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**FACILITATING HUMAN COMPUTER  
INTERACTION ARTWORKS:  
THE NATURE OF INTERACTIVITY  
WITHIN ARCHITECTONIC SCHEMES**

LUBA DIDUCH

A thesis submitted in partial fulfillment of the  
requirements of Bath Spa University  
for the degree of Doctor of Philosophy

Bath School of Art and Design, Bath Spa University

2015



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## Abstract

This paper examines Human Computer Interaction artworks and how notions of interactivity are evolving due to the presence of expanding architectonic schemes in and around these artworks. This research draws on sources that use rapid ethnographic methodologies to collect data and argues for a redefinition of current understandings of interactivity within the field of multimedia and art practice. My research has been practice based and is reflected in the artworks and writing that I have produced.

Participants' highly differential levels of commitment with an artwork while examining understandings of co-creativity are explored. Artworks of contemporary artists who use Human Computer Interaction and computer technologies to experiment with the idea of expansiveness through spectator participation in the field of HCI artworks are discussed. In varying degrees, and due to varying aspects of immateriality, artworks are considered as being extended beyond the confines of both the multimedia interface and even the architectural structure of the art gallery or exhibition space. Terms such as *architectonics*, *touchpoints*, *configuration* and *agora* are employed when describing interactive processes in the field of Fine Art installation. Modernist writer and critic R.H. Wilenski is referenced regarding the relationships between art, architecture and the artist/spectator. Current and past understandings of interactivity, as well as terms used by contemporary interface designers such as Don Norman and Dan Saffer are used in relation to the study of HCI artworks. In addition, this paper focuses on the modes in which audiences 'look away' and use a range of devices that exist around artworks to expand the architectonic schemes in and around them.

My research question investigates the ways in which Human Computer Interaction artworks are expanded through audience interactivity and engagement. In addition, I am examining the ways in which architectonic schemes extend artworks beyond their

immediate structures. My research has focused on the modes in which audiences 'look away' from interactive artworks and through their actions after looking away, expand the architectonic space of the artwork.

This thesis is rooted in a research process that uses ethnographic principles to document and explore audience engagements with new media, more specifically, HCI artworks. The fieldwork methods that I have been using have been executed in natural settings and include participation, observation, hand drawn charts and notes, interviews with key informants and documentation of three main prototypes. I have used *rapid ethnography* (Millen, 2000)<sup>1</sup> as a methodology for the purpose of compressing fieldwork into shorter time periods that are normally used in ethnographic practice. Key texts include James Clifford's *The Predicament of Culture*, Roy Ascott's *The Telematic Embrace*, and R.H. Wilenski's *The Modern Movement in Art* (Wilenski, 1945)<sup>2</sup>.

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<sup>1</sup> MILLEN, David R. 'Rapid Ethnography: Time Deepening Strategies for HCIFieldResearch'. AT&T Labs-Research. Proceeding DIS '00 Proceedings of the 3rd conference on Designing interactive systems: processes, practices, methods, and techniques. New York, NY, USA ©2000.

<sup>2</sup> WILENSKI, R.H. *The Modern Movement in Art*. Faber and Faber. 1945.



## Preface

In 2008 I graduated with a Master of Fine Arts from University of Calgary in Calgary, Canada. My focus was related to the exploration of connections between the body and technology and how these relationships were expressed in installation artworks. At the time, I applied an intermedia approach to my art practice when I combined sound art, photography, digital printing, 3D printing, video art, sculpture and interactivity in my art installations. I used these media to show how the human body is transforming in relation to emerging technologies.

The main works created alongside my MFA thesis were titled *Corpus* (composed of four inter-related and interactive artworks) and *~Crashsampler*, an interactive video and audio installation. Both installations were composed of digital technologies that included digital audio and video projections, as well as physical materials such as metal, electric wiring, sinew, LED lights, vinyl sheeting and wood. Research was conducted alongside my art practice and involved the examination of artists and theorists whose practices involved the exploration of digital technologies and interactivity in relation to the human body. My chosen research path revealed how these new media technologies had become significant and influential in my own practice. However, it was only towards the end of the completion of my MFA degree that I began to question the meaning of interactivity and that my research questions became more complex in nature. It became evident that my questions had moved my research outside of the realm of body-technology dynamics when they addressed issues of the participant's body in relation to social relationships, as well as the systems and spaces that surround artworks.

*Corpus* (2008) was a work that integrated five images of my tongue with motion sensors and lights sources. The lights were activated when visitors to the gallery walked in front of the sensors. I was struck by one visitor's response to the installation when I witnessed

him, in a wheelchair, using the series of lights to create a unique interactive experience. He rode his wheelchair back and forth in front of the tongue images, creating a rhythmic lightshow. It was at this juncture that the concepts of active participation and the use of available technologies in relation to the viewer became apparent when I witnessed this individual becoming not only viewer of the artwork but a very active participant in it. Using the technologies available to him, he created an interactive experience for himself that was unique to his own circumstances.

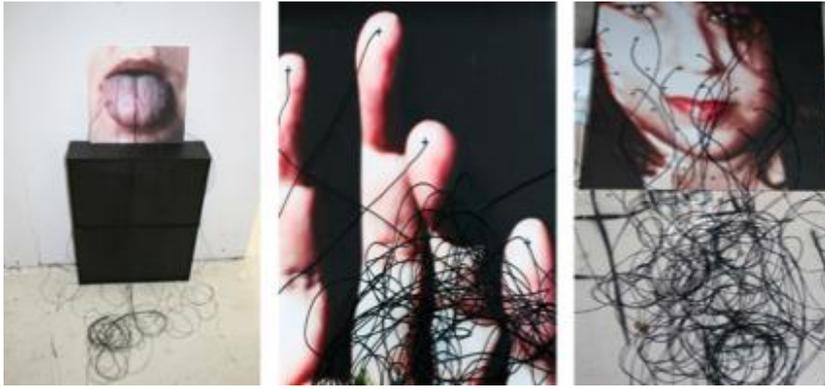


Figure 1. *Corpus*, Nickle Arts Museum 2008. Author: Luba Diduch.

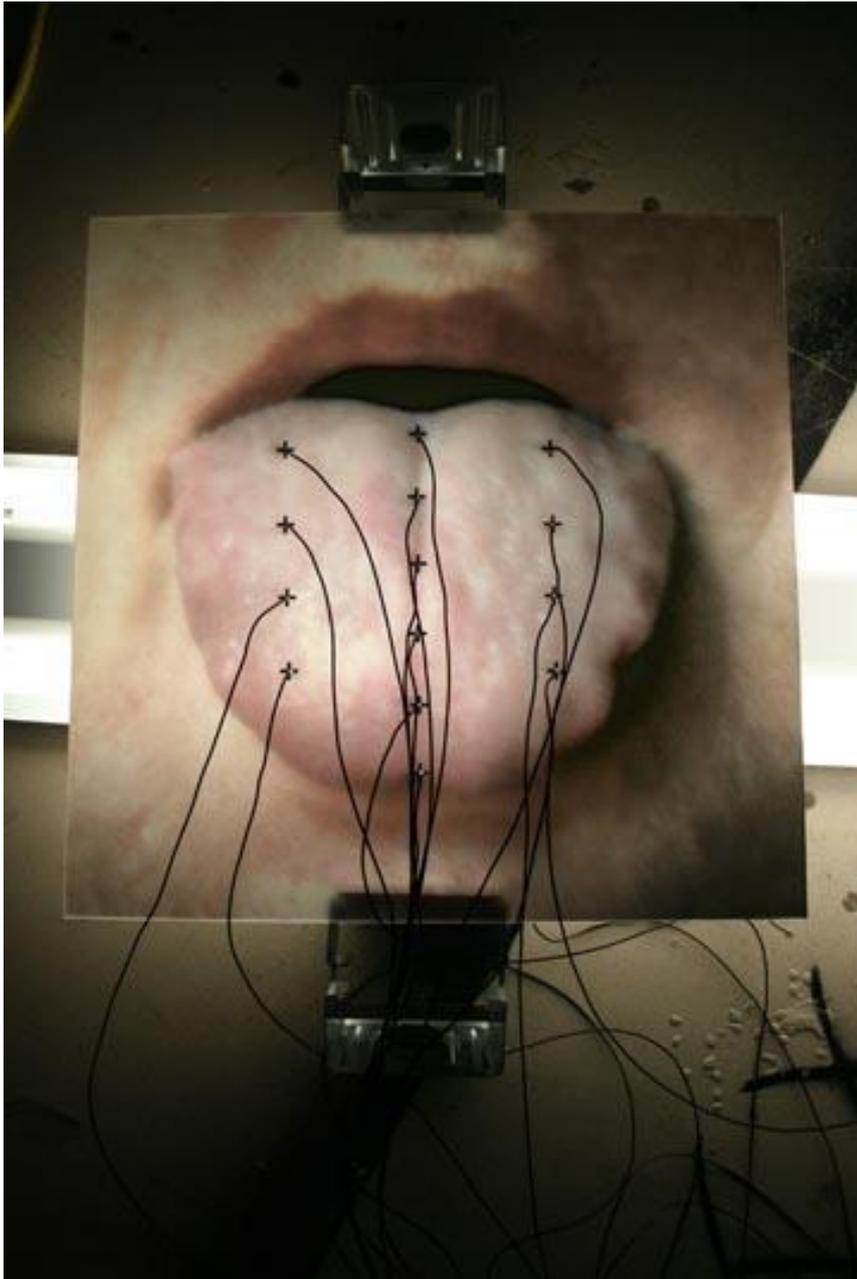


Figure 2. *Corpus*, Nickle Arts Museum 2008. Author: Luba Diduch



Figure 3. *Corpus*, Nickle Arts Museum 2008. Author: Luba Diduch.

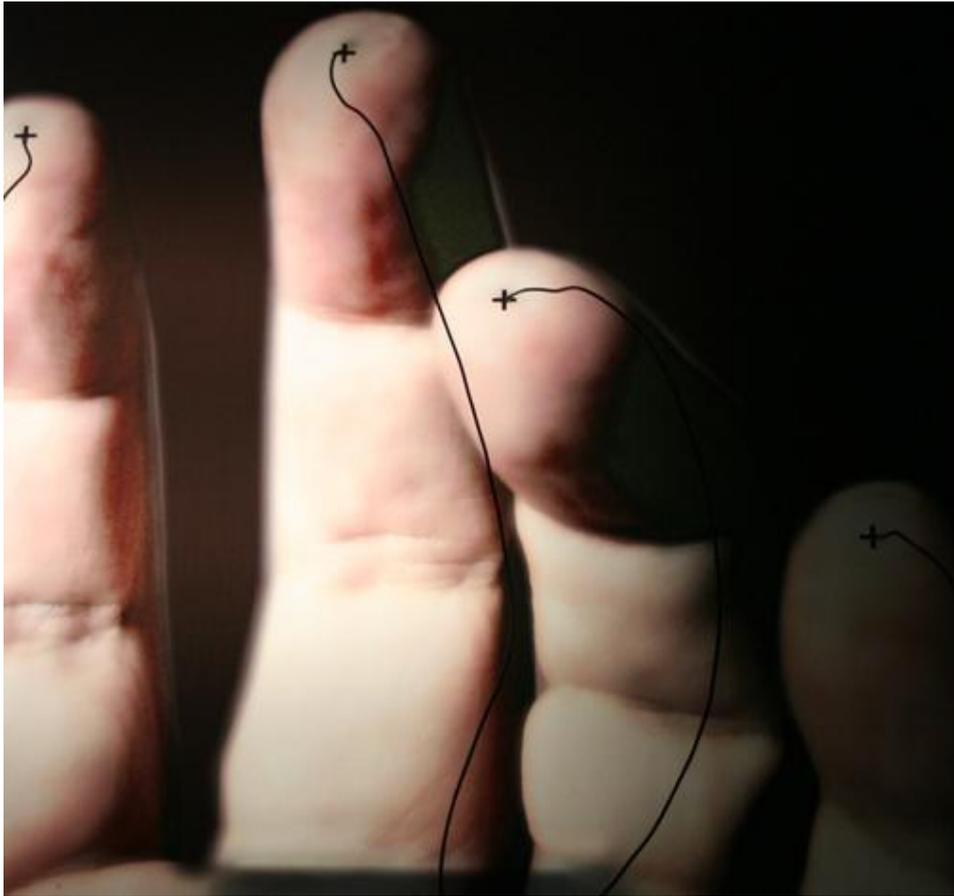
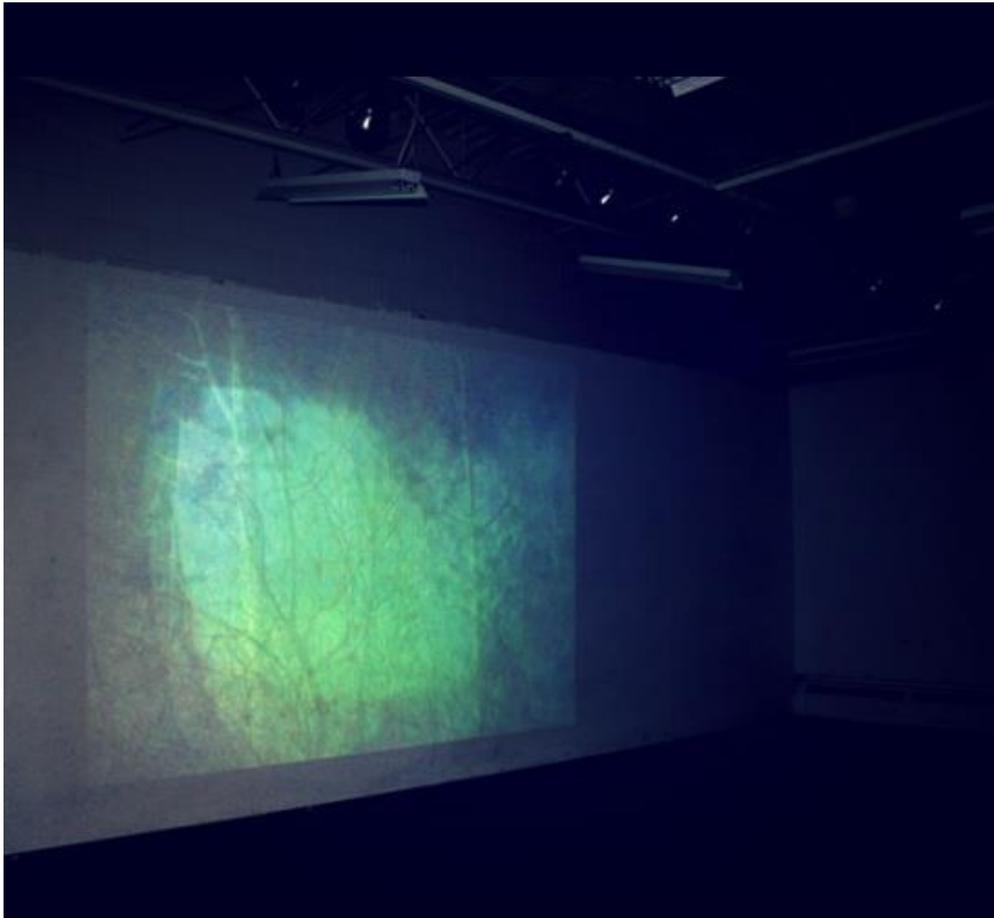


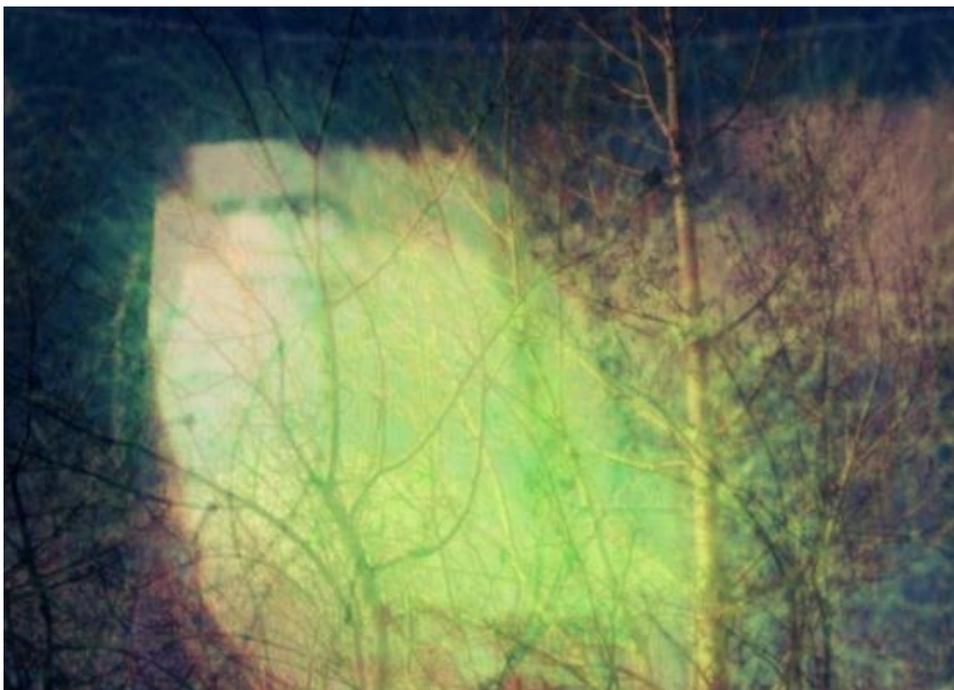
Figure 4. *Corpus*, Nickle Arts Museum 2008. Author: Luba Diduch.



