview and truth of the experience. They are positioned as the over seers in outer world. The individual has the totality of the immersion.

With *Osmose* (1995) and *Ephémère* (1998) there is a question over whether the audience that take part in the work are viewers or users. They are integral to the functioning of the work and directly influence what is seen.

Laurie McRobert, who has written *Char Davies' Immersive Virtual Art and The Essence of Spatiality* (2007), believes that "VR art is fated to act positively and catalyticaly on our psyche" (McRobert: 2007:10). Subversion of what we believe reality to be may be the catalysts she describes. If our comprehension of our existence is to be expanded then it may be that a new platform and open perspective such as the one suggested by virtual reality is the way to do it.

Summary

VR allows Davies a hybrid of benefits derived from computing, painting and three-dimensional virtual space. Her immersive worlds allow viewers to make journeys that in the real world would be impossible. The movement between layers is part of an aspirational ideology. The virtual world allows us to design unlimited environments in every sense. However, *Osmose* (1995) requires many *real world* movements and controls to navigate the virtual world. Whilst this can be attributed to the limitations of current technology, it is disappointing that the experience of immersion is still so real world. There is a conflict between requiring the Holodeck to achieve a level of reality that appears to be unmediated and thus without distance between the art artwork and the participant. However, this very concern of wanting to replicate and accurately simulate the physical world may be preventing a truly new experience and access to parts of our consciousness that have previously been under used. Char Davies has gone further than most in showing the potential of removing the constraints of the physical world by opening up the virtual world like a portal into her mind.

Chapter Four: New Media Art As Part of Our Evolving Digital Culture

Information Society

> Digital technology has fundamentally changed the way art is made. Over the last forty years, Media Art has become a significant part of our networked information society. Although there are well-attended international festivals, collaborative research projects, exhibitions and database documentation resources, Media Art research is still marginal in universities, museums and archives. It remains largely under-resourced in our core cultural institutions. (Media Art History: 2010)

The theories of interacting with new and emerging technologies in the previous chapter demonstrate that through engagement there can be the acquisition of a greater appreciation for the form and opportunities of new media art. I would suggest this is part of a cultural shift, which is currently taking place, and is fundamental to the integration of new media art into the broader spectrum of contemporary art works being exhibited and collected. This chapter will explore some of the challenges of culture upon new media art. It will consider the changes that have taken place within society and identify its relationship to new media art. The impact of a fluctuating culture may be of benefit to new media art, particularly if it can be part of that change.

> What is the promise of "social media art"? It allows contemporary artists to tap easily into a vein of technological excitement, puts them on the same plane as everyone else, and offers a space hospitable to gestures already familiar from "relational esthetics (sic)" art. (Davis: 2010)

I would postulate that for the participants of new media artworks it is possible to undergo a transformation of their cultural understanding and even at a subconscious level their cultural positioning. Until there has been a paradigm shift in the cultural and

institutional structures of appreciating technology within art, the work of determinists in this field will provide the most rapid forms of integration. These pro-active supporters may be growing in numbers, but appear to still have a limited voice and lack the popular recognition that contemporary art forms have achieved in a relatively short period of time.

In attempting to promote and convince about the value of new media art it would need to resolve the vexed terminology that has already been discussed in this thesis. If the lexicon is clear then its definition, position, and value will be clear. Definitions that can clarify the uncertainty, such as "new media art covers projects that make use of emerging media technologies" (Tribe & Jana: 2006:6), would strengthen perception of the work. In addition, illustrations of the lessons that we have learnt from previous technologies that were classed as new media being appropriated into art forms would validate its burgeoning transition. In reference to photography, which was not immediately accepted as a conventional art form, its technological advances challenged its creative developments and acceptance into the art world through experimentation. This is highlighted by art historian Edward Shanken, who specialises in the intersection of art and technology, when he references photography historian John Tagg:

> …the reception of an earlier "new media," the more experimental aspects of photography were not well-assimilated and the impact of the discourses of photography and contemporary art on each other was highly asymmetrical: the latter changed very little, while the former lost its edge in the process of fitting in. (Shanken Cited in Johnson: 2011)

What has become apparent is that the level of engagement and understanding of new media artwork is related to a cultural shift. Within the context of this thesis cultural

shift refers to the recalibration of people's expectations, understanding, and appreciation of artwork that has been created using new technology. The reason for describing it as a recalibration is that the viewer/participant must re-equate themselves with what they know about art and how they engage with it. I would suggest that this is at the core of the slow adoption of the medium.

> In 1968, Ascott rightly described himself as "the artist responsible for first introducing cybernetic theory into art education [in Britain] and for having disseminated the concept of a cybernetic vision in art through various art and scientific journals." True to his "cybernetic vision," Ascott conceived of these various aspects of his praxis as interrelated components of a larger system comprising his total behaviour as an artist. (Shanken: 2002:156)

A re-education is required to maximise the experience and benefit from its multi-sensory stimulation. Participation remains a problematic part of contemporary art for many art patrons.

> It was Ascott's intention that viewers could more actively participate in the creative process by determining the state of the artwork according to their subjective aesthetic sensibilities at a particular moment. Thus, both the work itself, and one's experience of it, unfolded over the duration of interacting with it. Each work depended on an exchange of information between the artist, the viewer, and the object. The ongoing, cumulative result of these interactions represented the potential of the work's infinite number of compositional possibilities. (Shanken: 2002:158)

The reliance on participation may be effected by an uncertainty of protocol for interaction and therefore restrict the engagement from some of the audience. This relationship is complex, as in some areas of society, such as communication and

entertainment, this transition has already taken place. However, new media art appears to be behind the trend of the invisible integration of technology into our lives. Whilst there may be a lack of protocol for some artworks, a large proportion of the potential audience will have already acquired an understanding and appreciation for the integration required through the use of modern communication and entertainment.

Artist Simon Penny[1] notes of new media art: "only by becoming intimately familiar with the genre, can we appropriately integrate it into society" (Penny: 2005). This idea of integration may be what new media art requires to gain acceptance; but raises the question of how, as we already inhabit a digital age, which does not appear to significantly enhanced the art form's profile.

After the Second World War, social behaviours, most notably in Europe, went through substantial shifts. One of the most fundamental changes to affect cultural paradigms was the transition from an industrial society to an information society (Webster: 2006:8-21). Whilst this transition from an industrial society into an information society started before the world wars, and is evident in the collecting and labelling exercises of the Victorians, the technology and practical necessities of war accelerated its impact on how we live many aspects of our life. What is exciting and unnerving about this shift, is that whilst we cannot predict when it will finish, we can see that currently we are in the middle of the most dramatic, immediate, and rapid period of the change yet. Indeed, this rapidity may be something that society is still adapting to, and is not yet able to engage with all of its aspects.

The information society has matured to a point of technological ubiquity and democratisation. Whilst this is evident in our daily lives through devices such as

phones and social media, I will look at the structures of this new form of society and identify the areas that are most relevant to new media art. The key parameters and identifiers, which identify a particular type of information society, as described by Frank Webster (2006:8-21) are: Technological, Economic, Occupational, Spatial, and Cultural. What I find intriguing, and will investigate further, is that if we are an information society, and as such have a particular core of activity within the technological arena, how has this changed our cultural behaviour and understanding of it? How can new media art benefit from this change? It may be that the epistemological position of new media art is at odds with how the current variant of the information society is defined.

Webster's (2006:11) identification of the technological identifiers of an information society includes satellite television, personal computers, and online services. He comments on how the volume of technological innovations leads to a reconstitution of the social world because their impact is so profound. The impact of networked communications and personal media has been a catalyst to this reconstitution. It is difficult to define the current version of the information society as it is still maturing. However, what can be said is that the role of technology has shifted from information storage to information generation, and that the role of content provider has devolved from the governments and broadcasters to the independent. Within the context of this thesis it is important to consider that for society the paradigm of digital technology is still relatively new, and as such is continually evolving. It is this uncertainty that may share a direct correlation with the current situation of new media art.

"An effective shift in the paradigm through which computers were perceived required cultural transformations as much as technological ones" (Gere: 2011). It may then be that a paradigm shift in the perceived value of new media art will only be possible through a cultural transformation. The relationship between the developments of the information society and new media is a very close one. It could even be argued that new media art is a direct manifestation of an evolving information society. This is particularly evident in works that utilise systems, structures, or information, and manipulate or expose their processes.

The initial phase of this relationship can been seen in the first art works to be based on computer displays. Today we see the relationship become much more diverse and complex. It is explicitly present in the use of devices such as the iPad to create works of art, and it is more embedded in forms such as Hacktivism. Nihilistic forms for new media art have changed appearance since the dawn of net.art in the mid-nineties. Whilst its visual and material representation has evolved, its core values have not; for example see *Hack the City* (Gorman & Dillon: 2012).

It is important to remember that new media art is not exclusively tied to the medium of the computer.

> Why assume that every emerging technology uses digital encoding by computer? Those who speak of "digital art" often lump together these different phenomena under a single banner. A theory of digital art is a filter that brings out commonalities in one group of art works and that makes clear how these works differ from other kinds of art works.
> (Lopes: 2009:4)

Given that a majority of new technology is based on microchips, it is an obvious assumption that all new technology will be digital; and it is a function of an information society to exploit developing technologies that can support its structures. By its very nature, information, or data, is well suited to the computational processes of the modern computer.

We are currently seeing a rapid increase in the digitisation of imagery. Not just in the form of scanning books or images, but in the form of visual databases and the recognition of, and response to, visual markers. Services such as Google are exploring the possibilities of using software, such as Google Goggles, to engage with the visual world in a very algorithmic way. There are now augmented versions of reality that layer a fictional world over reality with the mobile phone or tablet serving as a viewing portal to the world. If society is in the midst of an information revolution why does its creative output in the form of new media art not receive wide spread recognition?

> The avant-garde's specialisation of itself, the fact that its best artists are artists' artists, its best poets, poets' poets, has estranged a great many of those who were capable formerly of enjoying and appreciating ambitious art and literature, but who are now unwilling or unable to acquire an initiation into their craft secrets. ...this elite is rapidly shrinking. Since the avant-garde forms the only living culture we now have, the survival in the near future of culture in general is thus threatened.
> (Greenberg: 1989:8)

It can be argued that new media art is still in the vanguard of creativity. The rapid take up of tablet computers, for example, has provided hundreds of millions of people with the opportunity to create and consume this artwork. Web sites such as Deviant Art suggest that this is increasingly prevalent, but perhaps that new media art's public platforms remain limited and niche-based. That said, the internet is now such a public

space, that despite the incomprehensible amount of information available on-line, it can be discovered with very little searching. However, if it is a niche, this might suggest that there is a limited audience, and as Greenberg (1989) describes, avant-garde art is for the artists.

"The use of computers by artists also reflected the growing importance of such technologies as part of the so-called 'post-industrial society'" (Gere: 2011). This was most famously advocated by the American sociologist Daniel Bell, in his book *The Coming of the Post-Industrial Society* (1973). If the information age is formed around the technology of society, then we currently find ourselves in a period of dramatic and rapid social change. Culture is another key area that defines what is referred to as the information society, and as such I will now take a moment to discuss the current cultural situation in the context of the information age.

> Contemporary culture is manifestly more heavily information laden than its predecessors. We exist in a media-saturated environment which means that life is quintessentially about symbolisation, about exchanging and receiving - or trying to exchange and resisting reception - messages about our selves and others. (Webster: 2006:20)

Within contemporary culture we are being driven ever closer to a medium free world for information consumption. Although it has caused some public relations issues for Apple Inc, its decision to remove optical media drives from all but its professional computer, the Mac Pro, is an indication that CD/DVD/Blu-Ray discs will soon go the same way as the floppy disc did some ten years after Apple removed that technology from its hardware. Whilst this has the potential to be of commercial benefit to Apple where distribution costs will be lower and purchases will be directed to their dedicated

online line stores for media content and applications, it has so far alienated many existing customers and potential platform changers. This also has the unfortunate effect of potentially exaggerating the issue of owning an intangible new media artwork.

Whilst at the advent of video there was debate over the value of a video artwork, rarity and limitations of copies has enabled it to maintain a financial value, as well as archival and collectors value. Having work only exist on hard drives and on servers in the cloud may resolve itself through new modes of understanding and technology, but currently it is an area of doubt and uncertainty. Counter to that dilemma is the gradual transfer of people's lives and media to being online and in the cloud. Many will not have considered how many of their modes of communication and sharing are now online. "The masses have always remained more or less indifferent to culture in the process of development" (Greenberg: 1989:8).

Devices such as the Amazon Kindle have excited the appetite of the general population to such a degree, that many consumers are not questioning the falling sales of physical books. They are unconsciously convinced that they have an access to their library, which is not only extremely mobile, it is unprecedented in ease of management.

> We are arriving at a point where digital technologies are no longer merely tools, but increasingly participants in our increasingly participatory culture, for better or worse. The need to keep questioning our situation remains more pressing than ever, especially as the technology itself is more and more invisible as it becomes an integral part of the very fabric of our existence. (Gere: 2011)

Society is moving closer to a culture of what theorist Marc Prensky refers to as "Digital Natives" (Prensky: 2001). This occurs when members of a society have only

ever known a digital interface for their consumption of information. Why is this trend and state of culture important to this thesis? Because it directly impacts on how people's perceptions of technology have changed, and how their pattern of consumption of content has transferred from traditional analogue sources to the wide range available on line.

Currently there is a large percentage of society that can be considered as "Digital Immigrants" (Prensky: 2001). This is where the engagement with technology is learned as a secondary skill and has not been a part of the individual's everyday life from a young age. Whilst the internet provides a wider range of content at various levels, it is accessed through very few means. Predominantly web browsers, but increasingly apps which draw information from the internet. Given that a third of Facebook users access their profile through mobile devices[2] it is an indication of how the technology has developed, even during the time of writing this thesis. How can this benefit new media art? If Tribe & Jana's (2006) definition of new media art, which I favour, is that new media art utilises new technologies, then currently mobile computing and personal technology is the new technology where the art would be expected be taking place.

The platform of tablets and phones for creativity was identified quickly by established artists, such as David Hockney, as well as the younger generation normally associated with this kind of technology. However, it has taken time for the devices' applications that help create the artwork to mature. Interestingly, the modern mobile device platform is well suited for the distribution and consumption of art works through its systems, structures, and interconnectedness. This has not yet fully exploited in an art

context, and what has been made available on this platform has been promoted as games, such as in the case of Scott Snibbe's work on the iTunes store[3].

An important part of a cultural shift to achieve greater equality for new media art may be stimulated by a high-profile company such as Apple. They have a history of linking technology and art and indeed excited the imagination of artists such as Andy Warhol with the first Macintosh. When Steve Jobs was C.E.O. of Apple has said that: "Apple stands at the intersection of technology and the liberal arts" (Fry: 2010). When reviewing one of Apple's product launches where this ideology was used to make a point about their commitments, Writer Stephen Fry said in The Guardian; "This statement confused non-Americans who are not familiar with the phrase "liberal arts" but I think shows the fundamental cultural seriousness of Jobs and Apple, which in turn explains their huge success and impact" (Fry: 2010). It is possible that this commitment and association with the arts will strengthen the role of technology in creative practices.

It would appear that whilst new media art is a direct result of our information society; it has not been able to achieve the expected level of impact within it. It may still be the case that the medium has not matured to a sufficient stage in its own development. "Isous central theory was that the evolution of any art was characterized by alternate amplic and chiselling phases" (Gere: 2011:92). The amplic phase is characterised by rich experimentation and expansion of a medium. The chiselling phase is when all possible innovations have been exhausted and the ideas turn in on themselves and the medium becomes its own subject matter (Hopkins: 2016:424). I would suggest that due to its relative newness, and rapidity of change, we have not yet reached the end of the

amplic phase within new media art's practice. What is exciting is that it may never move into a full cycle of alternation, as it is already self-referential.

The perception of its place as a medium is another factor in its integration that will require greater integration into mainstream art to become recognised.

> Media are perceptually available in traditional art, but not in computer-based art. A painting, for example, is made by applying paint to a surface, and Jackson Pollock makes paintings in which we can see the act of painting. In these works, the technology of painting is made visible to the viewer. However, nothing like this happens with computer-based art. A computer might show you a pixelated image or play you a sequence of sounds, but it doesn't reveal to you the computer technology underlying the image or sounds. The code that underlies the audio-visual display is invisible. Put metaphorically, "the computer is the ultimate black box where production … is occluded". (Lopes: 2009:30)

This occlusion that Dominic Lopes, Professor of aesthetics at University of British Columbia, describes here is misleading and illustrates the preconceptions that surrounds new media art. Some new media art is not explicit in revealing its medium specificity as it does not inform the concept of the work, and one of its qualities is that its inner workings can be hidden from view. However, there are many pieces that use the very structure of technological functions, particularly digital coding languages, as the subject matter of the artwork; ASCII art for example.

New media art will continue to struggle for its place in the art world and in gaining substantial presence whilst it is perceived to fail as art; "Modern art aims to invite perceptual experience of medium and it's valuable when it succeeds in this aim. However, computer art hides its medium, so it fails as art" (Lopes: 2009:30). In new media art's defence I would argue that it can provide a strong perceptual experience

when the medium reveals something of itself. “The value of an artwork is measured by its power to provoke and sustain hard thinking, and works that fail this test of profundity fail as art” (Lopes: 2009:30). New media art meets this challenge as it is frequently conceptual and experiential, and provokes a range of cerebral and emotional responses. The works are conceptually and perceptually intriguing. They also provide many layers of meaning and often works will provide a dynamic experience responding to input, therefore making each viewing unique, thus making a strong overriding concept the key to the work’s value.

Within an information society there is conscious movement to push technology to it boundaries. Daniel Chandler (2005) describes this as Technological Determinism, and whilst some do not agree with this view, it aligns with the conscious effort of this thesis to increase the profile of new media art. The flaw in the theory of determinism is that it is an artificial effort to push technology, or in this case art, to the fore. However, it would be better to allow these technology-based issues to progress with more fluidity. If technology based art achieves institutional and public recognition without being championed, then it will have an opportunity to become more wide spread on its own merits. Forcing the issue is likely to have a negative effect and even risks ghettoising new media for the foreseeable future. For new technology and new media art to be embraced and become an invisible part of our daily culture of activity it must be allowed to flourish on its own. That’s not to suggest it should go without some promotion and education, but in a measured fashion that does not appear to be forced.

Earlier in this thesis I have suggested that new media art may invoke a sense of the shock of the new. In some instances there appears to have been a reaction to new

media artworks that can be described as a technophobic response. The technophobic response is in part grounded in the argument, as previously mentioned, which was proposed by Adorno in *Dialectic of Enlightenment* (1972). This theory may have had some credibility when digital technology was new and was not a part of our every day life, but given the ubiquity and invisibility of the technology, it is less likely to be an issue for a majority of society. While discussing the history of Artforum International Magazine, and the changes in art that it has covered, contributor Michelle Kuo notes the imbalance in state of confidence from museums compared to the language used in exhibitions:

> Technophilia and technophobia alike pervade museums, galleries, and art-fair booths; the language of new media and social media—platform, network, algorithm, sharing—abounds in press releases and exhibition titles, slaking our thirst for 1960s-cum-1990s cyber-euphoria.
> (Kuo: 2012)

Prensky's (2001) notion of Digital Natives and Digital Immigrants would suggest that Digital Immigrants have overcome any potential fears of the technology. There is however another area of society where the technophobic response could manifest itself against new media art. The concept of the *Digital Divide* (Bishop: 2012) means that the gap between those who embrace technology and those who have limited knowledge or access to it make it a form of segregation. This could cause a sense of estrangement for those on the disadvantaged side of the divide.

> For now, it's easy to see why we should distinguish digital art from information art and new media art. Not all information is digitally encoded and computer-based. Hans Holbein's Ambassadors conveys lots of information, but it's not digital art. (Lopes: 2009:21)

As I have mentioned Tribe and Jana describe new media art as making use of emerging media technologies. This also supports the definition I made at the start of the thesis whereby new media art was categorised by works which utilised the latest of technology to explore its own boundaries as well as those of art and our understanding of the world.

> Some count video and even film photography as new media. Yet video and film aren't digital. Why assume that every emerging technology uses digital encoding by computer? Those who speak of "digital art" often lump together these different phenomena under a single banner. A theory of digital art is a filter that brings out commonalities in one group of art works and that makes clear how these works differ from other kinds of art works. (Lopes: 2009:21)

Italian writer and artistic director Domenico Quaranta, at the *Link Centre for the Arts of the Information Age*, believes that "new media art is more or less absent in the contemporary art market, as well as in mainstream art magazines" (Johnson: 2011). He makes the following observation about new media art's place in the conventions of the art world:

> Talking about conventions, if the contemporary art world evaluate art works on the basis of their content, the new media art world is interested in how a work contributes to the development and the understanding of a given medium; if the contemporary art world has a market-driven distribution system based on private galleries, art fairs, private, public and corporate collections, the new media art world nurtures an experience economy made of festivals, symposia and meetings; if the contemporary art world needs objects, the new media art world needs experiences. (Johnson: 2011)

Quaranta's points here are important in identifying an area where value can be demonstrated. I would expand upon this by saying that it appears that new media art is an extremely rich and dynamic medium, which is the result of its self-reflective nature

and its existence in experience. This also suggests that existing arts institutions may not be a complementary fit for new media art. Festivals and symposia may offer a greater level of support and appreciation. These however are generally limited in the number of attendees and attract parties already knowledgeable about the subject thus limiting its exposure to new blood.

> Inevitably, new media and the longer history of new media art will be recognized by the Museum of Contemporary Art as well, once a potential market for it is developed and promoted. Proactively theorizing the issues and stakes involved may play an important role in informing the ways in which that merger unfolds. Needless to say, many in the NMA community are wary of losing this critical edge in the process of assimilation. (Johnson: 2011)

Online Communities, Cultures, and Patronage:

> Ascott envisioned technology as playing a vital role in implementing his cybernetic vision, as a means both to enhance human creativity on the individual level, as well as to enable collaborative interaction between participants from diverse fields and geographic locations.
> (Shanken: 2002:14)

Whilst a concern of this thesis is to find the reasoning behind the limited exposure of new media art in mainstream arts institutions, I have considered the postulate that it may not be appropriate to demand equality within traditional art institution structure. Whilst equality is an aspiration, it may be one that is floored if the very nature of the art works is at odds with the existing structures. I have previously expressed concern over forcing new media art being assessed under the paradigms of traditional art that

have remained unchanged for many years. It is therefore possible that as a new art form it requires new platforms of exhibition.

As this chapter will illustrate, there are frequent debates and reflection by galleries about the position of technology within their exhibition space. This chapter's focus is on the cultural aspects and influences that support or inhibit new media art's visibility. As a "convergence culture" (Jenkins: 2006) the cultural landscape is shifting rapidly, and as a result new opportunities have presented themselves in only the last few years. This section deals with the relatively recent development of social media and addresses the blurring of boundaries between social media as a means of communication and a platform for creative practice.

Cultural magazine editor Steven Johnson reminds us that: "the worlds of technology and culture are colliding" (Johnson: 1997:2). He remarks that this should not be a surprise, as the creative and technical mind have long cohabited, in people such as Leonardo da Vinci and Thomas Edison.

In new cultural forms of expression, facilitated by new media, we see an opportunity to develop creative practices that have not previously been possible. Academic Robert Witkin focuses on the relationships that can influence and shape art forms in *Art and Social Structure* (2007). What he terms as "The social determinants of artistic revolutions" (Witkin: 2007:cover notes), refers to art being a powerful means of thinking and constructing social relations." Through networks such as social media, the cyberspace of the Internet is becoming the new hothouse for collaborative art, as well

as challenging the exhibition format that has struggled to modernise within arts institutions. There is a cyclic effect of art constructing social media networks, but also of social media supporting the development of art; happing outside of the mainstream art world.

> The ethos of much online art is opposed to the established hierarchies and niceties of the mainstream art world, particularly its courting of corporations and very wealthy individuals for sales and patronage. (Stallabrass: 2003:117)

There is a new level of democracy developing out of social media, but are these new systems and paradigms enough to support new media art, or does it require a greater level of support and investment from more influential individuals? Arts institutions have struggled with the dialect that Michael Heim refers to here:

> Cyberspace floats now in a cultural limbo. The limbo is zigzag holding pattern that professional philosophers call "the dialect". This dialect is a social fever characterized by mood swings between utopian fantasy and hateful cynicism. Hyperbole alternatives with attack, and the status of cyberspace hovers uncertain: commercial juke box? Neodemocracy? The end of broadcasting? Monster information swamp?
> (Heim in Lunenfeld: 2000:25)

Over the last two decades their relationship has constantly been in flux, usually in response to the latest technology or trends. Whilst social trends are not usually in arts institution interests, the trends of new art forms, and new modes of communicating with their audience can be of considerable importance when attempting to increase their audience.

Social media is the mainstream contemporary to an art platform that was once an underground network that was virtually private. Social media is a network that did not exist in the mid-nineties when net art was emerging as an art form, and suggested it may be the potential solution to computer art dissemination and exhibition. The infrastructure and infinite connections with people, that modern social media provides, were not there.

In the mid-nineties when the Internet was becoming popularised, some galleries, such as the Whitney and Tate, made a concerted effort to replicate the gallery experience online. This was done with the opinion that if the Internet was a threat to the gallery system, then taking ownership of the virtual space early, may negate the issue arising later on. For the more progressive galleries it was a way in which to explore new possibilities both in terms of creation and exhibition. After only a few years, circa the turn of the millennium, this new world was not delivering its promise and many galleries ceased maintaining work in their online spaces.

Theatre Bay Area, founded in 1976, serves the vital artistic community of the San Francisco Bay Area, and is the largest regional theatre service organization in North America. In 2011 it commissioned a report into the use of social media within arts organisations. Devon Smith's report *The Tangled Web: Social Media In The Arts* (2011) opened with the following statement that is a reflection on what they felt the state of the sector was:

> As a sector that has historicaly (sic) been both underfunded and under resourced when it comes to any sort of technological shift arts, and cultural organizations (sic) have struggled with how to effectively adopt and utilize (sic) the vast (and ever increasing) expanse of social media tools on the internet. (Smith: 2011)

Since then galleries have used the Internet to drive visitors into their physical gallery space and sell tickets and merchandise. While the large institutions have not regularly maintained the online exhibition space, supporters of new media art have been developing their own networks. Through spaces such as Facebook, Deviant Art, Flickr and blogs, a new form of exhibition and art creation has emerged.

Bob Stein's essay *"We Could Be Better Ancestors Than This": Ethics and First Principles for the Art of the Digital Age* (Lunenfeld: 2000:198-212), explores the notion of new computer technologies influence over arts creation and dissemination. However, he is not convinced that the developing culture is what we believe it to be. "The idea that we are going to have a cornucopia, a cacophony of cultural works coming from around the world isn't the case now, nor is it likely to be, in the current climate" (Stein in Lunenfeld: 2000:201).

As an essay from the end of the twentieth century, it is with the benefit of hindsight that we can review his comments. Stein describes a situation where the promised democracy of cyberspace was not foreseeable, and an American centric version of the Internet was preventing the opportunity of a "global village" (McLuhan: 1994). The actual development of social media and the much stronger democratisation of the Internet have come into fruition in the first decade of this century. Stein's example (Lunenfeld: 2000:201) of a musician from out side of the United States and Europe not having the same opportunities is no longer the case, and has been challenged by pop musicians such as South Korea's Psy.

Research reports, such as *Audience 2.0* (National Endowments for the Arts 2008), which are funded by the United States federal government, have detailed the impact of social media on the gallery experience. However, these investigations have been focused on the marketing potential and levels of interaction social media bring to the gallery. Social Media enables networking across well-supported and public infrastructures. The advantage of these sites and services over the Net Art sites of the nineties is that they stem from social interactions. Artists can connect with other artists in a range of disciplines, as well as their own. This communication is important and has taken place for as long as social media has been available. There, are however, are other benefits to this new infrastructure. The use of social media networks can facilitate the creation and exhibition of art works in dynamic and unpredictable ways. There are generic social media sites such as Facebook, which invite a more social aspect to networking. There are more specific sites designed to showcase artist's work, such as Deviant Art (2012) and Saatchi Online (2010). These sites invite engagement through comments and sharing.

In the late nineties, the tools of the new media artist were relatively expensive and not as ubiquitous as they are today:

> We're seeing incredible tools being developed to make art, but it puts these tools in the hands of a smaller number of artists than ever before. So, great tools, but many fewer artists will be using them. Because they are more expensive, they are more directly in the service of capital than ever before.
> (Stein in Lunenfeld: 2000:200)

What Bob Stein, and many others, did not foresee on the technological and cultural horizon was the impact of cheaper computers, mobile computing devices, and social media, which would be used by over one-seventh of the global population. The

availability of affordable, and even free, art software and applications has resulted in new media art being more accessible to more people. Technological developments have also affected the convergence of computing and photography, resulting in many devices including integrated cameras, which expand creative potential further. Whilst social media was not intended to be a platform for creative practice, it has, as with so many new forms of technology, been re-appropriated by the artistic community. In the spirit of the early days of computer art it has been hacked and manipulated to explore its creative potential. It is becoming more than a mode of communication for discourse, it is now a platform, elemental, medium specific tool for creativity.

New on-line galleries are still being produced, but spaces such as www.bubblebyte.org suffer the same issues as the net.art sites of the nineties. They present work in a limited fashion, as if they have borrowed the traditional exhibition methodology from the arts institutions. Bubblebyte.org describes itself as:

> bubblebyte.org is an online gallery showcasing artists that engage in a creative way with the digital space and stress the multiple possibilities of the media. bubblebyte.org is in itself container and content, artist and gallery. (Bubble Byte: 2012)

The issue with these kinds of art web sites has been about their use of outmoded exhibition techniques, particularly ones that originate from a different space. The use of social media as a platform is a more contemporary approach. It enables the work to be shared and discovered in a more dynamic way. At the time of writing, social media had not yet reached a level of full maturity as a creative and exhibition platform, as it continues to develop new modes of interaction.

Creative projects such as the animated film *Live Music* (Landau:2009) have been produced by using *Facebook* as a communication platform for sharing code and ideas. However, this is not the most exciting potential of a networked art space. Spaces such as Deviant Art enable artwork to be shared, commented upon, and even purchased. Sattchi Online offers a similar service, and whilst they are attempting to provide an alternative space, they fall prey to the same issues. They are essentially an online version of the traditional arts institutions. They could be developed further, but currently they display static works such as photographs, paintings, and digital illustrations.

The work being exhibited on sites such as Bubblebyte.org are predominately based on the Adobe Flash platform. This is now a rapidly ageing technology for producing interactive media. It is no longer supported on mobile devices such as phones and tablets, and therefore is potentially inaccessible to millions of users. Adobe Flash was at one time the main software and platform for multimedia interactivity. Unfortunately for the artists involved, Flash is suffering the same form of digital decay (Sterling: 2004) as early Net.art. As computing languages become out dated and lack widespread support, then the artworks risk being lost. Current artists can work with HTML 5, which offers similar potential for visually striking and dynamically interactive pieces. There is still the risk that in ten to fifteen years time these works will also have limited compatibility.

Exhibitions of images and virtual sculptures have taken place in *Second Life*. Whilst offering a virtual social and creative meeting space the members of *Second Life* are limited in numbers compared to *Facebook*. One of the factors that is restricting the

potential of an art network is that there are many websites and social networks which are not connected, but more importantly are developed without a holistic approach. Instead, a piecemeal approach has prevented the development of this medium. “The Creative Time Tweets series further lionized social media art with a project by performance artist Man Bartlett, who continues to lead the emerging group of artists working with social networks as a medium” (Chayka: 2011).

Media art lacks a champion, moreover, it lacks a patron; but is a patron required when a democratised Internet is available for the exhibition and sale of art? The notion of art patronage suggests a 15th Century approach. The renaissance was enabled by the new technology of paper and printing, and new media art is the technology that is enabling a new renaissance. Art patronage still takes place, but is less linked to dignitaries such as the Medici's of the renaissance (Jones: 2011), and is more commercial in its contemporary form. Who are the Medici’s of today? They come in a number of forms and predominately are patrons for either directly or indirectly the money.