**Figure 5. *Canto*, Installation view. The Little Gallery University of Calgary 2008. Author: Luba Diduch.**



Figure 6. *Canto*, Touchscreen. The Little Gallery University of Calgary 2008. Author: Luba Diduch.



**Figure 7. *Canto*, video projection. The Little Gallery University of Calgary 2008. Author: Luba Diduch.**

Following graduation, I took part in the Calgary Sled Island music festival where I showed my interactive art installation titled *Canto*. *Canto* featured a touchscreen that allowed visitors to create soundscapes as they touched buttons that were each assigned different bird sounds. A projected video work showed images of birds flying into and out of trees that were superimposed over a portrait of myself, the artist. With this work, I was able to observe the degree to which the visitors to the gallery became engaged and involved in creating soundscapes on their own, and as a result, this line of thinking moved me further into the direction of considering the participant's experience, rather than only the viewer's body, in relation to the systems and spaces that surrounded the artwork.

In 2009, I was invited to take part in a conference at the Banff New Media Institute in Banff Canada called *Interactive Screen: Beautiful Lives*. It was here that I met artists, writers and theorists who were exploring digital technologies in relation to artworks.

At *Interactive Screen 1.0: Beautiful Lives*, I presented a paper and work titled *Inner Beauty*, which involved a stethoscope microphone and miniature amplifier. I assumed the role of an artist/facilitator when I used these technologies to engage participants in a work where I recorded the inner sounds of their bodies. During the course of the conference, I recorded participants' heartbeats and other internal bodily sounds, amplifying them using a portable amplifier while I recorded their spoken narratives in relation to this experience.

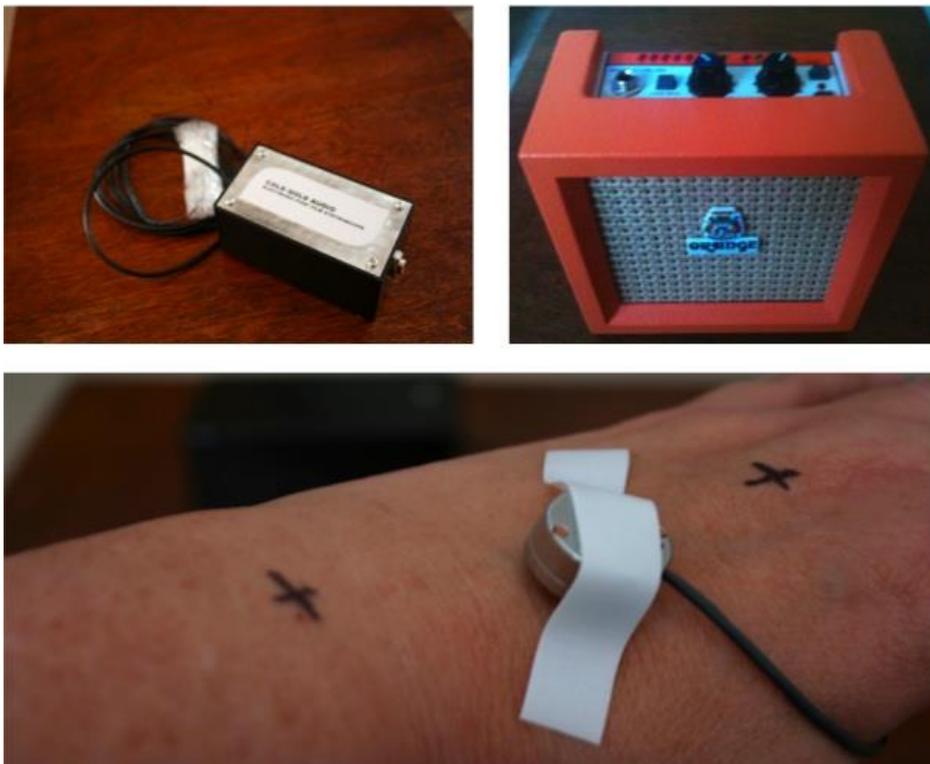


Figure 8. *Inner Beauty*, The Banff Center, Interactive Screen/Beautiful Lives conference. August 2010. Author: Luba Diduch.

It was these direct contacts with conference participants that afforded me an opportunity to discuss artworks located in participatory environments. Ultimately, it was the creation of the interactive and participatory art installations previously mentioned and the subsequent meetings and conversations I had with other practitioners who were concerned with participatory artworks that eventually led to my interest in pursuing PhD research.

This thesis is rooted in a research process that uses ethnographic principles to document and explore audience engagements with new media, more specifically, HCI artworks. The fieldwork methods that I have been using have been executed in natural settings and include participation, observation, hand drawn charts and notes, interviews with key informants and documentation of three main prototypes. I have used *rapid ethnography* as a methodology for the purpose of compressing fieldwork into shorter time periods that are normally used in ethnographic practice. Key texts include James Clifford's *The Predicament of Culture*, Roy Ascott's *The Telematic Embrace*, and R.H. Wilenski's *The Modern Movement in Art. (1945)*

## Chapter 1 Methodology

### *Introduction*

For this course of research I studied audience interaction in relation to my artworks and chose rapid ethnography as my methodology. This methodology was selected because of its usefulness in collecting information regarding “users and audiences, understanding how audiences behave in relation to new prototype evaluation and iterative design” (Millen, 2000). This approach was used to study four human computer interaction prototypes: they were titled *Deep*, *Touchpoints* and *Touchpoints II (iteration 2)* and *Touchpoints II (iteration 3)*.

The research process was initiated during the summer of 2011, when rapid ethnographic methods were used to collect data around an art installation at the Bath School of Art and Design gallery (BSAD). Although these methods seemed useful at the beginning of the study, over time, they were altered when combined with more traditional ethnographic methods. The methodological direction began to change when the social settings that housed the prototypes, and evidence of sustained relationships formed with the participants as a result of these settings were revealed.

The Bath School of Art and Design gallery was chosen as the site for the first study because the visitors who were frequented the space – students, faculty and visitors – formed a community of people that would be available, and have an interest in, experimenting with artworks installed in the gallery space. This choice of location was made based on my knowledge as an exhibiting artist and researcher at the beginning of my study. Throughout the period of research I subsequently encountered several other audience groups. In this paper I will describe how each one was instrumental in changing my perceptions regarding participation with prototypes in this paper.

The BSAD group was composed, among others, of visual art, design, photography, fashion students at the BSAD, tutors and administrators in the school as well as visitors who came specifically to visit the gallery. Choosing a particular group of subjects lay the groundwork for the rapid ethnographic study in that it “limited and constrained research focus and scope” – a field method associated with rapid ethnography (Millen, 2000). This approach filtered out participants who may have generated data that weren’t directly useful. During a three-week period, I observed visitors in the gallery when they engaged with the *Deep* prototype – a sound/video installation that been constructed especially for the purpose of examining audience interaction with computerised interfaces (Figure 9). By identifying multiple key informants, another significant rapid ethnographic method was employed that involved engaging participants as informants. These participants helped to create an opportunity to quickly collect an abundant amount of rich data about the nature of audience interaction. This was achieved through conversations and observations of a few key people (informants). By observing and recording typical norms and deviations of behavior within this test group, yet another rapid ethnographic technique was used to quickly concentrate on specific data collected — the observation of typical and exceptional behaviours. “Typical” behaviours were revealed when visitors’ displayed direct experimentation and playfulness when engaging with a microphone positioned within the *Deep* prototype. These visitors did not affect a change in the prototype per se. Visitors who exhibited “exceptional” behaviors, created their own artworks when they looked away from the prototype to create iterations based on *Deep*. It was the unexpected creations of “exceptions” that allowed me to collect artifacts in the form of photographs and personal narratives related

by the creators, and in so doing, I added to my data collection in the process (Driscoll, Anderson, 1995 - 2015)<sup>3</sup>.

One of the rapid ethnographic methods that I did not use (Millen, 2000) included working with a research team. According to Millen, this would have provided a broader perspective to my study. In this instance, I was the artist/facilitator who developed the project, but wasn't aligned with assistants or other individuals who could voluntarily dedicate time to my research. As a result, I didn't have access to multiple perspectives and interactive observations from fellow researchers. Typically, rapid ethnographic methods allow co-researchers to gather data simultaneously, and to analyze the data as a group once they are collected. This aspect of collaborative data collection and analysis was missing from my study. Instead, I relied on informants' impressions and observations to develop a polyphonic aspect of my research. Multiple rapid ethnographic observation techniques on my part uncovered exceptional behaviors that became an important aspect of my study. I should mention here that my observation techniques evolved in the 3<sup>rd</sup> and 4<sup>th</sup> iterations of my prototype to full participation, and that I will describe how this unfolded in detail in Chapter 3 of this paper.

As my study progressed, I kept the following question in mind: what is the nature of interaction between audience and artwork within fine art installations? My study has taken the time, space and degree of interaction into consideration, and has allowed for high levels of involvement to take place (even beyond the immediate time-space of the work). Works have been made specifically for the purpose of studying audience interaction and, within this context, they might be seen as prototypes towards more expansive notions of interactivity.

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<sup>3</sup> DRISCOLL, Dana Lynn, Dr. Paul V. Anderson. 1995 - 2015. 'Ethnographic (Observational) Research, Interviews, and Surveys Purdue University', Dr. Paul V. Anderson, Miami U., Ohio. [Accessed 2013] [www.allenbrizee.com/Obs\\_Int\\_Surveys.pdf](http://www.allenbrizee.com/Obs_Int_Surveys.pdf).

In the process I have been led to argue for a redefinition of current understandings of interactivity within the field of new media (Human Computer Interaction or HCI) and art practice, one that allows for people's highly differential levels of commitment with the artwork to come to the fore. For my research demonstrates the different levels or degrees of interactivity that one can experience in relation to artworks. In order to study this idea of commitment further, my research has drawn upon understandings of co-creativity (one of the highest levels of interaction and commitment to an artwork that can be demonstrated by a spectator), which allows for audiences – within the context of interactivity – to become producers of work in their own right.



**Figure 9. *Deep*, Bath School of Art and Design Gallery (BSAD) May 2011. Author: Luba Diduch**

My installation work *Deep* was composed of a sound booth measuring 1.9 metres (6.5 feet) high and 1.4 meters (4.5 feet) wide with wood and cloth draped around its parameter (Figure 10). These structural elements formed an enclosure for the participant where he or she could become immersed in, and interact with, sub-aquatic sounds and images. A projector was positioned on top of the booth and a mirror was used to reflect a video image of rushing water along its walls and onto its floor. Several strategically positioned speakers played river sounds that had been pre-recorded in an underwater setting in Banff National Park in Alberta, Canada (Figure 11). This was done in an attempt to create an installation that contained visual and auditory characteristics reminiscent of a simulated underwater environment. A microphone was installed in the booth's interior for the use of participants, which was an early attempt to encourage audience engagement with my work through the use of technical props or technological interfaces of my own devising. The microphone was connected with an audio mixer that distorted the voice and combined it with ambient compositions. The arrangement of electronic equipment encouraged interaction with the artwork in the form of acoustic production, although I did not provide any written directions regarding what was expected of the viewer. The expectation was that visitors would engage with the microphone, taking note of the unique sounds that occurred when their inputs combined with the existing soundscape and then walk away. My intention was to leave the meaning and function of the prototype open to interpretation so that the viewer would be free to respond in his or her own way.

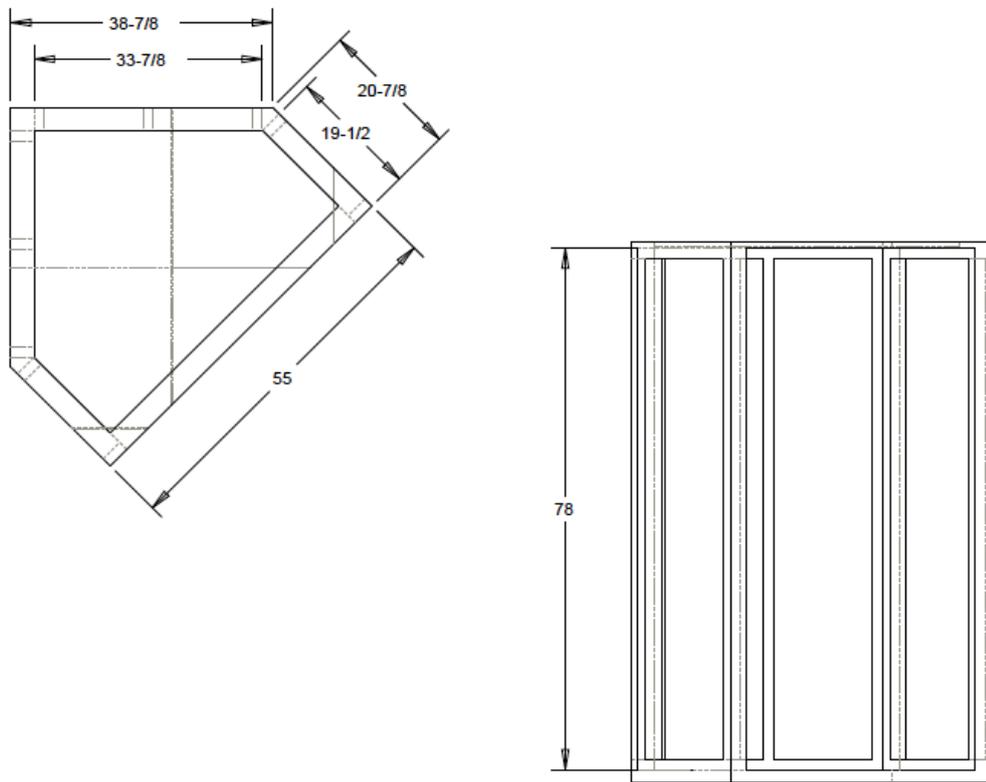


Figure 10. *Deep*, May 2011. Plan for construction of *Deep* booth. Author Luba Diduch



**Figure 11. The Bow River in Banff National Park, Canada where original underwater sounds and video images were recorded for *Deep*. August 2010. Author: Luba Diduch.**

In order to set up an observation site for my prototype, I employed several techniques that are often used in ethnographic studies. The first of these methods was to use a “fly on the wall” approach that involved me as a full observer with no direct participation (Driscoll, Anderson, 1995 - 2013). In order to do this, I set up webcam settings that would record movement and duration in the gallery space as visitors arrived and departed. I was free to review these recordings at a later date. This distant approach combined with my simultaneous presence in the gallery where I remained an observer. These approaches were devised along with a second type of rapid ethnographic method that featured me as a limited participant where I was able to participate to some extent with participants who approached me, through conversations and interviews that occurred adjacent to the prototype in the exhibition space. I also documented the artwork itself as a part of this process (Appendix G). In chapter 4, I will explain how this relationship with the viewer evolved over time and I became a full participant in the 4<sup>th</sup> iteration of the prototypes that I was studying.

My data collection process began with, three visits to the gallery each day: at 9:30 a.m. 12:00 p.m. and 3:00 p.m. These times were identified following three preparatory days of observation in the gallery. Because of increased traffic volumes evident during these time periods, I felt I would get the best sample from them. I hoped to narrow down more specific times that would provide a representative indication as to varying flows and patterns of visitor traffic. My intention was to identify the time periods that would yield a variety of valuable data that I could then document and use in my study on audience participation with my prototypes. During this observation phase, I also spoke with visitors, made notes, drew diagrams showing human traffic and movement, and made visual, audio and video recordings of activity. At the conclusion of the exhibit, I asked individuals who had created works based on my prototype, to voluntarily share them with me. As a result, the data-gathering

process took place over time and had different points of origin. I had begun the process of re-evaluating my own understanding of interactivity.

### ***Ethnography***

Ethnography is a methodology that is both qualitative and immersive, and has proved vital to my intimate study of audience interaction with gallery-based artworks. It involves observing, interpreting, reading, writing and participant observation. In the early to mid 1900's anthropologists and theorists such as Bronislaw Malinowski, Alfred Radcliffe Brown and Claude Levi-Strauss made contributions to the ethnographic field through their ideas regarding language, cultural contexts and social structure. Their pioneering studies and research established traditional ethnographic practices that were used to describe communities and their activities. Malinowski in particular, developed the practice of 'participant observation' that has become useful in my account. Participant observation is a technique used in field research where the researcher studies a group by sharing in its activities (Dictionary, 2010<sup>4</sup>). By being present in a gallery, I was effectively placing myself in the position of the viewing public, while maintaining my distance from the artwork and acting more as an invigilator or documenter.

Despite an established critique of this methodology, (*Being Ethnographic: A Guide to the Theory and Practice of Ethnography*, Raymond Madden, 2010; *Ethnographic Practice in the Present*, Marit Melhuus; and *Between Art and Anthropology: Contemporary Ethnographic Practice*, Arnd Schneider and Christopher Wright, Editors, 2010) I have found many of these ethnographic methods continue to be relevant to the process of researching interactivity,

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<sup>4</sup> DICTIONARY.com. 2010. [Accessed November 29, 2010].  
<http://dictionary.reference.com/browse/participant+observation>

and understanding audience and time-space interactions within the relatively closed context of an art gallery (Porth, Neutzling, Edwards, 2009)<sup>5</sup>. Ethnographers present “webs of meaning” (Hoey, 2000-2015)<sup>6</sup> that emerge from direct encounters with participants and are based on views of people in a particular location. “They act as interpretive bricoleurs, who although they are collecting data, are shaped by their own personal histories, biographies, genders, social classes and ethnicities” (Denzin, Lincoln, 2005 p.4-6)<sup>7</sup>.” Fieldwork, participant observation and gathered data become the basis for study, building a picture of how people use and interact with space and with one another in the immediate context of a gallery. In addition, power dynamics between researcher and participants is a factor as they respond to each other based on their subjective interpretations of their roles within the gallery context. The ethnographer is immersed in a community for a significant amount of time, gathering observations regarding these issues, to be used in subsequent interpretation and reflection. This feature of longer periods of study differs from rapid ethnographic techniques, and I will explain this in more detail in Chapter 3 of this paper.

When using ethnographic practices the fieldwork phase of a project is time-consuming. It is the data gathered during this important phase however, that is ultimately used to draw conclusions regarding societies and their activities. Effective ethnographic research validates the transformative nature of fieldwork. James Clifford is an

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<sup>5</sup> PORTH, Eric. Neutzling, Kimberley. Edwards, Jessica. ‘Anthropological Theories, A Guide Prepared for Students by Students’. The University of Alabama, Department of Anthropology. 2009. <http://anthropology.ua.edu/cultures/cultures.php?culture=Functionalism>. <http://www.metropolismag.com/Point-of-View/March-2013/Toward-Resilient-Architectures-1-Biology-Lessons/>[Accessed June 1, 2011].

<sup>6</sup> HOEY, Brian A. ‘What is Ethnography?’ 2000 – 2015. <http://brianhoey.com/research/ethnography> [Accessed August 11, 2013].

<sup>7</sup> DENZIN, Norman K. Yvonna S. Lincoln. (2005) *The Sage Handbook of Qualitative Research*. Sage Publications, Thousand Oaks, California. pp. 4-6.

historian and professor who authored several books related to the field of ethnography, including: *The Predicament of Culture: Twentieth-Century Ethnography, Literature, and Art*, 1998 and *On the Edges of Anthropology: Interviews*, 2003. Clifford's writings connect history, literature, art and anthropology and it is undoubtedly for this reason that his works have been found useful in the fields of visual arts and literature (Coles, 2000 pp. 99-114)<sup>8</sup>. Clifford writes about how the popularity of ethnography in the arts, specifically, became apparent when the "spatio-temporality of modernism" became less relevant and other multi-disciplinary and 'fringe' art forms became more widely accepted and used (Sharp, 2011)<sup>9</sup>.

Some examples of artists who make use of ethnographic principles include Sophie Calle (Keuchler, 2002 pp. 94-114)<sup>10</sup>, Christian Boltanski (Ruchel-Stockmans, 2013)<sup>11</sup> and Susan Hiller (Hiller, Einzig, 1996 p.xi)<sup>12</sup> however, it is useful to note that they use these principles to generate content for their own discrete artworks, rather than to understand audience interaction, for example. Calle in particular, establishes relationships with the people she encounters, becoming part of their 'communities' per se while using multi-disciplinary means to collaborate with them. In her performative, photographic piece called *The Sleepers*, Calle allowed people to sleep in her bed for a few hours in return for letting her photograph

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<sup>8</sup> COLES, Alex (ed). 2000. *Site Specificity – The Ethnographic Turn*. Black Dog Publishing. pp. 94-114.

<sup>9</sup> SHARP, Miranda. 'Crossing Territories: Live Art as a Mediator of Intimacy'. 2011. Visual Communication Sage Publications. [Accessed August 1, 2013]. <http://vcj.sagepub.com/content/10/3/325.full.pdf+html>

<sup>10</sup> KUECHLER, S. (2002) 'The Art of Ethnography: The Case of Sophie Calle'. In Coles, A, (ed.) *Site-Specificity: The Ethnographic Turn*. (p. 94 -114). Black Dog Publishing: London. [Accessed May 2012]. <http://discovery.ucl.ac.uk/119309/>

<sup>11</sup> RUCHEL-STOCKMANS, Katarzyna. 'Image and Narrative', Online Magazine of the Visual Narrative. Issue 14. 2006. [Accessed June 2011]. [http://www.imageandnarrative.be/inarchive/painting/kasia\\_ruchel.htm](http://www.imageandnarrative.be/inarchive/painting/kasia_ruchel.htm)

<sup>12</sup> HILLER, Susan. Einzig, Barbara. (1996) *Thinking about art: conversations with Susan Hiller*. p.xi. Manchester University Press.

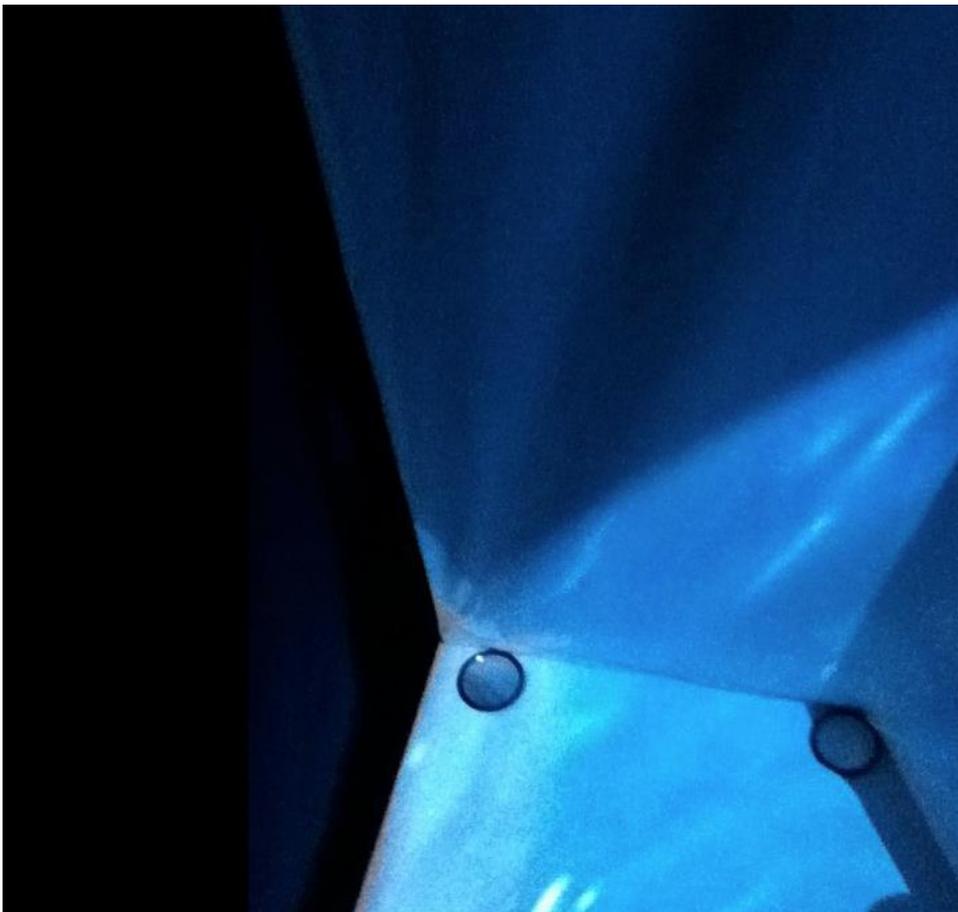
them (Kuechler, 2002 pp. 94-114). At the end of the day, however, the work clearly belongs to Calle and the ethnographic methodology merely facilitated the retrieval of data for making relatively autonomous art pieces.

James Clifford's writings suggest that the complexity of ethnographic representation is made up of an extensive production of texts and information gathered from large groups of people. He situates artifacts, identities and communities amid shifting processes of everyday life (Clifford, 1988 pp. 12,13, 56, 63). Clifford writes that although ethnographic authority is traditionally based on one person's account it is, in fact, composed of many voices. As mentioned before, my own rapid ethnographic study incorporates the voices and artistic contributions of all those who actively engaged with the HCI artworks. Relying on one person's impressions of a situation, such as the artist who has not fully studied the interactions around his or her own work, would create a narrow depiction of a community and its culture. It is for this reason that ethnographic depictions – that include multiple voices and perspectives – are better suited to describing cultures than relying on a singular viewpoint, and thereby, are appropriate for studying the range of engagements that can take place around a piece of authored HCI. In Clifford's text *The Predicament of Culture* (Clifford, 1988 pp.47, 52) traditional ethnographic practices are used to describe indigenous cultures and how they may pertain to studies in visual arts and performance, culture and museology. Fieldwork, participant observation and gathered data (Robinson, 2010)<sup>13</sup> become the basis for study.

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<sup>13</sup> ROBINSON, Laura. (2009). 'New Avenues for Sociological Inquiry: Evolving Forms of Ethnographic Practice'. *Sociology* August 2009, vol. 43 no. 4. Sage Journals. BSA Publications, 2013. [soc.sagepub.com/content/43/4/685.full.pdf](http://soc.sagepub.com/content/43/4/685.full.pdf) [Accessed August 5, 2010].

The ethnographer is immersed in a community for a significant amount of time, gathering subjective observations to be used for subsequent interpretation and reflection. When using ethnographic practices, the fieldwork phase of a project is time consuming. It is the data gathered during this important phase however, that is ultimately used to draw conclusions regarding societies and their activities (Tejasaputra, 2013)<sup>14</sup>.



**Figure 12.** *Deep detail.* May 2011. Author: Luba Diduch

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<sup>14</sup> TEJASAPUTRA, Adi B. 'Supporting Rapid Ethnography for HCI Field Research with Pair Writing'. [Accessed August 11, 2013].  
[http://www.the2the.com/adi/publications\\_presentations/supporting\\_rapid\\_ethnography\\_hci\\_field\\_research\\_pair\\_writing.pdf](http://www.the2the.com/adi/publications_presentations/supporting_rapid_ethnography_hci_field_research_pair_writing.pdf).

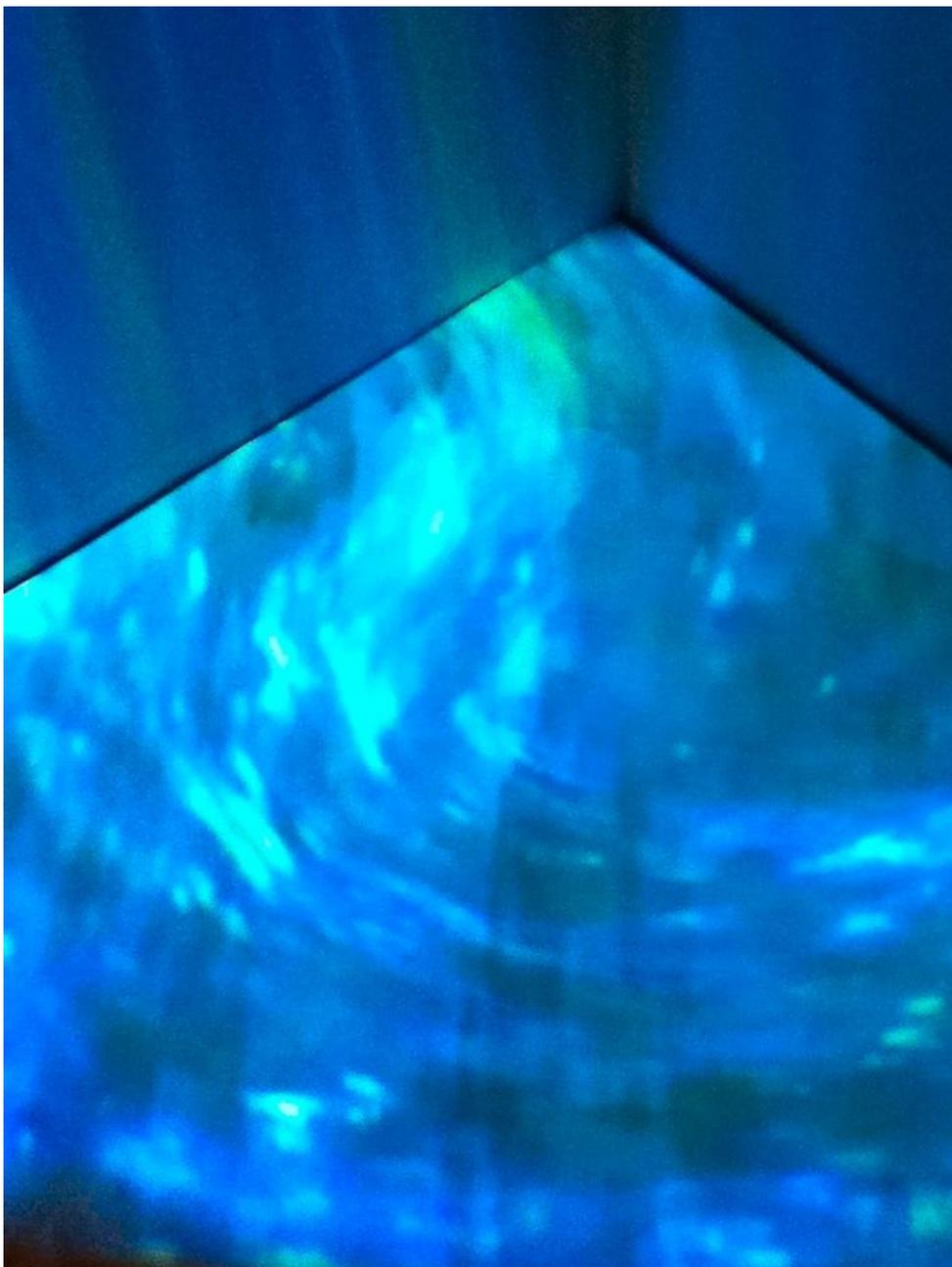


Figure 13. *Deep detail*. May 2011. Author: Luba Diduch

Clifford identifies cultural artifacts as having the power to construct 'paths of meaning,' which seems a relevant way to describe the role of HCI artworks in a gallery setting. He states that, "participant observation involves jumping between the "inside" and the "outside" of events; on the one hand interpreting the significance of events and on the other, stepping back to interpret these events in a broader context." (Clifford, 1988) This is a good way of describing the way in which I was at once artist and audience of my own HCI artworks. The observer, Clifford continues, enters the observed community with a sense of acceptance and ideally achieves a level of rapport with informants. In my own study of the prototype *Deep*, I spent a great deal of time in conversation with visitors, as I believed they could provide a rich source of data. Although these exchanges were informal, they focused on the individuals' opinions regarding my work and highlighted the fact that their interaction with my HCI works included the production of their own narratives and experiences related to them. As well as talking about my artistic practice and their experiences of interactivity, our conversations touched on their individual practices and how these apparently separate fields of activity related to each other. As my field notes demonstrate (see Appendix A) I built up a high level of rapport with my key informants. Indeed, ethnographic data presented in Chapter 3 includes comprehensive case studies that include conversations, artworks and studies of audience movement and engagement. I have used these ethnographic ideas – around the production of rich qualitative data – when dealing with gallery communities and these will be discussed later in this chapter.