A patron of art, such as Charles Saatchi facilitates the creation and dissemination of work. In the process of doing so he generates large amounts of money for the artist and himself. Saatchi Online is an attractive prospect for an artist wanting to be discovered and sell work to a wider audience. Over 100,000 artists had uploaded work to the web site as of 2010, and the site receives an estimated 73 million hits a day. A single person as a patron is now rare, and it is increasingly the case that corporations sponsor artists. Within new media this is most commonly technology companies. This allows them to showcase their product being used for extraordinary and creative practices. “As

generative artist Marius Watz (who recently worked with agency Scholz & Volkmer to create abstract background animations for Montblanc's eyewear series) told *ARTINFO* earlier this year, "media art has the positive aspect of looking like the future," an appealing quality for commercial industry" (Chayka: 2011).

This relationship may not sit ethically well with many artists, but it may be a necessity. The risk is that as with patrons such as Lorenzo de' Medici, corporations can have a substantial influence over the art they facilitate. Arts institutions such as galleries have operated through sponsorship for many years without it perceivably affecting the content of the exhibition. This may be a level of parity that new media art and traditional arts institutions can share.

> Most of the art that we see in our culture comes packaged in various forms that in various ways serve the interests of the capitalist class. We do live in a class society-whether we like it or not- and in one way or another most of the art that we see ends up serving the tastes, interests, and agendas of the people who paid for it. And overwhelmingly the people who have paid for it in this century have been members of the capitalist class. (Stein in Lunenfeld: 2000:199)

There is another form of patron that is potentially more influential on society than those previously mentioned. Media organisations, arts councils, and the government have an over reaching control and influence on mainstream content that is available. Whilst many countries are not oppressively controlling of the arts and media content, its mechanisms affect its ability to diversify and change quickly. It lacks funding and the quick response to emerging areas of creativity. Equally, it favours to fund projects that are likely to generate income, and therefore have to appeal to a mass market.

In 2012, the Arts and Humanities Research Council (AHRC) established the Digital Transformations project to explore "the potential of digital technologies to transform research in the arts and humanities"; and among a number of aims: "questions of access and availability, and new forms of expression, in the creative and performing arts" (www.ahrc.ac.uk). This research-funding theme identifies the importance and the rapidity of this field. It has been linked to the Research Council's Digital Economy theme. This may be necessary and advantageous for both research areas, but it is indicative of the way work often receives support. Increasingly it is for the speculation of increasing financial gains. In support of federal funding for the National Endowments for the Arts and Humanities in the United States, Robert Hughes took the position that the culture needs the government to fund art (Stein in Lunenfeld: 2000:199).

If government support is separated enough to provide non-bias support there is the opportunity for new media art to benefit. In the early 2000's, in Australia, the government placed specific funds and support for new media art, and after only a few years, retracted the funding stating that it had done its job and new media art was no longer in need of special support.

It may be that a focused round of support would be of benefit. However, government policy should not get mixed up with the arts as this can have a negative impact. It is more appropriate for available funding to be disseminated by those with a wide knowledge of the arts and its and societies current needs. The AHRC's research theme will not only explore the issues of data management and originality, but will facilitate the work of creative practitioners to gain a deeper understanding of how this area is

developing. As their statement says, the data may be of interest to policy makers, and it is possible that this new research will enhance new media arts profile. The AHRC's Digital Transformations Moot was an event, which included performances, presentations, discussions, demonstrations, and expert networking and debate. This is a welcome event, but it indicates the cultural position of new media art. It is not only changing rapidly, but is struggling to be dealt with quickly by institutions.

These events, which are supported and attended by the existing practitioners and experts in the field, typify the closed network of dissemination and exhibition. As this thesis explores later in this chapter, the notions of cultural groups, networking, and location may no longer require parity with the current arts institutions, they may actually be developing their own platform.

In the same year as the AHRC Digital Transformations research them was announced, the BBC and the Arts Council of England launched a joint venture arts web site. Thespace.org is a web gallery for a range of arts content. At the time of writing it was still in a developmental stage, and although live, was not heavily promoted by either organisation. It was generally discovered through arts column articles and references on new media subject sites.

> Today The Space opens a new door into the cultural universe - one that offers a glimpse of a future where people can explore the amazing things the arts can do, whenever they want and wherever they are, and where all sorts of experiences can be easily found in one place.
>
> To do this, artists and arts organisations need to further develop the skills to understand and experiment with the creative potential of the new digital platforms.
> (Arts Council England: 2012)

What makes this project exciting, and has positioned it within the context of new paradigms of access, is that The Space was also made available via Freeview television and interactive set-top boxes. As may be the case with arts institutions in the near future, television is on the brink of a major revolution. The traditional channels of broadcast will be redeployed to a new non-linear platform where content is chosen from providers and schedules are no longer required. The institution of broadcast is not yet certain how this will happen, but it has realised it must happen if it is to survive.

Arts institutions may soon have the same epiphany, and make radical changes to how they conceive their structures. This will not be easy as its roots are much deeper than those of television, which is less than a century old. As The Space has shown, the convergence between mediums including the range of the arts, the Internet, media corporations, and arts organisation can channel a new approach to creation and consumption. Time will tell if this platform and approach can mature to fully move beyond the confines of tradition, but it is a reassuring sign for new media arts mainstream presence.

Artnet.com critic Ben Davis has a sceptical view of social media's current role with in the arts. However, he suggests that it can operate in an expanded field:

> On the one hand, this faddish obsession with "social media" is understandable. The Facebook Corp. has begun to wrap its fingers around every other aspect of life, so it is clearly logical to ask what effects social media might have on art-making. But at the same time, I find the chatter somehow sad, as if visual art's power to inspire passion among a larger audience is so attenuated that it has to throw itself on

> whatever trendy thing is out there, to win some reflected glory for itself.
> (Davis: 2010)

Davis' point is extremely insightful here as it exposes one of the key concerns about new media art. If it requires the latest trend to become noticed, then it has an inherent issue that makes its long-term appeal questionable. In defence of this practice, I would argue that part of new media art's specificity is that it must explore new modes and forms of technology, and currently that is social media. Theoretician Sally-Jane Norman promotes the artistic use of digital resources and the socially vital role of what she terms as creative extremophiles (AHRC *Moot* Programme 2012).

Currently these creative extremophiles are most prevalent in mass culture platforms, such as social media and digital home entertainment. The benefit of this mode, over others, is that it is highly popular and has unparalleled exposure to mass culture and society on a global scale. Davis notes that as with the term art, social media is a "vaguely defined term" (Davis: 2010), and it is this lexicological uncertainty that it shares with new media art.

Davis uses French semiotician's A.J. Greimas' *Semiotic Square* (Fig. 1) to rationalise the relationship between art and social media. This localised dissection of the evolving paradigm of art and technology intersecting informs the debate over new media art's role.

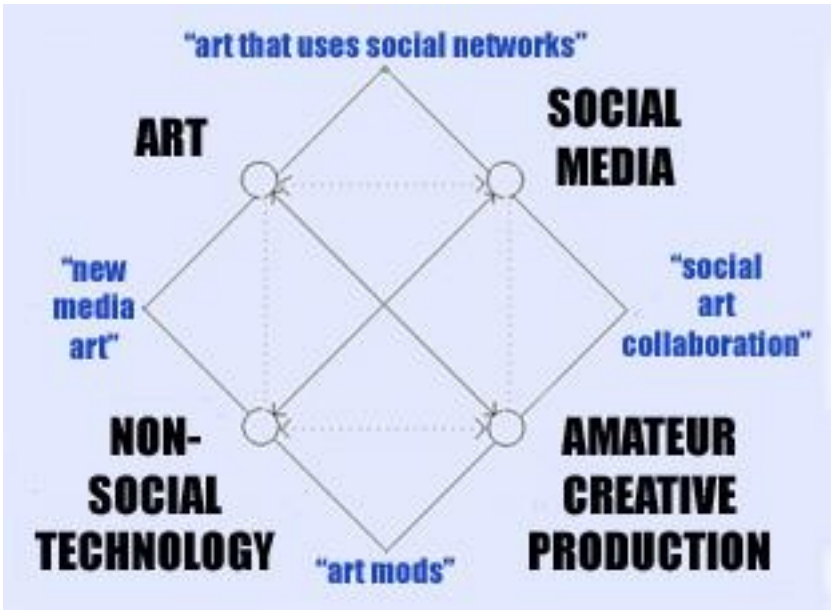

Figure 1. (Davis: 2010) Interaction of Art, Technology, and Society

Most notably, Davis surmises that art, which uses social media, does not change its function. This would be where a photograph or video are shared, much in the same way as a magazine or traditional web site. The difference here being that its dissemination relies on social networks and the cascading of sharing.

An article on Mashable.com by Lauren Drell (2012), expands upon this mode and details how artists are using social media as a new form of gallery. Whilst this is clearly an impact of new media technologies on art, it is only exaggerating the traditional practice of curation and inviting wider social comment. It does not fully exploit the potential of this new medium.

> " "NEW MEDIA ART", the relationship between "traditional art" and "non-social media." Given how we have defined our terms, this has a fairly straight-forward identity we can assign to it: A great many artworks that are simply "new media works" are falsely classified as "social media art," because they involve technology and take social media as subject matter. (Davis: 2010)

Whilst it is reassuring to see a clear definition between the various interactions between art and social media, this postulate highlights the ease at which the term new media art can become confused. It also indicates that there is not enough definition and understanding generally, and that just because an artwork's subject matter is social media, it does not necessarily make the artwork new media art.

Social collaboration is an exciting area that could be developed further and I have previously mentioned its form in relation to the film *Live Music* (2009). As Davis notes, its paradigm of mass authorship and amateur participation go against the art-world norms. A useful insight to the relationship between popular culture and serious art can be found in Adorno's essay *How To Look At Television* (2009):

> Their output has increased to such an extent that it is almost impossible for anyone to dodge them; and even those formerly aloof from popular culture – the rural population on one hand and the highly educated on the other – are somehow affected. The more the system of 'merchandising' culture is expanded, the more it tends also to assimilate the 'serious' art of the past by adapting this art to the system's own requirements. The control is so extensive that any infraction of its rules is a priori stigmatized as 'highbrow' and has but little chance to reach the population at large. The system's concerted effort results in what might be called the prevailing ideology of our time.
> (Adorno: 2009:160)

By layering this analysis onto social media, it acknowledges that social media has brought about the democratization that Stein and others believed would not be achievable. The exciting thing about levelling is that not only is there little or no perceivable controlling influence (although we know this differs from country to country, and international and local laws), but that a complete cross section of society

around the world uses social media. As Adorno discusses, by adapting older art systems there is the possibility that a work will appear too high-brow, and will thus reduce its audience. The prevailing ideology of our communications culture is that social media is for everyone. The social structures of the real world can play out through virtual networks, and continue their social barriers. To the same extent, the networks can negate social structural influences and enable a true ideal of equality.

The field of *Art Mods* revealed by this *Semiotic Square* is a cultural side effect of technology being available to the masses. Where *non-social art, which is* new technology, without the social aspect meets *non-art* (amateur creativity) outside of the art world proper. Works such as hacked Second Life avatar characters, and edited video clips from World of Warcraft sequences, are presented as the virtual world equivalent of fan art, a subculture of media.

> The increasing strength of modern mass culture is further enhanced by changes in the sociological structure of the audience. The old cultured elite does not exist any more; the modern intelligentsia only partially corresponds to it. At the same time, huge strata of the population formerly unacquainted with art have become cultural 'consumers'. Modern audiences, although less capable of the artistic sublimation bred by tradition, have become shrewder in their demands for perfection of technique and for reliability of information, as well as in their desire for 'services'; and they have become more convinced of the consumers' potential power over the producer, no matter whether this power is actually wielded. (Adorno: 2009:161)

Adorno's observation of the audience for art becoming wider, is particularly relevant here as he notes, "modern audiences are less capable of artistic sublimation" (Adorno: 2009:161). This is also the point made by Davis, that the new media are facilitating the

creative expression of those less familiar with the visual and conceptual languages of art.

> Ascott redefined art as a cybernetic system comprised of a network of feedback loops. He conceived of art as but one member in a family of interconnected feedback loops in the cultural sphere, and he thought of culture as itself just one set of processes in a larger network of social relations. In this way, Ascott integrated cybernetics into aesthetics to theorize the relationship between art and society in terms of the interactive flow of information and behaviour through a network of interconnected processes and systems. (Shanken: 2002:3-4)

Social media is a powerful and democratic form of feedback loop. Its networks are increasingly interconnected and now Ascott's cybernetic system of art is a reality. The very systems used by art and society exemplifies the flow of information and behaviours within our culture. As Steve Dietz writes: "Art is different after new media because of new media - not because new media is "next," but because its behaviours are the behaviours of our technological times" (Graham & Cook: 2010:xiv). The technology that is most ubiquitous in our time is not solely the computer, or the Internet, but the networks that exist on them. The social and artistic behaviours that Ascott and Dietz refer to are being shaped by what the network can currently do, but the users are also defining what the networks should become. "Ascott's conception of the computer was not simply as a tool for generating images, but rather as an integral component in an interactive, behavioural system" (Shanken: 2002:14).

Experimental projects that construct communities through communications technology are providing a social platform and cultural service to benefit new media art's awareness. *Do It With Others* (DIWO)[4] at Furtherfield takes ownership of networked

cultures and exists as networked creative minds rather than individuals exhibited and then shared on a (social) network:

> DIWO was proposed as a contemporary way of collaborating and exploiting the advantages of living in the Internet age that connected with the many art worlds that diverge from the market of commoditised objects - a network enabled art practice, drawing on everyday experience of many connected, open and distributed creative beings.
> (Garrett and Catlow: 2013)

Originally conceived as an Email art project, through the *Netbehaviour* list, DIWO operates in "an art world largely dominated by elite, closed networks and gatekeeping curators and gallerists, mail art has long been used by artists to bypass curatorial restrictions for an imaginative exchange on their own terms" (Garrett and Catlow: 2013).

Summary

> Technological conditions brought about by the internet have transformed everyday life with increasing intensity and significance. An entire parallel virtual world has been invented and constructed online for siphoning major (and minor) forms of information directly into homes, businesses, government agencies, and cultural institutions. Such major changes in communications systems foster enormous shifts in societal connectivity. (Lovejoy: 2008:221)

The complexity with new media art finding platforms for exhibition is that its not a structured approach. As with the examples of Social Media given in this chapter, by its very nature it has to flit between current trends and technologies. Social Media is particularly useful as it is so wide spread with a potential audience of almost a billion people just on Facebook. The work that is generated as a result of social media is more

exciting than it becoming a formal platform, but as such it does facilitate dissemination out side of the traditional arts institutions. The work being created as a response to the social implications of social media, and as a collaborative mode of production is defining a new genre and form. However, this may be short-lived depending on social media's own developments. Therefore, archiving this form of work will be particularly problematic, as the thread of development and exhibition will be difficult to capture.

It is possible that the future of new media art will benefit from society's increasing engagement with communications technology causing the medium to become invisible and the artwork's content to reach its potential.

Case Study: Alife- Christa Sommerer and Laurent Mignonneau

Key Works:
Data Tree (2009)
Wissengewächs (2007)
Life Writer (2006)
MobileFeelings (2003)
MobileFeelings II (2004)
TheLivingWeb (2002)
Verbarium (1999)
LifeSpacies (1997)
LifeSpaciesII (1999)
A-Volve (1994-1995)
Interactive Plant Growing (1993)

Introduction

Following the discussions about our evolving digital culture this case study focuses on Artificial Life art (ALife), which is wide ranging in its forms of output from on-screen artificial intelligence insects to genetically engineered biology in the physical world, but here I focus on digital forms of plant life. Whilst this form of new media art is amongst the newest forms, it has become one of the most respected in terms of research as it combines many areas of science and technology, and is filtered through the thought processes and critical reflection of art practices. Christa Sommerer and Laurent Mignonneau have been at the forefront of this form of creativity for over twenty years. Their forms of botanical *ALife* have developed from touch-sensitive plants to synthetic genetic manipulator to virtual plants grown with text input. This work is important to my research as it bridges the gap between the generally accepted sciences and roots of the natural world and the more uncertain potential for our future in the form of artificial intelligence. As I have discussed, our culture is becoming

increasingly digital and pioneering patronage is key to the stewardship of new art forms. Those recognising and supporting work in cutting edge areas such as ALife will increase awareness of the art form and subsequently its funding and curation. The examples in this case study inform the Conclusion of this thesis by exploring work which takes advantage of new forms of interaction and sensory responses. Through changes in our culture's acceptance of new forms of technology and making uncomfortable concepts more approachable new media art and its rapidly changing focus can become more integrated in the arts institutions of the world.

> Sommerer and Mignonneau are among a diverse group of artists who are exploring another convergence: between digital media and the computational models of artificial life and artificial intelligence.
> (Bolter & Gromala: 2005:157)

Figure. 1. Sommerer & Mignonneau 1996-97, *GENMA*, Genetic Manipulator.

Artificial Life

As I have previously discussed, what we now recognise as new media art has developed from the practices of kinetic art. Over time this came to include electronic devices that accompanied many of the mechanical systems that were being

appropriated. Since the nineteen sixties, computers, their displays, and their peripherals, were included due to their functionality and natural evolution out of the automated-mechanical systems that had been used previously. From the early nineteen nineties new media art's computer faction has been experimenting with a form of computer programming that can imitate biological processes.

Known in the sciences as Artificial Life, or Alife, it has been a research and philosophical interest tackled in parallel to artificial intelligence since computing was first developed. Artificial Intelligence (AI) deals with electronically synthesised awareness and interpretation of information instead of the typical electronically automated processes. Alife art could be considered to be less about intelligence than AI, but it synthesises processes that take place in nature, such as environmental responses, with increasing accuracy.

Alife mimics or appropriates biological processes that we take for granted, but that are fundamental to the evolution of life on Earth. Popular culture often associates artificial life with computer games such as virtual pets. Whilst the core technology might be very similar, Alife art is far more conceptually directed and experimental. It is itself an evolution of Alife science. As Sommerer (2001: 297) describes: "In the interactive arts, artists have employed genetic programming techniques to create audience-participatory artworks that change and evolve according to environmental inputs".

There are an increasing number of scientists and artists working in the field of Alife. Due to the genre of the work much of the output is similar in approach and appearance. The work is carried out internationally, but particularly productive countries are Austria and Australia.

Sommerer and Mignonneau have been crucial to the art world's understanding and development of new media art. Their work has been described as "epoch-making" (Stocker et al: 2009) by Toshiharu Itoh of the NTT-ICC Museum in Tokyo, and they are considered to have created one of the milestones in EA's history. At the same time that Char Davies began work on her first major interactive artwork, *Osmose*, Sommerer and Mignonneau were exhibiting *Interactive Plant Growing* (Fig. 2) at Mediale '93 in Hamburg. This proved to not only be a seminal work for the then postgraduate students, but also a key moment for new media art as another layer of its potential was revealed. As described on the University of Art and Industrial Design, Linz, based web site:

> They develop simulations of Artificial Life and creative environments for interaction and participation. The confrontation of real and virtual systems requires conscious interaction and exemplifies the interdependence and co-operation of both models. (Media Art Net: 2010)

Figure. 2. Sommerer & Mignonneau 1992, *Interactive Plant Growing*.

Although they both live and work in Kyoto, they spend much of their time touring works internationally. They have received numerous awards and nominations for their art works, including the Prix Ars Electronica Golden Nica Award in 1994 and Interactive Art Honorary Mention Award in 1999. As a result they are now able to install large-scale site-specific projects such as *Wissengewächs* (2007, Fig. 8) and *Solar Display* (2008). Sommerer and Mignonneau's works are essentially new media art. The components they employ are fundamentally electronic and computational in origin. They also rely on human interaction to complete nearly all the works.

Their subject matter (the hybridisation of biology, technology and art) is currently the vogue of new media art, but they have been working with elements of synthetic nature and artificial life for nearly twenty years. Their work possesses the now recognisable aesthetic of virtual reality and digital images. Like Char Davies, their work relies on algorithms to interpret the user input into computer visualisation. A result of using this technology is that works have an artificial and synthetic quality, which has developed and become a stylistic trait as well as medium specific one.

Many of Sommerer and Mignonneau's works have a visual composition that resembles scientific research, specifically microscopes looking at developing organisms. This is no accident. Other artists have created similar compositions as a result of Alife's associations with science, as it is a field of study that examines systems related to the processes of natural life, and its evolution, through computer, robotic, and biochemistry simulations.

Fig. 3 John F. Simon Jr 2003, *Alife*.

In John F. Simon's- *Alife* (2003:Fig. 3) "the worlds are created by the artist in software and are defined through the language of scientific instrumentation with references to microscopic, telescopic and satellite imagery" (Simon: 2010).

Alife artwork usually has specific aesthetic qualities as a result of it science led media. It would appear that the medium has an aesthetic that cannot be fundamentally changed. This assumption would be misguided, as the aesthetic is a result of the time at which the works were developed rather than the limitations of the medium. It is fair to say that Sommerer and Mignonneau frequently use the same computer technology where possible. As with most artistic mediums it has become more pliable to their ideas and they have a more developed sense of its relationship to the subject matter. It also means the systems are very reliable as a means of creation and exhibition. The limits and benefits of the chosen hardware and software are fully understood and appreciated by Sommerer and Mignonneau.

Cybernature-

While many of Sommerer and Mignonneau's works are classed as Alife interactive art research, their most prolific creativity is centred on Cybernature. Cybernature is a virtual version of the natural world, as we know it. However, as part of the virtual world's medium specific qualities the nature in these spaces can be augmented to meet the demands of the artist's intent. Mitchell Whitelaw describes transition from nature to this emerging Cybernature as:

> …a pristine new nature begins to form in remote inner chamber. Supported by expensive sophisticated technology, this nature offers several advantages over the rapidly unravelling original. It is enormously malleable; it might resemble the "old" nature or some fantastic environment of our own imagination. (Whitelaw: 2004:98)

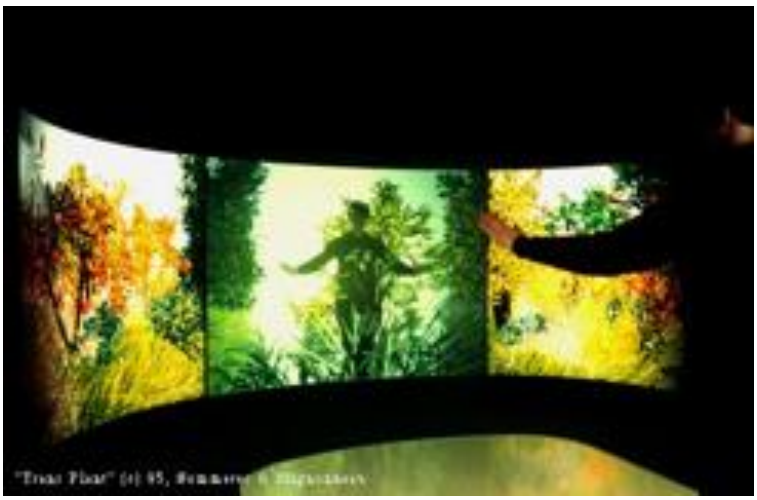

Figure. 4. Sommerer & Mignonneau 1995, *Trans Plant*, an interactive computer installation.

The theme of cybernature's artificial ecosystems is featured in some of their more widely recognised works. These Cybernatures require no previous knowledge of interactive art installations on the part of the participant. Their appearance is all too familiar and intuitive due to their close simulation of life processes. The stimulation of touch feeding the growth of the artificial life is one of the most important parts of these

works. It is this mode of interaction and communication that exemplifies and exposes the work's concept.

Virtual plants and creatures exist, grow and evolve in a seemingly endless world, which is often familiar and progressively uncanny. Although Alife as a theme has been considered in popular culture through children's toys, such as Tamagotchi virtual pets, the Alife in cybernature artworks are aesthetically and conceptually more sophisticated. As well as the direct responses to input from the participant, they can be programmed by the artist with artificial intelligence and automated responses to stimulus from a variety of input. This automation is usually a synthetic life process simulated by algorithms designed by the artist.

The processes within the work of Sommerer and Mignonneau have been described as "Art as a Living Process" (Viewing Space: 2010).

Interactive Plant Growing

Interactive Plant Growing (1992: Fig.2) may be one of Sommerer and Mignonneau's earliest works, but it should also recognised as one of their seminal works. It's core values and themes have been explored and reworked many times since by themselves, and others. *Interactive Plant Growing* is important for a number of reasons, a number of which have become clearer over time. When the work was first exhibited the audiences that had experienced interactive art were familiar with press button interfaces that caused a limited predetermined reaction. By the early nineties computer graphics and programming were not only sophisticated enough, but affordable enough, for artists to seriously use them in installation projects.

Sommerer and Mignonneau met at Staedelschule Institute for New Media, Frankfurt, during postgraduate study, before gaining a joint artist in residency at the National Centre for Supercomputing Application at the Beckman Institute in Illinois. This residency gave them the opportunity to explore ideas that were previously out of reach. Financially, and practically, these projects were expensive and avant-garde, so the support this residency provided was key to enabling Sommerer and Mignonneau's imagination.

Whitelaw (2004:65) explains the installation space provides the contextual tone for the work: 'As the broken symmetry of potted plants and virtual plants suggests, the articulation of the virtual and the real is central here.' The installation is based in a darkened room, where only the light of the projection screen, and a few strategically placed spotlights, highlight the plants. The plants that are placed on pedestals in front of the screen represent their virtual counterparts, a fern or ivy for example. When the participant touches the leaf of a plant its corresponding virtual version, or avatar, is stimulated to grow. The onscreen plant is pre-programmed to grow certain features. However, the speed and motion of the interaction from the participant determines the shape and size of the plant. 'Their bio-electrical reaction to being fondled by installation visitors was feed directly into a computer, where the data became parameters for algorithmically generated graphics' (Stocker et al: 2009:7).

The interaction is an abstracted version of the domestic relationship we have with nature. The process of watering the plant, and feeding it nutrients to grow is reconfigured touch stimulating growth. The more it is touched, the more it grows. At

random points a Killer weed grows which resets the virtual space to allow more plants to grow.

> People are astonished that the plants can sense something, without even being touched, says Sommerer. People change when they really see that a plant is a living organism that should be respected. (Frauenfelder: 1994)

This idea of demonstrating and exaggerating the sensitivity of nature exposes one of the core issues that can be revealed to participants. The blurring of the lines between natural and mechanical could be disturbing for some people. The realisation that the two processes work symbiotically may, perhaps, be said to presage the next stage of evolution for human biology.

> A plant is like an antenna, says Sommerer. At the roots we have installed a receptor which is connected to amps, filters, and analogue-to-digital converters. These signals are transmitted to the artificial plant program. (Frauenfelder: 1994)

Interactive Plant Growing (Fig.2) demonstrates that it is now possible for humans to bridge the communication gap between plants and technology, or what is more pertinent, to our own identity, between mechanical and biological. Whilst there may be a danger to becoming too closely integrated to technology at a biological level, it is not the intent of this work to play on such fears. It is neither the intention of an artist such as Stelarc, though more apparent at a corporeal level in his practice. This association with a potential threat to our biological physiology may be one factor that could affect its wider cultural acceptance.

That concern aside, *Interactive Plant Growing* is intended to be a message about the natural world and how we communicate with it. Moreover, it demonstrates the

postulate that technology and nature can work in synergy. Given its close resemblance to the nature we recognise, the visualisations that appear on screen are aesthetically unnatural. The growth pattern is greatly accelerated in comparison to real plants.

> The revolutionary principle of *Interactive Plant Growing*: to trigger computer images by touching a plant- a natural interface. (Grau: 2003:298)

Making the natural process more hyper-real and instantaneous enhances the cause and effect experience. The growth patterns, of size and appearance, are a direct result of the stimulation they receive from the participants. This allows an extremely close relationship to take place between the artwork and the participant. As well as the experience of interaction, the participant is able to leave their impression on the virtual environment.

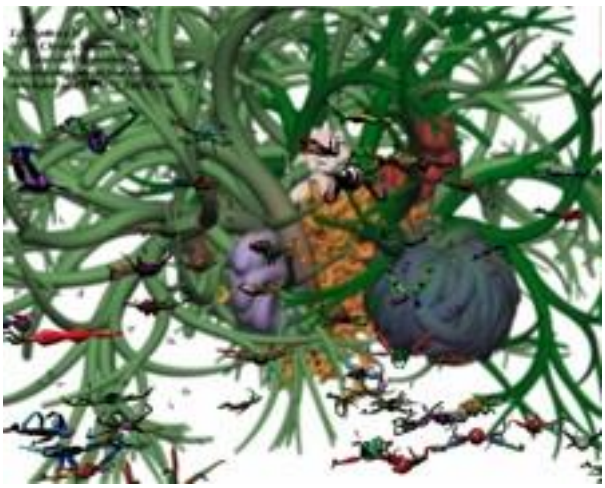

Figure. 5. Sommerer & Mignonneau 1999, *Life Spacies II*.

The appreciation for the way one interacts with nature will vary depending on the level of interaction. However, in most cases it is likely that participant will have experienced a moment of realisation, even if it was to discover that they felt uncomfortable doing

so. A combined response of surprise, respect and responsibility would be expected during most encounters.

Wissengewächs

Figure. 6. Sommerer & Mignonneau 2007, *Wissengewächs*, interactive facade with 16 screens reacting to passerby's positions and movements.

Wissengewächs (Fig.6) engages with participants in an informal way that lures them to the library. As with many public art installations its location provides additional meaning to the content of the work. In the case of *Wissengewächs* it was installed around the outside of an exchange library building in Braunschweig, Germany. The work was commissioned to emphasise the importance of the library in the year that Braunschweig was the City of Science.

As a beacon to passers by it works very well. It draws their attention to the library, which in an Internet enabled society could be forgotten. It also carries a metaphor of 'growth of knowledge', which is the translation of *Wissengewächs*. As an artwork it is more of an adaptation of previous processes and aesthetics than a wholly original piece. Passers-by may not be expecting the experience of artificial life growing on the

outside of an urban building. It does, however, represent a process that they are not only familiar with, but are a part of.

A problem for urbanised areas is often their lack of integration with nature. Whitelaw has noticed that Alife artist Jon McCormack's work, such as *Eden* (2000-2001), raises an awkward irony: "While western industrial culture is steadily demolishing its biological environment, it is becoming increasingly adept at simulating living systems" (Whitelaw: 2004:98). Although *Wissengewächs* replaces what may have been biological plants with virtual plants, the simulation through industrialised graphics emphasis the lack of a biological nature and therefore infers the common problem of nature being replaced by human constructs.

As I have previously identified, the work is intended to draw attention to the library. Here *Wissengewächs* identifies the risks to nature and the library through the process of simulation and symmetry. They are both endangered, and one solution may be that they work in tandem to survive. The inter-textual narrative of *Wissengewächs* is what makes it so important as a recent piece of work.

> Historically, gardens have served many different functions, from being a health care resource to places of contemplation and wonder. But in some way, gardens have always been about our arrangement, control and understanding of nature.
> (McCormack: 2010)

Wissengewächs provides a garden where it has previously been difficult to establish one. Although the garden is virtual, its interactivity and relationship to nature remind us of this idea of gaining control over nature. Whilst participants can try to take some control over the growth of the plants on the screens, they are reminded that nature will ultimately be more independent than they expect. The work implies that our role in

nature is to harmonise and interact in a stimulating way. Baudrillard's (1984:2) concern that "Present-day simulators try to make the real, all the real, coincide with their simulation models" demonstrates there is a danger that eventually we could replace many fundamental aspects of our world, including nature, with a less valuable representation.

There is an understated level of symmetry between the immediate world surrounding the installation, and the virtual world within *Wissengewächs*, that was more apparent in *Interactive Plant Growing*. The aesthetic style of the plants that grow around the building (see Fig. 6) appear very engineered and digital. The plants suggest a metallic and industrial aesthetic. They echo the uniform, modern, and industrial, exterior of the library extension.

The position of the screens and quantity suggest that they are part of the structure. In *Interactive Plant Growing* the symmetry was almost a skewed reflection of the biological into the virtual. The symmetry in *Wissengewächs* is likely to only be realised by the participants when they consider what they interacting with is in place of the biological alternative. The screens become a simile of the library books or masonry. If they were to be removed then the building would not exist, physically or functionally.

Verbarium and A-Volve

Works of Alife owe their existence to programming code. Programming code can be considered a universal language as it is used globally for controlling computers with

only minor variations in form and strucutre. Its benefit, like the DNA that it simulates in Alife, can be effected by and interfered with by external forces.

In *Verbarium* (1999, Fig. 7) the participant can create personalised virtual plants that then exist with others plants, and are even viewable at code level by others. The participant inputs a word or sentence and then this is directly interpreted by the programming into the structure of a new plant. The plant that grows from this then serves as a record of the participants visit.

Other participants can explore the collection of artificial plants from previous participants by clicking the mouse on a plant; the text that spawned it can be retrieved. This is a simple process for the participant to engage with, but it has a much deeper message for how we remember events and how our natural world is a reflection of the events that have shaped it.

Figure. 7. Sommerer & Mignonneau 1999, *Verbarium.*

As with the rings on the cross section of a tree, there is evidence of previous events. Scientists read the rings of a tree to learn more about the environment. Natalie Jeremijenko's *Stump* (1999) works on a similar principle of natural data recording. *Stump* involves what Jeremijenko calls a 'printer queue virus'. The programme calculates how much paper a printer has consumed. When the approximate paper equivalent of one medium-sized tree has been used it prints out an image of a ringed cross-section of a tree trunk.

Scientists also look at what plants are growing in particular geographic locations to determine the atmospheric and terraferma qualities. *Verbarium's* location is fixed in cyberspace. Whilst it can now be accessed anywhere, as the work has been adapted to a web format, its atmospheric conditions are set. The possibility of storing memories in biological materials has long been a dream of science. It allows society, as well as science, a method of recording information that is more intuitive and closer to our own understanding of memory than the electronic and mechanical systems that we have been using as a result of developments in digital technologies.

Verbarium is not the answer to meeting these needs of organic memory development, but it is an indicator of the possibilities. As part of an easing process it allows more sceptical or less aware participants to gain an increased comprehension for new modes of recording and recalling memories.

Genetics and evolution are as important to Sommerer and Mignonneau's work as plant based ecological systems. DNA, natural selection, life systems and genetics are present in most of their works. In *A-Volve* (1994, Fig. 8) participants can interact with artificial

creatures that live, mate and evolve in a virtual water-filled glass pool. A touch screen is used for designing the creatures. By drawing a two-dimensional view, and cross-section view, of a form onto the touch screen the participant generates data that is used to calculate a three-dimensional shape. The speed of the drawing process is also used to calculate the 3-D form that comes "alive" in the pool. The data from the drawing becomes part of the creature's genetic code. This virtual DNA determines the behaviour and fitness of the creature. These creatures not only react to each other, but also to the visitors' hands in the water.

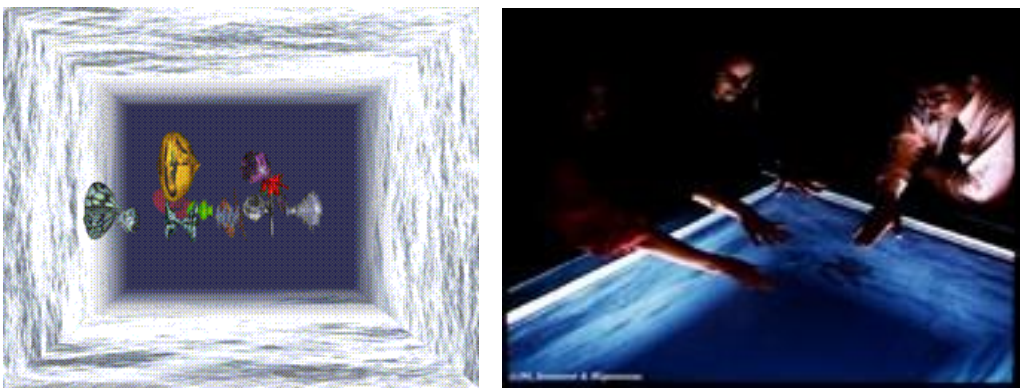

Figure. 8. Sommerer & Mignonneau 1994-97, *A-Volve*, a real-time interactive environment.

A-Volve is reminiscent of a computer game that was released in 2006. In Spores the player can select a number of predetermined genetic factors before their organism is release into a virtual world to grow and evolve. The game's tag-line, 'Is it really just about survival? Spores offers you choices to play the way you want to', suggests two issues of relevance to *A-Volve*. Firstly, there is a clear similarity between the theme of these two products, a manipulated evolution which identifies with the scientific grounding of Darwin's theory.

Secondly, there is a danger of the two being compared and associated with each other. A major concern for the acceptance of new media art is that the public could view it as a game. This similarity between *A-Volve* and *Spores* was not possible when *A-Volve* was originally exhibited as there are twelve years between them. Retrospectively though, it is possible that some will still denigrate it as a game. A positive association would be that if there are 137,410,997 *Spore* game creatures currently in existence, then there is interest from the public to engage with the subject of evolution within artificial worlds.

Alife attempts to be a simulation of biological life. Whilst it currently appears to be synthetic it could potentially become an alternative form of life. Alife simulates and appropriates the processes that take place in biology. Researchers Sarvothaman Guruprasad and Kanagaraj Sekar discuss the challenge in their paper *Artificial Life and Living Systems: Insight Into Artificial Life and Its Implications In Life Science Research* (2006): "The current challenge is to design evolutionary systems with high complexity comparable to that of biological networks. This is proposed to be achieved by ALife" (Guruprasad and Sekar: 2006).

Computer scientist John Von Neumann understood life to be a process that can be abstracted away from any particular medium. If this is to be applied to Alife then the bio-chemical components of the plants can be considered a medium. The processes then become a construct that can be assimilated to other systems.

Replacing The Known Interaction

> Sommerer and Mignonneau's Riding The Net (2000) shows how digital art can offer insights into interface design: this browser picks out appropriate images from the Web based on the participant's oral remarks. (Bolter & Gromala: 2005:156)

In many of their works there appears to be a fascination with replacing our common understanding of processes of interaction. I would suggest that whilst nature is simulated and represented artificially, it is an alternative rather than a replacement. The works usually enhance the participants appreciation of nature by incorporating it into the installation. By way of representation the works seek to get their participants to reconsider their relationship with nature and methods of communication.

Simulation is a key component of new media art. It is a creative tool that achieves a greater sense of realism than most other mediums. However, simulation could also be endangering the credibility of new media art. Simulation is imitation of the closest resemblance to the original. As Jean Baudrillard acknowledges, we have already begun to replace the *real*:

> It is no longer a question of imitation, nor of reduplication, nor even of parody. It is rather a question of substituting signs of the real for the real itself, that is, an operation to deter every real process by its operational double, a metastable, programmatic, perfect descriptive machine which provides all the signs of the real and short-circuits all its vicissitudes. (Baudrillard: 1984:2)

A virtual substitute has benefits of adaptability, expediency and perfect reproducibility. However, a digital representation could become a barrier to the value of the *real* experience. "The presence of the original is the prerequisite to the concept of authenticity" (Benjamin: 1999:214). Engaging with a representation of the original

artefact operates at a reduced level of authenticity in comparison to experiencing the original, although there is temporarily a sense of fascination with the accuracy of the simulation.

The simulacrum becomes problematic for the acceptance of the artwork as genuine and valuable. When Rosalind Krauss discusses the Simulacrum she describes it as; "The appearance of reality from which any testing of the real-effect by actually, physically, moving through the scene is denied" (1986:139). With works such as *Interactive Plant Growing* the challenge of absolute simulation is met by allowing the participant to touch the physical plants. This would reassure the participant that what they are seeing on screen is as real as any other electronic instrument read out. This is because there is a direct line of communication and correlation between the cause and affect. Many other works such as *A-Volve* also attempt to take the simulacra further by allowing the participant to appear to have physiological influence on the virtual creatures.

The representation of a *nature* that can be controlled, is free of pollution, and is virtual, could make it the perfect idealisation of nature. A reoccurring theme for artists, such as McCormack, is *Eden*. This message is increasingly important as we see an increase in global warming and genetic engineering.

new media art, like *Trans Plant* (1995, Fig. 4), allow for the experience to be personalised, creating a greater sense of engagement and responsibility. The participants can take ownership of the experience. In a work such as *Interactive Plants Growing* the process of communication becomes an educational one as well. The sense of responsibility is born out of knowledge acquired from the experience.

Where Alife is stimulated by interaction with real objects there is a relationship between reflection, imitation and appropriation taking place. The real actions and objects are represented by a digital alternative. The growth of the plants closely imitates the growth patterns of real plants. What makes this seem extraordinary and unbelievable is that the process is greatly accelerated beyond anything we know to be possible. The real objects, and in the case of *Interactive Plant Growing*, real plants, are appropriated to be the means of human computer interface. Other methods of encouraging the artificial plants to grow could have been chosen, but the process of physical interaction was key to the inception of the work.

> Through this interaction, intuitive and natural interfaces, and evolutionary image processes, these installations allow visitors to become essential parts of the systems by transmitting their individual behaviours, emotions, and personalities to the works' image processes. Images in these installations are no longer static, predetermined, and predictable but "living systems" themselves, representing minute changes in the viewers' interactions with the works' complex image structures. (Popper: 2007:300)

The realisation that plants could be interacted with and that they respond so directly to that interaction may be a revelation to many. Many of Sommerer and Mignonneau's works meet their participant through the recognisable interface of nature. This is more intuitive and innate than a contemporary method such as a keyboard or mouse. How we interface as humans and with the world around us has been complicated by social standards and further more by technology. Through abstract means their work highlights our current conventions and issues of interface cultures. When we communicate and interact with others we increasingly use modern methods such as e-

mail. These methods of interfacing are impersonal compared to the methods employed by many animals. Animals use more primal methods of communication such as smell.

Figure. 9. Sommerer & Mignonneau 2002-04, *Mobile Feelings / Mobile Feelings II*.

Mobile Feelings (2003) and *Mobile Feelings II* (2004) (Fig. 9) emphasises the impersonal nature of modern communications technology by making communication very personal. Mobile phones may transmit the human voice, but false tones and inaccurate words can make the conversation unreliable. Without an image the process cannot convey the subtleties of direct interfacing.

Communications such as e-mail and *Second Life* have created a network of communication where time, place and honesty have no real impact. *Mobile Feelings* seeks to alter our perception of communication. Through the use of primitive signals such as sweat, heart rate, etc., these adapted mobile phones communicate the information to the recipient. The system relies on two paired devices. The communicators do not look like electronic devices. Instead they resemble something alien to our society. They resemble coral or fossils. Their appearance suggests they

could have been the tableware or decorative items to an ancient civilisation. Their design physically and methodically, invokes a sense of the primitive or other worldliness. These are an example of works where Sommerer and Mignonneaue have moved away from a botanical nature and have focused on more subliminal aspects of human nature. Yet again, these works demonstrate how a developing synergy between nature and technology can profoundly alter our awareness of modes of communication.

Summary

Many of Sommerer and Mignonneaue's works invoke a sense of almost omniscient god like control. Interactive Alife work tends to put the viewer in control, making them a participant. This level of interaction, and the responsibility it bestows, is almost God like in that the participant is given the power to create life, be it plant or creature.
For artists it can be a difficult process to relinquish creative control, and it is this transference of power that completes the implication of the work and allows it to be so engaging and influential. In contrast, the work of Daniel Brown (Fig.10) is accessible to participants on the Internet. It is here that much of his work exists, in terms of creation and exhibition. This example demonstrates how this on-line approach is one of the only ways in which it differs to Sommerer and Mignonneaue's work. The stylistic and conceptual choices are near identical.

Figure. 10. Daniel Brown 2005, Stills from *Flowers* series.

Plants as a theme are common in Alife work, almost to the point of being a cliché. This is very enlightening as "Cliché's may reveal inadvertent truth, but they are by definition limiting" (Harris and Garvey: 1994:68-75). This commonality may be a result of the particular software that has been used to generate the Alife, as many works of these genre posses a very similar stylistic quality. However, the interactive concept is too similar. Both works rely on the participant to stimulate and determine the growth of the Alife. This is unfortunate, as it might suggest to an audience that there is little variety in the medium. It is a testament to the quality and originality of Sommerer and Mignonneaue's work that their pieces are considered the exemplar of cybernature and Alife artworks.

Figure. 11. Sommerer & Mignonneau 2009, *Data Tree*.

The dilemma for cybernature art, and new media art in general, is that repetition suggests the scope for artworks is limited and that it could already be stagnating. We have seen a number of examples where artists are working with Alife and resulting in similar aesthetics and concepts. One rationale for this could be that as an art practice it is overtly informed and influenced by science. For Alife art to become more dynamic practitioners must move towards the philosophical explorations that will allow it its own identity. Aesthetically many of the works I have discussed have been produced over a similar period of time. Newer works, such as *Data Tree* (Fig. 11) suggest that once the medium has been extensively explored aesthetically then further concepts led by philosophical investigation, rather than scientific fact, will allow the work to develop beyond is mid nineties appearance.

Figure. 12. Natalie Jeremijenko 1999, *A-Trees*.

Their latest work, *Data Tree* (2009, Fig.11), is both a development and a departure from what their usual thematic focus. Issues of the environment and relationships between technology, nature and art are ever present as their medium of choice. What makes *Data Tree* different is that Sommerer and Mignonneau have brought the technology another step closer to nature, by projecting key atmospheric and biological data (or life data) onto the surface of the plant. The virtual has been all but been removed. The tree, as with *Interactive Plant Growing*, features the plant as the interface. The intention is to highlight the communication processes of a plant to the viewing public. The danger for *Data Tree*, is that Jeremijenko has produced a similar piece, *A-Trees* (1999) as part of her *One Tree* project (Fig.12), where the growth of the virtual plant is affected by the atmosphere directly surrounding the computer.

"What elicited such enthusiastic responses from those partaking in *Interactive Plant Growing* was the blending of biological and digital metaphors and the consistent link up of art and science" (Stocker et al: 2009:7). Sommerer and Mignonneau's work rely

on the metaphors of process structures, communications, and networks. “By reconstituting living environments as computational systems, some cybernatures also reconstitute them as pure nature, autonomous, self-referential and impervious to human pollution” (Whitelaw: 2004:98). Whilst the intention may be an idealised version of the organic world, it is likely to inherit a number of its flaws. It cannot be autonomous because it is designed to be interacted with; which if devoid of, it cannot achieve its purpose. Whilst it may be self-referential, it is not impervious to human disturbances, as with nature, as it is designed to be manipulated, deleted and replaced on a more frequent basis than the biological world it imitates.

Sommerer and Mignonneau are frequently invited to talk and show their work at event such as Ars Electronica. As Gerfried Stocker identifies in his forward to his joint book with and about the artists:

> Ars Electronica’s mission as a festival for art, technology and society is to seek out precisely these commonalities and connections between disciplines and genres, and, accordingly, to nurture collaborative research and joint ventures in which artists and scientists work together as equal partners with the aim of not only generating explanations but even more creating the images, narrative and symbols that we human beings need in order to comprehend the techno-cultural transformation processes of our modern society and culture.
> (Stocker et al: 2009:7).

With Sommerer and Mignonneaue there is the impression that the new media art they are producing is the next evolutionary step for the medium. Whilst the works of other artificial life artists, such as *Telegarden*, *Alife, A-Trees, and Turbulence* have also explored links between nature and computer systems and processes, their works are largely experimental and independent, coming from the area of art or nature. Sommerer

and Mignonneau have accrued an experience and consistency in the medium that enables them to respond to concepts articulately.

Their creations could be criticised for being an evolution or adaptation of their previous works. However, this would be to ignore the poetic process of their artwork. The symmetry between their subject matter and the way they create their work. Their body of work represents the time and cultural climate they were created in. They also have a timeless quality. Their pertinence may diminish as society gains a better understanding of the relationships that can form between nature and the digital world. They will continue to develop a nostalgic value for new media art's short timeline. Their work indicates how new media art can not only be critically successful, but also speak to society on a new level of engagement.

The success of Sommerer and Mignonneau's Alife art is a pertinent reflection of how Douglas Davis described our world in 1973, as well as the potential integration of technology and nature; "Technology, now, is our environment, our landscape" (Davis: 16:1973).

Chapter Five: Institutional and Curatorial Structures Surrounding New Media Art

> While working with art that is "born digital" is a special case for most museums, I would argue that the many of the issues and lessons are transferable to the digital contextualization of any work in a museum's collection. (Dietz: 2003)

Introduction

Much of this thesis has postulated through various technological, creative, and social rationales, as to why new media art has been positioned as a medium that is not only different to, but possibly valued less than traditional art forms. I have not yet focused on the responsibilities of the institutions that, to date, have a mixed level of engagement with it.

Are suspicions towards arts institutions well founded? For some, this will be the case. As Julian Stallabrass, writer of *Internet Art: The Online Clash of Culture and Commerce*, has noted about new media art entering the gallery space, "Galleries and museums thoroughly commercialised their activities" (2003:117). This portrays a negative impression of galleries structures and motives, and if this is a more widespread concern it may discourage some new media art practitioners. A posting to CRUMB's New Media Curating Jiscmail list[1], by Mat Trivett, made the following point about this relationship:

> I feel that there is a disconnect between the realms of the digital and the analogue in the way that so called 'digital art' is viewed by institutions and funders and therefore framed to the viewer or audience.
> (Trivett: 2011)

Whilst a number of the major galleries participate in supporting research and networks of new media art activity (the New Art Trust for example is a collaboration between the Tate, MOMA and SFMOMA) in the background, it appears that the cultural sector relies on its specialist curators to provide them with their quota of new media art public engagement.

> Despite this and the proliferation of current practice in this area, such work is still under-represented in Tate. Work that is interactive, process-based or that involve networks, systems and feedback, are generally not catered for.
> (Gere: 2004:9-10)

For many institutions curating works that utilise networked, new media, or electronic components is still a specialism, rather than normality. As the institutional voice of new media art, the New Media curator has a responsibility to programme works that not only entice the audience, but also educate and place it in parallel with other art forms. The relationship between the audience and the artwork may be a difficult one to measure, even for seasoned curators, as their expectations of the gallery are increasingly in flux. Their role as spectator has evolved into one that often depends on their interaction, but the balance of this relationship is still difficult to predict. Has the Internet liberated the gallery space into a democratic environment within the context of art, or have the gallery institutions capitalised the virtual space to the detriment of all that is within it? Is it also possible that some believe it has been included to the detriment of art institutions?

This chapter looks at whether the inclusion of new media art within a gallery's programme is ever a stable part of its collection and exhibition manifesto. By looking

at the work of respected curators, such as Christiane Paul and Steve Dietz, I will propose that the role that new media art plays in the contemporary gallery system currently diminishes its status to that of a less significant medium when it comes to programming and collecting. Paul is the adjunct curator of new media art at the Whitney Museum of American Art in New York and is frequently consulted on new media arts issues by other arts organisations. Dietz is the founder, President, and Artistic Director of Northern Lights.mn[2], was the founding director of 01SJ Biennial[3], and founded one of the earliest, museum-based, independent new media programs in 1992 at the Smithsonian American Art Museum. He was also the Curator of New Media at the Walker Art Centre in Minneapolis before the initiative was closed in 2003, and set up Zero1[4]. Dietz's curatorial interests appear to be in conflict with the gallery system when he posits; "there has been at times heated debate not only about how best to present digital and specifically networked art in an institutional context but also whether to do so at all" (Dietz: 2003).

The findings of this chapter will highlight potential cultural heritage issues for new media art. The archiving and collecting of work today will affect its value and curatorial prospects in the future.

> Such practice, both in its historical and current manifestations, is of great importance in its capacity to engage with and reflect upon our current technological condition. This is one of the reasons why there are such a large number of artists working in this area. It is also why any move to collect and display such work is likely to prove very popular, especially among younger people. (Gere: 2004:9-10)

Can new media art be part of the art establishment rather than marginalised from it? I would suggest that at the centre of the issue are the institutional structures that educate,

exhibit, and collect works of art. Within this chapter I explore the role of the gallery, and demonstrate they have the influence to drive change, and as a result have a responsibility to engage with and reflect upon artworks from all mediums, on an equal footing rather than remaining static on traditional and historical value systems.

Galleries and the curators charged with programming have a responsibility to be diverse, stimulating, current, and global. Whilst programming works that have been collectively identified as important is a relatively straightforward and established task, the biggest challenge comes from programming new works in emerging media, which have not yet been subject to substantial reflection over time. It is however important to represent the contemporary and future possibilities, as well as the heritage of the past. It is also becoming more evident that the process of collecting and curating emerging works is still developing, and the act of collecting new media works influences what will become the heritage of the future.

Throughout this chapter I discuss the tensions between the current gallery systems and new media art, and will also examine the role of curator, collector, and academic, in the alignment of new media art with art institutions. Of particular importance to this chapter and the investigation of my hypothesis is the interviewing of curators from a variety of galleries. I have spoken to arts programmers from local galleries in Wales, national galleries within the UK, and galleries outside of the UK, to explore their specific issues related to the exhibition of new media art.

Within the complexities of the issues to be approached in this chapter, I discuss in some depth, the role of the curator in the exposure and stewardship of new media art.

As such I will be detailing the changing meaning of this title, as well as the role it plays in the profiling of new media art. I will also be examining the institutional directions and practices of a range of galleries, and how these have impacted on new media art's current profile and its potential. As part of this mapping I will again refer to the curators the galleries employ, as they are the voice of the galleries' direction and mission. It is important to understand the role of curator because the person in that position could be new media art's greatest ally.

While forming my conclusions to this thesis, I posit that there should not be an argument for the segregation of New Media, causing what currently appears to be the ghettoising of new media art, but for the equality and integration that other forms, such as photography and video, have achieved. To form a balanced discussion of the issues surrounding the role of arts institutions and the wider acceptance of new media art, it is beneficial to review the approaches of contemporary galleries.

Over recent years the curatorial practices of galleries and museums has been forced to adapt to the demands of a new art world. It is increasingly an art world that attempts to educate, and embrace the majority, rather than make it an experience for the art elite. Galleries now find that they are the weekend attraction for young families, as well as the traditional researcher, artist, or veteran fine art viewer. Galleries such as Tate Modern use blockbuster shows and contemporary themes to structure their programmes. However, particularly since the turn of the millennium, the presence of electronic works has been sparse, to the point that they are still a rarity in many gallery spaces. In 2004, Charlie Gere suggested that the Tate's handling of new media work

suggests that it is of equal claim to its attention, but they may not have recognised its importance yet.

> There are many difficulties in its collection, curation and display; there are other forms of art practice that have equal claim to Tate's attention; and its historical and contemporary importance may not be obvious.
> (Gere: 2004:9-10)

At the turn of the millennium some galleries, such as the BALTIC[6], ran a series of new media art events that exhibited and provided discussion for the rapidly emerging new medium that was computer based art. Experts in the field, such as Beryl Graham, presented works as a showcase that felt more like the future of art, rather than the current state it was in. Gere presented a vital paper on the *Gallery and Museum in the Digital Age* (2002) at the Tate.

Interestingly, the *DeCode: Digital Design Sensations*[7] exhibition at the V&A in December 2009 had a very similar tone to exhibitions held nearly a decade earlier. A collaboration with OneDotZero[8], it was presented as this is what art could be, or that it was an alternative to traditional art. "Onedotzero, a contemporary arts organisation operating internationally with a remit to promote innovation across all forms of moving image and interactive arts" (www.vam.ac.uk). The Tate has a department that is focusing on the archiving of time-based media art, but this is still in its very early stages, and as a result, the staff, are still trying to define what it is they are collecting, and this is not always specifically new media art. The problem being that time-based media art is often perceived as being a form of video art, and therefore is not fully representative or inclusive of interactive media. However, what they are finding is that

specialist knowledge, methods of archiving and retrieving the works, is essential, and this is something that is being developed as new work is discovered.

The staff involved, and the methodologies employed, often stem from traditional time-based artworks, which previously referred to film, video, and kinetic art. What is of considerable relevance to this thesis is that video and film have been through a similar journey to new media as they were once classed as new media. Whilst the experience of previous mediums close to new media's journey, such as photography and film, are useful guides, unfortunately, it is not possible to use the entirety of structural models developed from other mediums. There are complications when looking more closely at them, particularly when differences in the medium specificity can be so considerable and changeable, as is frequently the case with new media art. I am therefore interested in what aided the development of new technologies, such as photography, into becoming an art form, but will remain aware that new media art requires its own paradigm appropriate to its processes, concepts, and fluctuating materials.

As new mediums photography and film (and to a lesser extent video), have suffered and benefited from being new. It took more than a few years for photography to be accepted as a fine art medium. Prior to its acceptance photography was subject to heavy experimentation, such as the famous exposures of plants and insects by Henry Fox Talbot in the mid eighteen hundreds. It was perfected and utilised as either a scientific device, such as Eadweard Muybridge's motion capture of a horse running in 1878, or as a means of documentation, such as the construction of buildings or the gathering of members of a family.

New technologies require a gradual gestation period, as well as a positive track record to become embedded. This cannot be forced and may take many years. Art practices such as painting and sculpture are thousands of years old, photography is nearly two hundred years old, and film has been in use for over a century. The main component of new media art is the digital computer, which has been in existence for around sixty five years. Until the evolution of the personal computer, the technology had been difficult for artists to obtain, and even then it was generally creative minds, whom had more of a background in computer sciences than art practice, that really started to experiment. As with photography, artists eventually saw a potential in the technology and began to experiment with it, and then gradually adopted it.

As video became cheaper and more ubiquitous, more artists could access it, and thus broaden its creative potential. It has been a slow process for consumers outside of industry to be able to afford and access computers, video cameras, and large displays. There has been an inconsistent and varied exposure, as well as rapidly increased, to society of new media technology and its uses. Its purpose and form have been in flux since its inception. In particular, it has changed from communication, to entertainment to, control mechanism several times, confusing the situation for society as well as arts institutions. There are parallel creative timelines running between independent artists and the technology industry, that move at differing rates, (although this gap is closing), with different motivations. This multi-layered timeline may be one of the external influences that have hindered the presence of new media art in the gallery. It is possible that galleries have not been able to afford the supporting technology, and the curators have not had the sufficient experience or guidance as to how the work should be presented.

Curating and Collecting- Personal and Institutional Aspects

There have been tensions between artists and art institutions, particularly with a lack of trust on both sides. Initially galleries were naive to the possibilities and impact of art on the Internet, which resulted in some works almost not being shown as they undermined the establishment and the sponsor. There was then the concern that well resourced galleries were going to take advantage of Internet based artists seeking wider exposure:

> Why should we, as artists struggling to find ways to survive on the tricky edge of a new digital communications environment, be trying to breath new life into the corpse of the traditional art institutions? For the money, fame and glamour?
> (Adrian in Stallabrass: 2003:118).

There are benefits for the institutions to embrace work referred to as Internet art. "It is a relatively cost-effective way to appear contemporary, and especially to be seen to address globalisation" (Stallabrass: 2003:118). It also allows galleries to claim they are reaching an audience outside of their usual remit. Whilst this may be positive, there is also a tension here in retain traditional and maintaining a core audience, whilst diversifying and modernizing and attracting a broader audience. There is a danger that whilst seeming to embrace the Internet as an art space they will change the context of the space to meet their own purposes and thus change the meaning and impact of the artwork. Practical benefits, which are often one of the first considerations, include the content of online exhibitions being easily updated without affecting the standard gallery programme. Works can be archived online, quickly changes without gallery closure, and exhibition inside the gallery should they choose to highlight a particular collection.

Of particular interest to this thesis is a potential danger of art institutions establishing and taking ownership of the paradigm and taxonomy of new media art, although the benefits of their experience may outweigh this, it is possible that their position will over shadow and skew the newness of the practice: “we're trying to identify the activity that is net art. Since we know what older art looks like, we can start to develop standards and a critical evaluation framework for looking at net art based on our idea of what art should act like or look like” (Jana cited in Stallabrass: 2003:119). Stallabrass highlights how this statement illustrates the risk to the authenticity of new media art by institutions managing the works in such a way because they can only understand the work in traditional terms. Therefore, the work in their opinion must conform to the museological vision. There are two main risks here that should be considered. Firstly, does the choice of terminology affect the integrity of the new media artworks; and secondly, will it affect the long-term ownership of the language and definition?

To develop a balanced and accurate account of what is happening within the gallery space, and the ways in which new media art is programmed, or may be programmed in the future, I am going to discuss the results of a number of interviews held in person or over the Internet throughout this chapter. The interviews with curators and critics from locally funded galleries through to internationally recognised institutions, have provided me with some very open and generous accounts of their experiences and opinions of where they see the issues affecting the position of new media art. The interviews with authorities in local, national, and international curation, exhibition, and collecting will provide the most current opinions and procedural realities within new

media art. These interviews will be interwoven with the dialogue from critics and theorists in order to develop a balanced understanding.

Curation has evolved into an art form of its own, operating in the space between the gallery, the artist, the artwork, and the viewer. Programming has become event driven for largely commercial reasons, and the curator, (although this will vary depending on the gallery), now has to work with maximising the value of existing collections, as well as guiding new acquisitions and highlighting new talent. New courses are being rolled out at postgraduate level to prepare new curators for the challenges of the twenty first century exhibition spaces. A number of the most recent courses, including those at Goldsmiths College, London, and Danube University, Krems, have been developed so as to enhance not only the practical skills in curating time-based media, but the specific and theoretical effects of interactivity and digital media.

Curating has become a theoretical and conceptual responsibility, in addition to its traditional associations of collecting, archiving and preservation. New media art theorist and curator Sarah Cook, highlights in *Rethinking Curating* (Cook and Graham: 2010:10) how the role of curator, which originally referred to the caring of objects or a collection, has now become one of selecting artworks; directing how they are displayed, and writing interpretational material. Graham and Cook question whether a curator should care for the works, or "…segregate the sheep from the goats?" (Cook and Graham: 2010:10). This responsibility to the gallery, and the public, is one that is vital in supporting new art forms and requires experience and on-going education.

The twenty-first century gallery model of culture and business requires the curator to

be contemporary in many aspects of their role. The modern gallery uses curating as an interface, or mediator, to the artwork. In many cases the contextualisation that the curator employs to frame and select the work, enables some of the less familiar works, or those more complex to engage with, to become more approachable and appealing. The role of the curator has become more than caring for the objects. Graham and Cook try to differentiate their approach to new media art curators as; "…curator as editor rather than curator as connoisseur." (Cook and Graham: 2010:12). This distinction implies that selection and exhibition is a process of precision and choices based on criteria, rather than being influenced by taste, however informed that might be. The growing market for new media curation courses reinforces this definition, and the need for further understanding of this emerging medium.

It is possible that the ability to move seamlessly between the roles of theorist and curator in the way that Graham and Cook have done over the past fifteen years is vital to balancing the new requirements and demands of the gallery. Whilst they are reflecting upon the art form and its ramifications on the art world, they are able to negotiate and champion the work into galleries. They argue for "…new media art to be seen as an art world rather than an orphan" (Cook and Graham: 2010:47), which is a powerful idea in relation to my hypothesis, and reinforces the notion of equality within the art world paradigm.

Mainstream art galleries appear to have been hesitant to fully engage with new media artworks as they view it as a risk that is outside of their long-established parameters. Initially institutions question its validity as art, then its trustworthiness due to scepticism as a result of news reports of hacktivism and cybercrime. The practicalities

of exhibiting electronic works mean that they require specialist equipment, a technician, and facilities such as the Internet and adequate power supplies. Galleries prefer art works that do not require constant maintenance and are not likely to break down.

Arts curator and director Karen Mackinnon[8] has nearly twenty years of curating experience, and was one of the pioneers for the inclusion of digital media within Cardiff's Chapter arts centre programme of events. Mackinnon agrees with the idea of balance in curation, and that the artwork in new media shows are most successful when they are both things- "conceptual and technological" (Mackinnon Interview November 2010).

> When work is lead by the technology that's difficult. As a curator I'm more interested in work which is lead by ideas and telling us something about the world we live in. (Mackinnon Interview November 2010)

> "It's all about ideas and not about how sophisticated something is. This is where the art world gets confused. Ars Electronica and all those kind of shows, show off the latest technology and that is where the "is it art" comes into it. Is that something you would show? The art world is still very much about the conceptual work, the ideas, how it engages, and what it tells us about the world." (Mackinnon Interview November 2010)

In an international context, Christiane Paul has achieved some success in improving the profile and recognition of new media art. However, although on the surface this situation suggests the gallery is forward looking, it took thirteen years for new media to be considered as part of the main collection. At the start of the millennium the *Artport*[9] website, Paul's focal point for the Whitney Museum's engagement with new media art, was highly active with exclusive commissions and exhibitions. After receiving limited

presence on the main gallery website the original version of *Artport* has now been achieved and a new version has become part of the main collection, and is therefore featured on the home page of the Whitney Museum website. Interestingly Paul makes a distinction for Art port between new media art and net.art, and the use of the term new media is of significance to my choice of terminology for this thesis.