It is this "ethnographic turn" to the audience that has become an important facet of my research. Like Clifford, I have employed different types of observation in a social space, undertaking an ethnographic study that resides in the immediate vicinity of the art gallery. In the BSAD gallery, for example, the audience is observed – by the artist-invigilator-participant observer who sits at the edge of

the gallery space (me) – interacting with a sound-based HCI work. In the context of this research project, the latter is used less as a basis for artistic contemplation and more as a basis for studying interactions between informants and myself, which include conversations and the construction of oral narratives around the work, as well as the production – as it transpired – of co-created artworks.

The first stage of my research, in 2011, allowed me to enter a community of artists, faculty and visitors at the Bath School of Art and Design gallery, and to initiate an ethnographic based study based on audience interaction with my own HCI artworks. This was a good place to start, as the art school proved to be a place where it was possible to achieve a level of acceptance, trust and understanding between myself (as the artist) and gallery visitors (largely students and tutors who are associated with a range of courses in the field of art and design). This state of acceptance was important when initiating dialogue with visitors, and securing the value of an ethnographic approach to studying HCI artworks. My daily presence in the gallery provided opportunities for repeated conversations with visitors. Some of these individuals began to approach me voluntarily on a daily basis. The ethnographic method was opening up new possibilities for me, as I did not simply observe (at a distance), but made notes and had detailed conversations. Their interest in speaking with me was often based in common interests regarding their own practices as well as curiosity regarding the installation work itself. My status as an artist within an art school, as well as a student, helped me gain the necessary acceptance for an effective ethnographic study within this creative-academic community. My commitment to being present with the work in the gallery led to familiarity and subsequent relationships with informants, which heightened the value of this method of research and the richness of the data that it provided for the purposes of understanding interactivity.

However, with this sense of acceptance and community in mind, how does the researcher then differentiate his/her subjective perspectives, emotions, background and education from those of researchers when observing and writing about others? I was constantly aware of the subjective nature of my research and how this might compromise my findings. I was reassured, however, that this differentiation from other participants in the gallery occurs, when the researcher analyses and searches for patterns in the data *in retrospect* – in a time and space beyond the immediate context of the artwork. Indeed, there were many unexpected events that presented themselves to me when I was present in the gallery, observing and speaking with the gallery visitors. In this respect, the ethnographic method has surpassed my expectations, taking me over and above my initial assumptions and concepts for my own research project (even those collected on the ground). It revealed elements of the interactive exchange within HCI artworks that I could not have foreseen or even discovered, had I not been there to witness them for myself.

Throughout the process of qualitative data collection around audience interaction, I have been a participant as well as observer, alternating between positions of proximity and distance. At times I was at a distance from the BSAD gallery because I am, myself, a visitor (being an international student from Canada). I came to the gallery as an art practitioner who was exhibiting a work that had been created in another country, under different circumstances from those experienced by practitioners at the Bath School of Art and Design. This made me an outsider who, on some levels, was part of the group, but in other ways was not. My roles as Canadian, visitor and artist practitioner helped to maintain distinctions between the audience and myself that, I believe, facilitated the objective value of my observational work. This play of differences had an advantage for me because I could step back and observe with a certain amount of detachment. Although I was involved in informal conversations with visitors, I was always conscious of my own perspective as a

researcher (and the differences listed above have helped me maintain this dual role of participant and observer) and this allowed me to gather their stories as well listen to them. My identity as post-graduate researcher helped me to assume my role as an ethnographer who was aware of the nature of storytelling, but deciphered the collected stories in a critical fashion and in context of my research goals.

According to ethnographer Wilhelm Dilthey, “understanding others arises as a result of co-existence in a shared world.” (Walton, 1993)<sup>15</sup> He describes how in the midst of spontaneous events, a researcher is required to stand back and make a critical analysis. One of the concerns inherent in ethnographic research is the question as to whether or not other, independent researchers would come to the same conclusions using the original researcher’s framework and setting for study. This aspiration for objectivity becomes apparent through the search for academic and external validity or the search for relevant texts that question whether or not these types of findings can be consistently found in other similar groups (LeCompte, Preissle, 1982, pp. 31-60)<sup>16</sup>. Could my own research around self-made artworks generate data that was reliable enough to inform others about the nature of interactivity around HCI artworks? Indeed, this was my intention, when I set up the parameters and structure of my study. My thought was that this approach could become useful to others because there were a number of safeguards in place, for example, in terms of the aforementioned detachments. Ethnographic data is a result of a researcher placing him/herself into a setting and

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<sup>15</sup> WALTON, Susan. ‘Never in Anger as an Ethnography of Experience’. University of Michigan. 1993. [Accessed July 2012.]  
[deepblue.lib.umich.edu/bitstream/handle/2027.42/66542/10.1?...2](http://deepblue.lib.umich.edu/bitstream/handle/2027.42/66542/10.1?...2)

<sup>16</sup> LECOMPTE, Margaret D. Goetz, Judith Preissle. ‘Problems of Reliability and Validity in Ethnographic Research’. *Review of Educational Research*. Spring 1982, Vol. 52, No. 1. pp. 31-60.

a self-conscious acknowledgement that collected data is transformed through the process of understanding and analysis. The ethnographer arrives at his or her own conclusions regarding the degree to which the data is subjective or not (and acknowledges this in her work). In this respect, I would argue that the distance of time and place has been useful to me. I collected the data in a gallery but only reflected on the data in the process of studying it, after the event. I would argue that there has been a separation – in space and time – between my role as participant observer – present in a gallery in 2011 – and reflective researcher today, allowing for a degree of scholarly detachment and reappraisal.

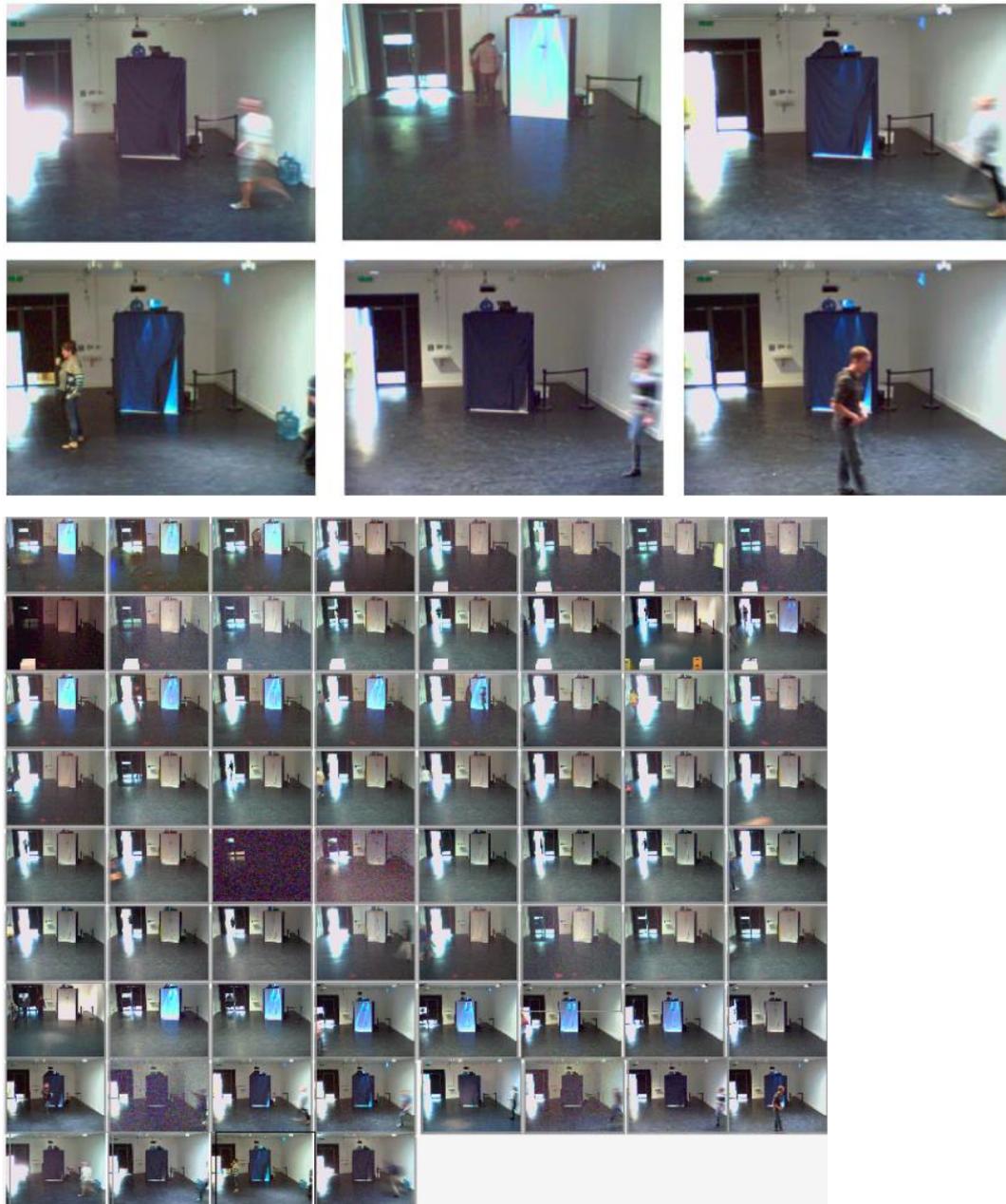
Another tool that can assist in heightening the objectivity of ethnographic research is the use of technology. For example, I set up the webcam in the BASD gallery to observe the visitors independently of my own observational activities. The webcam was reliant on technology triggered by movement that resulted in an archive of thousands of photographs being produced – an archive that I could only study retrospectively. Before the exhibition started, the webcam was prepared, through the computer and by using standardised software, to record images that were then saved for future review. Positioned above the gallery space, the camera was like an “eye”<sup>17</sup> that viewed the gallery setting in parallel yet independently of the participant observer, who was present in the gallery gathering data. The webcam at BSAD collected and recorded activities that could either substantiate or refute the data gathered by the researcher on the ground (Figure 14, Appendix B webcam animations numbers 1 - 9). The types of behaviours I observed via webcam ranged from visitors seeming not to take interest, to those who entered the booth and interacted directly with the microphone and video images. The webcam images showed that the percentage

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<sup>17</sup> The webcam made me think of Michel Foucault’s book *Discipline and Punish*, where he describes the Panopticon as an all-seeing eye within institutions.

of participants who did *not* actually pull aside the curtain and engage directly with the prototype outweighed those who did. The camera did not record conversations I had with visitors, only the frequency and duration of the interactions that occurred. I noted that some people walked by and glanced briefly at the booth and others appeared to stop and listen to the sounds emanating from it. In conversations with staff at the BSAD I discovered that some visitors to the gallery were too shy to engage with the work, while others weren't sure of how to respond to it. As seen in the webcam animations in Appendix B, the number of visitors who passed by my installation was greater than those who stopped to engage. Nonetheless, I observed that the BSAD space was often used for conversation when visitors met up with friends, listened to the sounds emanating from the sound booth while others stopped to engage in conversation with me, the participant observer.

Following this exhibit, I resolved that when planning the next iteration of the prototype I would expand the possibilities for visitor interaction, thus building upon what I had learned from *Deep*.



**Figure 14. The webcam as witness: documentation of participants' interaction with *Deep* at the BSAD. Author: Luba Diduch**

When I began my PHD research I was exploring theories regarding the type or level of interactivity generated by my installation based HCI work. The webcam imagery collected in the BSAD gallery, alongside the conversations and field notes, became integral to the process of information gathering. What I discovered, as this paper will show, were different types of audience engagement that could only be picked up on the (ethnographic) ground – types of engagement that could be supported by visual data on the webcam. In the beginning – as an experienced artist in particular – I had expectations of what was going to happen in relation to my own HCI artworks. I expected that participants and visitors would approach the installation piece and ‘play’ with the sound system – thereby speaking into the microphone and turning it into a sort of instrument. This assumption was based on previous experiences, such as my 2008 exhibit *~CrashSampler* in Calgary, Canada, where a microphone suspended from the ceiling was used to make random feedback sounds that contributed to a pre-recorded soundscape. On this occasion, however, I had not been carefully observing the audience. As far as I could tell, visitors who participated in *~CrashSampler* did play with the microphone but I did not observe or record a wider set of interactive practices. Later, however, my ethnographic approach – supported by webcam recordings at the BSAD show – indicated that one way in which audiences were interacting with HCI artworks was sampling the sounds and creating images and videos of themselves in, around and beside the prototype.

In the case of the exhibit at the BSAD gallery, I was open to learning about how audiences responded to my work, in spatial and temporal depth, and from different perspectives. I wanted to learn about the experiences that people were taking away from the interactive work. A combination of conventional ethnographic work and web-cam observations allowed me to augment my knowledge as an artist and in the end; I was surprised by the reactions. Being open to discovery

and utilising specific methodologies and technologies has opened up my perceptions as a practitioner, and has changed my understandings of audience interaction and the concept of interactivity itself. These are findings that I can share with a wider audience. This change in view has occurred when I have been presented with concrete instances of audience participation and co-creative activity in the process of undertaking qualitative research. These findings will be fully discussed in a further chapter titled 'Understandings of the Expanded Interface'.

Paul Dourish, a writer and researcher who has written about Human-Computer Interaction and ethnography, views technology as an entity that humans are appropriating and adapting for their own purposes. As a result of this process, humans are finding ways to establish uniquely creative and social scenarios (Dourish, Bell, 2002, p.207, 73)<sup>18</sup>. Dourish's writings have resonated with me, specifically in relation to an event that occurred during my data collection period at the BSAD. One of the visitors in the gallery used her mobile phone to document her experience within the sound booth that I was exhibiting. She took a number of photographs and video clips of her mirrored reflection as well as abstracted elements of the video and audio projections that she experienced. Another gallery visitor and BSAD design student used the booth to create spontaneous rap/hiphop performances of his poetry while one of his friends acted as a member of his own audience.

These appropriations of my work and adaptations of it – for the visitors' own purposes – led to new co-created artworks (see Figure 15). Subsequent activities have included email correspondence where one participant has shared her work with me. This exchange – or

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<sup>18</sup> DOURISH, Paul. Bell, Genevieve. *Divining a Digital Future* *Divining a Digital Future: in Ubiquitous Computing*. MIT Press, April 2011.

interaction – has evolved into a deeper social scenario, one that began with the installation of an artwork in a gallery in Bath far away from where I live in Canada and now travels as written and visual data through computer networks. This process of discovery, particularly as it takes place *on the ground*, highlights the way in which ethnographic study can contribute to understandings of audience interaction with HCI artworks, allowing for a range of behavioral and temporal layers of involvement to surface, some of which emerge beyond the space and time of the exhibition of an ordinary artwork in a gallery setting.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 15 Participant's contribution. May 2011. Co-author: Amanda Goode**

## ***Rapid Ethnography***

Within my research, ethnography is consciously adopted as a methodological approach. Ethnography is defined as involving “an *extended* time period where the participant observer collects, watches, listens, asks and collects anything that can be used as data” (Blackstock, 2011)<sup>19</sup>. These extended time periods can mean years of study on the part of the participant observer. However, *ethnographic* practice can also be adapted to the needs of a short-term social event, such as an exhibition where I have worked with *rapid ethnographic* techniques (Millen, 2000). This methodology has been useful in studying art installations that I have come to see as prototypes – artworks that are iterative for specific periods of time. One could argue that ethnography has become used in a range of recognised and popular contemporary art practices. Artist and author Liz Bailey discusses the “ethnographic turn” in the field of art in her article “Why have some artists turned to anthropology (ethnography) in their practice and how has this turn been interpreted and critiqued?” (Bailey, 1996)<sup>20</sup>. Bailey’s argument (interpreted through the writings of Miwon Kwon) (Ibid, 1996) is that some artists adopt ethnography to critique the idea of authorship in order to explore whether or not artworks are created by the artist, the audience, or both? Others artists do so because they feel that experience (participation) in an artwork and interpretation (observation) are strongly related. This is relevant because participant observation is an important aspect of *traditional* ethnographic research. Bailey goes on to quote James Clifford who gives these traditional qualities relevance within *contemporary* ethnographic practice when he says that they have

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<sup>19</sup> BLACKSTOCK, Lena. ‘Rapid Ethnography and Finding the Right Problem’. Stokefire.. <http://www.stokefire.com/2011/06/rapid-ethnography-and-finding-the-right-problem/> [Accessed August 28, 2913]

<sup>20</sup> BAILEY, Liz. ‘Why have some artists turned to anthropology in their practice and how has this turn been interpreted and critiqued?’. [http://www.lizbailey.org.uk/painting\\_pages/essay%20pages/artist%20as%20anthropologist.htm](http://www.lizbailey.org.uk/painting_pages/essay%20pages/artist%20as%20anthropologist.htm) [Accessed June 2011]

been re-located within shifting frameworks, “perpetually displaced, both regionally focused and broadly comparative – suited to working and responding to today’s technological world” (Ibid,1996).