Whilst physical exhibitions have been programmed they are still not a frequent occurrence. What is interesting with Paul's position is that she is also an academic at The New School in New York, and yet another champion who is dynamically moving between roles. It is also intriguing that she has been titled as adjunct curator, which could be perceived as having negative connotations as far as new media art is concerned. A question is raised over how involved do galleries want to be with emerging art forms, and how much do they value the inclusion of new media art in their programming? The original *Artport* website was not promoted on the front of the main Whitney Museum website, thus making it difficult to find through general browsing and required prior knowledge of its presence to be viewed. Paul's academic contributions are recognised by the new media art world and of particular note is the talk she gave at the Tate in 2003. Paul is particularly influential in the guidance of issues surrounding the exhibition and curation of new media art. Her closest counterpart in the UK would be Beryl Graham at Sunderland University and CRUMB. They have similar motivations and roles within their field. Their association with an academic institution gives their work a particular direction and credibility. Paul's advantage is that she is actively involved with a major gallery of international repute, and has been charged with championing the programming of new media art.

Paul's talk at the Tate in 2003 raised a considerable amount of issues that new media art has been coping with for years, and this was predominantly within the context of what we understand to be the contemporary gallery space. Issues ranged from the audience's expectations, to the physicality of the gallery space. Paul (2003) noted how the audiences approach to a new media exhibition ranged from "…hesitant, to interaction, to being over the top enthusiasm to destroy the work." There were also concerns that the gallery space not only changed the context of the work, but that it even clashed with it, particularly Internet based art, where a computer terminal may be placed in an open gallery environment.

Some gallery spaces, on a purely practical level, suffer from a White Cube hereditary condition that means they are not adequately prepared for the specific facilities required, to show electronic works. Paul is more than aware, through first hand experience that collaboration between artist and curator is essential to ensure the exhibition works effectively. There are additional complications to the way the work is hung. The technical requirements of many new media art works demand that they set-up in a particular way, with particular equipment. Whilst the artwork is recent and the artist is still able to be involved in the show, the curator can rely on their input to ensure compliance. Arts institutions, such as Tate, document the specific media requirements made by the artist when works go on loan, particularly video sculptures. However, if the artist is not involved, or the required equipment is no longer available, there are then serious issues that the curator has to tackle. For example, if the work requires a specific type of display, such as a Cathode Ray Tube (CRT) monitor, they are no longer manufactured, so an existing equivalent would have to be sourced. If this were not possible, then the work would have to be shown by alternative means such as

a flat screen display. Whilst this may not appear to be an issue if the image reproduction is the same, it may completely alter some pieces of work.

Figure. 1. Nam June Paik 1965, *Magnet TV*

For example, Nam June Paik's *Magnet TV* (1965) (Fig. 1) relies on a CRT display that is interfered with by an external magnet. This effect is a result of the medium specificity and a material quality of the CRT display, and is therefore impossible on a digital display meaning the work would not function as intended by the artist. These are issues to be dealt with by the collecting and archiving initiatives, but could prove to be an issue for works which have not been identified for archiving.

A very powerful statement by Paul (2003), that succinctly exemplifies the issues I am approaching in this thesis was, "Work is ghettoised by the internet lounge space viewing experience, and becomes 'trite' as a result. Traditional works do not force

viewers to access work in this way." Paul has identified new media exhibition as problematic. Interactive work pose issues of equality of experience; for example, projection is problematic as there may be an imbalance of one user and fifty viewers.

Melbourne's Australian Centre for Contemporary Art (ACCA) and Hewlett Packard (HP) suffered difficulties in October 2010 (Artforum News: 2010) when their interactive art installation *myworkisintheaustraliancentreforcontemporaryart*[10] was heavily criticised by artists for exploiting the copyrights of anyone that participated. The project was mainly a promotional opportunity for Hewlett-Packard to demonstrate their new ePrinters. Visitors, as well as participating artists, were encouraged to send their work to the Internet connected ePrinter, which was situated within the gallery. The concept being that their contribution, if printed, would be deemed to have been exhibited in the ACCA, thus transforming visitors into creative participants. Some of Australia's, and the world's, most respected artists, were making a contribution to this unique global art collaboration until the terms of use became clear.

Local journalists quickly began to report on the dissatisfaction of artists towards the small print contract they were entering by engaging in the project; "These rights are 'perpetual, non-revocable, worldwide and royalty-free' and give permission for the works to be used 'in any way whatsoever', including in advertising campaigns." (McColl: 2010). There was even a report that angry artists made submissions to the project protesting about the potential copyright abuse in the project, only to find their protest artworks were rejected by the project's curators who turned out to be staff from Hewlett Packard's local advertising agency.

This story was also picked up by the New Media Curating discussion list, and the contributors made some interesting observations that not only explain how this project got out of hand, but also present a lesson for galleries that are just beginning to work with networked technologies in a curatorial context. "…the closest ACCA comes to dealing with 'art in the age of mechanical reproduction' is discrete video installation and some very nice sound works. So they would not be familiar with media art in its broader sense." (Rackham: 2010).

If a gallery is presenting a show in an area in which they, or their curator, has little experience, then there is a danger of misjudging the requirements technically, conceptually, or interactively. The other danger that this story highlights is that presence of technology can again become the focus, rather than facilitating the concept. In this case, the technology itself was not the distraction, but the sense of trust and level of ownership came into question. However, the most pertinent issue, particularly for this thesis, is that the gallery has allowed itself to become the advertising space of a major company, and it has influenced the work substantially. Instead of being content with the sponsorship of an exhibition, Hewlett Packard has actually censored the very thing that was the concept of the installation. This intervention compromises the integrity of the curator, gallery and piece of work. As the discussion list also highlights here the company has less to lose in the long run although the legal issues have stirred up controversy in the short term.

> Interestingly most things I see in the gallery context dealing with printing technology these days lean heavily in the manufactures favour - the art being a mere example of what the technology can do.
> (Rackham: 2010)

Hypothesising that new media art is under-represented within arts institutions is a bold statement to make, and to be satisfactorily answered must be supported by not only my observations, but the official positions of galleries, and the opinions of recognised new media art theoreticians. Throughout my series of interviews and conversations for this thesis, I have been in dialogue with members of the British Council, the Arts Council for England and Wales, and long established experts such, as Roy Ascott, Ruth Catlow, and Christiane Paul. They have been able to provide a rationale for the foundations of this thesis's concerns.

It is becoming clear that galleries are now amending and updating their remit and processes for collecting. The British Council for example has extended its collecting of film to "include work that is driven by online feeds from the Internet and work that is software based" (Louise Wright, British Council. e-mail February 2011). Moreover, the concern is that the collecting which is taking place is small scale, and still in the very early and tentative stages.

Internationally renowned new media artist Roy Ascott's understanding of the situation is that "as far as I know there is no collecting of new media art works in the UK- apart from video" (Ascott, e-mail 2011). This is very telling of the current new media art climate as Ascott has been involved in some of the UK's most recognised programmes for the research of emerging creative technology mediums. If there were a structured collecting programme you would expect someone in Ascott's position to be aware of it, if not involved in it. Paul supports this, but also suggests, as does Pip Laurenson, Head of Time-based Media Conservation for Tate, that the work is there regardless of this matter. "While there are no established rules for collecting net art, the examples

mentioned show that institutions commonly host net art that officially enters their collection but tend to be more open when it comes to exclusivity" (Daniels and Reisinger: 2009:101). So work is being produced, and is gaining some momentum with its exhibition through determined curators, but the structure for its collection, and rights over exhibition, need to be developed further and made fit for purpose.

One of the most increasingly visible concerns during my interviews was that many galleries do not fully appreciate the importance of emerging mediums, such as the digital, for the cultural heritage of the future. This is particularly evident as Ascott believes that galleries are "emphatically not" (Ascott, email 2011) more accepting now than in the mid-nineties of electronic and new media works; and Paul clearly states that "I don't see that galleries are much more accepting of new media arts (unless you count video) than they were 15 years ago, only very minor progress has been made" (Paul, email 2011). Ascott even describes, when questioned about galleries' current understanding of electronic and new media art works, that it is "extremely limited if not totally disinterested" (Ascott, email 2011). Whilst this point is incredibly indicative of my concerns, I have not found this to be the case with every gallery, and actually that smaller galleries appear to be more open to new media arts potential within their collection. As part of understanding the status of new media art I am interested in the idea of artwork that represents the cultural identity of a nation. Therefore, I have been speaking to some curators from galleries that have a remit to support local artworks and creative cultures. Within Wales the galleries that are supported by the Arts Council of Wales have clearly stated that they are there to serve the local community in terms of collecting and showing works from local artists, as well as programming international works and residencies.

> New media is definitely not our exhibiting priority - as a gallery we very much focus on materials and processes, we fall within ACW's craft gallery portfolio, and though such boundaries are now rather obsolete I see 'craft' as incorporating tangible/physical things from fields of both applied of fine art - of course this now includes some new media - videos currently part of Jerwood Drawing show are good examples. (Meg Anthony, Oriel Myrddin. Email discussion, February 2011)

In the case of the Glynn Vivian museum in Swansea, there was a contrast to what Ascott had stated about disinterest. I found the gallery to be very open minded about what they currently collected, and what they would like to collect in the future. The approach of the Glynn Vivian was of particular interest to my thesis, as curator Karen Mackinnon had previously worked at the Chapter Arts Centre in Cardiff where she was responsible for programming works from emerging mediums. As this was in the early to mid-nineties the emerging media were the digital and the networked. Chapter enabled a wide variety of cutting edge work to be shown as it had a directive to be cutting edge.

> Chapter's mission was to show cutting edge works, medium and concept. They asked the same questions- why aren't galleries showing new media works in this world of technology. We honestly thought when we did that programme that in 5 years time everyone would be showing that work as part of their programmes. In a sense they're still not, they are showing it, without realising it, without focusing on it. (Mackinnon, Glynn Vivian Museum. Interview November 2010)

When looking at galleries' programmes often attention is not drawn to the inclusion of new media art, causing those looking for it to surmise that it is not being engage with. There is the possibility that galleries have curated a show based on a context outside of the medium and technology has been included as it is a current medium or one that was

most appropriate for conveying the concept. It is also possible that as with galleries in Australia, the medium is no longer gaining specialist attention. Throughout my initial research the impression I got was that it was not being shown at all. In some of my gallery visits I have been pleasantly surprised to find new media work on show when it was not mentioned in the galleries promotional material. However, it is more common to find that when there is a show that focuses on new media artwork, that the gallery makes that a headline for the marketing material.

> Chapter's audience is very informed, mainly artists, its job was to push the boundaries. Glynn Vivian's audience is much broader, programming is based on the fact that it's a local public gallery, supporting local artists, inviting international artists to come and make work here, and programming with our collection. (Mackinnon, Glynn Vivian Museum. Interview November 2010)

Although the Glynn Vivian has a more traditional exhibition remit than other galleries I have discussed, it is one that celebrates its cultural heritage. Whilst programming emerging work, such as the robotics of Paul Granjon, new media is still rare, as most of the work shown tends to be photographic and video based. Programming technological art pieces is problematic for the gallery as they have an established permanent collection and display of paintings and ceramics. Whilst the gallery was being refurbished in 2010/11 the gallery presented a series of film exhibitions. *Ffilm 1/2/3* showed works from the galleries own collection, as well as works from the Tate and the British Council. What was most prominent was that the video works had been presented on screens of various sizes around the collection of paintings and ceramics. Mackinnon commented during the private viewing how good it was that people were walking around the collection. An experience that apparently does not currently happen very often, as audiences tend to visit specific shows in the main exhibition

space. There was a mixed sense of juxtaposition and complimentary acceptance in the adapted gallery space. Stairwells had also been utilised, as space was limited.

Whilst viewing work on the stairs does maximise the space and the exposure, it was generally the case the people standing and blocking the stairs was problematic, or that the work did not receive sufficient attention as it was viewed in passing. Viewing a digital video file on a twenty four inch flat screen display next to a one hundred and fifty year old collection of ceramics reminded me that what I am suggesting in this thesis is that the work, and its inclusion, can be perceived as problematic for some. The *Ffilm 1/2/3* exhibition demonstrated that in the future exhibitions combining such a disparate variety of artworks would not seem so unusual. They are only problematic if you do not give them all equal prominence. New media can be exhibited in a gallery next to paintings and sculptures and be its own piece of work. It can also help to highlight the skills and uniqueness of each medium.

Over time the friction between technologies and cultures will disappear, as the historical distinctions will become blurred and technology will increasingly have become part of culture and society. What held the variety of works together at the Glynn Vivian exhibitions was that they were a celebration of the cultural art forms that were prevalent in and around the Swansea area; and represented what was important to the local culture.

Blurring The Exhibition Space

Whilst home video cameras in the seventies and eighties were a boost to its popularity, it was only from the late nineties that digital videotape became affordable and compact enough for people to consider it seriously. Video is now as accessible as photography for anyone wishing to engage with it as a creative medium. Therefore it is possible that the journey of new media art is at the same tipping point video was when the digital camcorder changed things. With the popularity of tablet computers since mid 2010 it has meant that more people have been exposed to a potentially creative medium. Much as when camera phones were first released, the technology of image making is taken out of the realm of photographer and transferred to a mode of communication that everyone can engage with. Tablet computers and touch screen phones have seen artists that work in more traditional mediums, such as David Hockney, embrace the power these devices have. The nature of touching these devices means that the experience feels more proactive in the generation of imagery.

With the development of tablet computing, led by the Apple iPad, mobile and touch based access to information has opened the opportunity for viewers to access not only image galleries, but for interactive artworks to extend their life and functionality. Through the App Store Apple Computers may have created the foundation for a new mode of delivery and accessibility for screen-based artwork. Artists such as Scott Sona Snibbe have been able to adapt some of their earlier interactive works for the iPad and iPhone.

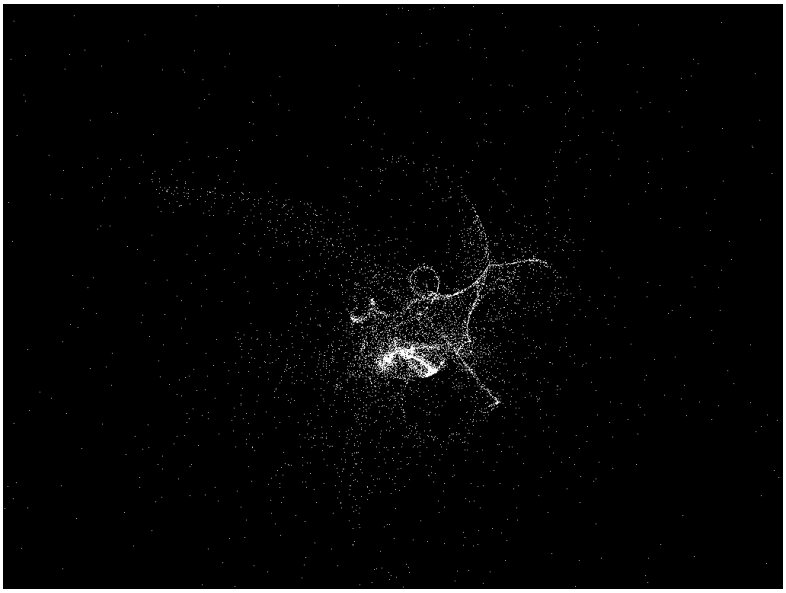

Figure. 2. Scott Sona Snibbe 1998, *Gravilux*

Through reprogramming rather than emulation the artworks engage with the audience through touch and an exploration of the technology's potential. The artworks are listed as either creative tools or entertainment in the App Store. When purchased, which in itself is an interesting model for new media art, the software runs full screen. In the original versions of *Grailux* (1998) (Fig. 2), *Tripolar* (2002), *Bubble Harp* (1997), and *Antograph* (previously *Myrmegraph* (1998)) they relied on a wired stylus for users to interact with the pixels and paths on screen. Whilst the results of the interaction were instantaneous, the pen was a layer of abstraction from its effects on screen. With the touch screen versions only the coldness of the glass screen came between the user and the output.

Snibbe has also developed the software so that results can be captured as an image file and posted in an online gallery such as Flickr. The categorisation of the works within the App Store as entertainment is problematic, but as a way of delivering new or archive work to an audience of millions worldwide it could be proposed as a new form

of exhibition. This has been experimented with by musicians, such as Bjork and Taylor Swift, where apps have given previews of new music tracks via interactive elements.

Much in the same way as net.art was attempting to circumvent the gallery, work based on a download from an application service means that the artist stays in control of the costing and to a certain degree the distribution of their work. Apple Inc. charge thirty per cent of the app price, but the artist can choose to make the app free if they feel it is more appropriate. As Mackinnon points out "Artists are wary of the relationship between business sponsorship" (Mackinnon Interview November 2010), and the previous example of a collapse in trust from the ACCA/HP project is indicative of the delicate relationship.

The App Store model means that the artist stays in control of the artwork as they are able to update or remove it from the store whenever they want. What they cannot control is the environment the work is accessed in. The screen technology for the devices tablet and mobile phone devices does vary, but this is not as concerning as the increasing issue of multitasking and consuming more than one media input at a time. Some of the reviews on the App Store suggest how you should best view *Grailux.* However, the artwork may be used in any location or environment imaginable with numerous distractions. When these pieces were originally viewed they were in a white cube gallery setting, which forced them into a specific context and point of focus.

Whilst the category of entertainment can be problematic for artwork such as Snibbe's, it can also enable new audiences to discover the work. The delivery of artwork through the App Store removes any issues associated with preconceptions of the gallery or

museum institutionalisation. The space is separated from the potentially negative nostalgia and heritage context, and presents the content in neutral, albeit commercial, environment. However, "art has not yet been liberated via net" (Graham and Cook: 2010:11).

Paul discusses the issue of context and access in her paper for *Net Pioneers* 1.0:

> Net art promises new ways of distributing and accessing art that can function independently of the institutional art world and its structures of validation and commodification. While some net artists have explicitly opposed "institutionalization" and resisted to being shown by a museum, many others felt that their work should be seen in the context of "art in general" and be represented in the gallery space and on museum websites. As other art forms before it, new media art has shifted the focus from object to process: as an inherently time-based, interactive, participatory and collaborative, customizable, and variable art form, new media art resists "objectification" and challenges traditional notions of the art object.
> (Daniels and Reisinger: 2009:103)

Net.art attempted to utilise the openness of the Internet. Whilst there have been many successful, purely on-line exhibitions and art projects, such as the collaborative *CODeDOC* on the Whitney Museum's *Artport* web site, it seems as if the work was limited to being accessed by a small network of knowing participants. The artworks were listed on artists or galleries dedicated net.art pages and therefore was only accessed by those with prior interest in the medium. Whilst the Internet promised democratisation of information, this was not initially realised, until the much fuller potential of Web 2.0 was released.

At the *Net.Art (Second Epoch)* conference in Buenos Aires in 2009, Dietz's paper, *Beyond 'Beyond Interface': Art in the Age of Ubiquitous Networking*, proposed that we consider whether what we are seeing now as truly a second epoch of net.art (Olson: 2009). This is a point that not only provides a rationale for why net.art is less prevalent today than it was fifteen years, but also a new sense of possibility. The possibility that the medium will have a greater longevity and that it can be developed beyond what has been historicised about to date. The ubiquity of networks now means that data, and more importantly, electronic screen based art, can be seamlessly distributed and shared in a much more dynamic and fluid way.

The advantage of the new application stores that run on mobile devices is that they promote applications based on popularity of download, as well as through various systems of classification. These application stores make the process of downloading and installing very simple as it is automated by the operating system. Whilst accessing pages on the Internet is also relatively simple, in the mid-nineties the percentage of people on-line was very low compared to today, particularly in countries where the technology and infrastructure were significantly behind the United States.

Questioning whether new media art should even be in the gallery is an approach that is flawed from the outset and encourages a sense of unwelcome. As Paul and Dietz have noted the segregation of art into its materials results in a form of ghettoising which will only serve to alienate the medium further.

> Related to the issue of context is ghettoization. There is a conundrum. On the one hand, it can be valuable to provide a focus on a particular set of practices, whether they are photography or performance or digital art. At the same time it

> doesn't make sense to completely divorce photography from the visual arts; to not include it in a thematic show, whether about modernist art in America or America in the modern age. In the Walker's expansion there will be a “mediatheque” devoted to the presentation of new media. We will continue, however, to do crossover shows. (Dietz: 2003)

It is vital for the parity of new media art that within a collection or exhibition space it is considered as a piece of art, rather than an alternative to it. Currently many galleries appear to be doing this subconsciously, or at least without fanfare. This is a positive position for new media art as it is the opposite of my concerns that some galleries were actively refusing to show it. However, for the cultural and historical aspects of art it is important that galleries are fully aware of the mediums they are collecting. As with taxonomy, it is important to be proactive about a medium for the sake of accurately recording its cultural value within a wider heritage context. Whether its importance or development are yet to be fully realised, it is now forming a substantial moment in the history of art where a new form of expression is being developed. The challenge for exhibitors is that the new media artwork will have prerequisites that are essential for it to be accessed. A painting or sculpture can essentially be placed anywhere it will fit, and is contextualised by the design of the exhibition. An electronic work may require a power source, network connection, and appropriate supporting hardware and software.

When discussing the inclusion of new media artworks within the Glynn Vivian collection, Mackinnon was very positive:

> Yes, we would defiantly want to include digital works in the refurbished gallery. We don’t have anything like that in the collection at the moment. New purchases now include contemporary art, and film. Archiving is tricky with changing formats.
> (Mackinnon, Interview November 2010).

Whilst there are a range of issues that can affect whether a gallery acquires an artwork; capacity and direction are primary in the decision making process. “The technology and the money, as well as the “is it art”, come in to whether galleries accept the artworks” (Mackinnon, Glynn Vivian Museum. Interview November 2010).

Paul sees “no major differences in collection / preservation approaches of new media around the world” (Paul, email 2011). Whilst this is surprising, it does support the growing evidence that even in America and Australia the inclusion of this work is not as a standard, but specialist event. Even in Europe, countries such as Austria and Germany seem to have a greater presence of new media artwork being created and exhibited, but this is within the structures of specialist galleries.

> As a cultural institution, the Center for Art and Media (ZKM) in Karlsruhe holds a unique position in the world. It responds to the rapid developments in information technology and today's changing social structures. Its work combines production and research, exhibitions and events, coordination and documentation. (ZKM: 2010)

Australia's approach to nurturing new media art appears to have been one of the most holistic with its level of specific government support and the open mindedness of it galleries.

> We tend to talk about most digital art through the prism of visual arts, perhaps with a nod to video art, but in many ways the more fruitful comparisons are with the performing arts. Digital art is time-based, often performative, often ephemeral, often done in/by groups, process-oriented, and so on. (Dietz: 2003)

The links to performance and video art have been explored within this thesis already. Whilst the synergies between them become difficult to distinguish and separate at times because they encompass elements that are still evolving, and video's path is now led by the digital, they have been through life cycles that new media art's curation can adapt.

> The burning issues of collectability and ownership and authenticity take on a whole different tone when viewed against the history of music, its notation system for replaying a core experience that is nevertheless different every time; and the by-now acceptance of live and recorded performances as different but not merely derivative. (Dietz: 2003)

Dietz's comment here about ownership and authenticity are of considerable importance to the artist and the gallery. His point is persuasive as it suggests that digital works are merely code and therefore the presentation of the work will be as faithful as possible negating any issues of difference that may arise from location and output capabilities. This then becomes an issue of intellectual property for the artist and gallery. As with music, the recording itself is the property in many cases, and whilst this can be limitlessly duplicated and distributed, its presentation should be determined by whether the artist wants financial gain, or even to control the environmental context in which it is viewed.

"Net art reconfigures the roles of the artist / author, curator, institution, and audience" (Daniels and Reisinger: 2009:103), and as a response from new media art in general, it is possible that one solution to rethinking the exhibition and curatorial experience is to adapt the model of labs or educational events. A workshop lab, or a creative lab, as an exhibition may be an approach that more, non-new media art galleries can adopt.

Galleries such as the Tate and the Glynn Vivian have events schedules, which as well as being educational, are an entertainment event for people wishing to engage in new experiences and art forms. This is traditionally done in areas such as painting or sculpture. In some cases it is more about experimentation on the audience's ideas and the understanding of the materials and subject matter. The results can be very informative for the gallery and artist. As a way of measuring acceptance of a medium and promoting a greater understanding, these events can stimulate a new dynamic in the gallery space, and as a result shift someone's preconception of what an art gallery does. This would certainly be something for new media artists and galleries to consider as a method for facilitating the integration of new media art into mainstream galleries and museums, as well as in the audiences consciousness.

Emerging Structures

> Net art is often referred to as ephemeral and unstable media, a label that is only partly accurate. Any time-based art piece, such as a performance, is essentially ephemeral and often continues to exist only in its documentation. Digital technologies allow for enhanced possibilities of recording and the process of a time-based digital artwork can potentially be recorded as an archive.
> (Daniels and Reisinger: 2009:111)

This chapter has so far explored issues surrounding exhibition and integration within the traditional institutional gallery system. The question that follows those findings is whether new media art should be given special consideration and whether it should be in the gallery space at all, as they have not had the most consistent relationship to date. New media art has a natural home on the computer, and therefore it can be argued that it does not require the gallery to exist. However, in order for its potential value to be realised does it first require the gallery to place it within the context of the art world

and exhibition alongside art works of differing medium, but of an equal quality and importance. What structures are best suited to support new media art, and is the gallery the best and only place to do it? What alternative modes and models are emerging?

Funding within the arts has reached a crisis point in recent times due to budget cuts. However, new media art can be of benefit to institutions that are looking to reduce expenses in the long term. Whilst there is an initial cost to the artist or gallery, artwork can be created and exhibited on relatively affordable equipment that can be reused. In some cases the audience can provide the means of viewing in the form of personal media, such as smart phone. Artist Sander Veenhof demonstrated this in 2010 with his augmented reality exhibition at MOMA (Fig.3).

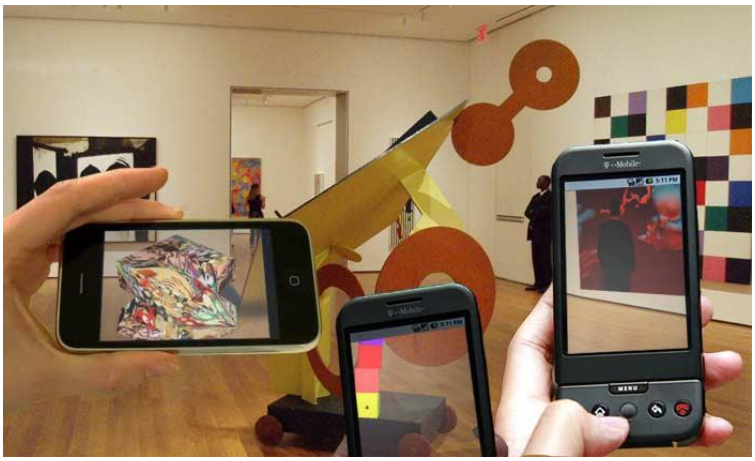

Figure. 3. Sander Veenhof 2010, MOMA Augmented Reality Installation

Archiving can also benefit from new technology as many works can be stored and shared from a single location. Whilst some of the methodologies require specialist or updated knowledge, the increased engagement with new media could help to create a network of curators and gallery technicians that approach the work with an equal sense

of importance and purpose. The inclusion of new media artworks in the standard programming and collecting could also provide opportunities for a new generation of artists who will value virtual content just as much as anything physical.

At the *Computers and the History of Art* group (CHArt) 2010 conference, I asked Pip Laurenson how the Tate's collection agenda was structured. To my surprise her response echoed that of the Australian Government, who, in 2006, claimed that new media art no longer required specialist support as it had now become mainstream. Laurenson stated that the Tate was collecting work that was interesting and may be of benefit to future collections. She was not looking to select electronic works specifically, but she had found that by the very nature of the permeation of technology into all areas of life she was seeing more works that could be classed as new media art. When I approached the subject of why the public were not seeing this recently acquired work, she was not able to answer why it had not been programmed into the exhibition schedule. However, she revealed that they are still developing archival practices to deal with the accurate recording and retrieval of data about the work. When discussing the role of the conservator, Laurenson also claimed the following, "Time-based media conservation has reached something of a tipping point; with an increase in specialist museum posts, the proliferation of research projects and growing acceptance within the cultural sector of this new and emerging area of practice" (Laurenson: 2010). I am concerned that even the champions of new media art, who are already in the gallery system, have some difficulty in getting their enthusiasm into the programming of exhibitions.

> The archiving of the context of net art requires a new understanding of the archive as a "living" environment that

> can itself adapt to the changing requirements of the mutable "records" it contains. (Daniels and Reisinger: 2009:113-116)

When considering the structures used by galleries and museums for collecting and archiving it should be considered that curators of new media artworks are concerned that "fixed theoretical positions look foolish with rapidly changing media, use of common language terminologies although its hard to avoid informal language evolving in conferences, papers and blogs, examples are for reflection not as the top standard, institutions and exhibition examples are as a guide, and to not create model curators." (Graham and Cook: 2010:11). The taxonomy of an art form is difficult to establish when it is still evolving, particularly at the extreme rate of development of computer technology. However, establishing a terminology can assist its acceptance and understanding through constructing a fixed point. This can be explored further when and if the medium continues to evolve, but as something fixed it provides a common term of reference, clarifying the discussions.

Within the archiving processes of galleries the terminology employed will enhanced and diversify the recalling of the collection at a later date.

> Archives typically have "keys" and systems for cataloguing and classifying, and the development of a vocabulary for archiving net art has been a major part of preservation efforts. (Daniels and Reisinger: 2009:113-116)

Metadata or tagging will usually be based on agreed terms such as Oil on canvas, or surrealism. However, what web 2.0 sites such as Wikipedia have demonstrated is that there is value in the collaborative process of developing ideas and allowing definitions to evolve along with subject matter. The tension between "folksonomy verses official

taxonomy" (Graham and Cook: 2010:11-12) means that large institutions will use the official taxonomy as it is an established methodology. What then of the new or emerging modes of creativity? Often redundant terms are rejuvenated and re-appropriated to provide some form of official strength. Building upon the Guggenheim Museum's efforts to preserve its collection of conceptual and video art, and the *Variable Media Network*[11], members of the *Forging The Future Alliance*[12], have developed a system of tools that provides a new structure for cataloguing existing collections and archiving new acquisitions. The behaviours and approaches provide points of reference to galleries to ensure they consider the unique issues that effect new media art.

Paul details that, what distinguishes the variable media paradigm from other preservation concepts is the focus on the behaviours rather than its material. The behaviours are described as follows:

- Installed
- Reproduced
- Interactive
- Contained
- Performed
- Duplicable
- Encoded
- Networked

There are also key approaches to support preservation:

- Storage (collecting software and hardware as it continues to be developed);
- Emulation (recreating software, hardware and operating systems through emulators;
- Programs that simulate the original environment and its conditions);
- Migration (upgrading the work to the next version of hardware / software);
- Reinterpretation (restaging a work in a contemporary context and environment).

Within her paper, Paul explains that:

> It is only through standardisation and continuous dialogue between institutions that new tools and vocabulary can be developed for cultural preservation. The *Forging the Future Toolset* (Fig. 4) is a result of this collaboration. Whilst it proposes that a consortium of museums and cultural heritage organisations become dedicated to exploring, developing, and sharing new vocabularies and tools for cultural preservation, interested parties are encouraged to utilise the tool set and to provide feedback into the development process.
> (Daniels and Reisinger: 2009:113-116)

Laurenson's comment (2010), earlier in this chapter, "growing acceptance within the cultural sector of this new and emerging area of practice", would suggest that the practice has made advances in terms of visibility. Whilst new archiving structures will enable new forms of creative work to be collected appropriately, it is the general acceptance that will ensure work is collected, rather than discussed. By stressing the term "growing" Laurenson is indicating that it is still a gradual process and that there is work to be done to ensure the cultural sector appreciates this emerging medium, particularly as it will eventually progress to being a current medium, if it has not done so already.