Digital technologies, such as those used in HCI, are very much a part of contemporary society. Their diversities are evident in converging mediums and communities and initiate relationships between a myriad of cultural groups, computers and networks that exist both locally and globally. Due to high-speed networks these communities communicate with each other almost instantaneously. These ways of forming networked communities become increasingly relevant in view of my initial readings of James Clifford’s thoughts on studying local communities, with the view of understanding larger cultural issues (Ibid,1996). In retrospect, these readings have validated the rapid methodological methods that I am using, as opposed to undertaking longer and more detailed studies of a community. In actuality, they seem appropriate to studying the relatively short life of a piece of work in a gallery. They make sense within contemporary ways of thinking and approaches to making artworks, yet are grounded in traditional and accepted ethnographic concepts.

Indeed, my methodology includes field research methods that are commonly used in the wider field of human-computer interaction, beyond the context of Fine Art. I am working in the territory of Human Computer Interaction (HCI) (Dix, 2012)<sup>21</sup> as I provide interfaces, prototypes and interactive experiences situated within the shifting frameworks described by Clifford. The rapid ethnography model uses an abbreviated approach in comparison to traditional ethnographic techniques. During my first period of research, the data-gathering period was much shorter than is typically used in HCI when it was implemented during the three-week duration of my exhibit *Deep* at the Bath School of Art and Design gallery.

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<sup>21</sup> Dix, Alan. Human Computer Interaction. Third Edition. 2012. <http://www.hcibook.com/e3/chaps/ch3/resources/>[Accessed 2013].

The collection of HCI methods that I used included: observing an overview of the test site, gathering data in a natural setting, observing the visitors in the gallery, using multiple informants and observers, detailing data from the visitors and analysing qualitative data – all done within a limited time frame (Millen, 2000). My chosen methodology uncovered patterns and aberrations in responses to the work that became useful to my account and will be discussed in more detail later. Dilthey writes, “ethnographic experience is explained as being a way to construct a world of meaning comprised of clues, traces and gestures” (Clifford, 1988 p. 36). This is because the ethnographic experience involves the conceptual world of ideas interpreted through the manifestation of observable, rational events. It is not just the experience in and of itself that is important, but also the way it is communicated using language and conceptual systems.

As discussed earlier, the ethnographer gathers observations drawn from personal experience in the field and this results in an experiential creation. Although this experience can be seen as being subjective, I have found that it also possesses an objective dimension found in the methodological aspect and purpose of research. The researcher is required to distinguish between subjective observations and wider contributions to knowledge throughout the research process; that is to say, observations are tested and measured against existing practices. This sets up a movement towards the objectification of data, a process that is further achieved in my study by the repetition of particular research experiments, thus creating larger data samples containing emerging and meaningful patterns. I have undertaken a number of exhibitions as part of this research project, for example, that have allowed me to continue testing my findings and adapting artworks to test their validity.

During the course of my research, the issue of validity has become increasingly apparent. Individual testimonies transform into

contextualised and coherent narratives when I review and interpret interviews, webcam images and drawings. The informal yet illuminating conversations that have generated the initial stories of interaction have an intimate, subjective quality. However, not all of the 'narratives' that I collect are subjective (in the sense of having been spoken by a social subject with a consciousness). As mentioned previously, the webcam also provides a visual narrative (or sequence of images) and by its very nature is more detached because of its technological and optic qualities, and the remote manner in which it gathers information. My initial interpretation of the data may be subjective (told from my own perspective), but I can test my own observations against those generated by the 'eye' of the camera; this webcam 'story' and what it collects is beyond my control. It is programmed to capture images within repeating timeframes, from consistent angles and under stable conditions. This objective retrieval of data contributes a vital aspect to the bigger picture combining with other data-gathering methods. One of the stories that the webcam told me was that visitors to the gallery often formed into groups and either directly interacted with *Deep*, and/or with each other alongside, or parallel to, the art installation. This supported my reasons for using ethnography as my methodology because as well as a place for exhibition, the BSAD gallery was a community space that was used not only for exhibiting artworks but was also used for communal exchange.

One of the key findings during the period of my research in the BSAD gallery is that I observed that not only were visitors looking at and engaging with my work (fully interacting) but they were also looking away (Rogoff, 2009)<sup>22</sup>. I noticed that this was occurring when they shared personal stories with me that seemed to be triggered by yet

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<sup>22</sup> ROGOFF, Irit. 'Looking Away, Participations in Visual Culture'. *Histories and Theories of Intermedia*. University of Maine. December 27, 2009. <http://umintermediaj501.blogspot.ca/2009/12/irit-rogoff-looking-away-participations.html> [Accessed June 2012].

separate from my work, as well as when they began to see my installation work as a source for their own sampled works. When they participated in the activities that occurred in the spaces around the work, they began to move from being observers of the artwork to active co-creators. This conclusion cannot only be drawn from my ethnographic work, by my presence in the gallery as an active participant observer.

In her article titled *Looking Away, Participations in Visual Culture*, Irit Rogoff describes this act of looking away from the work on the part of both audience and artist – and focusing on the relationships that occur in the spaces around the work. It is in this “looking away” that the audience moves to the foreground – yet through its related activities remains in the context of the work. This suggests that one should look at interaction and audience participation beyond the context of any immediate cause-and-effect relation between viewer and work. My research suggests a relation that exists beyond the artwork and includes elements of participation that fall outside of the time and space of the artwork.

These activities became apparent when I noted that visitors to the gallery photographed, filmed and made recordings based on my work, using portable mobile devices. They were creating their own works, using a range of digital techniques and technologies in response to my own – in a sense ‘looking away’ from the exhibited work in order to generate new artworks. It was only by looking away from the work, also, that I was able to discover this to be an integral part of the response of audiences in relation to my art installations, with implications for how we study and understand the wider use of installation artworks by gallery visitors. As I will explain in the chapter titled “Understandings of the Expanded Interface”, the sound booth in the exhibit *Deep* became a “stage” where creative activities occurred and works were generated. Rogoff calls these zones “spaces of appearance” where “audiences shift themselves from being viewers

to being participants engaged in activities related to the artwork” (Ibid, 2009). I will be identifying these zones later in Chapter 3 when I explore the idea of artwork as platform referred to in Claire Bishop’s edited collection of texts called, *Participation* (Bishop, 2006)<sup>23</sup>.

## **Conclusion**

This section has demonstrated that qualitative research methods used as a part of ethnographic practice incorporate a variety of methods for data collection: case studies, personal experiences, reflection, interviews, observations, interactions and visual texts. In these instances, the researcher assembles thoughts and images in order to create a multi-faceted and holistic collage of interactive experience within HCI artworks the field of fine art (Denzin and Cook 1981, pp. 4-6). In my own case, these methodological elements became the basis for observing a particular community as it engaged with interactive artworks within a gallery setting, who in turn, I discovered, itself became the source of an eclectic range of information to be interpreted. This was the beginning of my journey into the central question of my thesis: what is the nature of audience interaction with Human Computer Interaction artwork in the context of a gallery space?

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<sup>23</sup> BISHOP, Claire (editor), *Participation*. Documents of Contemporary Art. 2006, MIT Press, Cambridge.



**Figure 15.** *Deep* participants detail. May 2011.  
Author: Luba Diduch.

In an interview titled “The Ethnographer in the Field”, Clifford talks about art production as being rooted in “local acts” rather than contributing to cumulative culture. He maintains that ethnographic study must be situated in “specific cultural and historic circumstances” in order to capture these local acts (Coles 2000, p. 59).

During periods of participant observation at the BSAD, I was struck by the fact that people who were most willing to speak with me regarding *Deep* saw a connection or relationship between my work and experiences and their own. Once they made the connection, they were eager to speak to me and to ask questions about the meaning of *Deep*, as well the technologies that I had used to assemble this work. In addition, the conversations that resulted revealed to me that *Deep* had a visceral effect on the visitors. Many of their comments had to do with the physical and auditory sensations of being physically immersed in water. The visitors shared anecdotes with me about physical experiences they had when swimming in rivers, lakes and the oceans, and how they felt when they were submerged in these bodies of water. Acoustics became an important element when the visitors became aware of the work’s presence in the building even after they left the gallery space: it was evident that the rumblings and vibrations produced had travelled beyond the parameters of the gallery.

My continued presence in the gallery space had a significant role in adding to the dynamics of the work because the conversations that occurred actually became an extension of *Deep*. (Appendix A *Fieldwork Data Collection for Deep*). Had I not assumed the role of participant observer on a daily basis, the opportunity for having these conversations would not have occurred. The events that occurred in relation to visitors at the BSAD affirmed to me the usefulness of my chosen methodology and, that it was instrumental in starting a process that made me re-think the nature of interactivity and the role

of the audience in relation to multimedia art installations. This is an idea that I will be developing in more detail as the thesis develops.

When I began my observation of *Deep*, I didn't know if visitors to the gallery would be willing to interact with me at all: this was because I had never had the experience of conducting an experiment like this before. My expectations were open-ended at the beginning of the participant observer process – I felt that the conditions I had set out for myself in the BSAD gallery would provide me with new information and insights in relation to interactivity. As my methodological process began to unfold, I could see that my previous notions of interactivity were being challenged. My questions regarding the nature of interactivity were no longer in relation to the art installation itself, but pointed to the spaces and audience members who were situated around the artwork. I began to see that my observations would be useful when looking at solutions to Human Computer Interaction in Fine Art (this will be discussed further in Chapter 3) and how these observations related to other artists who have encouraged interactivity in their art practices. What I did not expect when embarking on the participant observation process was that some visitors would act on their creative impulses when they 'performed'<sup>1</sup> at the microphone in the sound booth and recorded and photographed themselves using mobile devices. This was an indication to me that further research would continue to glean unexpected results. In addition, my study confirmed to me that I am not simply focusing on the body of the audience member as he or she enters the gallery but as a person who is actively living a technological existence and is prepared for co-creativity.

As a result of my observations, and after the initial installation of *Deep*, I decided to provide an enclosed environment for interaction, and added a curtain that covered the entrance to the booth. This provided visitors the privacy to interact with the work without being seen. Experimentation with the volume of the soundscape allowed

the audio component of the work to spill out of the gallery into the hallways, adjoining offices and studios in the building where the gallery was situated. As the exhibition progressed, I became increasingly aware of the fact that gallery visitors were sampling the audio and video content in the work and using it as a basis for their own 'derivative' works, as well as participating in the act of co-creation.<sup>24</sup>

One of the ideas I am exploring is the possibility that the audience becomes part of an enlargement of the space when engaging with the work. This idea is one that R.H. Wilenski explored in his book *The Modern Movement in Art* (1935). Wilenski's view was that it is the *artist as spectator* who enlarges the space in the gallery through his/her architectural romantic or descriptive experience in the space (Wilenski 1935 pp.176-177). I would argue however, that it is the *contemporary audience* who has taken on this role of enlargement. As I will discuss in more detail in Chapter 3, I followed cues from co-creators and visitors to the gallery, adding slight changes to the work. The addition of a video on a side panel outside of the gallery visually and sonically introduced the work in the main space.

The methodology I am using has led to unexpected findings and some discoveries related to my work – in excess of common sense notions of audience participation with interactive art installations – and a developing/changing concept regarding art installations. The process has presented me with a bigger picture and has forced me to re-align my thoughts. When visitors visited my exhibit at the BSAD gallery and used mobile devices in a private booth space to sample, they also began to share their works using networked technology. As a result of this, I have begun to think about how artwork can be enlarged via spatio-temporal relationships using contemporary

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<sup>24</sup> When this occurred, I began to consider the potential for performative activity on the part of both research and participant, who both take the role of participant and respond in relation to their reading of the artwork.

technologies. My aim is to generate an artwork that sets out to consciously explore this theme of enlargement.

### ***Exhibits, Research and Subsequent Chapters***

My research has both rational and empirical elements and these are not mutually exclusive – they are both present because my methodology is both empirical and theoretical. The next phase of my research continues in this vein and the chapters that follow will address the idea of the enlargement of artworks, particularly through the idea of co-creativity. My research has begun to explore the manner in which interactive installation-based artworks expand beyond the immediate architecture and structures of an art gallery: for example, through visitor participation and the use of technology. The concept of interaction will now be further explored through the study of exhibition visitors who co-create artworks and distribute these newer works through the use of mobile devices and the internet. I intend to make more HCI artworks to study audience engagement further and subsequently, gain a deeper understanding of the nature of engagement.

The next section in this paper will provide a literature review I will use the term architectonics when discussing the layering of meaning that is revealed when an artwork is placed into a gallery structure. I am interested in the dynamic relationships that exist between space, technology, the interactive installation/artwork and the perceptions of the audience. In this chapter, I will be questioning whether the rational and empirical systems around the artwork affect and influence co-creative activity.

Chapter 3 will introduce the idea of architectonics. Architectonics, it will be seen, is a term that relates to the field of art and architecture, and has been used to describe *systems* that exist within structures and buildings. Locating my research within an 'architectonic space' is useful, as I study the ways in which people relate to interactive

installations in gallery spaces where these systems can be seen to exist (prior to the work). I will argue that these systems can become cues for visitors, influencing their expectations for, and behaviour around, the artwork. The notion of architectonics encourages the researcher to observe and discuss the original intentions of the architect (when designing the gallery space), the purposes mapped out by the institution, the inter-relationships that exist between rooms in the same structure/organisation, and the overlooked spaces beyond the immediate artwork (such as stairways and meeting areas) Architectonics takes seriously the idea that all aspects of an artwork, including the space where it resides can have a bearing on the experience of the visitor.

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## Chapter 2 – Experimental Research Practice in Fine Art/Human Computer Interaction

In this chapter the experimental works of contemporary artists and theorists who use Human Computer Interaction to explore spectator participation in the field of interactive artworks, will be discussed. What is noteworthy is that interactivity is largely taken as a given within these 'interactive' works. It is assumed to have a specific set of formal attributes, such as the capacity to immerse the participant in a story world and, certainly, the participation of audiences rarely forms the object of study as it does in my own research where the nature of the artefact itself proves to be the focal point of concern. This chapter will identify the range of working assumptions around interactivity in these works, and will establish similarities and differences with the results of my own observational research on this topic.

In varying degrees, and due to varying aspects of immateriality, these other artworks can be seen as extended beyond the confines of both the multimedia interface per se and even the architectural structure of the art gallery. For example, these works are not confined to the production of hardware but also include the use of underlying programming code. In this sense, the artworks can be understood in terms of the idea of expansiveness when the "combinations of materials within them 'decentralise' forms of interaction resulting in reorganization of structures of the artwork through networks of exchange" (Sweeny, 2009 p.2)<sup>25</sup>. Indeed, the idea of an expanded interface is central to this chapter, which offers a survey of historical and contemporary examples of HCI in the field of Fine Art. This chapter will demonstrate that the exchanges that occur between physical and virtual space within the works of HCI artists and how they are used to show *expansion* of artworks beyond

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<sup>25</sup> SWEENY, Robert. 2009. 'Networked Artworks: Complex Connections in New Media Education'. Page 2. *Proceedings of the Digital Arts and Culture Conference, After Media, Embodiment and Context*. University of California, Irvine. <http://www.escholarship.org/uc/item/4sk9195w#page-1> [Accessed July 22, 2013].

their physical parameters, in particular through the use of ‘the unified interface’ (Constantine, 1997)<sup>26</sup>. A unified interface can be defined as one employing technological hardware and software components that are configured harmoniously and in such a way that a participant can “touch” and be productive when exploring an artwork (Ibid, 1997).

As an artist who works with Human Computer Interaction installations (HCI), I identify my work with the research community that is located in this field, specifically when artists use computer technologies and social networks in the field of Fine Art. This is an area of art practice that uses processes found in emerging technologies such as prototyping, computer programming, sensor systems, WiFi networks and mobile devices to create and present artworks to audiences, both historically and in contemporary practice (Laurenzo, 2008)<sup>27</sup>. One of the questions I am asking is: how do other artists use these technologies to engage the participant/viewer? As this chapter will demonstrate, the contemporary artworks cited in this chapter contain formal and technical mechanisms that allow processes to be created and archived digitally as well as transmitted through networks (Poole, LePhat Ho, 2011)<sup>28</sup>. They also resemble ‘prototypes’, in that the artists use experimental methods to test their ideas related to HCI artworks. What these works fail to do, however, is to use audience engagement to question their own original intentions for the work. Indeed, an important characteristic of the works in this chapter centers in the role of the computer itself and its use as an artistic medium.

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<sup>26</sup> CONSTANTINE Stephanidis. ‘Unified User Interface’. *Ercim News Online Edition*. ERCIM News No.28 - January 1997. [http://www.ercim.eu/publication/Ercim\\_News/enw28/stephanidis.html](http://www.ercim.eu/publication/Ercim_News/enw28/stephanidis.html) [Accessed June 30, 2012]

<sup>27</sup> LAURENZO, Tomás ‘HCI in New Media Art Practices’ Instituto de Computación, Facultad de Ingeniería. Universidad de la República. Montevideo, Uruguay.

<sup>28</sup> POOLE, David, Sophie Le-Phat Ho. ‘Digital Transitions and the Impact of New Technology On the Arts’ *Canadian Public Arts Funders (CPAF) Network*. [www.cpafo-opsac.org/en/themes/.../DigitalTransitionsReport-FINAL-EN.p...](http://www.cpafo-opsac.org/en/themes/.../DigitalTransitionsReport-FINAL-EN.p...) [Accessed June 2011].

### ***Historical Precedents 1920s to 1950s***

The concepts of ‘interaction’ and ‘participation’ are ideas that are being explored in 21<sup>st</sup> century artworks, but they have also been seen in the past as relevant to earlier art movements (before the advent of complex computer systems). Even as early as 1957, Dada artist Marcel Duchamp said that every aesthetic experience assigns a participatory role in the spectator, who while viewing the work, “contributes to the creative act” (Duchamp 1957 pp. 77/78)<sup>29</sup>.

All in all, the creative act is not performed by the artist alone; the spectator brings the work in contact with the external world by deciphering and interpreting its inner qualification and thus adds his contribution to the creative act (Ibid, 1957 pp. 77/78).

After 1924, Duchamp was engaged in works that were “produced in genres, mediums and contexts that evaded the commonly accepted status of ‘art’” (Nodelman, 2003)<sup>30</sup>. These works were produced as collaborative endeavours and were considered to be outside of stable established genres such as painting and sculpture. They were created in the spirit of Duchamp’s beliefs regarding the ways in which “the work of art is a continuing process generated through the interaction of a plurality of minds” (Ibid, 2003). At this point, Duchamp was referring to works of his contemporaries that were becoming increasingly reliant on contributions stemming from the deciphering, interpretation and intellectual participation on the part of the viewer: Duchamp showed more than a passing interest in the activity of audiences in the context of his work.

As this chapter will demonstrate, the ideas first articulated by Duchamp continue to resonate in the digital age, albeit with some

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<sup>29</sup> DUCHAMP, Marcel. *The Creative Act*. New York. Paragraphic Books, 1959, pp. 77/78.

<sup>30</sup> NODELMAN, Sheldon. ‘Disguise and display: recent publications detail a long-neglected aspect of Marcel Duchamp’s seminal oeuvre—installation design as a work of art’. *Duchampiana I - analysis - Critical Essay*. *Art in America*, 2003.

important differences. The use of digital technologies in contemporary life situations creates multiple points of interaction between physical surfaces, adjacent regions and human beings: something that many have called 'haptic' qualities (Chang and O'Sullivan, 2013)<sup>31</sup>. These situations present the viewer with the ability to combine intellectual input with sensory/embodied participation. As I will demonstrate in this chapter, artists are increasingly finding ways to use haptic systems in their works as a way to engage the viewer through both mind and body. The intellectual aspects articulated by Duchamp can be seen as expanded to include the realm of the multisensory, augmented by experiences that involve using the body as well as the mind through the senses of vision, hearing and touch (Duchamp 1959, pp. 77/78). The end goal, it would appear, is the production of highly engaging and immersive artworks.

### ***László Moholy-Nagy***

In roughly the same period that Duchamp was exploring the beginnings of active audience participation and 'interactivity', the Hungarian artist László Moholy-Nagy was also examining the idea of expanded and immersive artworks. Some have argued that his preoccupation with the fourth dimension, in relation to artworks, was a precursor to virtuality. At the very least, Moholy-Nagy can be seen as an artist who is engaged in the process of augmenting the ideas of participation and collectivity originally put forward by Duchamp. Erkki Huhtamo, a contemporary theorist and writer in the area of digital artworks and new media, identifies Moholy-Nagy, promoter of constructivism, photographer and a supporter for the use of technology in the arts, as an important influence in the area of

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<sup>31</sup> CHANG, Angela and Conor O'Sullivan. 'Describing Haptic Phenomena'. Department of Computing Science, Motorola Inc. Cambridge.  
<http://www.yumpu.com/en/document/view/9721333/describing-haptic-phenomena-department-of-computing-science> [Accessed August 1, 2013].

contemporary “virtual museum presentations” (Engelbrecht, 2009)<sup>32</sup>. With the creation of his kinetic motion sculpture titled *Light Space Modulator* (1929) Moholy-Nagy produced a work that reflected light through movement into its surroundings within the gallery space, expanding the field of the artwork in haptic terms. In his writings, Moholy-Nagy declared that

It [the artwork] not only pushes the temporal dimension of art but expands its spatial dimensions into the entire environment, including the viewer, who becomes a surface onto which light is reflected (Shanken 2009 p. 85)<sup>33</sup>.

In this instance, Moholy-Nagy considered the viewer as an integrated part of the artwork, when the ephemeral aspects of the work reflected themselves into the spaces around the artwork and made contact with the viewer. He saw the reflections created by *Light Space Modulator* (Figure 17) as immaterial elements and as a departure from physical forms in artworks to ‘virtual forms’. He thought that these reflections extended the work by adding a fourth dimension of movement (or time) to the three dimensions of volume present in the artwork. (Moholy-Nagy 1928 p.18)<sup>34</sup>

In his essay “The New Vision” (1928), Moholy-Nagy argued that in order to adjust to the rapidly increasing speed of life, human adaptation (Steiner 2009 p.18)<sup>35</sup> was required (Moholy-Nagy 1928 p.18) and he connected this concept with the fields of photography, art, design, and sculpture. In a second related work titled “Vision in Motion” (1947), Moholy-Nagy referenced Albert Einstein’s theory of

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<sup>32</sup> ENGELBRECHT, Lloyd C. 2009. Moholy-Nagy, Mentor to Modernism. Flying Trapeze Press. [http://www.flyingtrapezypress.com/Chapter%20Six%20PDF%20from%20Moholy-Nagy\\_Mentor%20to%20Modernism.pdf](http://www.flyingtrapezypress.com/Chapter%20Six%20PDF%20from%20Moholy-Nagy_Mentor%20to%20Modernism.pdf) [Accessed July 1, 2013].

<sup>33</sup> SHANKEN, Edward A. 2009. *Art and Electronic Media*, Phaidon Press.

<sup>34</sup> MOHOLY-NAGY, Laszlo. *The New Vision*. 1928. Monoskop.org. [http://monoskop.org/images/a/af/Moholy-Nagy\\_Laszlo\\_The\\_New\\_Vision\\_and\\_Abstract\\_of\\_an\\_Artist.pdf](http://monoskop.org/images/a/af/Moholy-Nagy_Laszlo_The_New_Vision_and_Abstract_of_an_Artist.pdf)[Accessed December 2014].

<sup>35</sup> STEINER, Hadas A. *Archigram*. Routledge. Taylor and Francis Group. New York and London. 2009.

relativity when he said that he considered the architectural spaces where artworks resided to be part of a “space-time reality” (Moholy-Nagy 1947 p.60). It was through his experiments with kinetic sculptures and his writings that explored the notion of time in the form of a fourth dimension, that Moholy-Nagy was not only able to see artworks beyond their physical forms (and, hence, as subjectively expanded), but also the ways in which they became time based works that established an interactive relationship with the viewer.

In 1921, Futurist F.T. Marinetti presented a proposal in his “Manifesto of Tactilism” that advocated for the act of touch to be seen as an important part of ‘interactivity’ in artworks. Marinetti considered ‘tactilism’ to be useful in that it could present possibilities for the viewer to make discoveries connected with other senses other than just the visual. He stated that ‘a virtual sense is born in the fingertips’ (Marinetti 1921)<sup>36</sup> Indeed, the Futurists saw the traditional ways of presenting exhibits in art museums as largely fixed and static, which clashed with their innovative ideas regarding technology, motion and mechanization. They felt that greater degrees of interactivity – in the form of human involvement – were possible, and needed (Grau 2007 p.78)<sup>37</sup> in order to reflect a faster pace of life that was becoming apparent in the early part of the 20<sup>th</sup> century. While the terminology is different, some of the concerns appear to be the same: touchpoints are a good way of thinking about heightening audience engagements with artefacts and of increasing points of contact. Marinetti’s writings about tactilism have shown me that even the Futurists were already considering haptics and the sense of touch as important components in the experience of an artwork.

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<sup>36</sup> MARINETTI, F.T. ‘Manifesto of Tactilism’. 1921. Read at the Theatre de l’Oeuvre (Paris), the World Exposition of Modern Art (Geneva), and published In *Comoedia* in January 1921. [http://peripheralfocus.net/poems-told-by-touch/manifesto\\_of\\_tactilism.html](http://peripheralfocus.net/poems-told-by-touch/manifesto_of_tactilism.html) [Accessed June 11, 2013].

<sup>37</sup> GRAU, Oliver. *Media Art Histories*. The MIT Press January 31, 2007. p.1.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 17. László Moholy-Nagy. *Light Space Modulator*, 1929.**

## ***Contemporary Theories of Interactivity: Touchpoints 1960s***

After looking more closely at Moholy-Nagy and Duchamp who were thinking about the physical and intellectual integration of the audience/body in their artworks, I have observed a link between the artworks from the past that were considered to be interactive and how these notions of interactivity have evolved in contemporary art practice. Both Duchamp and Moholy-Nagy saw this potential for interactivity in the viewer. They saw the participant as part of the creative act and an integrated part of the artwork and they considered the artwork itself as a continuing process that evolved through the 'interconnections of minds'. Their works and notions of interactivity differed from contemporary interactive artworks, however, in that their particular audiences did not directly influence the final forms, outcomes and structures of their artworks. Their artworks were for the most part, already formed when exhibited to audiences and according to the intentions and structures that had originally been laid out. Although contemporary artworks involve a similar integration of the viewer described by Moholy-Nagy and Duchamp, they go further in engaging and involving the viewer through the use of haptic, immersive and expansive characteristics. Moholy-Nagy's work *Light Space Modulator* for example, 'expands' into the viewer's space through the artist's use of reflection and movement and depends on the viewer's presence to do so. However the reflections are not dependent on an active and conscious contribution on the part of the viewer who could directly cause these reflections to happen: they are still a feature of the work that was intended by the artist/creator.

In contrast to the works of artists such as Moholy-Nagy and Duchamp, many contemporary interactive artworks allow for the viewer to become an active collaborator who has an impact on how the artwork looks, sounds and responds to interaction. Many of these contemporary artworks contain haptic elements – they include artworks based in touchscreen technology for example, where

participants have to physically contact a touch sensitive screen to effect a change in the artwork. Immersive artworks “overwhelm the senses of the participant by heightening emotional and sensorial engagement with the artwork and by empowering the user to affect the very nature of work (through interaction)” (Leung, 2013)<sup>38</sup>. In these instances, the artworks become expanded through participant contact with multiple points of engagement (touchpoints) and as a result, extend beyond their original prototyped iterations.

Beyond the world of Fine Art, the design community has been looking at audience engagement with artefacts and the nature of interactivity in the contemporary, technological world. In this respect, designers have much to share with the artist. Human Computer Interaction artworks, for example, can be seen as providing “interfaces” that are programmed with ‘touchpoints’ — points of engagement that are designed for human interaction. In his book *Designing for Interaction*, author and interaction designer Dan Saffer defines touchpoints as sites that encompass “physical locations, specific parts of locations, objects, websites, spoken communication, written communication, computer applications, hardware and software” (Saffer 2007 pp. 2, 99)<sup>39</sup>. Touchpoints can be found in physical and virtual locations in an artwork where the connections between human being and constructed interface occur. Saffer describes touchpoints as being readily found in environments and are “the raw materials used by a designer” (Ibid 2007 pp. 2, 99) to create interactive experiences. Similarly, I have discovered that as an artist, using touchpoints can be useful when they are consciously located in and around artworks and are mapped out as connecting points for how and when interfaces are to be used within an

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<sup>38</sup> LEUNG, Ken. ‘Evolution of Immersion in 20th Century Media Art’. 2012. <http://www.kenleung.ca/portfolio/evolution-of-immersion-in-20th-century-media-art>. [Accessed August 12, 2013.]

<sup>39</sup> SAFFER, Dan. ‘Designing for Interaction: Creating Innovative Applications and Devices’ (2nd Edition) Voices That Matter. Berkeley California. 2007. p.4.

interactive experience (Ibid 2007 pp. 2, 99). In this respect, Fine Art has some useful ideas to borrow from the world of design.

Having said this, while the concept of a 'touchpoint' may be a historically specific concept, it alludes to ideas that have been previously explored in the history of art by Moholy-Nagy et al. Although the idea of an 'interface' in an artwork was not yet conceived of per se, as this chapter has demonstrated, the concept of points of contact – or 'touchpoints' in an artwork – were already being considered as a possibility within the realm of the viewer's experience. All of this suggests that the idea of touchpoints is central to understanding how to enhance and deepen audience engagement with artworks.

The idea of touching an interface is also explored in Donald A. Norman's book *Living with Complexity* (2011). Here Norman presents concepts related to how user-centered design can be interpreted as an appropriate methodology for exploring the expanded interface. Norman describes how touch points appear when participants initiate tactile interactions with interactive interfaces (Norman, Wadia 2013)<sup>40</sup>. Norman compares this idea of the physical connection through touch with Myron Krueger's 1969 work *Videoplace*, (Figure 18) a work that examines artificial reality and how it can establish a relationship between artist and viewer/participants when they touch the interface. In this work Krueger develops an interface that enables human gestures and touch to interact with large projected images: the first multi-touch system designed for human-computer interaction (UK Essays, 2003-2015)<sup>41</sup>.

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<sup>40</sup> Norman, Don. Bahar Wadia. 'Opportunities and Challenges for Touch and Gesture-Based Systems'. jnd.org. 2013. [Accessed August 2014]  
[http://www.jnd.org/dn.mss/opportunities\\_and\\_ch.html](http://www.jnd.org/dn.mss/opportunities_and_ch.html)

<sup>41</sup> UK Essays. 1983: Video Place / Video Desk Myron Krueger. [Accessed August 2014]. Available at: <http://www.ukessays.com/essays/technology/touch-screen-applications.php#ixzz3TkSGI7MW>  
2003 – 2015.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 18 Myron Krueger, *Videoplace*, 1969.**

Ultimately, this chapter will argue that while artists have intuitively created touchpoints in their interactive works, they have not explored this idea consciously. For now, my study (theoretically) takes into account the moment when the spectator makes contact with the interface through physical and cognitive means and the idea that a touchpoint emerges as a site for subsequent interactive events that lead to new iterations of the original artwork: an extension of the artwork that takes it, eventually, beyond the time/space of the original artwork.