New media art and its constituent technologies offer increasingly deeper levels of interaction and immersion. This experience needs to be considered when defining, exhibiting, and archiving new media art as it is the core of the artist's intention and the works conception. Bolter and Gromala (2005) describe the *SIGGRAPH 2000* art gallery as "experience design". The exhibition, which formed a snapshot of digital art

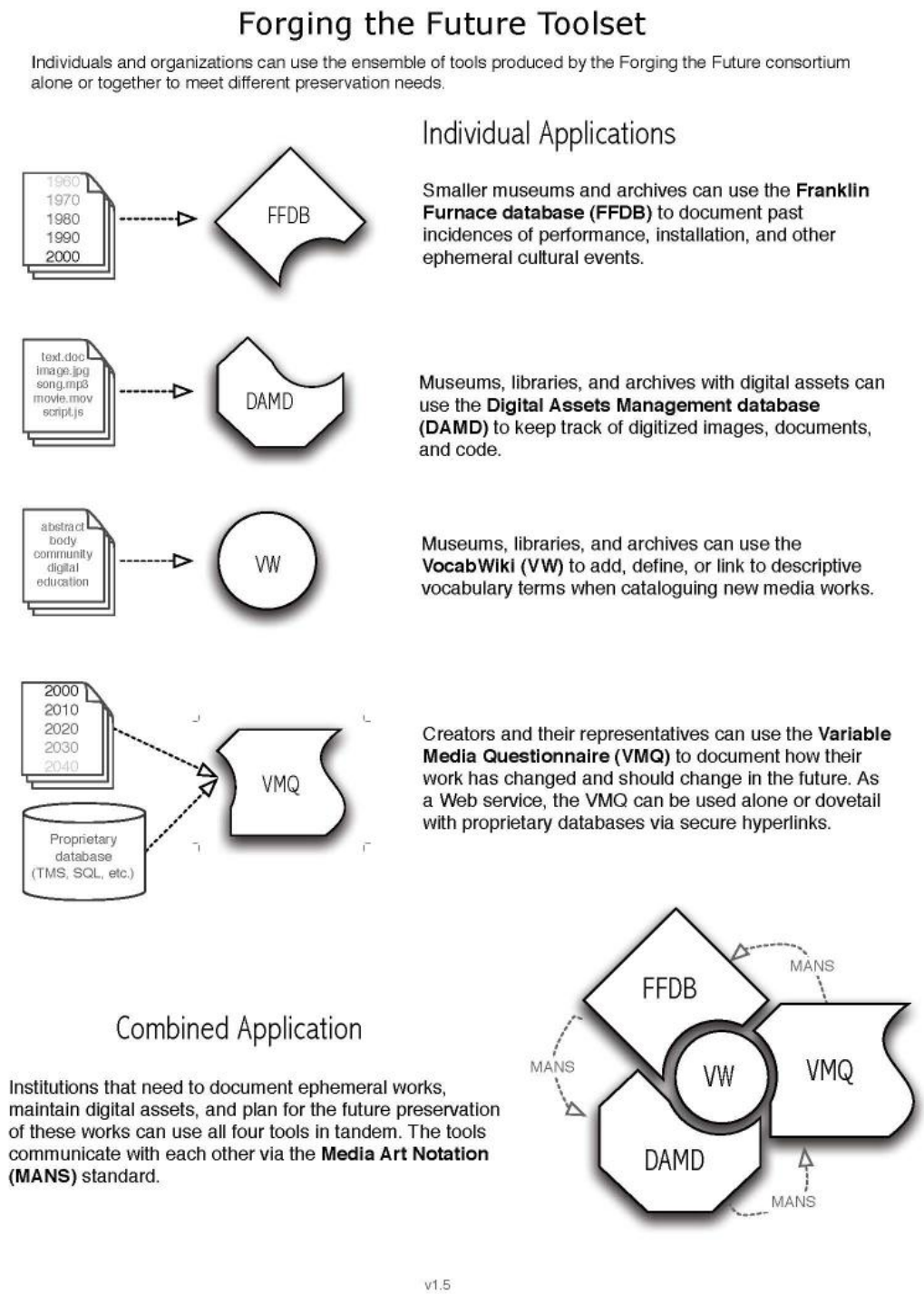

Figure 4. (Daniels and Reisinger: 2009:115)

at the turn of the millennium, had its presentation designed in the same way that a page of information might be considered. As Bolter and Gromala detail the spaces for each artwork were considered and arranged in relation to “contrast and similarity”, “This

highlighted their individual effects and at the same time contributed to the larger experience of the gallery" (Bolter and Gromala: 2005:145).

The setting had an atmosphere of intimacy and provided a contemplative space for the visitor. Some of the anchor works drew visitors in who then saw more subtle pieces surrounding them. Where necessary, pieces were isolated from the unwanted noise and light of the main exhibition by curtains. Some pieces such as *Text Rain* (Utterback and Achituv: 1999) were able to thrive in the busy spaces as they are open to casual approaches by visitors. Many of the works "blur the boundary between innovative technology and digital art" (Bolter and Gromala: 2005:146). In order for the work that was being viewed on a small computer screen by one individual to be shared many of the web based art works were projected onto a large screen.

An innovative decision for an art exhibition, which has been influenced by the trade stands of the very event supporting the exhibition, is the artists walking around the exhibition space discussing their work in terms of its function and its relationship to the exhibition. The artists also provide talks in the lecture rooms of SIGGRAPH 2000. The dynamic elements that work in synergy to create this event make the "gallery function as more of a performance than a static exhibit" (Bolter and Gromala: 2005:147).

Bolter reminds us that: "the digital interface is always both a window and a mirror" (Bolter and Gromala: 2005:149). Much of the work at SIGGRAPH, and new media art, is the result of a designed experience: "to design a digital artefact is to choreograph the experience that the user will have" (Bolter and Gromala: 2005:22). This notions of

being designed and a mirror are two of the examples of a synergy with contemporary exhibition practice.

> For many years the mainstream art world of museums and galleries ignored techno-scientific-inspired art. Most established artists did not concern themselves with developments such as computers, microbiology or telecommunications. As a result, pioneering artists found alternative exhibition venues, such as SIGGRAPH and Ars Electronica art shows and critical contexts such as ISEA conferences and Leonardo (Wilson: 2003:883).

In the nineties the functionality of the Internet was limited compared to today, but new media art enthusiasts had already started to take notice of this rapidly changing medium. As computer technology advanced and the aesthetic of the artworks became dated, there was also a realisation that the work was in danger of being lost; not just in terms of preservation, but also in terms of its recognition and values. When *Internet Art: The Online Clash of Culture and Commerce* was written there was a hope that the net would help to reposition art into a cultural position it had lost. The Internet was established originally as a research network for the government and Universities, but it soon became open and free with an ideology of democracy and freedom. However, as the capitalist potential of the Internet became realised by companies large and small, cyberspace became commercialised.

So at the turn of the millennium the ideologies of the artists and capitalists were at opposition. For some, this provided the opportunity to monetise their work and gain exposure. For others, this was an invasion of their space. This was also the opinion of many of the galleries that sought to own a piece of cyberspace as a new extended gallery space. Galleries have had to respond to online art, but have also been

influenced by the commercialisation of their activities and their sponsorship commitments. The ratio of cost to audience numbers is much more attractive online, and for galleries with commercial sponsors the funding can be arguably higher if the audience changes from thousands to millions of people. Unfortunately for new media art many of the attempts to incorporate the Internet into their programme was poorly handled, to which end the sites are now static ageing versions of what was attempted.

Art on the net appeared to be all bottled up potential:

> ready to be released with the next technological wave, its current condition has no need of the crutch of an imaginary future...The Internet is not a medium, like painting, print or video, but rather a transmission system for data that potentially simulates all reproductive media. (Stallabrass: 2003:11-12)

During the time since the book was written many aspects of the Internet and information distribution have changed. For example the book makes a strong statement about books being the "unparalleled medium for obtaining information by a writer" (Stallabrass: 2003:11). However, since then eBooks have become a growth area just as digital music has over the last decade.

An important point that Stallabrass (2003:10) explains is that the "coherence can only be examined later", and whilst this is true of a majority of art, it is particularly true of new media art as its composition is in constant flux. The coherence, context, and understanding will effect the value and appreciation of an artwork, and the work will either be successful in its own time, for a limited period, or successful later on and for longer.

"As it currently exists, this art is the most conceptually sophisticated and socially conscious area of contemporary practice" (Stallabrass: 2003:11). This was an accurate description of its profile in 2003, but is perhaps even more apt today given the increasing divisions and problems in society, education, and finance. As society becomes increasingly quantified on databases, new media works increasingly focus on the rate and scale at which the data flows. With all of the algorithms interpreting our daily lives and our increased reliance on technology, none have been more widely adopted than communications. Art on the Internet provides a bridge to the cultural understanding and adds meaning in a space that is devoid of genuine dialogue and conception of time and space.

Further indication of potential and emerging structures for the curation and dissemination of new media art is Rhizome's *The Download*, which was launched in November 2011:

> The Download is a new program through which Rhizome shares one work per month for free download. Part curatorial platform, part incentive to budding digital art collectors, the Download highlights new works and encourages display at home-on any screen, computer, or suitable device. (Rhizome: 2013).

This is outside of the traditional gallery system, and is established by Rhizome, which has also been maintaining its own new media art collection since 1999. Rhizome curates and makes available new media art works under the banner *ArtBase*:

> ArtBase is an online archive of new media art containing some 2174 art works, and growing. The ArtBase encompasses a vast range of projects by artists all over the world that employ materials such as software, code, websites, moving images, games and browsers. (Rhizome: 2013)

Summary

As this chapter draws to a close it is worth considering the advice of Roy Ascott, when asked if galleries and museums have a responsibility to collect and programme new mediums: “Yes, but they will need to be totally reformed and restructured to do so” (Ascott, email 2011).

Mackinnon’s realisation about her programming at Chapter arts centre is very revealing when considering new structures for the inclusion of new media art. “There are these trends and fashions in the art world that come and go. New media probably was high on everyone’s list, particularly if you were a contemporary space, how could you ignore this new thing that had come along and was very challenging?” It also reveals an issue that I would suggest explains the reasons for new media art’s exile from the gallery. It is possible that it just went out of fashion, or as happened in Australia, was considered established enough to continue without support, or even that it did not meet expectations and therefore should not be supported any further. Whatever the case it has become clear that the nineties was the period when this medium was growing in prevalence, and then disappeared as if it had not even started.

Beryl Graham and Sarah Cook (2010:11) of CRUMB have detailed how mediums and themes can work in a series of Hype Cycles. These are cycles of popularity indicated by levels of interest and engagement with the medium that can be influenced wholly, or partly, by external factors. This is particularly the case when there is an overall sense that things need to keep moving and establish a progressive momentum.

One of the biggest changes of the last decade that genuinely has the potential to free new media art is the mobile Internet. Access to new media art could now dramatically multiply following its transition from the user going on-line on a static computer, to being on-line all of the time with a mobile media device. “Net.art is now free from institutions” (Bentkowska-kafel: 2009:153-54). Recent developments in the methods for distributing content, such as Youtube and Apps, could allow new media art to reach its existing audience more efficiently as well as encouraging a new group to engage with digital works of art. Artists such as Scott Sona Snibbe have already begun to adapt their existing gallery installations into Apps that can be purchased for as little as £1.89.

The issue might be that the App stores are recognised for their medium free on-demand access to games and productivity software, so the association with works of art may not be a natural one resulting in the work being viewed and used as games or touch screen gimmicks. “Yet there is good reason to believe that this current wave will be different, since it is the first that has been tied into a widely taken-up technology that is not limited to a single medium and is not bound by the broadcast paradigm” (Stallabrass: 2003:114).

Where Paul “dreams of reconfiguring traditional models” (Krysa: 2006:81) it could be perceived that its attainment is unrealistic and that the institutional systems cannot be reconfigured. However, if the world has learnt anything over recent years as a result of the financial instability of entire countries, and the art sector knows this better than most, is that reconfiguration is not only possible, but necessary to survive. New modes and models will enable curators, galleries and institutions to deal with new media

artworks more appropriately, as well as raising its awareness through negotiated and understood levels of engagement. It may also be of benefit to the artist who is desperately promoting their New Media work to galleries and collectors and not having its value seen. The artist will have a structure and vocabulary and structure to refer to that both parties can appreciate.

> Net art requires new models and criteria for documenting and preserving process, context, and instability. These initiatives must develop a vocabulary for catalogue records; standards that allow to exchange the metadata gathered for catalogue records by institutions; and tools (such as database systems) for the cataloguing of unstable and process-oriented art. Both in Europe and the United States, numerous preservation initiatives are setting out standards for preserving media works.
> (Daniels and Reisinger: 2009:111)

The availability of art apps could help support a wider understanding of the medium as well as encouraging more people to become artists in this field. An unintentional benefit to internet connected television sets, is that they are increasing the awareness, and the value, of New Media's contribution to the arts by enabling artwork to be displayed in the home through apps such as Vimeo and Flickr. It allows a focused set of channels to present high definition art works that utilise sound and motion. These works are not interactive, yet, but they are the first of what is likely to revolutionise how we access art.

Perhaps one reason why new media art has until now, had a limited appeal is that it frequently plays on the expectations of the user and their frustration with irregular navigation and presentation techniques. Net.art feels rebellious, like street art. It is

often akin to situationist work in that its concept is in its design to be awkward and challenging; sharing an ideology with Net activists.

Archiving is a perennial issue, which is compounded, rather than alleviated, by advancements in technology and how it is used within art and its interaction. Issues of archiving and recording information about new media artwork, which due to its transient nature and constant flux, are problematic. The work also ages rapidly as its aesthetic often reflection the technological limitations of when it was created: “digital culture ages less gracefully than other cultures.” (Bentkowska-kafel: 2009:147).

The archiving of new media art is as important as it is problematic. I would argue that whilst it is important to archive what we can now, we maybe limited to only a record of its existence. Particularly given its transient nature, and not to mention its frequent reliance on interaction through specific software and hardware, it may be impossible to fully preserve the work. Preservation groups are doing a good job at this, but they are limited in capacity, and formal structures, which are still being developed.

I would also suggest that the archiving of this work requires detailed knowledge of the taxonomies, and paradigms, that surround the work. This becomes difficult, if not impossible, to do any other way than retrospectively, as the work is in such a state of flux. Approaches such as reviewing taxonomies used in competitions, as was conducted by the Ludwig Boltzman Institute Media.Art.Research (Kwastek cited in Schöpf & Stocker: 2009:267-268) will enable terminology, which is becoming established to become formalised as part of Art Institutions' structures.

This is why knowledge of the medium, and greater understanding within the categories I have discussed here become so important as guidance for future implementations. They will help to shape the way in which work benefits cultural heritage for future generations.

> Preservation of net.art in the hands of the artists. Artist's sites are usually an act of creativity themselves, and therefore many artists will not conceptualise the web presentation of work within the prescriptions of standards and digital preservation guidelines.
> (Bentkowska-kafel: 2009:153-54)

Case Study: Lab Craft

> Including objects made from sound waves and self-generating forms, Lab Craft brings together traditional craft skills and digital technology to create objects that move beyond the limitations of the handmade. (Burgoyne: 2010)

Figure.1 Michael Eden 2010, *Babel Vessel #1*, Emerging from 3D Printer

Within this thesis I have noted my observations of the issues surrounding both the physicality and the aesthetics of new media art. I have also commented on the increasing trend within new media to move towards a greater presence in the physical world through methods such as three-dimensional projection and increased haptic features. I found *Lab Craft: Digital Adventures in Contemporary Craft* (2012) to be an actualisation of this phenomenon. Its promotional material states: "*Lab Craft*, a new Crafts Council touring exhibition, presents the imagined as real objects" (Lab Craft: 2012). The works in the exhibition explore the idea of using digital technologies such as rapid prototyping, laser cutting, laser scanning and digital printing to distort or manipulate materials and forms.

Curatorial structures are the result of institutional standards and academic and philosophical determinism. They can be restructured based on a change in cultural

values, political and financial influences, or simply fashion. The curation of an art form can impact upon its broader awareness and potentially can affect how, where, and when the work is seen. This exposure of emerging or alternative cultures has a precedence with curators that champion them, and for new media art its presentation to new audiences will be important to its long term perception. *Lab Craft* has made bold and considerable progress in presenting the blending of craft traditions and high technology in a cultural group that is particularly resistant to change. The touring exhibition has made a great impact on the public's perceptions of the Craft Council as well as indicating the future of digital craft skills. Increasing public awareness influenced by reports in the media about 3D printing and rapid prototyping has helped to ease the transition into this digitisation of a traditional and analogue practice. *Lab Craft* provides an opportunity to critically review a success story that has transformed public perceptions.

Before discussing the content of the exhibition it is worth noting that, when I interviewed Meg Anthony, of the Oriel Myrddin Carmarthen gallery in 2011, where the exhibition was to be held a year later, I suggested new media could be considered as a contemporary form of craft. She was initially hesitant, but then became intrigued by the concept as I explained the skills and level of detail involved in the creative process. Oriel Myrddin is supported by the Craft Council and the Arts Council for Wales, and as a result must focus on work that can be classified or linked to craft practice in some way. The hosting of Lab Craft is a really exciting and positive move forward for the gallery as it shows a willingness to embrace the new technology. Lab Craft has made this possible by being a touring exhibition, with little demand on staff or resources on site.

> Curatorial practice orients itself towards the presentation of perspectives and context that facilitates dialogical transactions between artefact and mode of display through exploring new possibilities for viewer and spatial experience. (Dziekan: 2012:49)

Vince Dziekan (2012), author of *Virtuality and the Art of Exhibition,* writes; "The digitally mediated context of the contemporary art museum presents a challenge to rethink the institution's material interface in response to its increasingly 'virtualised' situation" (2012:51). Whilst this may be true for large galleries, and it is generally only for the presentation of factual and promotional information via the web and apps, this cannot be said for small galleries such as Oriel Myrddin. *Lab Craft* is particularly important to Oriel Myrddin as it moves the gallery closer to the virtualised, but in its own context.

The advancements in rapid prototyping technology are providing craft practitioners with new opportunities to experiment and diversify. *Lab Craft* refreshes and updates the traditional understanding of craft, moreover enabling the gallery to engage with a digital process that it might otherwise be lacking. Although it was already scheduled in the galleries programme, *Lab Craft* was the actualisation of the concept I put to Oriel Myrddin. The touring show, which is funded by the Craft Council of England, is a collection of work by craft practitioners who are experimenting with emerging technologies, and the processes of rapid prototyping, computer control cutting and forming equipment. Whilst the process of creating objects that have been designed on the computer has been around for over thirty years, its application has been a cost saving or streamlining exercise. *Lab Craft* demonstrates that it is possible to produce

craft oriented objects, which remain faithful to its heritage, using computers, and along the way revealing something about the place of technology in art.

The initial impression when viewing Lab Craft is that these objects, which range from textiles, to sculptures, to found objects, appear to be a collection of traditional material based pieces. Works such as Michael Eden's *Babel Vessel* and Zachary Eastwood-Bloom's *Information Ate My Table* confuses the viewer by masquerading as the product of traditional hand skills, such as ceramics or wood work, but then upon closer inspection reveal detailing that are not humanly possible, and are indicative of a digital aesthetic. It is this jarring between handmade marks, natural materials, and the mechanical computerised approach with modern materials that makes this new field of creativity so engaging and full of potential.

Curated by design writer Max Fraser, the exhibition features a wide range of experimental craft and design work, each of them combining traditional craft skills with the use of cutting-edge digital technologies. As an acquisitions advisor for the Craft Council of England, Fraser was in a unique position to "introduce the digital as a really unique and emerging area" (Swansea Metropolitan University: 2012). Fraser highlights that as with new media in art practice the "Digital in craft is a burgeoning area, it's happening, but its in its infancy" (Swansea Metropolitan University: 2012).

When looking at objects to be included within the exhibition Fraser was interested in items that "blurred the line between whether they were made by hand or machine, so they were kind of ambiguous in that sense" (Swansea Metropolitan University: 2012). He was also aware that as "this was a touring exhibition there would be a wide-ranging

audience and you couldn't assume that everyone would understand the digital" (Swansea Metropolitan University: 2012). This is a concern that I have identified in my thesis, and one that continues to be prominent within new media art, even though an audience's technological understanding is often assumed by those creating with it.

There was a sense of a slight resistance from the craft establishment and a preconception that anything digital was as simple as pressing a button and printing it out. "Craft as a definition is very hand made and driven by skill acquired over many years and there's an element of chance or risk or failure" (Swansea Metropolitan University: 2012). Fraser had to convince the council that there is a whole new skill set that comes with digital technology, such as learning and mastering the computer in the first instance, and then understanding how the machine works, and the properties of new material composites.

> The craft establishment needed to accept and understand digital technology. It is very much a part of the fabric of contemporary craft. Interestingly most makers coming through in the next generation wont know anything other than a digital world. The reality is that the machinery is very expensive and practitioners don't then to have it within their own studios. There is a danger that ideas become homogenised as a result of using standardised software. This can also result a digital aesthetic (Swansea Metropolitan University: 2012).

Fraser is interested in "practitioners who are looking at subverting the technology away from standardisation and hacking it, maybe recoding it in some way, may be applying the machine in a way it shouldn't really be applied. The outcomes from that are for me really the most interesting" (Swansea Metropolitan University: 2012). This is a part of the experimentation process where many creative practitioners engage with fundamentals of the materials and the medium. More than gaining a greater

understanding of how to manipulate the material, the hacking helps to avoid the problem of work being replicated. “The individuality of craft is essential, and anyone coming into it (craft) needs to hold on to their individuality amongst the standardisation of software” (Swansea Metropolitan University: 2012).

The exhibition extended beyond the physical space with additional online content, by encouraging the viewer to participate and use their personal technology, such as a mobile phone, to scan Quick Response (QR) codes. As well as two commissioned videos explaining the principles behind the manufacturing process, the QR codes that could be found next to the information plaque for each artwork take the user’s mobile device to a link to see and read more information about the artist and the work itself. *Babel Vessel* takes particular advantage of this increasingly popular mode of engagement by using a QR code as the template for its design. By vertically extruding and embellishing the digital aesthetic of the code’s data the object becomes sculptural and vase like.

Babel Vessel, invites the viewer to assess every dimension of its surface as it is riddled with rectangular tubes as if it were the cross section of a complex honeycomb of arteries. By scanning the top surface of the vessel its QR code roots are exposed and links the user to a hidden part of the exhibition website. “Addressing the relationship that connects the artwork, museology and digital technology has become a key dialog within cultural practice and policy” (Dziekan: 2012:51). The vessel’s embellishments include convex and concave curvatures on its sides that cut into and revel the capillaries of the structure, and griffin adornments on the four sides of the object.

Figure 2. Michael Eden 2010, *Babel Vessel #1*, Nylon, mineral coating

Before the viewer engages with the virtual aspect of the work there is a genuine sense of amazement that the object is made from one solid piece of material. It quickly becomes apparent that the intricate network of holes and detailing could not have been achieved by hand. This, combined with its general appearance induces a sense of the alien and other worldliness. This is a provocative and risky property when you consider it was being exhibited in a relatively traditional craft orientated gallery in West Wales.

Babel Vessel was of the most important and exciting pieces in *Lab Craft* as it was evidence that the skill of crafting an idea was still key in creating an engaging piece of work. It was also a beautiful hybrid of the tradition of ceramics and the aesthetic of the digital.

Figure 3. Zachary Eastwood-Bloom 2010, *Information Ate My Table*, Beech.

Information Ate My Table by Zachary Eastwood-Bloom is again sculptural in process and appearance, and reveals something about our understanding of the relationship between the virtual and the physical. The information that ate the table was a surface polygon mesh which makes up three dimensional objects in virtual environments. Traditional practitioners understand and appreciate the texture, grain and mass of their materials such, as wood and clay. These traditional materials are organic, and their random nature becomes part of the process and the finished piece.

There is, however, a question over the properties and value of new materials such as plastic ceramics. The exhibition posits two key questions in its marketing material; "As the human touch is considered a pivotal anchor in the definition of craft, is this made redundant amid the adoption of digital tools? Does digital perfection allow space for the great charm of mistakes?" (Lab Craft: 2012). These questions highlight the concerns that practitioners and observers face when such a fundamental shift in

processes and materials is taking place.

In *Information Ate My Table,* there is a tension caused by the infringement on the physical space by a virtual space. What appears to be a digital glitch has negatively affected the matter of a material, which does not normally meet virtual space. The flow and form of what we would expect to see in a coffee table are disrupted. Considering these materials appear to clash, it's interesting to note here that the original *Apple 1* computer system was encased by many enthusiasts in a homemade wooden case which I have considered this to be an oxymoronic relationship, making it something of a hybrid product. Natural materials are rarely seen in consumer electronics today.

Figure 4. *Apple 1* 1976, Steve Jobs and Steve Wozniak

When reviewing the exhibition the Guardian newspaper described the process of creating *Shine* (2010), by Geoffrey Mann, as follows:

> [*Shine*] investigates the reflective properties of a metallic object; in this case the subject was a Victorian candelabra. The reference information was generated through documenting the reflection by using raw data via a planar 3D scanner. When scanning a metallic object the laser beam is unable to distinguish between the surface and the reflection. The spikes represent the intensity of the reflection.
> (Fraser: 2010)

Shine is the essence of what craft practitioners are looking for when they work with a material. The surprise and unexpected nature of working with a material form part of the aesthetic of craftwork. *Shine* enables the unthinkable in a digital work; it allows imperfection and chance to influence the final output. The finished piece is a demonstration of the digital's continuous attempt to filter the analogue world into its own perfect imperial record, without the wisdom to articulate and replicate the subject's nuances faithfully.

The theme of alienation continues in this work, and whilst this could alienate the audience, it is the manner in which Mann has embraced the process in an explorative mode and presented it as a celebration of imperfection, that causes the audience to become intrigued and accepting of the form. As a form of glitch art *Shine* illustrates that imperfection, chance, and the unexpected can be just as exciting in the digital realm, and that the inclusion of a computer in the creative process does not mean that the craft and handmade qualities are absent.

Figure 5. Geffrey Mann 2010 *Shine,* Bronze, silver-plate.

Figure 6. 1234lab 2010, *8hertz,* Polyamide,

There were other pieces in the exhibition that had an even closer relationship to craft traditions. Jewellery as a craft aims to produce unique one off items that afford it the ability to attain a high value. In *8hertz,* 1234lab have transferred their experiments in three-dimensional sound-mapping into a physical object as a form of jewellery. The unique and personal nature of this process means any word or phrase can be transformed into wearable art.

> Voice recordings were mapped out in a 3D 'point cloud' which thickens and twists according to tiny nuances in tempo, pitch and purity. Multiple data points were joined together to create the sinuous form of this necklace – subsequently rendered as a 3D object using rapid prototyping production. (Lab Craft: 2012)

In the long term this practice could create unique items that are low-cost, and providing the file is retained easily replaceable.

Figure 7. Gary Allson and Ismini Samanidou 2010, *Woven Wood*, Oak.

Pieces such as *Woven Wood* appeal to the craft traditions on a number of levels. Wood is an ancient material long used for carving, and within craft, knots are a frequent design. Detail and craftsmanship is also greatly appreciated within the craft community. The role of technology in this piece is to "explore how digital making methods can be used to translate magnified textile weave structures into timber" (Lab Craft: 2012). Whilst material textures have been synthesised in wood by hand, the level of detail, repetition and accuracy has been limited. *Woven Wood* allows craft purists to see the benefits of software being used to control cutting machines for an output that they will appreciate and accept.

> The museum plays an instrumental role in determining the contours of creative practices associated with artistic production and curation. The art object, the gallery's cubic environment and the museum's institutional apparatus are powerful manifestations that shape our perceptions and understanding, as well as the expectations that we place on art. (Dziekan: 2012:7)

To support the experience of visitors who were not familiar with the art work or its creative processes *Lab Craft* provided a pocket-sized catalogue, which as well as

aesthetically echoing the exhibition's theme in its presentation, featured a glossary of terms accompanied by a colour code that was featured on each artefact's plaque. This approach formed a bridge for visitors who perhaps had an interest, but had very little previous engagement with technology in art.

As a further aid to understanding and appreciating the exhibition *Lab Craft*'s opening was accompanied by a presentation entitled *Crafting Technology*. The presentation by Anna Lewis and Claire Savage-Onstwedder, from The Creative Industries Research and Innovation Centre (CIRIC), at Swansea Metropolitan University (now University of Wales Trinity Saint David), put the work into context for visitors, who were predominantly from a traditional craft background. As well as demonstrating the potential of the digital in craft, and the processes involved, the presentation highlighted the importance of the role of the University to facilitate cutting edge equipment and guiding its use and experimentation with more traditional practitioners. The audience discussion after the presentation identified that there is still a prejudice towards digital technology being used to create the work.

Lab Craft does not try to ignore or synthesise traditional craft processes, but aims to exemplify what can happen when the digital and analogue processes are combined and explored in a supportive and experimental environment. The exhibition has positioned its self on a ground, which is needed in the current tensions between traditionalists and technological determinists. As an activity to promote a new mode of creation, *Lab Craft* is a suitable model that could be adopted for new media art. Unlike *Decode* at the V&A in 2009, which was overtly about education, *Lab Craft* allowed the work to speak for its self.

“Far be it from spelling the end of craft as we know it, *Lab Craft* presents an exciting extension to the maker’s toolbox” (Lab Craft: 2012). It’s not the digital mediation of craft, its craft’s mediation of the digital.

Chapter 6: New Media Art in London in 2013?

During the process of writing up this thesis, in the summer of 2013 I set myself the task of finding new media art being exhibited in London. This had been previously carried out by Regine (2012) in 2012 as a task that they believed to be without challenge, with the caveat that you were not specifically looking for works labelled new media art.

Before travelling to London I researched the galleries and museums searching for the terms new media and digital art exhibitions in London. Rather disappointingly, but to be expected based on my hypothesis, there were very few results returned, and even then they were not the form of artwork I had been discussing in my writing. Video installations were the closest the results came to new media. As an alternative approach I looked through the events and exhibitions listings of galleries to try and see if they had new media work on show, but had not declared it as new media art. This proved more interesting and fruitful.

Although there was a notable lack of exhibitions specifically featuring new media art as a term, there were a few exhibitions that stated that the artist used the medium of digital technology along with others, but did not want to describe themselves as a digital artist. There was a show at the Caroll Fletcher gallery by Thomson and Craighead, who have become synonymous with using audio-visual technology in their work. *Never Odd Or Even* (2013) was described as, “Interested in how information about the world is filtered through the prism of the world wide web, and other forms of information technology, Thomson & Craighead play with this data to create poetic, compelling works that ask fundamental questions about what it is to be human”

(Carroll Fletcher Gallery: 2013). As with other recent shows, they did not describe themselves as Digital or new media artists, but the work was the closest I found being exhibited in a traditional manner whilst in London. For example, a digital clock in a monitor, which was a representation of an LCD clock was programmed to display the time with digits displayed at the wrong angle, for example upside down or back to front. The classic video game space invaders had been hacked and reprogrammed to replace the encroaching flying saucers with text containing a pertinent political message for *Trigger Happy* (1998).

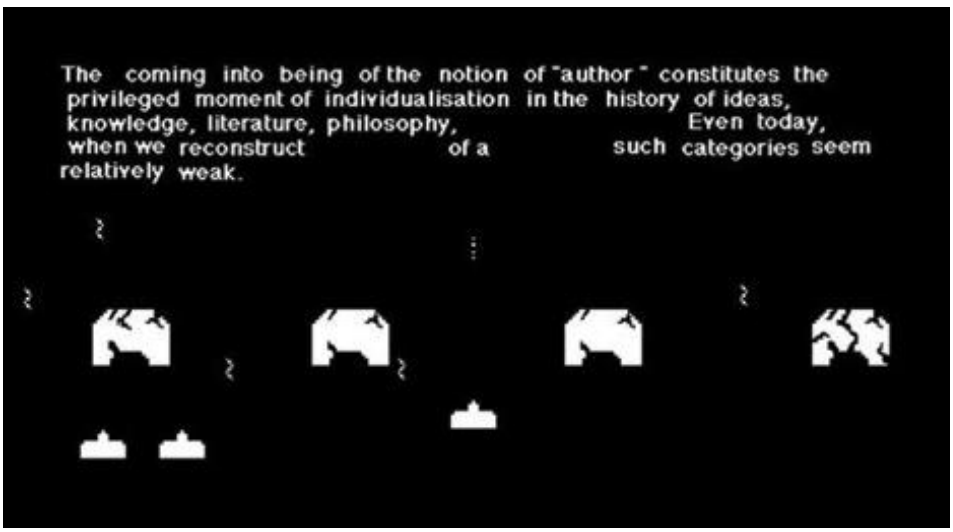

Figure. 1. Thomson & Craighead 1998, *Trigger Happy*, Modified arcade game.