This phenomenon can be seen in some of the artworks that have already been made in the field of HCI, when the interface expands and transforms through digital data, beyond its original form located in the screen, hardware and programmed interface. Further examples of HCI artworks and ancillary notions of expansion vis-a-vis touchpoints will be explored in this chapter. Then, in a later chapter, examples of this expansion will be seen in relation to my own HCI artworks, where an artwork is sampled, photographed and shared through the use of computer networks and technological devices. Before this, however, the paper looks to the past for historical precedents for touchpoints and expansions of the interface.

## ***The Expanded Interface – the 1950s, 1960s Computers and Video***

Along with Duchamp and the Dadaists, the 20<sup>th</sup> century brought forth many artists who promoted a multi-faceted approach to the audience-artwork relationship, continuing this process of emphasizing ideas and concepts rather than focusing exclusively on the physicality of artworks. In 1952 artist and musician John Cage staged what is considered to be one of the first “Happenings” at Black Mount College in North Carolina, USA, and which he titled *Theater Piece #1* (Butler, Blake, Harris, 2013)<sup>42</sup>. Happenings were events that mixed different forms of media with audience participation. Cage spontaneously orchestrated *Theater Piece #1* with other faculty members and artists at the college — painter Robert Rauschenberg, dancer Merce Cunningham and poet Charles Olson who performed works of their choice from within their own disciplines, all within the same performance (Gena, 1992)<sup>43</sup>. *Theater Piece #1* was a performance artwork that was planned around the idea of mixed media and where the conceptual aspects of the individual artworks transcended, or expanded, beyond their physical constructions (Krysa, Lillemose, 2006)<sup>44</sup>. This work was originally created by members of the Black Mountain Group and was created after they read a translated version of Antonin Artaud’s *The Theater and its Double*. In this book, Artaud argued that action and script (the pre-determined structures of an artwork) could be independent of each other in a theatrical production (Gena, 1992). The Black Mountain participants ‘expanded’ Cage’s *Theater Piece #1* by individually

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<sup>42</sup> BUTLER Brian, (editor), Blake Hobby (editor) Mary Emma Harris. ‘John Cage at Black Mountain: a Preliminary Thinking’. *The Journal of Black Mountain Studies*. 2011. Available at: [http://www.blackmountainstudiesjournal.org/wp/?page\\_id=1276](http://www.blackmountainstudiesjournal.org/wp/?page_id=1276) [Accessed July 22, 2013].

<sup>43</sup> GENA, Peter. ‘Cage and Rauschenberg: Purposeful Purposelessness Meets Found Order’. 1992. Museum of Contemporary Art.’ Chicago. Available at: <http://www.petergena.com/cageMCA.html>. [Accessed November 2011].

<sup>44</sup> KRYSA, Joasia, Jacob. ‘Curating Immateriality. Conceptual Transformations of Art: From Dematerialisation of the object to immateriality in networks.’ 2006. Available at: <http://www.data-browser.net/03/> [Accessed May 3, 2013].

adding their own spontaneous contributions (dance, poetry and painting), and within them, their own conceptual concerns. In the process, Cage's original concept of this artwork branched out in different directions, according to the intention and conditions of each performer's contribution. This collaborative artwork, however, was still focused on the formal parameters of the work in that the individual contributions continued to be rooted in the unique practices of each artist and was derived from the clearly delineated genres of painting, poetry, theater and dance.

In the 1960s the group Fluxus (Friedman, 1998)<sup>45</sup> included such artists as Yoko Ono, John Cage, George Brecht, Alan Kaprow, Al Hansen, Nam June Paik, and Joseph Beuys (Higgins, 2002)<sup>46</sup>. These were artists who were interested in how they could incorporate interdisciplinarity and conceptual approaches to opening up or expanding art practice towards an audience, while using various media and art disciplines simultaneously (Ibid, 2002). Echoing attitudes introduced by the Happening artists at Black Mountain College, the Fluxus artists regarded artworks in a way that was a departure from the ways they had been experienced in the past, such as during the age of Modernism. Whereas Modernism was concerned with form and materiality of an artwork, the Fluxus artists departed from approaches to making art objects when they put an emphasis – as a development of the work of Duchamp and Moholy-Nagy – on the use of intermedia and the conceptual involvement of the audience in art practices.

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<sup>45</sup> “The Fluxus movement has been described through the use of twelve ideas: globalism, the unity of art and life, intermedia experimentation, chance, playfulness, simplicity...specificity, presence in time and musicality.”  
 FRIEDMAN, Ken. (editor). *The Fluxus Reader*. Academy Editions, a division of John Wiley and Sons. West Sussex. 1998. Page ix.  
[http://www.nomads.usp.br/pesquisas/cultura\\_digital/arte\\_em\\_processo/Processo/Textos/Fluxus%20Reader.pdf](http://www.nomads.usp.br/pesquisas/cultura_digital/arte_em_processo/Processo/Textos/Fluxus%20Reader.pdf) [Accessed May 2013]

<sup>46</sup> HIGGINS, Hannah. *Fluxus Experience*. Chapter 3. University of California Press; 1<sup>st</sup> edition (December 2, 2002).

These perspectives relating to intermedial practices, conceptual approaches and the expansion of artworks have evolved and continue to be seen in contemporary artworks that employ computer technologies to combine different mediums and seek to engage the viewer in deep and immersive engagements with the artwork. In her chapter The Passage from Material to Interface, in Oliver Grau's book *Media Art Histories*, (2007) Louise Poissant describes the differences between the ways in which modernist and HCI artworks are approached and perceived by the viewer. Poissant relays the ways in which art of the modernist era was meant to trigger intellectual thought and visual perception without the viewer actually physically contributing to the artwork. She says that HCI artworks encourage direct contact with artworks and in this way, are in contrast with the modern era when art was meant to be experienced through intellectualization rather than the senses (Poissant 2007 p.229)<sup>47</sup>.

In his book *Media Art Histories*, (2007) multimedia theorist Oliver Grau describes a multi-disciplinary approach that, like that of the Fluxus artists, has become useful in the creation of artworks that are rooted in conceptualism and non-physicality as a way of getting audiences more involved in art practices. He says that digital artworks are understood in relation to other disciplines such as film, cultural and media studies, computer science, philosophy, and natural sciences (Grau 2007 p.1)<sup>48</sup> Within these contexts, methods of understanding and creating artworks have become an argument for an approach taken up by contemporary artists who currently use a variety of computer technologies in their work and who argue for the interactive qualities of the technological artefact in a gallery setting. Evidence of this approach to art practice is seen when artists who

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<sup>47</sup> POISSANT, Louise. *The Passage from Material to Interface. Media Art Histories*. Edited by Oliver Grau. Cambridge: MIT Press, 2007. Chapter 12. Page 229.

<sup>48</sup> GRAU, Oliver. *Media Art Histories*. The MIT Press January 31, 2007. p.1.

avail themselves of computer technologies often use several forms of media, employing them within a single work. In the 21<sup>st</sup> century, the convergence of artistic and scientific disciplines in culture and society as a whole, can serve as a lens for interpreting these multimedia works, indicating that interactivity is not simply a product of technology but very much an approach to audience engagement that has developed through recent art history. Many contemporary artists, perhaps unknowingly, are using Duchamp's concept of the "creative act", for example, and are discovering the ways in which it can manifest itself and evolve through the use of technology to create engaging and immersive artworks for participants.

Along with the activities of the Fluxus group, the 1960's "early scene" in Human Computer Interaction readily embraced the use of interactive artworks and included works that made use of computer technologies. Exhibits that examined this specific deployment of a medium in the area of artistic activity began to surface in 1968. One such exhibition was titled *Cybernetic Serendipity* which took place at the Institute for Contemporary Art in London, England. It was the first exhibit to show "computer-aided creative activity that included art, music, poetry, dance, sculpture, animation" (Reichardt 1960 p.5)<sup>49</sup>. The principle idea of this exhibition was to examine the role of the computer and cybernetic theory in contemporary arts practice and it included robots, poetry, music and painting machines, as well as a variety of works where chance was an important ingredient" (Daniels, Frieling, Helfert, 2013)<sup>50</sup>. *Cybernetic Serendipity* was an exhibition that showed "all aspects of computer-aided creative activity: art, music, poetry, dance, sculpture and animation" (Daniels et al 2013).

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<sup>49</sup> REICHARDT, Jasia (ed). *Cybernetic Serendipity, The Computer and the Arts*. Frederick A. Praeger Inc Publishers. New York, New York. 1960. pp. 5, 45.

<sup>50</sup> DANIELS, Dieter. Rudolf Frieling, Heike Helfert (Inke Arns for «Survey of MediaArt») Media Art (editors). Medien Kunz Netz/Media Art Net. 'Cybernetic Serendipity'. Zentrum für Kunst und Medientechnologie Karlsruhe Lorenzstraße 19. Available at: <http://www.medienkunstnetz.de/exhibitions/serendipity/> [Accessed June 2013].

The exhibition was not only about the computer as object – it was also organised thematically into three areas in order to show different facets of digital art practice. The first was a showcase for computer generated images, films, music and text, the second featured interactive artworks such as robots and painting machines and the third was used as a reference site for learning about the history of cybernetics. (Usselman, 2008)<sup>51</sup> The intention was to present research as well as to show the ways in which cybernetics were becoming important in contemporary art (Media Kunz Netz, 2013).<sup>52</sup>

Jasia Reichardt, the curator of this exhibition, was and continues to be, a curator, art historian and critic with an interest in the convergence of art and technology. She states that, “Exhibits in the exhibition were either produced with a cybernetic device (computer) or were cybernetic devices in themselves. They reacted to things in the environment, either human or machine, and in response to sound, light or movement.” (Daniels et al 2013) The work of these artists differed from that of Duchamp and his contemporaries, as well as the Fluxus group, in that the Cybernetic Serendipity practitioners were more specifically (and consciously) using digital technologies to engage the audience. For example, a work by artist Nam June Paik titled *Tango Electronique* featured a television screen that displayed “shimmering coloured lines”. The visitor was invited to turn television knobs that subsequently caused the lines on the screen to explode into intricate patterns. After playing with the device for a few minutes, the visitor began to understand the underlying logic of the artwork and was then able to learn how to control the image (Reichardt, 1969 p.45).

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<sup>51</sup> USSULMAN, Rainer. <http://www.rainerusselmann.net/2008/12/dilemma-of-media-art-cybernetic.html> [Accessed July 17, 2013].

<sup>52</sup> REINHARDT, Jasia. *Cybernetic Serendipity*. Media Kunz Netz. <http://www.medienkunstnetz.de/exhibitions/serendipity/> [Accessed August 1, 2013].

In 1962, a group of Italian artists mounted an exhibition titled *Arte Programmata: Arte cinetica, opera moltiplicata, opera aperta* at the Galleria Annunciata in Milan, Italy (EduEda The Educational Encyclopedia of Digital Arts, 2011)<sup>53</sup>. Curated by Bruno Munari and Giorgio Soavi, the artworks were chosen to showcase the Milanese Kinetic and Programmed Art Movement, which due to an international interest in the cybernetic arts at that time, corresponded thematically with the Cybernetic Serendipity exhibition in London. The *Arte Programmata* exhibited works that showed the ways in which these artists were experimenting with kinetic forms and in the process, arguably, were developing practices that held the future of digital art within them (Weibel, 2007 p. 21, 39)<sup>54</sup>. This was due to the fact that these artworks contained structures of mathematically based programs and were designed to allow for the generation of random processes within them that responded to inputs from artists, audiences and gallery visitors (Weibel, 2007 p. 21, 39).

In addition, it was through his writings related to *Arte Programmata* and in context of the exhibit he had curated, that Bruno Munari felt the artist should be an “operator of a team, working with others collectively, ending the era of the artist and the protagonist ‘total work’” (EduEda The Educational Encyclopedia of Digital Arts, 2011). A reflection of his philosophy was evident in his additional participation and collaboration with members of the Futurist movement. Munari, along with the artists of the *Arte Programmata* (Figure 19) were developing ideas of interactivity, audience

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<sup>53</sup> EDU EDA THE EDUCATIONAL ENCYCLOPEDIA OF DIGITAL ARTS. This page was last modified: 19:36, October 18, 2011. [http://translate.google.ca/translate?hl=en&sl=it&u=http://www.edueda.net/index.php%3Ftitle%3DArte\\_cinetica\\_e\\_programmata&prev=/search%3Fq%3DEduEda%2BThe%2BEducation%2BEncyclopedia%2Bof%2BDigital%2BArts%2BArte%2BProgrammata.%26biw%3D994%26bih%3D704](http://translate.google.ca/translate?hl=en&sl=it&u=http://www.edueda.net/index.php%3Ftitle%3DArte_cinetica_e_programmata&prev=/search%3Fq%3DEduEda%2BThe%2BEducation%2BEncyclopedia%2Bof%2BDigital%2BArts%2BArte%2BProgrammata.%26biw%3D994%26bih%3D704) [Accessed June 10, 2013.]

<sup>54</sup> WEIBEL, Peter. ‘It is Forbidden not to Touch: Some Remarks on the (Forgotten Parts of the History of Interactivity and Virtuality’. pp. 21, 39. *Media Art Histories*. Ed Oliver Grau, The MIT Press, Cambridge Massachusetts.

engagement and the first touchpoints used in collaborative works  
(Weibel, 2007 p. 21, 39).

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 19. Giovanni Anceschi, 1963. *Strutturazione tricroma*. Artworks such as these were featured at the Arte Programmata exhibition in Milan. This one featured a projector, electric motors and a wooden frame.**

## ***The Expanded Interface: Roy Ascott and Telematics – 1980s***

To engage in telematic communication is to be once everywhere and nowhere. In this it is subversive. It subverts the idea of authorship bound up within the solitary individual. It subverts the idea of individual ownership of the works of imagination (Ascott, Loeffler 1991)<sup>55</sup>.

In the previous section, artists who were exploring the first possibilities for interactivity in artworks that were composed of early forms of computers and programmed interfaces were discussed. These examples showed how interactivity and the role of the viewer in relation to the artwork were just starting to be explored. In this section, and central to this chapter, developments in interactivity and computer technologies will show how notions of interactivity began to change through the use of computer networks. Due to his artistic exploration over a long historical period in areas related to interfaces that expand beyond the hardware where it is located through the use of networks (ie. as in multimedia installations), is the British artist and theorist Roy Ascott. Ascott inherits some of the concerns of Duchamp, Arte Programmata and Futurism, cited above, but his ideas are more resolutely located in the contemporary understanding of interactivity in terms of heightened involvement with artworks and the production of an expanded artwork using nodes, or ‘touchpoints’ that are located throughout computer networks.

Although he doesn’t call them touchpoints, as such, Ascott is engaged in producing sites that are fully interactive and require a depth of engagement. He thinks about interactivity in terms of the co-creation of artworks via the interlinking of artists, although audiences are also invited to have a degree of participation with the work (for example in his work *Aspects of Gaia* where visitors were asked to directly engage and contribute to the artwork in a gallery setting). In

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<sup>55</sup> ASCOTT, Roy. Loeffler, Carl Eugene. (editors) ‘Connectivity: Art and Interactive Telecommunications’, a special issue of *Leonardo* (Vol. 24, No.2. 1991. © 1991 ISAST.)

his seminal text *The Telematic Embrace* (Ascott, Loeffler, 2003), Ascott's can be seen to research and implement a notion of interactivity that can be understood in terms of 'touchpoints' and his work has been very useful to me in identifying their presence and value in my own artistic practice, when they demonstrate how they are used to expand the interface as a whole.

According to art and technology historian Frank Popper, Ascott has been instrumental in introducing "total spectator participation" as a way to experience his artworks (Popper, 2007, p.77)<sup>56</sup>. According to Ascott's definition, total spectator participation is seen when the artist sets up a set of parameters in an artwork that can be compared to an open field of activity for both artist and participant/co-creator. However, it is important to note that in some of his works, such as *La Plissure du Texte* (1983), Ascott opened artworks to the participation of *artistic* collaborators, whereas in other works, such as *Aspects of Gaia*, he turned to the general public for total audience participation. This openness provided opportunities for both the artist and participant groups to contribute collaboratively to Ascott's artworks (Popper, 1975, p.14)<sup>57</sup>.