The most simulating experience of the visit came not from a traditional art gallery, or a pop up exhibition space, but the *Science Museum*. As I have previously discussed, the *Science Museum* has received support from the *Welcome Trust*, and their collaboration manifests its self in new forms of information interpretation. This is most originally achieved by collaborations with artists, some of which I have previously mentioned. The space also allows for installations of technology exhibition. During 2013 *Google* had taken over the basement level for a project entitled *Google Labs*. As an extension of an online project, designed to promote the power of the web through Google, the

space promoted itself as a series of interactive experiments. Using a unique QR coded card visitors travelled around the space taking telematic photographs the digital periscopes connected to the internet, programmed musical percussion instruments through touch screen interfaces, and witnessed a robotic arm drawing a portrait in the sand.

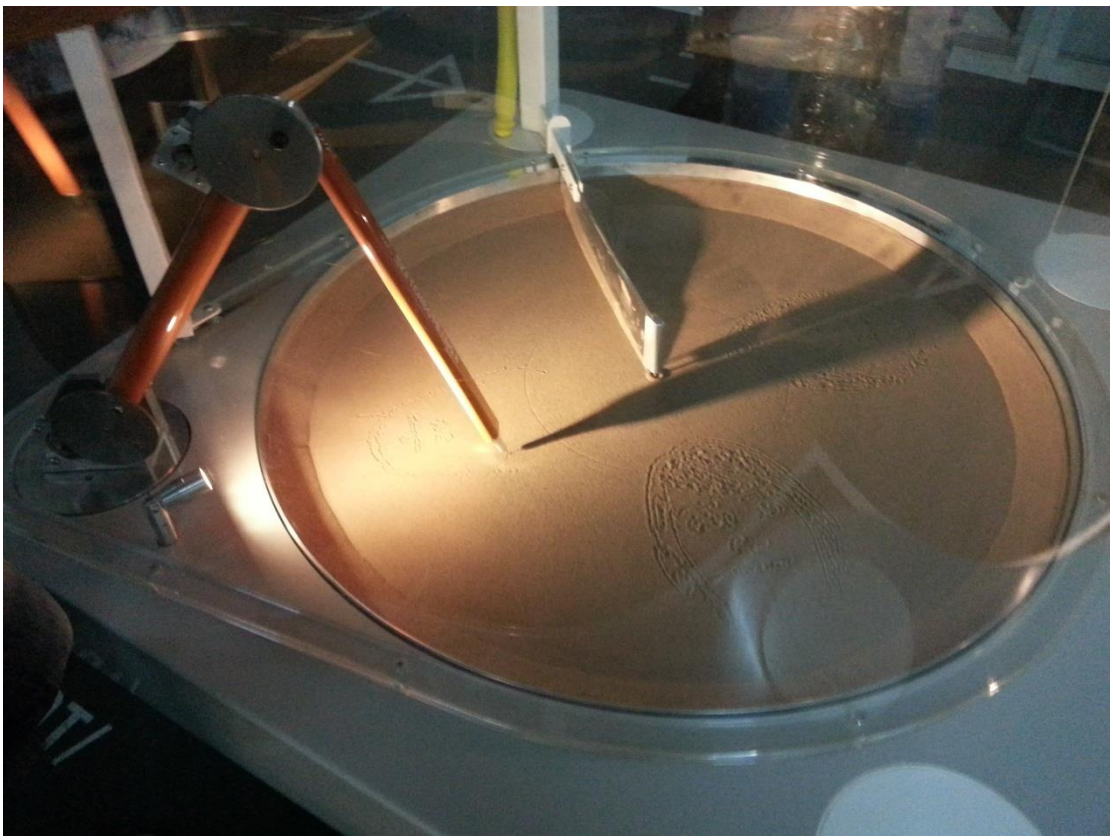

Figure 2. Google Labs Experiment 2013, London Science Museum.

Whilst illustrating how connected the world is and how instantaneous it can be, the exhibition was the most closely aligned with new media art and its new modes of exhibition during my time in London. Creativity and interactivity mediated by technology, but yet again it was the tool of the big brand company driving forward this initiative outside of the traditional arts institution.

Other areas of the Science Museum's *Wellcome Trust* wing included an area orientated towards children called the *Pattern Pod* where the principles of patterns such as

repetition where taught through objects, lights, and activities. A number of the interactions took place with computer based installations. Although to the patron there were no computers obviously present. Areas such as the *Motion Capture Room*, the *Seed Pattern Plant Generator*, and the *touch screen kaleidoscope* builder would not have been out of place at a *Siggraph* show ten years ago.

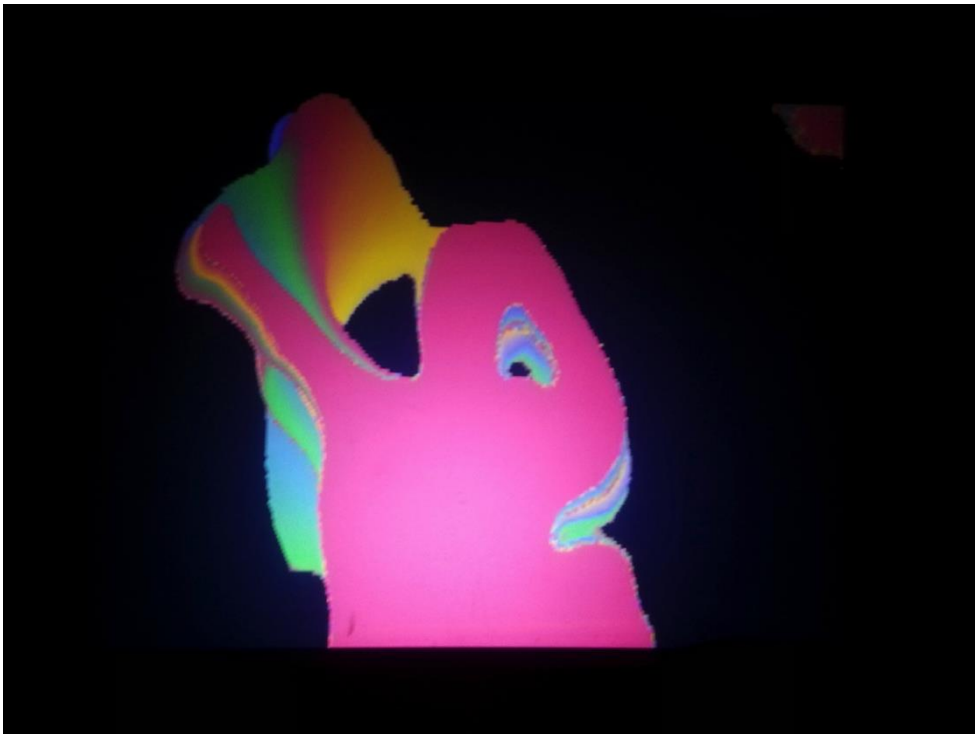

Figure 3. London Science Museum *Pattern Pod* Exhibition.

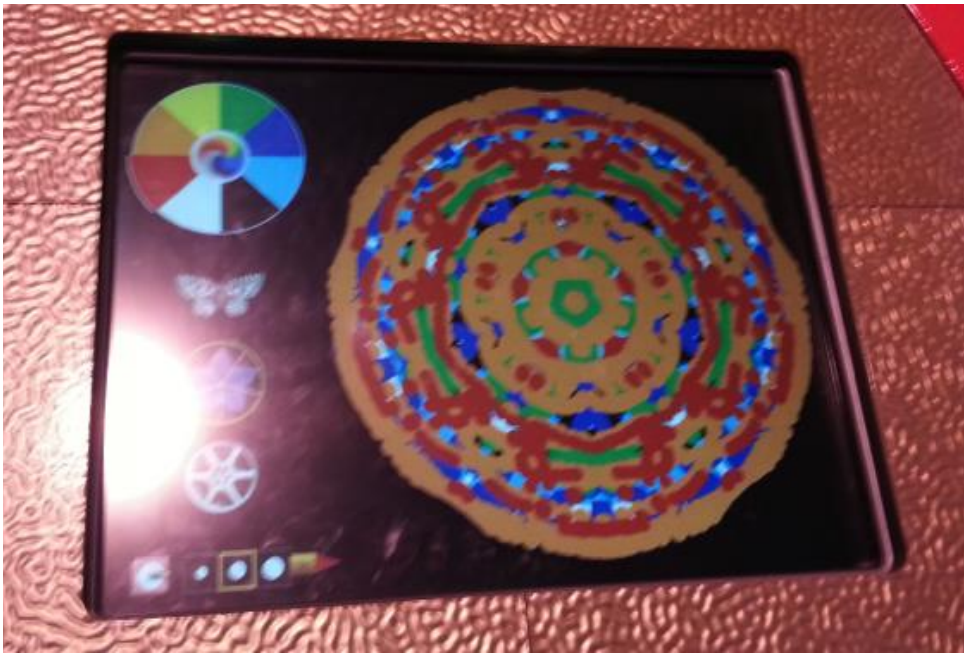

Figure 4. London Science Museum *Pattern Pod* Exhibition.

As I have previously noted the misunderstanding and limited promotion of new media arts events and exhibitions, it faces the challenge of being perceived as a toy not to be taken seriously, or at least not yet significantly developed to come mainstream. Unfortunately, during my visit this critique was supported by the Google Labs project which invited people to play. Whilst there is nothing inherently wrong with playful art (noting that this event was not advertised as art), without conceptual focus it can fail to be taken seriously by the un-initiated.

As with previous visits, my time in the Tate Modern was disappointing in terms of new media. The gallery appears to be standing still in terms of medium, showing increasingly traditional craft and materials based works, even lacking video art on this occasion. As I was about to leave the gallery I noticed that to one side of the cafe area there was a bank of monitors. Upon closer inspection it became apparent that the monitors were Wacom Cintiqu screens embedded into the counter.

Figure 5. Milk and Koblin 2012, *This Exquisite Forest*, London Science Museum Installation.

These Cintinqu's were part of *This Exquisite Forest* (Milk and Koblin:2012), an open art project to collaboratively build an online tree, where the branches were made up of artwork from visitors to the gallery or web site had drawn using the Cintiqu's stylus. It is worth noting that this piece was again sponsored by Google Labs, as a digital art experiment.

As is often the case with this sort of work two of the five units had either crashed, or their stylus was broken. It was interesting to observe visitors using the screens. Frequently it was a useful method for keeping children entertained whilst the parents finished their coffees. During my test of the project my workstation failed to refresh for a new section to be added and then subsequently crashed without restarting. Incidentally, three of the Google Labs pieces in the Science Museum were off-line due to a technical problem, and whilst I was there two technicians had to repair one of the drawing robots.

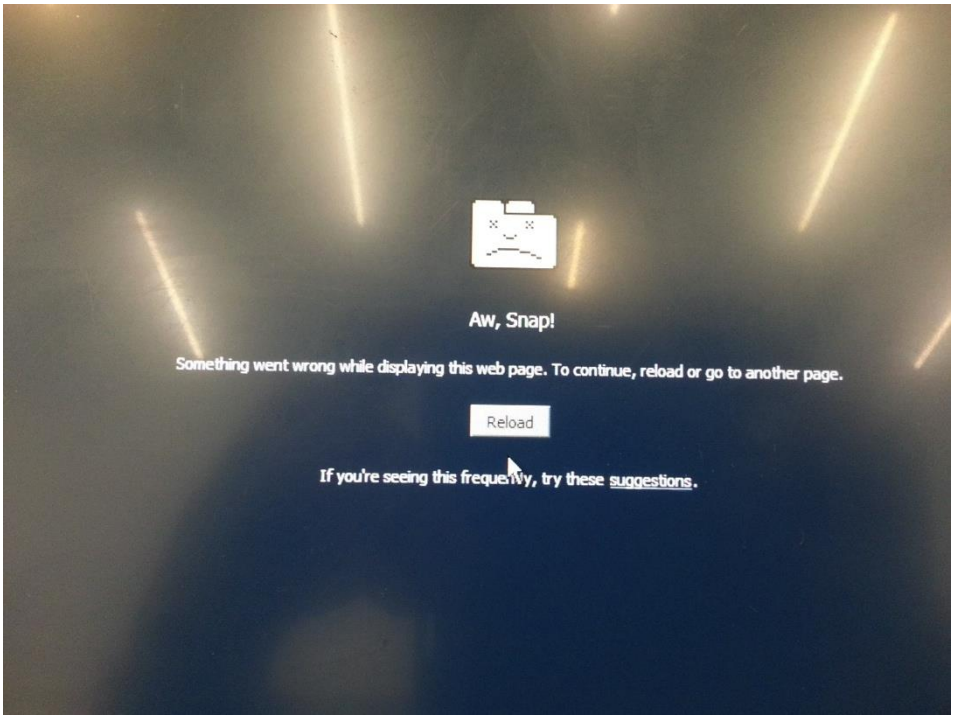

Figure 6. Milk and Koblin 2012, *This Exquisite Forest*, Broken Cintiqu Screen Terminal, London Science Museum Installation.

For those that were using the project it appeared to be fun and was similar to working with *Coral Paint*. Perhaps if you have not experienced a drawing tablet or touch screen before, then this was a unique and enlightening experience. Whilst I was disappointed with the way the installation had been neglected both in terms of location and technological servicing, I was just pleased to have been able to find some new media technology based art in the *Tate Modern*. "It is noticeable that the only institution in London putting on gallery displays of such work is the Science Museum" (Gere: 2002:8).

The experiences during my visit also reminded me there is still a concern that, "The attempts of arts institutions to co-opt parts of that culture by issuing edict that elevates and brands it as art, and in the process limits its scope and character" (Stallabrass: 2003:8). This was particularly the case with the *Google Labs* project where they not

only sponsored, but also designed the exhibition pieces to promote their communication technology.

Another development, which came to light during the writing up process, was a new technology for Human Computer Interaction (HCI). The *Leap Motion* Controller, which has been in beta testing and app development since mid-2012, marks a major paradigm shift for artists and computer users, on a par with the introduction of the iPhone and iPad.

> In January 2007 I was a speaker at Macworld and had the pleasure of sitting in the hall when Steve Jobs introduced the iPhone. I see the introduction of the Leap Motion control of computers as an equally significant paradigm-shift in the way we interact with our devices. Just as kids now take touch screens for granted, in a few years they will also take motion gesture control for granted. (Sutton: 2014)

Whilst this may sound overly bold and dramatic, it has the potential to facilitate art in a revolutionary new way. It will allow computer users in general, as well as practicing artists, to remove yet another barrier between the author and creativity. A major disadvantage of contemporary technological interactions is that often there are insufficient levels of sensitivity and detail on the input device, or the remediation of physical processes into digitally interpreted ones is the opposite of intuitive.

Leap Motion's approach is to develop a gesture control system that is simplistic in its set up, but sophisticated in its interpretation of data. Leap Motion has worked with major software companies, in particular Autodesk who produce the industry leading Computer Aided Design (CAD) software, and Coral who produce popular digital artist

software Painter. The intention is to enhance the power of the software with interactions that are much closer to the real work interactions that artists already use.

A major barrier when transferring from an analogue medium to a digital one is that you have to recalibrate yourself to learn new methods. Whilst this can be a positive to some, to many it is a hindrance. The synaptic patterns that have been developed by artists over many years immediately put them at a disadvantage, because new hand positions and movements have to be learnt to make the most of the capabilities of the software and hardware. The Leap Motion controller allows users to interact with the screen content in a more conducive manner for traditional practitioners' methods. Whilst touch screen technology has enabled simple drawing to become more ergonomic and intuitive, many other art forms such as painting and sculpture have struggled to satisfy the balance required between digital potential and prior experience of the analogue medium. "The seamless Painter Freestyle experience with Leap Motion makes the process of digital painting all the more attractive and accessible to people-it's simply so much fun!" (Corel: 2013).

Painter Freestyle, currently in Beta, has been shared with artists and software developers to enable its integration into the arts community by ensuring it meet their needs.

> By integrating the Leap Motion technology into Painter Freestyle, we've built a completely new, but very natural and expressive way to paint digitally. (Coral: 2013)

Other software under development includes 3D modelling where users can manipulate a virtual ball of dough with their fingers and various tools as they would with analogue

clay. The advantages being that it can be worked with anywhere, with unlimited quantities of virtual materials. Previous systems, such as servo-assisted pressure/texture replicating arms, have made users feel restricted in their movements. Whilst the pressure related to tools making contact with materials is absent from this gesture system, the movements and motions of the traditional craft remain the same. The technology has the potential to develop new modes of interaction and creative processes, but currently its strengths are in its remediation of previous arts skills. The technology is reminiscent of the facilities demonstrated in the film *Minority Report* (Spielberg: 2002). Whilst this was a futuristic imagining of how we might have interacted with visual data, it has become a reality, and one that has to potential to be more widely adopted with a broader implementation than Steven Spielberg had imagined. Artist Jeremy Sutton is among the first artists to emulate their traditional processes through the Leap Motion controller. "Jeremy Sutton emulates his traditional process, standing a distance from the screen and painting in a traditional manner" (Coral: 2013).

> As a professional artist, I can make marks in Painter Freestyle that simply wouldn't exist otherwise with any other tools or media. For instance, the use of multi-strokes, essentially paint coming out of our fingertips, is something that could only have been dreamt of previously. This is not just an incremental improvement in a paint medium or art tool. This is truly a dramatic paradigm shift that will revolutionize the way we create and interact with the computer. (Coral: 2013)

The *Leap Motion* controller has been marketed as a revolution in HCI devices. Whilst it can function as a game controller, and even a replacement for a mouse, one of its biggest selling points in its app store *Air Space*, is the creativity that it can enable. From, painting to music, to photo editing, it has applications to progress the form of

new media art. Earlier in this thesis I discussed the translation of interactive works by artist Scott Sneeb into new commercial and popular devices. Amongst the first applications chosen to be available were unsurprisingly art applications.

Conclusion

> The drawing together of art and science, or technology, is more than ever one of the components of contemporary art. (Moulon: 2013)

This statement summarises my opinion of where new media art now stands and the progress it has made whilst I have been writing this thesis. Due to the rapidly changing nature of the field of new media art, and my shift in opinion during the research process, a conventional conclusion to this thesis is problematic. However, there are summaries that can be drawn from this work that indicate the original contribution to knowledge required of a doctorate.

The writing and development of this thesis is the result of talking to artists, curators, and galleries, as well as observing the state of the art form's recognition, appreciation, and understanding within arts institutions and wider culture. There are two levels at which new media art is challenged. The first is the level at which art institutions operate, financially powerful, as well as culturally influential. The other is the level at which audiences participate.

The general public, who experience the exhibitions and presentations of arts institutions, are guided by those institutions' knowledge and opinion. It is within this context that new media art, as with all art, is created. The motivation for the creative act varies from exploration and expression through to commission for exhibition and commercial sponsorship. Work is often developed in a specific context and then subjected to the academic and financial critique of the art world. Greater knowledge and appreciation amongst audiences and institutions will aid new media art's presence,

and ensure it is able to operate as its own distinct art form with a broader appeal and not subjected to cult status. Parity is possible and has been demonstrated in exemplars of best practice within this thesis' case studies.

Response to Critical Theory

Upon reflection, there are key aspects of the background and focal theory that have informed the structure and philosophical position of this thesis, which I have then furthered in a contemporary and specific context. When Claire Bishop posited "Whatever happened to digital art?" (Bishop: 2012:436) I found it to be a reassuring question validating the rationale for my research. It was particularly relevant and poignant as it was written at the end of 2012, and I had been asking the same question since the end of 2007, and little had appeared to change within the field.

Margot Lovejoy's comment that: "Technological development and artistic endeavour have always been closely related in one way or another, whether in a linear sense or a paradoxical one" (Lovejoy: 2008:13) was not only encouraging at an early stage of my literature review, but was potentially a strong point for arguing the equality of new media art. It helped to demonstrate that even work considered as traditional, employed a form of technology, even if it was very primitive by comparison. However, there remains a misconception that prevents traditional art forms, such as painting or sculpture, being viewed as a form of technology. This may be because it is analogue, but it may also be that the technology is invisible as the forms are so established. Traditionally accepted tools of art creation, such as the paintbrush and chisel, have developed in conjunction with art; and have long been synonymous with its practice. This can result in other forms appearing to be alien to it; at least on a subconscious

level. Deeper consideration by arts institutions could result in an acceptance of new media as an additional and progressive medium for art creation. However, the instability and rapid development of new media art's principal components make it more problematic to engage with, as its tools frequently shift in form and its traditions are short lived and still being written. That said, its cost and availability are constantly improving for artists.

Continuing with this theme I was also interested in Lovejoy's statement that: "Invention of technological tools for representation affects the way the world is seen, how events are interpreted, and how culture is formed" (Lovejoy: 2008:13). Many of the tools used in new media art were developed for the purposes of digital representation, however art was not always the primary beneficiary; they were often devices of communication, consumerism, or war. Artists appropriated the technology and observed the artistic advantages and applications of new technologies.

Art represents our culture, and our current culture is largely dependent on technology, therefore the art will frequently reflect this in positive, and negative, forms and concepts. Whilst commenting on technology's impact on society through dissimilar media makes a statement, it is a diluted one compared to the works that make comment through the very technologies and actions they observe. Its influence is often better illustrated through the very technology and medium it is critiquing.

Charlie Gere noted that, "One of the ironies of net.art is that, despite being supposedly responsive to current developments, it repeats the gestures of previous avant-gardes" (Gere: 2004:10). This creative loop mirrors an issue in technological developments

where to ease the transition, new devices need to be backwards compatible or re-appropriate old terminology. If art forms utilising new technology do not also utilise the new expressive language it affords, then it will merely be seen as replicating old forms, rather than defining new and revolutionary ones. I would suggest that partly this is new media art's mode of development, and method of integration, allowing it to locate itself. It is of benefit to be located within tradition to find out where it excels, differs, and departs from the old, and what it can offer that is new. It could also be argued that by being a chameleon of art themes and genres it is displaying its versatility, and therefore uniqueness. It has the ability to replicate, synthesise, and to possess medium specific qualities of its own. New media art may include Baudrillard's (2010:3) notion of simulation and dissimulation, masking its true material qualities, but that is a specific application of the illusion, and is generally not its overall intention. That suggestion does it a disservice and undervalues the benefits of the medium.

Frank Popper's pioneering championing of electronic art appears to have had a less substantial impact on its wider acceptance than it should. Writing at a time when kinetic art evolved into electronic art, his work would now benefit from being continued in light of the digital developments, including the Internet and mobile media. His work does, however, raise the question of why after all this time (and the clear progression from kinetic art, which is sculptural in tradition, to electronic art) has new media art not become more accepted? Why is its ascendance into the art world not only slow, but a struggle?

Over recent years our relationship with technology appears to have changed due to technology becoming more personal, particularly as a result of the Internet and mobile

devices. This is likely to help the wider acceptance and understanding of the art form, as well as access to it in a variety of methods. It is possible that the relationship between art and technology would have been expedited had the “collaborations with industry necessary to realise projects and exhibitions” (Gere: 2002:7) been more widespread, and viewed with less suspicion. This is difficult to avoid, as although some governments, such as Australia's, have made financial and structural commitments to new media art, they have also been challenged by legalities; such as the ACCA closing its HP printing exhibition as a result of the backlash from self-imposed copyright conditions.

As Gere and others have also pointed out “difficulties in collecting, conserving and commodifying such work” (Gere: 2002:7) would have dissuaded galleries from taking the risk. It may be better that new media art resides outside of the formalised systems of arts institutions in order to be more focused on art than commodity, as it is still difficult to apply a financial value within the traditional structures set by institutions and the market.

Simon Penny (2005) noted that new media art requires intimate familiarity of its genre to be appropriately integrated into society. Whilst the inclusion of technology is becoming increasingly and readily accepted within our daily lives, the concept of new technology as an art form now requires the same level of familiarity. The idea of integration is a more accurate account of what I now believe new media art requires, as opposed to straightforward equality and parity. Acceptance and valued contribution are the status markers I now believe new media art requires. As new media art is not the same as painting, it should therefore not be judged by the same criteria for creation,

exhibition, and collection. Moreover, it deserves, as do all forms of expression, an opportunity to be presented, explored, and understood. I would suggest that it should be considered at multiple stages of education and culture; particularly within the context of other mediums being discussed.

Penny claims: “Digital technology earned the status of paint, plaster, and pencil” (Penny: 2005). I do not agree with this on two important points. The first being, that as I have illustrated in this thesis, new media art is still not as widely exhibited as traditional art forms. Secondly, that it is not a status to be earned, but a right. New media art should be accepted on its own merits, and if its transient and metamorphic composition is what makes it unique, then this should be celebrated and understood. Whilst special dispensation is not the answer, support for new media art at various levels may be required, particularly in specialist knowledge initially, and good general knowledge and trained technical support in the long term.

Whilst Guy Debord's notion of the “spectacle” (2006) in art has been a useful concept to apply to new media art, there is little evidence to suggest that it possesses substantial spectacle in the 21st Century to attract an audience. Whilst interaction and play are still present and often at the forefront of promotion, many of the “revelatory features” (Debord: 2006) of older new media art can no longer exist as a result of technology’s rapidity of change. This has been effected further by the democratisation and ubiquity of technology. The spectacle instead comes from the strength of the concept or the scale of the work, which still have the power to shock if conducted in the right context. New media art continues to manifest the phenomenon of “visual delight” (Wollheim: 1987), enabled by the continued intersection of art and technology; an area where

technology and art reveal their strongest abilities. With entertainment's broad attention, it increasingly plays a role in the dissemination and education of new media art with a wider audience.

At the beginning of this investigation my hypothesis resulted in me asking, as had others, “What is new media art?” (Graham & Cook: 2010:2). Whilst I posited a definition that suited the artwork most relevant to my investigation, it required further development. However, I the fluidity of the medium provides not only its uniqueness, but its openness, however problematic that may be for classification. I would suggest that part of the concern with movement between established paradigms is that, as Edward Shanken noted, at work are “authorized methods in order to identify continuities and erode categorical distinctions between the historical and current discourses of new media and mainstream contemporary art” (Shanken: 2010:362). Whilst erosion of established structures may be something that is of concern to institutions, its reductive process is important to reveal what is left behind. In the case of new media art, it is an on-going discourse, which is still to fully reveal its place and relationship with mainstream contemporary art.

As Lovejoy reminded us, “Walter Benjamin identified cinematography as an entirely new aspect of visual representation, one of which shattered all existing traditions” (Lovejoy: 2008:32). It is this shattering of traditions that can be considered as one of the biggest challenges and defining features of new media within art. It may be a matter of time before new media art becomes a fully established and recognised tradition, but it is not without embracing this shattering that real change can occur. The

alternative is a cyclic effect where we are presented with new interpretations, as opposed to new visions.

Reflections on Chapters

In chapter 2, *Defining and Identifying Value in Digitally Mediated Artworks*, it was important to understand the ways in which artworks are appreciated and valued, particularly since digital work is hard to discuss in financial terms. This chapter dealt with a range of issues including rationalising digital mediation as an evolution of a traditional practice, and an issue of visual language rather than technological barrier. Value was also explored as term, which could be developed to give greater meaning and understanding to new media art. Although not fully defined, I have suggested as a result of this chapter that if a formal structure were to be developed to aid the taxonomy of the work, then value would provide a number of recognisable categories which the work could be measured against. This could then be developed to demonstrate new categories that represented the uniqueness of the medium.

Chapter 3, *Virtual Touch- Virtual Reality as Fine Art Space* was an important chapter to consider as it developed the concept of mediation. It dealt with an area of new media art that was affecting its acceptance, as traditional art work operated within more physical paradigms. The lack of haptic qualities, due to much of the work I was exploring being screen based, led me to question if this was a new occurrence due to digital technology, and if it would decrease over time as the technology became more accepted through general consumer engagement in other areas of life.

Chapter 4, *New Media Art as Part of Our Evolving Digital Culture*, defined new media art as a progression of traditional practices, and posited that it was a reflection of the digital society and economy in which we now live. This was an important discovery as it demonstrated that much of the cutting edge digital work is happening as a result of collaborations that utilise new social media and networking opportunities, which form the basis of much of our modern communication.

Chapter 5, *Institutional and Curatorial Structures Surrounding New Media Art*, dealt with one of the thesis' major concerns. From the outset I posited that arts institutions, be they galleries, journals, critics, or the art market, were impacting upon the acceptance of new media art by excluding it. I posited a number of reasons in my introduction as to why this might be the case, and this chapter explored those concerns directly. It became clear that there was an extreme variety in approaches and opinion and there was no definitive conclusion to this chapter, although it did indicate the breadth of the problem that was related in part to historical issues of patronage and ownership. The main point to summarise is that it depended on the type of gallery, and their mission statement being contemporary, or specialist.

The final chapter, *New Media Art in London 2013?*, was an important reflection and critique to make at the end of the thesis, as it demonstrated that during the time I was researching and writing, the state of new media's acceptance had not substantially changed. This indicated that there was likely to be a slow and gradual curve to the wider acceptance of new media art within arts institutions. Discovering that galleries, such as the Tate Modern, were slow to adopt new art forms was disheartening, but the reinstatement and reprioritisation of *Artport* by the Whitney has shown that the avant-

garde galleries will pioneer the work until it has reached a wider acceptance, and it will then become part of the fabric of the exhibition programme without the need for special dispensation.

Reflections on Case Studies

The subject of the case studies I carried out were chosen because of their significance to the history of the development of the art form, and how they illustrate its potential to a wider audience. The art works discussed support their associated chapter by demonstrating the issues discussed in a real world context. The art works all provided a sense of wonder and shock of the new when the first exhibited, and were also a result of the conceptual and technological develops of the time they were produced.

The case study, linked to Chapter 2 on Camille Utterback's use of literary and temporal interactive spaces, demonstrated the variety of work that has been carried out in recent years, and enabled me to gain a greater understanding of the range of exhibition opportunities, as well as seeing a new media artist who had been accepted publicly and commercially.

The case study linked to Chapter 3, *The Allegories of Life, Religion and Space Through The Virtual Touch of Char Davies*, illustrated she had produced some of the most technically and conceptually challenging work within the history of new media art. This case study highlighted the tension between physical and virtual aspects of the component materials and visual content. It also demonstrated that long-standing concepts, such as Plato's allegory of a cave, can influence the design and understanding of an artistic experience, as well as the intersection of art and

entertainment through technology. Davies has shown that digitally based art work can continue beyond its original coding language and technical limitations, and be resurrected when the demand and timing are right.

Christa Sommerer and Laurent Mignonneau's Alife work, discussed after Chapter 4, covers a broad range of exhibition environments, but their fascination with reinterpreting the boundaries between organic and digital highlighted the areas that may be of concern or confusion to the general public, as well as demonstrating the possibilities of what a new medium can enable. The haptic qualities of many of their pieces has also shown that digital work is not solely screen based and can be accessible outside of the traditional technological peripherals.

Of great interest to the direction of new media within art was the case study following Chapter 5, on the *Lab Craft* exhibition. The show illustrated how non-traditional concepts could be presented in an accessible manner that was familiar to the gallery and craft community. The physicality of the work aided its acceptance, but it also raised the awareness of the variety and uniqueness, which is possible within digital creativity. It challenged conceptions of the relationship between the physical and the digital.

Reflections on Taxonomy of New Media Art

> I feel that we are still developing a Contemporary discourse of digital/New Media art as sets of practices rather than technologies or discourses specific to the genre…The fact that I feel that, and let me just shift hereon in to 'New Media' as my term as I feel it to be the accepted cultural mnemonic, is still developing, does not also mean that I place the onus of its disavowal by critics like Bishop on the New Media community. (Lichty: 2013)

As part of my conclusion to this research I would have preferred to provide a more definitive answer to the question of taxonomy, which is fundamental to the discourse of new media art. However, as Patrick Lichty noted in the above response to Claire Bishop's views on the digital divide, a contemporary discourse is still developing. A focus of terminology on practice has more stability and longevity than a specific medium. In part to my conclusion, I postulate here, based on the trend set by the translation of traditional language (for example the tools used when developing photographic negatives continue to be referred to in Photoshop), that socially determined terminology, which is established early on, will be the one that will remain, as it will already have a wider spread adoption. The issue remains however, that the audience does not yet have a consensus on this term. Critics will have to engage with the new language, and it is important to appreciate and accept that it is still developing. The process of identifying a definitive terminology for the art form, which I have referred to as new media art, was inconclusive. However, this has provided evidence that the lexicon used by those in the field remains problematic, and the engagement from larger arts institutions remains limited. Institutions will tend to follow established trends, as opposed to leading on their development, not including those with specific and funded remits for new media. This is because it is not their responsibility to decree forms of creativity, and it is difficult to predict or even recognise new forms until a pattern and tradition have started to take shape.

> In terms of naming, labelling, and documenting, it is in the nature of new media art to change, and curators and critics must accept and keep up with that change or risk fixing the art to death. Some part of new media will always be in emergence, and even the historical frames of understanding what is "new" will change. (Graham & Cook: 2010:2)

In its established and traditional form, the term *new media* is now redundant, as it has previously implied a very specific discipline of early web and CD-ROM media, not often associated with art. Increasingly, digital technology forms a part of many processes within our lives. In this thesis I am concerned with artwork that makes a considered effort to explore the creative benefits of emerging technology. As the *Lab Craft* case study illustrates, a modernisation, both in terms of production and conception of craft based artworks is now taking place. This provides a model and greater understanding of what is likely to happen across the creative arts practices and the shift in the paradigm of tradition.

In 2015 the Whitney Museum updated *Artport*, its online platform for new media art. The site, which has been under supported in recent years, has been made more prominent on the Whitney's web site, as well as being included in the permanent collection. "Artport is the Whitney Museum's portal to Internet art and an online gallery space for commissions of net art and new media art." (Whitney: 2015). This public statement by the gallery supports my decision to uses the term new media art. Whilst the relevance of the term new media has been debated and suggestions of work now being post-digital or post-internet have been posited by theorists such as Lev Manovich, Christiane Paul notes that the work of many contemporary artists uses the language of the net and is deeply informed by it, or even uses elements of it within a range of practices. She typifies these areas of work to represent what the term post-internet is trying to capture. From the description of *Artport* we can see that the gallery is in support of the idea of emerging technologies and the practices they help to evolve. There is a significance to this kind of work being included as part of the permanent collection, which results in it having the same status as other art forms. This is

highlighted by Paul in an interview with Marisa Olson[1] when the *Artport* site was being re-launched.

> Bringing Artport into the collection makes the statement that net art as a medium has the same status as traditional art forms. Not all of the artists that contributed to Artport are exclusively "net artists;" they may also be painters or sculptors and work across a range of media. Bringing their web projects into the collection means that they are as important and collectible as a painting or sculpture. (Olson: 2015)

There is still a debate to be had over their choice to use the term net art, as well as new media, because this suggests they are different and that may be confusing for new audiences. Whilst this may be true in specific terms, as an umbrella term to gain recognition, new media art would encompass net based works as well due to the technology constantly evolving. The role institutions play in the audience's perceptions of the art form is vital, and can impact upon its understanding and acceptance. Whilst it is a double-edged sword that the Whitney is commissioning net art and new media art, in terms of supporting and potentially influencing its direction, it has resulted in the gallery re-evaluating its collection and position. Paul explains that:

> The Whitney's curatorial team had in-depth discussions about how we would approach this relationship with the collection, which has significant ramifications for the ways in which we think about net art in institutional contexts.
> (Olson: 2015)

She also explains "There is a major difference between commissioning works and acquiring them for a collection" (Olson: 2015). *Artport*'s projects are commissioned under non-exclusive licenses, meaning that artists still retain copies of their works and can exhibit them elsewhere. "After discussions within the curatorial team, we decided

that it does not make sense to ‘lock down’ the works as acquisitions” (Olson: 2015). This decision is an indication of the kind of new thinking and acceptance of change that needs to take place in order for new media to become more integrated.

New Media Art’s Relationship to The Art World Through Audience and Distribution

> With interactivity, readers, viewers, listeners can pass through the boundaries of the work to enter it. This puts them in a position to gain direct access to an aspect of authoring and shaping the final outcome of a work in a way that never existed before the advent of the computer. The artist gives up total control in favour of a new kind of viewer communication and experience, one which offers an active position for the viewer, one which also celebrates the inherent creative capacities of all individuals. (Lovejoy: 2008:168)

This thesis explores the paradigm shifts caused by new media that are taking place within the art world, and seeks to uncover what could be done to be more inclusive of digital work. I do not see it as a separate entity on the outside, rather as part of an art world which is still developing its place and audience. Eventually, this debate will seem as redundant as the ones that met the advent of the printing press or photography.

Of all the forms of visual creativity, design disciplines have been most open to embrace and develop the benefits of new technology into their practices. Computer Aided Design (CAD) in disciplines such as architecture and graphics design has substantially benefitted those professions, and we have seen an almost complete transition to using computers in their processes. In architectural and product design the computer has enabled the construction of objects and structures that were previously inconceivable. Three-dimensional printers are increasingly demonstrating that for a

relatively affordable amount of money objects and products, and even buildings, can be produced that take advantage of new production methods. The question of uniqueness is also redundant here, since although there is the ability to mass-produce the objects, there will be as infinite a range in the creative possibilities as there is in traditional painting and sculpture.

New modes of creation, exhibition and engagement are presenting themselves alongside new technological advancements. Art has progressed into the networked age, but it has yet to fully realise its own potential. This realisation may not happen until there is a substantial cultural shift of our perception of art and the world it now reflects. It is still important to remind sceptics that within other disciplines, technology is also making paradigm shifts. It offers new modes of expression achieved by means not previously possible.

> This fundamental change in the relationship between artist, the art work, and the public creates important potential for change in the arts for expansion into new territory. Although, as we have seen, there has always been a continuing questioning and refusal of the boundaries of traditional forms in the evolution of art, interactivity as a new aspect of representation is different from the earliest attempts to include in their works some aspects of audience response by the Dadaists, Constructivists, Fluxus, and Conceptual movements when they invented new forms. (Lovejoy: 2008:169)

The social and cultural implications of new technologies are still developing and they are of on-going interest to the research community. It would seem that the art world is also still adapting and exploring this technology, and its implications to the art world's structures. The practice of new media art is by necessity experimental within constantly changing media forms, and explorative of conventional and sometimes

controversial boundaries. This is why the term new media is so fundamentally important to the practice. As a term to be used for discussion and archiving purposes its properties are transient and fluid. This requires a knowledge and skills-base which is constantly being updated and being self-reflexive.

When looking at a discipline retrospectively, it is relatively straightforward to develop taxonomy of its forms, and its curatorial and archiving structures. Potentially even a structure based on traditional standards, such as medium, date, author, and movement. However, new media works are so varied and often complex in terms of the medium, that a modified version of this structure would be useful for practitioners within arts institutions. Before this, however, recognition of its importance is required. This is likely to be a matter of time, as only now are graduates of recently developed courses in new media curation and archiving emerging.

There is also the increasing demand for digital resources from many areas of society such as schools, libraries, entertainment outlets, to government information systems. Magazines such as *Newsweek,* and encyclopaedias such as *Britannica,* have declared that they will no longer run print editions and will only be available electronically (BBC Business News: 2012). Amazon stated in 2012 (BBC Technology News: 2012) they were selling more e-books than physical books. All of this is a positive development that illustrates that society is increasingly comfortable with owning a digital version of a product verses the physical. Whilst other art forms have already been assigned their place in the art world with supporters and scales of value, new media art has yet to be burdened with such shackles. It has the potential to be free of restrictive structures.

Arts festivals have a long history, but for new media art they have become a key form of exhibition. Inviting practitioners and audiences to come together in an interactive and experiential hothouse, nurturing the medium and raising its awareness in the locations it visits. Festivals, such as *Ark*, which uses light projection, coding, and music for a form of immersive VJing (BBC Technology News: 2013), and *South By South West*, which provides artists and technicians with a place to combine their skills and interest in a physical metaphor of the very technological and practical merging that I have suggested has been taking place over the last few decades. Recent technological developments have meant that the space between digital and analogue has been decreased to the point of blurring and overlapping.

At the beginning of this thesis I posited that festivals were potentially a more relevant and beneficial space for new media art to be exhibited. The festivals have a currency and transience that matches the work itself. The *Fluxus* group's approach to structuring festivals and performance, as modes of exhibition, has grown into more widely adopted format and one that appears to be supportive of new modes of expression.

Galleries can be slow to respond to changes, and their strengths traditionally have been in reflecting on previous catalogues of work. It is reassuring, and exciting, to learn that galleries such as MOMA are collecting digital works, even to the degree where video games are collected as works of art and important design pieces. As a process, festivals can serve the currency and developmental needs of new media art, and galleries can use their knowledge and capacity to archive works of significance as they have always done. Commissioned new media art shows engage with contemporary themes,

however, this relies on the knowledge and passion of curatorial staff with a background in new media. This will give galleries an opportunity to develop their own portfolio for collection. *Artport* has demonstrated a space in between the old and new curatorial and exhibition structures, thus freeing them of the traditional concerns and enabling anew form of engagement.

Another platform for commissioning and disseminating will increasingly be applications. As with the hybrid application-album release of *Biophilia* (2011) by Bjork, new media artists and programmers were employed to produce an application for the release of every album track, which enhanced the experience of purchasing the album as well as listening to it.

At the time of writing StillReel[2] was proposing a digital art distribution channel through Internet connected smart televisions, "StillReel brings the art gallery to the home, coffee bar, or corporate foyer. We are an online subscription service where you can experience the latest high definition digital art on your connected device" (Still Reel: 2013). This is particularly interesting as it is the realisation of the prediction I made earlier in this thesis regarding digital art being exhibited on televisions in the home. Other services are also becoming available through smart TV's and set top boxes. At the moment there is a question of whether there is sufficient demand for this as a potential business. However, organisations are now delivering the service, and as a model for new forms of exhibition it is demonstrating how efficient and accessible it can be achieved.

> Although the coherence of the artist's conceptualization process is the most fundamental aspect of art-making, the influence of tools and of technological conditions transforms the production and dissemination of art.
> (Lovejoy: 2008:31)

There is reassurance for those that favour the organic and imperfect nature of analogue art materials, as digital technologies are not as perfect as they appear or often profess to be. As Rosa Menkman notes in her publication on Glitch Art, *The Glitch Moment(um)* (2011), technology falters and can be broken, or manipulated and interfered with. As Nam June Paik demonstrated in 1965 with *Magnet TV*, technology's modern equivalent of the magnet affecting the image is software/firmware hacking. Glitch art is the procedural and visual evidence that technology can be subject to similar random and unexpected occurrences that artists have enjoyed with analogue materials and processes and have argued are lost in the digital age.

> The dominant, continuing search for a noiseless channel has been – and will always be – no more than a regrettable, ill-fated dogma. Acknowledge that although the constant search for complete transparency brings newer, 'better' media, every one of these improved techniques will always possess their own inherent fingerprints of imperfection.
> (Menkman: 2011:11)

The problem, which I initially identified, led to the hypothesis that an improved understanding and awareness of new media art would require a paradigm shift to new modes of appreciation within arts institutions. The intention to explore the possibility of parity with other art forms has resulted in complex revelations that demonstrate extreme differences, as well as commonalities. For every similarity, technology has provided an uneven advantage. However, by identifying and understanding that new methods of production and consumption within new media art require emerging

models for engagement, it becomes clear that time is required for the medium to reach the desired parity of status. As a result of its continued development "A concise art historical theory of digital or new media art seems to still be a work in progress as of 2013" (Lichty: 2013).

Whilst the problem identified in my hypothesis has not been resolved, the ideas, issues, and evidence have been analysed in an original way, so that anyone coming to this field will benefit from my findings, and the background theory will have been changed by my intervention. This demonstrates the "Importance of the thesis to the development of the discipline" (Phillips & Pugh: 2002:61).

My conclusions about the exhibition of new media art in mainstream galleries are now contrary to the intentions of my original hypothesis, which implied an argument for a greater presence of new media art in arts institutions. Rather having decided as a result of reflecting upon where the work is nurtured, and by attending new media art events, I now argue that they may be better suited to alternative modes of exhibition, as part of their shift from traditional art paradigms. As part of this shift they do not require the traditional structures and institutions to become rich and engaging. However, they would benefit from greater awareness through education and reportage.

The Shift in Paradigms

Perceptions of new media art are now changing. Major art journals are acknowledging that they may have misjudged the role of computers in art when first reflecting upon and critiquing the art world. The fiftieth anniversary edition of Artforum's introduction by Michelle Kuo featured a 1967 memo from the journal's then editor, Philip Leider, in

response to a writer's pitch: "I can't imagine Artforum ever doing a special issue on electronics or computers in art, but one never knows" (Kuo: 2012). Since 1967 *Artforum* has featured digitally based works and is openly aware of the impact of devices such as the tablet and smart phone on art creation and consumption. The fiftieth anniversary edition featured details on digital works to highlight how art had changed since it first launched.

However, although new technology is becoming increasingly accessible to the general public, there is a continued risk of works being niche, and inaccessible conceptually. The notion of new media technology forces continually changing, evolving, and progressive artwork, which as a result is often increasingly transient. Whilst problematic for collectors, it enables artists to free themselves of many of the drawbacks of physical or analogue mediums.

At the start of this research I was concerned that new media art was being, or had already been, ghettoised. I now believe that postulate was itself acting to ghettoise the medium, as it suggested that the work was not welcome in galleries. Whilst there may still be a lack of new media art presence in arts institutions, this is not a result of it being rejected. It is more often a result of limited resources, both in terms of knowledge and finance (including technical support and infrastructure).

Another encouraging sign is that events, such as the Venice Biennale (BBC World Service: 2009), continue to show increasingly more new media art. This presence provides evidence that the art form will continue to grow and develop its own diversity, as well as its cultural appeal.

New media art allows a collaborative and participatory experience unparalleled in scale and complexity by analogue mediums. Whilst analogue art is able to accumulate and acquire meaning and value, such as nostalgia, historical significance, and financial worth, new media work is able to be transient, and develop within an ecosystem supported by its creators, collaborators, participants, and audience. Rather than negating the gallery, or the gallery rejecting new media art, it resides in a space where it is most likely to thrive. A space to which it is native, enabling it to develop without being skewed into a form for the sake of recognition and identification with tradition. Its very transience affords it currency and relevance in a contemporary context.

Whilst I would like to be able to end this thesis feeling more definitive about the future of new media art (particularly given my conclusions to the contrary of my original hypothesis), the situation is still uncertain. It should be noted that during the writing up period of the thesis at least two major contributors to new media art in the UK have closed. *Folly*[3] did not receive any further funding by the Arts Council as a result of government cuts, and therefore had to close. The BFI exhibition space was also closed as a result of government funding cuts, and a refocusing of the BFI's role resulted in staff being lost.

However, there are organisations such as *Furtherfield* that not only continue to receive funding, but increase their award year on year. *FACT* continues to support a diverse arts programme in Liverpool, but is also one of the key arts venues for the UK. There is increasingly a sense that larger galleries are now taking digital art more seriously. As well as the New Museum of Contemporary Art in New York focusing on works using

emerging technology, and the Whitney's *Artport* web space, the Guggenheim now has a dedicated website to net based art as part of their *Virtual Museum*: "It is definitely a kind of breakthrough when digital art is finally recognized by a major institution like the Guggenheim." (Stoker Cited in Mirapual: 1998). It has also experimented with an online exhibition and sales space called *Åzone Futures Market* (Guggenheim: 2016). Encouragingly, journals such as *Artforum* are periodically taking stock of new media art and the changes it brings to the art world.

Mark Tribe's titling of his intimate email list as *Rhizome* was pertinent in 1996, but continues to be so as new media art is beginning to flourish. It is unlikely that Tribe expected new media art to stay as a hibernating bulb for twenty years, but whilst it has grown roots that are deep and wide with practitioners, it has yet to produce a flower truly appreciated by all.

The September 2012, fiftieth anniversary special, issue of *Artforum* (Kuo: 2012), was dedicated to artists and issues within new media art. Of particular importance was the article by Claire Bishop (2012), which I have previously discussed. Whilst the article itself was a strong account of a number of issues facing new media art in mainstream galleries, it was met with an unexpected amount of hostility from the new media arts community who felt the piece did not reflect the true state of new media arts position in the art world.

Whilst Bishop may have underestimated the quantity of new media art pieces, I would support her claim that in mainstream art institutions the medium is still under-represented. The response article posted on the *Furtherfield* web site, by Lichty (2013),

made a reproach which was a balanced argument giving a number of examples of current new media work which undermined Bishop's argument. The article is sympathetic to my hypothesis and makes the following statement which effectively extends my original concerns:

> The response of the Contemporary art world has been to dig its heels in the pre-digital/analogue to preserve the hallmark of value, and that is the principle of scarcity. The exponentially productive network, especially with the rise of fabrication, is a major threat to material discourse, and one way to try to solve the problem is to discard it. (Lichty: 2013)

It is this very issue of the appearance of new media art having been discarded that was the original rationale for writing this thesis. It is reassuring that my hunch had a basis, and that at the end of six years of research that there is still a defensive debate in favour of new media art, and concern over the way it has been handled. This is an example of the very scenario that has given new media art a sense of ghettoisation. Later in the article Lichty indicates that new media art is now flourishing, however, he neglected to mention the examples he provides were of recent shows in Germany, and not in the UK. A point that may suggest the work is not flourishing equally in all countries.

As I have previously noted, Lichty acknowledges the developing status of new media art. As part of a future structure for analysis, it is important to note that he locates it within contemporary art practice and its history:

> If one is to talk about digital culture through the lens of Contemporary/art historical practice, this might be a key to interpreting digital art and New Media to the Contemporary crowd. It's all in how the discourse is framed and distributed. (Lichty: 2013)

I am concluding here, that the discourse is developing in relation to technological and cultural change. As Munster (2006:151) argues that aesthetics in digital works can be more productively analysed through a set of developing and potential baroque styles rather than through classical ones. The notion of practices rather than technologies being the basis for dialogue about new media art has a greater longevity; moreover it is able to respond to change and be dynamic, as opposed to becoming a static label tied to a specific period.

Response to Hypothesis

In conclusion, and response to my hypothesis, I still believe that an improved understanding and awareness of new media art will aid its inclusion in arts institutions' portfolios. The required paradigm shift to new modes of exhibition and appreciation is developing, but will take more time, particularly in countries with deeply established traditions and structures.

> Commentators on new media, like Gene Youngblood, frequently refer to a future point in time when their promise will be realised. Thought about new media is replete with a sense of a deferred future. We are repeatedly encouraged to await the further development of the technologies which they utilise. (Lister et al: 2009:60)

Although the desire to have parity with other art forms was my original intention, it has become clear that would require equality in terms of opportunity, education, and resources, as well as exhibition and curatorial engagement. Traditional paradigms, that were developed for analogue art forms, must now accept and be accompanied by new

models instead of being forced to fit new media. It is not new media's role to be the mediation of tradition; it will however define its own new set of traditions, from which new paradigms will emerge.

Original Contribution to Knowledge

What has become clear, as a conclusion to this thesis, indicating an original contribution to knowledge, is that new media art has favoured festivals, craft labs, and workshops as its mode of exhibition. It also now forms a commonality as a focal point in art collaborations. A greater understanding is developed from research events and conferences, such as *Fascinate*, *Transmediale*, *ISEA*, and *Siggraph*. These events seek to internally and academically review and contemplate the new media art form. These events could be classed as the basis for a cult based on its position in the art world and modes of creation and consumption. Moreover, these events become a catalyst to the development and understanding of new media art, as well as being a critical component of its art form.

New media as an art form is a reflection of our current state of social, technological, and creative ability and understanding. The inclusion of new and emerging technologies in creative practice should not be viewed as a threat to tradition, but a new chapter in the development of our ability to express ideas and communicate. We will one day move away from the physical and practical restraints of our current technology. Our current technology and understanding will seem rudimental to future generations. It is therefore the responsibility of this present generation to help support this new creative medium so that it can be embraced and understood, and that it might be preserved for its importance to human development as are so many great works of art from our

history. The term new media art will continue to evolve and represent new technologies and the enhanced creative ability they provide. Work on digital platforms is enabling a new perspective on humanity and is reflecting our current culture's obsession with technology. Whilst some are catching up with the digital, others are already forming traditions within the next medium; one which is post-electronic.

Further Research

The influence of computer-generated art on society awaits in-depth exploration. (Penny: 2005)

There continues to be fundamental research being carried out by academics and practitioners. New and emerging researchers, such as Alicia Bastos[1], are conducting surveys, such as mapping the digital media cultural events in London. She has been investigating "The cultural contribution of new media art events" with an interest in "developing a digital cultural capital in London" (Bastos: 2010).

This kind of work will inform us of the trends and developing paradigms. Looking forward to post-doctoral opportunities, there is work to be conducted on the effects of technology on the creative act, and how education can develop its programmes at a range of levels of study to nurture new media artists. Monitoring new media art's activities inside and outside arts institutions will give indications of its broader acceptance and the peak of its emergence moving to a new phase as an invisible medium. There would also be a benefit to develop a better understanding of the emerging paradigms and their relationship to more established models.

It would be difficult to future gaze what may become the new media art of the future, but monitoring the trends of entertainment, technology and social structures will give some indication as to where new forms may emerge. As a fluid medium we can look forward to new media providing new forms of expression that are not currently possible, and we will recognise them as a reflection of our culture. As Lovejoy said, "The mind of any age is the eye of that age." (2008:13).

Definitions/Glossary of Terms

The terms are developed from observations of art exhibitions and definitions in literature including:

Decode: Digital Design Sensations Catalogue (2010) London: V&A.

Greene, R. (2004) *Internet Art.* London: Thames and Hudson.

Lucie-Smith, E. (2003) *The Thames and Hudson Dictionary of Art Terms.* London: Thames and Hudson.

Graham, B. (2005), *Taxonomies of New Media Art- Real World Namings*, in J. Trant and D. Bearman (eds.). Museums and the Web 2005: Proceedings, Toronto: Archives & Museum Informatics, published March 31, 2005 at http://www.archimuse.com/mw2005/papers/graham/graham.html

Tribe, M. and Jana, R. (2006) New Media Art. Köln:Taschen.

Electronic Art (Electronic Technology Based Art)- An umbrella term for artwork utilising any electronic device as they key material in an artwork.

Electronic Art- Electronic Art is art which makes use of electronic media or, more broadly, refers to technology and/or electronic media. It is related to information art, new media art, video art, interactive art, internet art, and electronic music, among others.

The term Electronic Art is almost, but not entirely, synonymous to computer art and digital art. The latter two terms, and especially the term computer-generated art are mostly used for visual artworks generated by computers. Electronic Art has a much broader connotation, referring to artworks that include any type of electronic

component -- also works in music, dance, architecture and performance. It is an interdisciplinary field; artists often collaborate with scientists and engineers when creating their works.

New Media Art- new media art is an art genre that encompasses artworks created with new media technologies, including computer graphics, computer animation, the Internet, interactive technologies, robotics, and biotechnologies. The term differentiates itself by its resulting cultural objects, which can be seen in opposition to those deriving from old media arts (i.e. traditional painting, sculpture, etc.). This concern with medium is a key feature of much contemporary art and indeed many art schools now offer a major in "New Genres" or "New Media." New Media concerns are often derived from the telecommunications, mass media and digital modes of delivery the artworks involve, with practices ranging from conceptual to virtual art, performance to installation.

Digital Art- Digital art commonly refers to art created on a computer in digital form. Digital art can be purely computer-generated, such as fractals, and algorithmic art or taken from another source, such as a scanned photograph, or an image drawn using vector graphics software using a mouse or graphics tablet. Though technically the term may be applied to art done using other media or processes and merely scanned in, it is usually reserved for art that has been non-trivially modified by a computing process (such as a computer program, microcontroller or any electronic system capable of interpreting an input to create an output); digitized text data and raw audio and video recordings are not usually considered digital art in themselves, but can be

part of a larger project. In an expanded sense, “digital art” is a term applied to contemporary art that uses the methods of mass production or media.

Multimedia Art- Utilising and low tech mediums blending them for greater effect, particularly to illustrate contrasts. Typically includes audio visual elements such as slide projection accompanied by music.

Hybrid Art- The “Hybrid Art” category is dedicated specifically to today’s hybrid and transdisciplinary projects and approaches to media art. Primary emphasis is on the process of fusing different media and genres into new forms of artistic expression as well as the act of transcending the boundaries between art and research, art and social/political activism, art and pop culture. Jurors will be looking very closely at how dynamically the submitted work defies classification in a single one of the Prix categories of long standing.

Medium- The material means through which the image or concept is presented.

Net.art- Art works that are developed using internet technologies, particularly coding, and are then exhibited on-line. The aesthetic of Net.art changes and evolves alongside with web technology.

Virtual Reality Art- Works created with three-dimensional design software and then experienced through the use of a head mounted display or 3D glasses creating a visually immersive environment that is usually synthetic, representational or abstract

from reality. This work is usually interactive using either glove controls or sensors on the participant's body.

Interactive Art- A wide range of reciprocal relationships between the work and the viewer. Both can respond, react and interact instantly. Art work responds to input from the participant, usually through touch, but aural and physical presence can also be used. Some works are influenced by camera input. Work often employs a number of technologies including displays, speakers, sensors, cameras, tracking, and coding.

Glitch Art- Code and electronic devices are hacked, manipulated and interfered with to purposefully distort their output. This can generate a random aesthetic, or designed message/image.

Time Based Media- The concept is delivered over a period of time not being fully realised until a full cycle has been completed. Traditionally video art, time based media now includes linear and non-linear works where interactivity and time spent engaging with the work is fundamental in the works existence.

Kinetic- Traditionally employing mechanical technology to create movement and interactivity, it was the forerunner to new media art breaking the boundaries of exhibition, technology and sculpture.

Generative- Images or animations created by programming variables, or interpreting external data sources such as audio or statistics.

Transmedia- 360 degree storytelling utilising a number of platforms to continue or expand a narrative.

Unstable Media- Mediums where their primary form of presentation is unreliable due to material weaknesses or inconsistencies and unreliability in its continued availability.

Code- Computational code carries the core data necessary to run a computer. Code is both a new material that artists can use and an inspiration for their subject matter. Practitioners are exploring the beauty of algorithms and the artistic potential of computational systems.

Programmers- Are a recent addition to the creative arts community. They develop and craft bespoke code, working individually or collaboratively. Programmers can also access and develop code from an open-access library.

Artificial Life (ALife)- Digital simulations/synthesis of life forms, usually cell like and designed to respond to interruptions in their environment through audience interaction.

Immersive- Participant's senses become surrounded and the simulated environment directs understanding and emotional response to work. Typically achieved through 3D projection or head mounted display and accompanied by audio. The Holodeck from *Star Trek The Next Generation* (Allen, C. 1987) being the ultimate goal.

Networked- Connected by a network as a mode of communication to send and/or receive data as part of or the basis for the concept of the work. This can be a local or worldwide network through wired, wireless, or mobile phone data connections. Modern data networks provide artists with a platform for production, collaboration, interrogation and dissemination.

Telepresence- Through the use of a network remote access provide influence over a distance material. The use of technology and cause and effect over distances are key to the concept of the works that use this platform.

Systems Art- Loosely describes a group of radical artists working in the late 1960s early 1970s who reacted against art's traditional focus on the object with the aim of making their art more responsive to the world around them.

Endnotes

Endnotes to Preface

1. FACT (Foundation for Art and Creative Technology) has been leading the UK video, film and new media arts scene for 20 years with groundbreaking exhibitions, education and research projects. The organisation aims to pioneer new forms of artistic and social interaction with individuals and communities. (FACT: 2011)

2. Furtherfield was founded by artists Ruth Catlow and Marc Garrett in 1997 and is been sustained by the work of its community; specialist and amateur artists, activists, thinkers, and technologists, who, together cultivate open, critical contexts for making and thinking. Furtherfield is now a dynamic, creative and social nerve centre where upwards of 26,000 contributors worldwide have built a visionary culture around co-creation – swapping and sharing code, music, images, video and ideas.
Furtherfield opened London's first dedicated gallery for networked and new media art in 2004. Not-for-Profit Private Limited Company since 2009, Furtherfield is part of Arts Council England's National Portfolio Organisations.

Vision- We believe that through creative and critical engagement with practices in art and technology people are inspired and enabled to become active co-creators of their cultures and societies.

Why now?- Art and technologies play a central role in the way we see and form our societies. And so it is important that their developments and productions involve more, and more diverse, people at a fundamental level.

We want to open up the black box of art, technology and social change so that more of us, around the world can get involved and make the magic happen for ourselves, our friends, families, communities and societies.

What We Do?-We create online and physical spaces and places for different kinds of people to come together to get involved with contemporary arts and digital technologies. We are based in London, UK. We run the Furtherfield website for discussion and critical review and two physical spaces in the heart of Finsbury Park with the support of Haringey Council. **Furtherfield Gallery** at the McKenzie Pavilion hosts exhibitions and pop-up up events and **Furtherfield Commons** is a technology and community space for discussions, workshops and informal residencies. We host exhibitions, experimental residencies, experiences, reviews, discussions and workshops. We work with international partners and so local and global networks of people connect to exchange knowledge and ideas and to create their own networked art infrastructures.
(Furtherfield: 2015)

3. BFI Exhibition Space- This was a space within the British Film Institute in London the exhibited artworks that utilised video technology either through the use of cameras, moving image, or imaging technology such as high definition and 3D. The space is no longer open due to funding cuts and restructuring.

4. The Tanks are a subterranean chambers forming an exhibition space, which became available as part of the Tate Modern's extension project, and are the former oil tanks from when the site was a power station "No longer generating electricity, the Tanks generate ideas, creative energy and new possibilities for artists and audiences. These raw, industrial, subterranean spaces, each measuring over thirty metres across and seven metres high are the world's first museum galleries permanently dedicated to exhibiting live art, performance, installation and film." (Tate Gallery: 2016)

5. Microsoft HoloLens puts you at the center of a world that blends holograms with reality. With the ability to design and shape holograms, you'll have a new medium to express your creativity, a more efficient way to teach and learn, and a more effective way to visualize your work and share ideas. Your digital content and creations will be more relevant when they come to life in the world around you. (Microsoft: 2015),

6. Frank Popper has documented the history of the relationship between technology and participatory forms of art, particularly between the 1960s and the early 1990s. Popper explains that contemporary virtual art is a further refinement of the technological art of the late twentieth century and a departure from it. He argues that new media art provides a humanization of technology, with its emphasis on interactivity, philosophical investigation of the real and the virtual, and multisensory nature.

7. Founded in the Netherlands in 1990, ISEA International (formerly Inter-Society for the Electronic Arts) is an international non-profit organisation fostering interdisciplinary academic discourse and exchange among culturally diverse organisations and individuals working with art, science and technology. The main activity of ISEA International is the annual International Symposium on Electronic Art (ISEA). (ISEA: 2013)

8. The New Art Trust is a partnership between the Museum of Modern Art (MOMA), San Francisco Museum of Modern Art (SFMOMA) and Tate.

9. BA (Hons) Digital Media Arts (2017 Entry). "Programme Overview: This degree gives you expert knowledge of how cutting-edge technology and methods are shaping the creative industries, both in the UK and abroad. By combining theory, practical skills and professional experience, we open up an unbeatable range of career opportunities for you." (Surry University: 2016)

10. The Ruskin Gallery is a unique exhibition space, surrounded by the artists' studios of Cambridge School of Art on Anglia Ruskin University's Cambridge campus. It incorporates a ground-breaking digital gallery - the first of its kind in the UK. (Anglia Ruskin University Gallery: 2011)

11. Rhizome is dedicated to the creation, presentation, preservation, and critique of emerging artistic practices that engage technology. Founded in 1996 by artist Mark Tribe as an intimate email list subscribed to by some of the first artists to work online and now a thriving non-profit, Rhizome has played an integral role in the history, definition and growth of contemporary art engaged with technology and the Internet. Rhizome is located within the New Museum at: 235 Bowery, New York. (Rhizome: 2011)

12. CRUMB aims to help those who 'exhibit' new media art, including curators, technicians and artists. (CRUMB: 2009)

Endnotes to Chapter One

1. To give some insight into the degree to which the medium of digital media has progressed it is worth noting that to create text on screen each character uses 1 bit of storage. There are 8 bits in every byte. This means that an unformatted 2000 word document uses 250 bytes just for the characters, not including the file format information. Most computers in 1979 only had 1 kilo byte (kb) of Random Access Memory (RAM) and discs could only hold 250kb of data.

As a majority of personal computers in the late seventies and early eighties were only capable of displaying lines of text it took some computing power to develop the graphical user interface seen on computers such as the Apple Macintosh. The technical requirements of pixels to create a colour depth of 32 bits requires four times the amount of processing power. There are 8 bits in a byte, so 32 bits divided by 8 equals 4 bytes per pixel.

If a single pixel of a 32 bit colour depth image uses 4 bytes, and an image is made up of 5 million pixels (although many photographers now take photographs at resolution nearing 20 mega (million) pixels, that means it would take 1, 250, 000 bytes to store the image. That is 1.25 Mega Bytes (MB). All of this technical information means that the processing power to deal with this average size/quality image did not exist in the late 70's early eighties.

2. The Fotoman (1990) was the first commercially available digital camera in the UK also sold as the Dycam Model 1, only produced 320x240pixel black and white images, had just 1MB of internal memory and a fixed focus lens. (Atherton: 2013)

3. Saatchi Art- Saatchi Online was started by the Saatchi Gallery in London in 2006 in order to help artists without gallery representation to find an audience for their work. It is estimated that over 1 million artists across the globe aren't represented by galleries. Saatchi Online provides these talented artists with a platform to showcase and sell their work in an environment with an excellent reputation for introducing outstanding artists. (Saatchi Art: 2016)

4. Google Glass takes all the functionality of a smartphone and places it into a wearable device that resembles eyeglasses. The see-through lens could display everything from text messages to maps to reminders. They may be capable of showing video chats, providing turn-by-turn directions, taking photos and recording notes -- all through simple voice commands. (Goldman: 2012)

5. THQ released a drawing tablet (game tablet) and software package for the Wii called *Draw!* in 2010, aimed at families. It has subsequently been released on Playstation 3 and XBOX 360.

Endnotes to Chapter Two

1. Matters in Media Art was launched in 2005, this collaborative project between the New Art Trust (NAT) and its partner museums – the Museum of Modern Art (MoMA), the San Francisco Museum of Modern Art (SFMOMA) and Tate – has been designed to help those who collect and keep time-based artworks (e.g. video, film, audio and software-based installations). Conceived originally as a consensus building project for the three partner museums of the NAT, the enduring goal has been to affirm our commitment to time-based art and artists by developing shared practices for the works' care and preservation. It has always been the consortium's hope that if the three museums could come together to agree on emerging stewardship practices, then by sharing these practices online they would be used, improved upon and refined by larger audiences of artists and collectors. (Tate Gallery: 2013)

2. Wacom Tablet- Wacom's line of creative pen tablets include a range of choices for your creative interests. The Intuos line up is a great place to start, especially for drawing, sketching and photo activities. The choices in Intuos Pro deliver the pressure-sensitivity, pen performance and productivity features most sought out by serious creative. (Wacom: 2015)

3. Surface Pro Computer- Every Surface goes from laptop to tablet in a snap, works anywhere that your day takes you, and connects seamlessly to your other devices. With multiple ports and the very best digital pen experience, Surface will redefine what it means to be productive in the office, studio or café. (Microsoft: 2015)

Endnotes to Chapter Four

1. Simon Penny is an Australian artist, theorist, curator and teacher in the field of interactive media art. He edited the anthology *Critical Issues in Electronic Media* (1995). Penny has been creating electronically sophisticated robotic installations, curating shows such as *Machine Culture* at Siggraph '93, and writing about digital culture and electronic media art.

2. Facebook reported 543 million monthly active users on mobile, with 955 million on desktop. But mobile is growing much faster right now: Desktop MAUs grew by 29% over the year before, while mobile MAUs grew by 67%. (Lunden: 2012)

3. Scott Snibbe is an Interactive media Artist who has repurposed and distributed a number of his artworks as Apps for the iOS App store and the Mac Apps store. He now generates income for his company Snibbe Interactive. Works available include *Gravilux*, *Bubble Harp*, and *Tripolar* (2010). Snibbe also worked with Bjork on *Biophila* as an interactive album promotion/release platform for iOS.

4. The DIWO (Do It With Others) series (since 2007) of Email Art and co-curation projects that explored how de-centralised, co-creation processes in digital networks could (at once) facilitate artistic collaboration and disrupt dominant and constricting art-world systems. (Garrett and Catlow: 2013)

Endnotes to Chapter Five

1. NEW-MEDIA-CURATING@JISCMAIL.AC.UK. For those involved in curating, exhibiting, archiving or interpreting new media art (including net.art, interactive installations, digital video etc.) The list of the CRUMB web site (https://www.jiscmail.ac.uk/mailinglists/category/W1.html Accessed: August 2013)

2. Northern Lights.mn is a roving, collaborative, interactive media-oriented arts agency from the Twin Cities for the world. It presents innovative art in the public sphere, both physical and virtual, focusing on artists creatively using technology, both old and new, to engender new relations between audience and artwork and more broadly between citizenry and their built environment.
(Northern Lights: 2011)

3. 01SJ Biennial was set up by Zero1. The 2010 01SJ Biennial is predicated on the notion that as artists, designers, engineers, architects, marketers, corporations and citizens we have the tools to (re)build the world, conceptually and actually, virtually and physically, poorly and better, aesthetically and pragmatically, in both large and small ways. 01SJ is about how powerful ideas and innovative individuals from around the world can make a difference and come together to build a unique and distributed city-wide platform for creative solutions and public engagement.
(01SJ Biennial: 2010)

3. **Mission-** ZERO1 is a Silicon Valley arts organization. We connect creative explorers in art, science, and technology to provoke new ideas that shape a more resilient future.

Vision- To fully explore what's possible tomorrow we provoke new ideas, spark experimentation, and seed creative strategies today.

What We Do- Working with some of the most fertile and creative minds from the worlds of art, science, design, architecture, and technology, ZERO1 produces the ZERO1 Biennial, an international showcase of work at the nexus of art and technology and the ZERO1 Fellowship program where principles of artistic creativity are applied to real world innovation challenges.

Core Beliefs- At ZERO1 we believe that

- Art, at the frontier of technology, broadens our critical understanding of the world by provoking new ideas, experimentation, and creative strategies.
- Through a global network of partners we can bridge academic, corporate, and cultural worlds to foster collaboration and encourage social action.

Things get interesting where disciplines rub up against each other.
(Zero1: 2011)

5. The Baltic gallery has no permanent collection, providing instead an ever-changing calendar of exhibitions and events that give a unique and compelling insight into contemporary artistic practice. (Baltic Gallery: 2011)

6. DeCODE

Onedotzero co-curated the seminal exhibition with the V&A. Decode: Digital Design Sensations showcased the latest developments in digital and interactive design; from small, screen-based graphics to large-scale interactive installations. The exhibition features both existing works and new commissions by established international artists and designers such as Daniel Brown, Golan Levin, Daniel Rozin and Troika.

The exhibition explored three themes:

Code presented pieces that use computer code to create new works, and also looked at how code can be programmed to create constantly fluid and ever-changing works.

Interactivity looked at works that are directly influenced by the viewer. Visitors were invited to interact with and contribute to the development of the exhibits.

Network focused on works that comment on and utilise the digital traces left behind by everyday communications and looked at how advanced technologies and the internet have enabled new types of social interaction and mediums of self-expression. (One Dot Zero: 2010)

7. OneDotZero- onedotzero is a cultural leader curating and producing memorable and engaging events, exhibitions and experiences. Bringing art, entertainment and technology together to thrilling effect, onedotzero focuses on commissioning, production, consulting, public and private events, content development, publishing and education. Our commitment and credibility is applied with deep curatorial experience to create sensory experiences that are on-brand, current and instill a sense of true excitement around digital culture. (One Dot Zero: 2015)

8. Karen MacKinnon is the Director of Artes Mundi International Visual Arts Exhibition and Prize. MacKinnon has been working as an international curator based in Wales for the past eighteen years, including roles at Glynn Vivian Art Gallery, Swansea and Chapter, Cardiff. During that time she has organised and curated contemporary and historical exhibitions and has developed a specific interest in the relationships between local and global, place and locality. More recently, she has been working in a number of different contexts both on and off site, working with socially engaged practitioners as well as those whose work is gallery based.

In 2005 she curated the exhibition *Somewhere Else Wales* at the Venice Biennale which included the work of Peter Finnemore, Laura Ford, Paul Granjon and a residency with Bedwyr Williams.
(Artes Mundi: 2013)

9. Artport is the Whitney Museum's portal to Internet art and an online gallery space for commissions of net art and new media art. Originally launched in 2002, Artport provides access to original art works commissioned specifically for artport by the Whitney; documentation of net art and new media art exhibitions at the Whitney; and new media art in the Museum's collection.
(Whitney: 2015)

10. Artnet reports that Melbourne’s Australian Center for Contemporary Art and Hewlett-Packard are smarting from an interactive art installation/product showcase

gone wrong. The piece, dubbed *myworkisintheaustraliancentreforcontemporaryart*, was intended to run October 25–November 7, 2010, and was intended as a promotion for HP's ePrinter technology, allowing anyone to email an artwork to a printer located in ACCA's foyer. Less than a week into the run, however, the printer was taken offline, according to *The Age*, amid a hubbub from artists condemning the piece for copyright provisions giving HP ownership of all the works submitted. Artists Damon Kowarsky and Deborah Kelly had even encouraged submitting protest works. ACCA made the decision to kill the project, and is currently claiming that it was "a venue-hire arrangement." When the project launched, the institution's artistic director Juliana Engberg was quoted as promoting it with the tagline, "Art in the age of mechanical reproduction just went cosmic." (Art Forum News: 2011)

11. The Variable Media Network proposes an unconventional preservation strategy based on identifying ways that creative works might outlast their original medium. The aim of this diverse network of organizations is to develop the tools, methods and standards needed to rescue creative culture from obsolescence and oblivion. It is promoted by the Forging the Future Alliance. (Variable Media: 2012)

12. Forging the Future is an alliance dedicated to building tools to help rescue digital culture from oblivion. Building on the work of the Variable Media Network, Forging the Future refines and distributes free and open-source products that boost access and aid in preservation. Our aim is to help creators, conservators, and curators understand the possible futures that can be imagined for a cultural artefact, and choose the best among them on a case-by-case basis. (www.forging-the-future.net)

Endnotes to Conclusion

1. Marisa Olson, *Collectible After All: Christiane Paul on net art at the Whitney Museum*- Interview held with Christiane Paul regarding the launch of Artport. The interview transcript can be found in the appendices of this thesis. (Olson: 2015)

2. StillReel is an online digital art gallery providing a curated selection of art for you to stream to any connected device, like a Smart TV. Change your art in your home as often as you like without the commitment of buying. For businesses, StillReel provides engaging content for customers in coffee shops, bars and other retail spaces. With StillReel, we've made it easy to browse through great digital artworks, create your own Playlist and stream them onto any connected device like a Smartphone, Tablet or Smart TV. Each Playlist comes with it's own unique web address you can copy into any browser and turn the screen into a work of Art. (Still Reel: 2013)

3. Folly- Founded as the Folly Trust in 1989, it has worked on a number of interactive digital art projects across the north west of England. (BBC Lancashire News: 2011)

Endnotes to Further Research

1. Alicia Bastos- Her research focuses on the measurement of the cultural contribution of new media art events to London. It develops the concept of ‘digital cultural capital’ by adapting the concept of ’cultural capital’ devised by sociologist Pierre Bourdieu for the digital age. The objective is to give relevance to social and cultural studies, specifically in terms of digital culture and the arts. (Bastos: 2010)

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ZKM (2010) *Centre for Art and Media* [Online] Available at: http://on1.zkm.de/zkm/e/about (Accessed: October 2010).

Appendix

Interview Transcripts:

Karen Mackinnon- Glyn Vivian Gallery- Curator /Artes Mundi- Director

Full audio recording of interview available at:
https://soundcloud.com/brett-aggersberg/karen-mackinon-interviewmp3/s-J78TN

Karen Mackinnon of the Glynn Vivian art gallery in Swansea, South Wales, not only suggests this point as a problem from her twenty years of curating experience, but also as one of the pioneers for the inclusion of digital media within Cardiff's Chapter Arts Centre programme of events. Mackinon agrees that it is most successful when it is both things- "conceptual and technological".

"When work is lead by the technology that's difficult. As a curator I'm more interested in work which is lead by ideas and telling us something about the world we live in." (Mackinon Interview November 2010)

"It's all about ideas and not about how sophisticated something is. This is where the art world gets confused. Ars Electronica and all those kind of shows show off the latest technology and that is where the "is it art" comes into it. Is that something you would show? The art world is still very much about the conceptual work, the ideas, how it engages, and what it tells us about the world." (Mackinon Interview November 2010)

Chapter's mission was to show cutting edge works, medium and concept. They asked the same questions- why aren't galleries showing new media works in this world of technology. We honestly thought when did that programme that in 5 years time everyone would be showing that work as part of their programmes. In a sense the're still not, they are showing it, without realising it, without focusing on it. (Karen Mackinon, Glynn Vivian Museum. Interview November 2010)

Chapter's audience is very informed, mainly artists, it's job was to push the boundaries. Glynn Vivian's audience is much broader, programming is based on the fact that it's a local public gallery, supporting local artists, inviting international artists to come and make work here, and programming with our collection. (Karen Mackinon, Glynn Vivian Museum. Interview November 2010)

As Mackinon points out "Artists are wary of the relationship between business sponsorship" (Mackinon Interview November 2010),

When discussing the inclusion of electronic artworks within the Glynn Vivian collection Mackinon was very positive. "Yes, we would defiantly want to include digital works in the refurbished gallery. We don't have anything like in the collection at the moment. New purchases now include contemporary art, and film. Archiving is tricky with changing formats." Whilst there are a range of issues that can affect

whether a gallery acquires an artwork; capacity and direction are primary in the decision making process. “The technology and the money, as well as the “is it art”, come in to whether galleries accept the artworks.”

Mackinon’s realisation about her programming at Chapter is very revealing when considering new structures for the inclusion of Electronic Art. “There are these trends and fashions in the art world that come and go. New media probably was high on everyone’s list, particularly if you were a contemporary space, how could you ignore this new thing that had come along and was very challenging?”

Pip Laurenson- Tate Modern

Pip Laurenson, (2010) *Time-based Media Conservation - Recent Developments from an Evolving Field* International Network for the Conservation of Contemporary Art, Conference 2010.

At the Computers and the History of Art group (CHArt) 2010 conference, I asked Pip Laurenson, Head of Time-based Media Conservation for Tate, how their collection agenda was structured. To my surprise her response echoed that of the Australian Government, who, in 2006, claimed that New Media Art no longer required specialist support as it had now become mainstream. Laurenson stated that the Tate was collecting work that was interesting and may be of benefit to future collections. She was not looking to select electronic works specifically, but she had found that by the very nature of the permeation of technology into all areas of life she was seeing more works that could be classed as Electronic Art. When I approached the subject of why

the public were not seeing this recently acquired work, she was not able to answer why it had not been programmed into the exhibition schedule. However, she revealed that they are still developing archival practices to deal with the accurate recording and retrieval of data about the work. Laurenson also claimed the following when discussing the role of the conservator; "Time-based media conservation has reached something of a tipping point; with an increase in specialist museum posts, the proliferation of research projects and growing acceptance within the cultural sector of this new and emerging area of practice" (Laurenson 2010).

Laurenson's comment (2010), earlier in this chapter, "growing acceptance within the cultural sector of this new and emerging area of practice"

Roy Ascott- Artist/Plymouth University- Professor

When asked if galleries and museums have a responsibility to collect and programme new mediums he replied: "Yes, but they will need to be totally reformed and restructured to do so" (Ascott email 2011).

Internationally renowned New Media critic Roy Ascott's understanding of the current situation is that "as far as I know there is no collecting of new media art works in the UK- apart from video" (Roy Ascott e-mail 2011).

Ascott believes that galleries are “emphatically not” (Ascott email 2011) more accepting now than in the mid-nineties of electronic and new media works

Ascott even describes, when questioned about galleries’ current understanding of electronic and new media art works that it is “extremely limited if not totally disinterested” (Ascott email 2011).

Ruth Catlow- Furtherfield- Director and Artist

Skype Interview July 2013

How does Furtherfield relate to the objectives of the Arts Council?
Had support since 2005 at a lower level. Funding has been cut, but not to the BFI though.

Do you receive support from other organisations and what have been the main challenges in running Furtherfield?
Harrogate Council supply the gallery space and we supply the public programme. Otherwise independent. Currently looking at options for sponsors.

Are you comfortable with the term new media art?
People can be tribal about the term. For the public we use digital. I like media art and networked new media, or digital culture. Material/aesthetic influence it. People outside think we are insane for worrying about the term.

Why do you feel it's so hard to find new media art in a mainstream gallery? Why don't we see it in the Tate Modern? I know that Pip Laurenson is collecting time based media.

They are often gated gallery spaces. Is this still the case? Work is increasingly shown at fairs. Curators need more knowledge. There are technical issues that can put people off.

Other comments of note:

- What can help introduce more people to new media art? Being social, go where people are. New places to meet new people. Furtherfield is in the park so people are already in a recreational moment.
- Ellie Carpenter from Goldsmiths working with Furtherfield on Curation with New Media.
- Contextualisation is difficult for some curators.
- The art is produced by groups.
- Carol Fletcher, formally a sculptor, is setting up a gallery for commercial sale of new media work.
- Open access free social media is important. Open software rather than Photoshop which is tied down is of interest to us and the practice.

Meg Anthony- Oriel Myrddin- Curator/Manager

New media is definitely not our exhibiting priority - as a gallery we very much focus on materials and processes, we fall within ACW's craft gallery portfolio, and though such boundaries are now rather obsolete I see 'craft' as incorporating tangible/physical

things from fields of both applied of fine art - of course this now includes some new media - videos currently part of Jerwood Drawing show are good examples. (Meg Anthony, Oriel Myrddin. Email discussion, February 2011)

Christiane Paul- Whitney Museum of American Art- Adjunct Curator / The New School- Professor

Of importance to the UK context of my thesis Paul sees "no major differences in collection / preservation approaches of new media around the world" (Christiane Paul email 2011).

Paul clearly states that "I don't see that galleries are much more accepting of new media arts (unless you count video) than they were 15 years ago, only very minor progress has been made" (Christiane Paul email 2011).

Marisa Olson-

Collectible After All: Christiane Paul on net art at the Whitney Museum

Olson

Collections like Artport are a rare and valuable window onto a field of practice that, in some senses, was borne out of not being taken seriously. From mid-80s Eastern European game crackers to late-90s net artists, the first people working online were often isolated, by default or design, and were certainly marginalized by the art world, where few curators knew of their existence and fewer took them seriously, advocated for them, or worked to theorize and articulate the art historical precedents and currents flowing through the work.

Paul

Artport in its early days was sponsored by a backend storage company in New Jersey, which was then bought by HP, so HP appeared as the official sponsor. I think it is notable that sponsorship at that point did not come from a new tech company but a brand name that presumably wanted to appear more cutting edge.

Paul

The evolution and focus of Artport mirror shifts in net art practice and in the cultural landscape of the web over time.

Olson

In a sense, Artport has grown up parallel to the maturing of net art into what is now a highly diverse field of practice. For instance, it began in those bubble days just prior to the backlash against the term “new media” that is reflected in Lev Manovich's 2001 use of the term “post-digital” (channeling Rosalind Krauss's “postmedium”), the 2003 Tate panel you were part of entitled “When New Media Was New,” the Banff Centre show curated by Sarah Cook & Steve Dietz in 2005, “The Art Formerly Known As New Media,” and subsequent uses of the term “postinternet.”

Paul

The practice of many, if not most, artists who work with the digital medium today is extremely hybrid. They may create online projects but they might also do object-based art, paintings or sculptures that are deeply informed by or use elements of the net or its “language,” which is what the term postinternet tries to capture.

Paul

I think Artport's new status as a special collection was a very important step for both the works featured on the site and the recognition of net art(ists) in general. The Whitney's curatorial team had in-depth discussions about how we would approach this relationship with the collection, which has significant ramifications for the ways in which we think about net art in institutional contexts.

There is a major difference between commissioning works and acquiring them for a collection. All of Artport's projects were commissioned under non-exclusive licenses, meaning that the Whitney Museum has the right to exhibit them in perpetuity and hosts projects on its server, but that artists are still able to retain copies and show their works in exhibitions with a credit line stating that the respective piece was commissioned by the Whitney. The Whitney does not have exclusive ownership of Artport projects, which brought up the question of whether we needed to officially acquire all of the pieces to bring them in to the collection. After discussions within the curatorial team, we decided that it does not make sense to “lock down” the works as acquisitions.

Bringing Artport into the collection makes the statement that net art as a medium has the same status as traditional art forms. Not all of the artists that contributed to Artport are exclusively “net artists;” they may also be painters or sculptors and work across a range of media. Bringing their web projects into the collection means that they are as important and collectible as a painting or sculpture.

Marisa Olson *Collectible After All: Christiane Paul on net art at the Whitney Museum* http://rhizome.org/editorial/2015/aug/10/artport-interview-christiane-paul/?ref=tags_artport_post_readbtn (Accessed: August 2015)

Louise Wright- British Council

The British Council for example has extended its collecting of film to "include work that is driven by online feeds from the internet and work that is software based" (Louise Wright, British Council. e-mail February 2011).

Emma Posey- BLOC- Founder

>Why was BLOC established and what is its long-term aim?

To network. Aims were short and related to funding rounds.

>How does BLOC relate to the objectives and interests of the Arts Council of Wales?

Issues relating to non-employment of media expert. Emma not contacted to oversee applications of media art proposals.

>Where does new media art fit in to the Welsh arts context?

There are issues surrounding new media art in Wales. The focus and understanding has been towards craft and traditional areas. There are very few well recognised media artists in Wales.

>What have been the challenges in running BLOC, or has there been a lot of support?

Attendance was good, but the support to develop BLOC has reduced and applications for BLOC to be come more substantial in Wales have not been awarded.

>Who is BLOC's target audience?

Practitioners/artists

> Do you have an interest in any particular form of new media art?

Technology of coding and components.

Emma sees coding and manipulating components as the most interesting area of New Media Art as so many people have access to photoshop and video editing software. There is a deep understanding and engagement with the medium by exposing and controlling its medium specificities.

Emma feels that the term New Media Art is problematic. She prefers creative technology.

Emma now works at Aberystwyth University with Creative Technology for young people.

From: Lucina Ward
To: B Aggersberg
Date: 9/22/2009 4:07 AM
Subject: FW: PhD- Assistance with information

22 September 2009

Brett Aggersberg MA, BSc (Hons)
School of Creative Arts and Humanities
TrinityUniversityCollege,
Carmarthen
SA31 3EP UK
T: 01267 676936

Dear Brett Aggersberg

Thank you for your enquiry of 28 August to Director Ron Radford to which he asked me to respond.

The National Gallery of Australia does not have a specific policy for collecting or curating electronic based art, although we adhere to conservation principles when archiving work. Rather we approach electronic, digital and video art under the umbrella of contemporary practice and, where necessary, adapt our broader museum procedures to the specific requirements of the work.

The collection includes historic video—Benglis, Calle, Hill, Nauman, Oppenheim, Paik, Viola *et al*—and a small number of key installations such as Bill Viola's **Interval** 1995 which use digital or analogue video and / or audio. Holograms, for example, tend to be collected as Photography. Some recent acquisitions are: Salla Tykkä's **Cave trilogy (Lasso, Thriller, Cave)** 2000–03; Shaun Gladwell's **Quay sequence** 2007; Farrell and Parkin's **Along the Great Wall** 2007. You can search the collection at http://artsearch.nga.gov.au/

Our exhibition program and collection displays on occasions incorporate works which might broadly be described as electronic art but the last shows dedicated to video / digital art were: *Gary Hill – Bruce Nauman: New International Media Art* (14 December 2002–21 April 2003); *Bill Viola: The Passion* (29 July–6 November 2005) and the children's exhibition, *Future Play from the House of Tomorrow* (19 March–29 May 2005. Other exhibitions which may suit your project include: *Virtual reality* 1994/95 and *Paula Dawson: There's No Place Like Home* 1999.

Our education and public programs regularly feature film, video and digital art. One important imitative was fullscreen which ran 2004–08 (see the website for details).

Although I haven't specifically addressed every one of your queries, I hope this will give you a sense of our approach. If you have other questions, please do not hesitate to contact me again.

Good luck with your project.

Yours sincerely

Lucina Ward
(Acting) Senior Curator
International Painting and Sculpture
National Gallery of Australia
postal address: GPO Box 1150, CANBERRA ACT 2601
street address: Parkes Place, Parkes ACT 2600 Australia
telephone: +61 2 6240 6483
facsimile: +61 2 6240 6529
http://www.nga.gov.au

-----Original Message-----
From: B Aggersberg [mailto:B.Aggersberg@trinity-cm.ac.uk]
Sent: Thursday, 27 August 2009 9:59 PM
To: lucy@198.org.uk; info@balticmill.com; MAnthony@carmarthenshire.gov.uk; media@guggenheim-bilbao.es; education@guggenheim.org; pressoffice@guggenheim.org; info@moma.org; press@newmuseum.org; Information; Ron Radford; archiveenquiry@npg.org.uk; press.office@royalacademy.org.uk; admin@saatchigallery.com; Peyton-Jones@serpentinegallery.org; commassistant@sfmoma.org; glynn.vivian.gallery@swansea.gov.uk; arwen.fitch@tate.org.uk; daisy.mallabar@tate.org.uk; pressoffice@tate.org.uk; stacey.arnold@tate.org.uk; vanda@vam.ac.uk; enquiries@whitecube.com
Subject: PhD- Assistance with information

Dear Sir/Madam,

my name is Brett Aggersberg and I am currently writing my PhD on Electronic Art in the UK. I lecture at Trinity University College in Carmarthen, Wales, and I am writing my PhD with supervision from Swansea Metropolitan University.

I am writing to galleries in the UK, and abroad, to compare the different approaches to dealing with electronic forms of art, including new media, digital, virtual and interactive. This will allow me to gain a more accurate and current view of the state of electronic art in the UK.

It would help my research immensely if you could reply to the following questions.

>What is your policy on curating and archiving electronic based art work?

>Do you have a permanent electronic art collection?

>How would you select an electronic based art work for exhibition or acquisition?

>Have you noticed a shift in people's perception of electronic art from say 10 or 20 years ago?

>Do you include electronic art in your education programmes?

>How do electronic art works compare financially to traditional works

such as painting or sculptures?

>How do you support artists working at the vanguard of art and technology?

>What issues have you encountered when working with electronic art?

>Do the public, or artists, request the showing of work that incorporate cutting edge technology?

>Do you have a network of sponsors, artists and curators actively working with electronic art in your gallery?

>Do you have any audience feedback on current or previous electronic art exhibitions that you could share with me?

I understand that you are very busy and therefore any reponse will be greatly valued. Thank you in anticipation of your reply.

Yours sincerely,

Brett Aggersberg MA, BSc (Hons)

School of Creative Arts and Humanities
Trinity University College,
Carmarthen
SA31 3EP
UK

B.Aggersberg@trinity-cm.ac.uk

01267 676936

From: "Meg Anthony" <MAnthony@carmarthenshire.gov.uk>
To: B Aggersberg
Date: 8/27/2009 2:49 PM
Subject: RE: PhD- Assistance with information

Hello Brett
A quick summary response to your email
We don't have any kind of collection so archive maintenance not an issue for us.
We're small and very under-funded - the last time we showed a film show we had to borrow adequately good quality projector from neighbouring gallery! With better funding from ACW purchase of decent equip would be a high priority. Increasing openeness to film/new media from public - public perception definately changed so it s now seeming to be 'normal' part of gallery experience. In terms of our own remit - film is not a particular priority - we're open to it but in our artistic policy, materials and techniques - methods of making, are more important - and this is in line with our Arts Council status as 'craft' gallery.
We only have one gallery space so conversion to a 'dark' space has its problems/costs but is and can be done, despite the fact that the space is naturally extremely light.
Hope that of some use
Best
Meg

-----Original Message-----
From: B Aggersberg [mailto:B.Aggersberg@trinity-cm.ac.uk]
Sent: 27 August 2009 12:59
To: lucy@198.org.uk; info@balticmill.com; Meg Anthony; media@guggenheim-bilbao.es; education@guggenheim.org; pressoffice@guggenheim.org; info@moma.org; press@newmuseum.org; information@nga.gov.au; Ron.Radford@nga.gov.au; archiveenquiry@npg.org.uk; press.office@royalacademy.org.uk; admin@saatchigallery.com; Peyton-Jones@serpentinegallery.org; commassistant@sfmoma.org; glynn.vivian.gallery@swansea.gov.uk; arwen.fitch@tate.org.uk; daisy.mallabar@tate.org.uk; pressoffice@tate.org.uk; stacey.arnold@tate.org.uk; vanda@vam.ac.uk; enquiries@whitecube.com
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>Do you have any audience feedback on current or previous electronic art exhibitions that you could share with me?

I understand that you are very busy and therefore any reponse will be greatly valued. Thank you in anticipation of your reply.

Yours sincerely,

Brett Aggersberg MA, BSc (Hons)

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SA31 3EP
UK

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01267 676936

Regards,
Brett

Brett Aggersberg
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Conferences:

Postgraduate Research Forum. Swansea Metropolitan University. March 2008.

Wales Institute For Research in Art and Design (WIRAD). **Conference for New and Emerging Researchers**. Hilton Newport. April 2008.

Image 2.0. Falmouth University College. August 2009. Paper *Virtual Touch*.

Electronic Visualisation in the Arts (EVA). British Computing Society. July 2010.

CHArt. British Computing Society. November 2010. Paper *Virtual Reality as Fine Art Space.*

ReWire. John Moors University Liverpool. September 2011.

Recalibrate: new media art Symposium. Swansea Metropolitan University. June 2012. Keynote presentation, *The Case for new media art*.

Fascinate. Falmouth University College. August 2013.

Swansea Animation Days (SAND). Swansea Metropolitan University. 2003-2009

Amper SAND. Swansea Metropolitan University. 2005-2008

Application of Knowledge:

Higher Education Academy Book Review of: Bentkoska-Kafel, Cashen, T. and Gardiner, H. (eds.) (2007) *Futures Past: Thirty Years of Arts Computing. Computers and the History of Art.* Bristol: Intellect.

Advance Communication Technologies Project Blog.
Social Media For Art. http://www.actirelandwales.com/wordpress/?p=1761

Planning of *Recalibrate: new media art Symposium.* Swansea Metropolitan University. June 2012.

Teaching New Media within an Art and Design context at University of Wales Trinity Saint David has included the following undergraduate modules:

Digital Art

Challenging Spaces

Advanced Creative Project

New Media in Practice

Communication Graphics

Fundamentals of the Still Image

Multiplatform Publishing

Interactive Media

Exhibitions, Galleries and Events Attended:

Decode- V&A April 2010.

BFI Gallery- Including: *The All-Seeing Eye (The Hardcore Techno Version)* by Pierre Bismuth and Michel Gondry 2008; Mark Lewis 2007; Patrick Keiller 2008.

Royal Academy of Art- Including various Summer Exhibitions.

British Museum.

Ffilm 3- Glynn Vivian Gallery March 2010.

Lab Craft- Oriel Myrddin March 2012.

EVA 2010 accompanying exhibition.

CHArt 2010 accompanying exhibition.

ReWire 2011 accompanying exhibition.

AmperSAND- Paul Granjon in Conversation.

Tate Modern.

Tate St Ives.

Furtherfield.

London Science Museum Welcome Trust Wing.

Fascinate Exhibition and Electronic Art Workshop- Falmouth University College.

Adobe Education Summit- Barcelona 2013.

Staffordshire University Digital Art Graduate Show 2013.

South Bank Centre- Hayward Gallery.

Google Chrome Web Lab- London Science Museum.

Scattered- Multimedia Dance Production by Motionhouse, 2010.

London Exhibitions detailed in London 2013 Case Study.

Membership:

MeCCSA (Media, Communication and Cultural Studies Association)
Rhizome
CHArt (Computers and The History of Art)
HEA Fellow
BAFTA Cymru
Adobe Campus Leader, and Adobe Education