Throughout his career, Ascott has been known as a pioneer in the field of cybernetics and his theoretical and artistic contributions signal a turning point in the field of HCI and fine art. At the same time, the field of HCI Digital technologies and art was evolving in the area of 'embodied interaction' (Shanken, 2007, p.50)<sup>58</sup> An example of this can be seen in the interactive works of David Rokeby where participants were encouraged to move around the interface in responsive environments: the emphasis was on the physical location

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<sup>56</sup> POPPER, Frank (2007). *From Technological to Virtual Art*. Cambridge, MA: MIT Press. p. 77.

<sup>57</sup> POPPER, Frank. *Art, Action and Participation*. London. Studio Vista. 1975. p.14.

<sup>58</sup> SHANKEN, Edward. 'From Cybernetics to Telematics'. In: *The Telematic Embrace*. 2007. p. 50.

of a body in the gallery space. By using technologies and interactive media in the arts, Ascott has made contributions and identified the area of telematics, an area of exploration for artists where computers and methods of telecommunications between individuals converge (Shanken, 2007, p.50). In *Telenoia* (Adrian, 2013)<sup>59</sup>, his 1992 project produced with Zeronet V2\_Institute for the Unstable Media, (an interdisciplinary center for art and media technology in Rotterdam (the Netherlands), Ascott referred to telematic art as “not as a finite object but as a process and system, a fluid, moving stream of data configurations, embodied in networks, on screens, in material structures, in installations and environments, endlessly open to transformation and change”.

However, not all of Ascott’s participants in telematic projects had access to neither similar levels of networked computer technologies, nor the proficiency with these technologies required when making contributions to a telematic artwork. In the case of Ascott’s work *La Plissure du Texte*, participation required access to a computer data terminal that had been specifically configured to link with an IP address and computer network. Each invited artist had access to this configuration and was asked to view the data terminal as a meeting point that linked a network of artists and to contribute to a fairytale narrative. Ascott recognised that telematics could provide “a context for artistic encounters between people who were separated by distance” as they collaborated through computer networks (Shanken, 2007, p. 50). In *La Plissure du Texte (The Pleating of the Text)*, Ascott tested this method of collaboration when he asked fellow artists to contribute textual material through the use of computer networks. The network itself was used as the “medium for the creation of a world-wide, distributed narrative – a collective global

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<sup>59</sup> ADRIAN, Robert. *Telenoia, Interview with Roy Ascott*. Web. <http://v2.nl/events/telenoia>. [Accessed August 1, 2013.]

fairy tale". (Ascott, 1983)<sup>60</sup> This concept of telematic communication through networks and with other artists is connected to the idea of cybernetics, a field that involves networks of dynamic relationships between animal (human) and machine, and was cited earlier in this text in relation to the *Cybernetic Serendipity* exhibition.

Cybernetics is an area of study first championed by Norbert Wiener, a mathematician who studied the implications of computer science, interactive systems and their effects on society as a whole (Packer, Jordan, 2002, p.104)<sup>61</sup>. Ascott took Wiener's ideas in relation to cybernetics – those that created bridges between human beings, communities, networks and the machinery associated with technology – and called them telematics. In his book *The Telematic Embrace*, Ascott described cybernetics as being "integrative, drawing many disparate parts together". (Ascott, 2007 p.185)<sup>62</sup> He said that as a result of cybernetics, (ready connections between humans and computer technologies), human beings are seeing themselves more and more as controllers of their environments. He saw this connection between human beings and networked technologies as being useful in the creation of artworks, and it was at this point that he coined the term "telematics". More importantly Ascott used this term to specifically describe computer networks that could be employed as an artistic medium for artists when they gathered to collaborate in the creation of artworks (Ibid, 2007 p.185).

In *The Telematic Embrace*, Ascott constructs a theoretical framework for evaluating and viewing interactive artworks. Ascott's framework for analysis takes into account the facets of Dada, Surrealism, Fluxus,

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<sup>60</sup> ASCOTT, Roy. 'La Plissure du Texte, a distributed authorship for ARTEX'. December 11 – 23, 1983. <http://alien.mur.at/rax/ARTEX/PLISSURE/plissure.html>[Accessed June 2013].

<sup>61</sup> PACKER, Randall and Ken Jordan. *Multimedia, From Wagner to Virtual Reality*. W. W. Norton & Company. 2002. p.104.

<sup>62</sup> ASCOTT, Roy (author). Edward Shanken (editor). *The Telematic Embrace, Visionary Theories of Art, Technology and Consciousness*. University of California Press. 2007. p.185.

Happenings and Pop art, while simultaneously fusing cybernetics with the intentions contained in the work of the Fluxus artists. He describes how – rather than being satisfied with producing highbrow, intellectualised art – the practitioners in the Dada, Surrealism, Fluxus, Happenings and Pop Art movements were interested in art that was multi-directional – produced, exhibited and experienced by everyone, not exclusively by artists. In addition the artworks were often placed in environments where the separation between art and spectator was not clearly delineated. These artworks stood as a contradiction to modernism that involved experimentation with form, processes and materials. They established a foundation for the multidisciplinary and participatory natures of telematic art in that it contains possibilities for the use of a variety of media including video, audio, text, interactivity, theater and other forms of artistic production.

Ascott explored cybernetics in light of his own conviction that interactivity in computer-based forms of expression is and will continue to be an emerging issue in the arts of the future (Ascott, 2007, p.185). Intrigued by the possibilities that computer technologies presented, he built a theoretical framework for connecting interactive artworks with the science of cybernetics. Ascott took these ideas and re-contextualised them in his writings while simultaneously testing them in his own artworks and exploring the uses of computer networking in relation to creating these artworks. He used his work *La Plissure du Texte* as a means to investigate the use of telephones, cables and satellites when making links between participants who were located in different geographic locations and who used these technologies to “interweave textual inputs” (Ascott, 2007, p.189). These connections were then digitised using data processing systems, remote sensing systems and data storage. He was making discoveries regarding the technology of interaction between individuals and how these can be enabled and documented using artificial systems of intelligence. In this way, he was creating a theoretical framework to show how the research of Norbert Wiener (the originator of cybernetics and feedback) in the

areas of science, engineering and the control of systems could be used in the development of artworks (Packer, Jordan, 2002 p.104). It is in projects like this that Ascott has explored “networked communication and its impact on human behaviour within and beyond the realm of what is conventionally defined as art”. (Packer, Jordan, 2002, p.104) Similarly, I am looking at the impact of the viewer’s presence in relation to an artwork, and how it can transform it. Ascott sees technological systems, internet and related technologies as having organic qualities that can relate to human emotions and experience (Bulatov, 2012). He equates these organic, living, characteristics to new media when he uses the term moistmedia.

“It is with the coming together of the silicon dry world of interactive media with the wet biology of living systems, that the emergence of a new substrate and vehicle for art can be detected, which I identify as moistmedia, and which may lead to the evolution of a moist art” (Ascott, 1990).<sup>63</sup>

When Ascott refers to the relationship between computer hardware and the organic qualities of the human body as “moistmedia” (Ascott, 1990) he suggests that the systems contained in technological components mimic organic systems and processes that are found in human beings, such as reproduction for example. In the process, he is examining “the dry world of computational virtuality and the wet world of biological systems consisting of bits, atoms, neurons, and genes.”(Ascott, 2013)<sup>64</sup> Although my own practice doesn’t fall under the category of moistmedia, I find some of its underlying concepts (ie the ‘organic’ aspects of evolving artworks) present in processes that I develop when I encourage the viewer to sample aspects of art installations and engage in a process that allows them to “reproduce”

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<sup>63</sup> ASCOTT, Roy. ‘Is There Love in the Telematic Embrace?’ *Art Journal*. Vol. 49, No. 3, Autumn, 1990. [http://www.academia.edu/740563/Is\\_there\\_love\\_in\\_the\\_telematic\\_embrace](http://www.academia.edu/740563/Is_there_love_in_the_telematic_embrace) [Accessed September 2012]

<sup>64</sup> ASCOTT, Roy (author). ‘Moistmedia, Technoetics, and the Three VRs’. Taurus, Lionel, Lionel Bonnaz, Alexis Chazard (editors). ESAD Grenoble Valence, Site de Valence. [http://www.erbavalence.fr/modules/documents/isea00/isea00\\_tout.htm](http://www.erbavalence.fr/modules/documents/isea00/isea00_tout.htm) [Accessed June 1, 2013].

them in new ways. (Clarke, 2013)<sup>65</sup> In this sense, the artworks become living, in flux and organic. This idea of reproduction in relation to expanded HCI artworks will be explored further in the next chapter of this paper.

As a result of these discoveries and developments in art theory, artists such as Roy Ascott have explored the technologization of organic life in their writings and artworks. These organic characteristics are the reason that humans can identify and are drawn, Ascott believes, into active participation. Ascott states that interactor/spectator becomes involved on physical, emotional and conceptual levels, in a physiological experience. The exchanges that result initiate a flexible give-and-take where the audience becomes involved in a decision making process. Ascott realises that while the artist establishes the context in an art experience the spectator is instrumental in its evolution. (Ascott, 1990, p. 99) This concept is important within my own practice and will be demonstrated through examples of my own HCI artworks in the next chapter.

As a result of studying his practice, Roy Ascott has taught me that participants' behavior in relation to technologically based collaborative projects share qualities with organic systems. Their interactions are similar in that they are reliant upon interdependent relationships between active participants, and that they grow and 'reproduce' as a result of human engagement. When the relationships between participants are maintained over long periods of time, the artworks too, take on a prolonged life. They expand beyond their original hardware software/hardware interfaces as well as in duration and meaning. By using global networks of participants in the creation of projects that develop organically over time as in his project *Aspects of Gaia*, 1989 Ascott continually revisits this particular prototype of the interface in his works. In this work, Ascott

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<sup>65</sup> CLARKE, Joseph. 'Polemics of a Cybernetic Future'. Pratt Undergraduate Future. January 2013. [Accessed February 2015]. <http://www.pratt.digitalfutures.info/?p=73>

revisited Lovelock's holistic theory regarding "the Earth as an organism that unifies climate, geography and other forms into one large system. (Jenner, 2014)<sup>66</sup> Ascott's resulting artwork showed Earth as a unified organism, but from a multitude of perspectives." (Ibid, 2014) In particular areas of the hall where *Aspects of Gaia* (Figure 20) was exhibited, viewers were transported through a series of LED screens displaying messages about Gaia and were encouraged to contribute in the creation and transformation of texts and images positioned throughout the exhibit. In this way they physically and cognitively engaged with Ascott's ideas regarding telematics and how they themselves related to Earth as a living organism.

In addition, I have noted Ascott's view regarding the relationships between cognition and location and how these are useful in my study. In the preface of the book *Art, Technology, Consciousness: Mind@large* (Ascott, 2000, p.1)<sup>67</sup>, he talks about the differences between 20<sup>th</sup> century architecture and its physical relationship to the human body, versus architecture of the new century which "progressively embodies the mind. The mind has come to understand that reality ... is endlessly in flux" (Ibid, 2000 p.5). This changing view of architectural structures, location and the way they are perceived by human beings within the context of systems will be discussed further in the next chapter of this paper.

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<sup>66</sup> JENNER, Walter. 'Art and Electronic Media'. Compart center for excellence in digital art, University of Bremen. <http://artelectronicmedia.com/artwork/aspects-of-gaia-trolley-under-brucknerhaus-with-networked-led-messages> [Accessed June 2013.]

<sup>67</sup> ASCOTT, Roy (ed). *Art, Technology, Consciousness: Mind@ large*. "The Building of Sentience". Bristol, UK: Intellect Books. 2000. pp.1, 5.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 20. Aspects of Gaia, Ars Electronica 1989.**

### ***The Expanded Interface: Brenda Laurel and digital narratives – 1990s***

Another practitioner who considers HCI in context of heightened audience participation is designer, professor and researcher Brenda Laurel. Laurel considers the relationship between machines and humans as one that establishes conditions for the audience to become part of an “interactive event” (Reiser, 2002)<sup>68</sup>. Her interests lie in the cultural aspects of technology, human computer interaction and the creation of digital narrative. (Laurel, 2003)<sup>69</sup> In addition, Laurel is an advocate for making technology more accessible in social situations where non-artists and designers can use it for creative purposes. In a sense, this attitude towards the audience indicates that through the use of the technological interface, everyone can be involved in creative activity.

In her virtual reality game *Placeholder* (1992) Laurel played with the idea of creating a “series of environments that were imbued with narrative potential - places that could be experienced and marked through narrative activity.” (Laurel, Strickland 1993)<sup>70</sup> Indeed, Laurel used narrative as the ‘placeholder’ for the participant’s contribution in this interactive work. First conceived in Banff National Park in Alberta, Canada this work was located in several distributed physical locations, including a sulfur hot spring (in a natural cave), a waterfall and a grouping of rock formations overlooking a river. In order to create an infrastructure for the work, enlisted actors developed archetypical characters, including Crow, Spider, Fish and Snake. Actors who created potential narratives in the landscape of the park

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<sup>68</sup> Reiser, Martin. ‘The Art of Interactivity: From Gallery to Street’. 2002. [www.martinrieser.com/Rieser\\_Art&Computers.pdf](http://www.martinrieser.com/Rieser_Art&Computers.pdf) Accessed July 3, 2013.

<sup>69</sup> Laurel, Brenda. ‘Monoskop - a collaborative wiki research on the history of media art and culture’. Last modified on 16 March 2013. [http://monoskop.org/Brenda\\_Laurel](http://monoskop.org/Brenda_Laurel) [Accessed May 2013].

<sup>70</sup> LAUREL, Brenda. Rachel Strickland. ‘Placeholder, Landscape and Narrative in Virtual Environments’. Interval Research Corporation, Banff Center for the Performing Arts. Published in ACM Computer Graphics Quarterly Volume 28 Number 2 May 1994. [Accessed June 25, 2013].

developed these characters for this work (Strickland, 2013)<sup>71</sup>. Three-dimensional videographic scene elements, spatialised sounds, textual messages, and animations were then employed to present a constructed landscape that could be visited concurrently by participant/visitors who assumed the roles of Crow, Spider, Fish and Snake. Participants wore head-mounted displays and were able to walk about, view themselves as symbols representing their respective characters, speak to each other, and use both hands to touch and move virtual objects in space.” (Laurel, Strickland, 1993) The characteristics of the artwork and its haptic features became important factors within a multisensory understanding of interactivity. The intellectual interpretation and deciphering that participants used to assess the narrative options presented to them, converged with bodily engagement when they used their senses to navigate through the artwork.

In the development of this project, Laurel used narrative as a strong component to encourage participation. Her ideas on the function of the interface in these situations focused on the manner in which the interface became transparent, allowing the person using it to ‘look away’ from it, while becoming simultaneously becoming engrossed in the role that he or she was playing. This was important to Laurel because the type of interactions she created “focused on how imagination relates to perception, allowing participants to change and recreate the existing narratives”. (Haller, Billinghamurst, Thomas, 2006, p.330)<sup>72</sup>

More than the mechanics of how the interface works, Laurel continues to be interested in the individuals who use technological artifacts, their responses and experiences with them, and how her studies can uncover the manner in which their behaviours and

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<sup>71</sup> Strickland, Rachel. *Placeholder*(1993). Accessed September 10, 2013. Web, <http://vimeo.com/27344103>

<sup>72</sup> Haller, Michael. Mark Billinghamurst. Bruce H. Thomas. *Emerging Technologies of Augmented Reality: Interfaces and Design*. 1 edition (November 10, 2006). Page 330.

enactments can inform design. (Moggridge, 2013)<sup>73</sup> She interprets the interactions that occur within computer technology as theatrical acts or “cyberdramas” that refocus the participant’s attention away from the interface and onto their own “performance.” Laurel’s theatrical perspective differs from earlier interactive examples in that she includes digital narrative in her works and encourages the participant to contribute to this through their collaborative acts. This idea of the participant ‘looking away’ from the interface when collaborating with the artist is important to my account in relation to HCI artworks and will be discussed further in the next chapter.

Laurel’s observations note an overlap between the disciplines of human computer interaction and culture. The domain of the theater, a cultural institution, can be seen as an arena of creative and evocative activity. As such, it is promising to think that the cross pollination of technological and cultural ideas can extend to other art forms as well. Laurel argues “that the computer can be studied from a rigorous humanistic perspective, using well-defined models established for other forms of art.” (Laurel, 1991 pp.49-65)<sup>74</sup> Through her research Laurel observes how principles of theatre can help practitioners enact their own narratives within responsive environments that take over from where methods of developing traditional forms of interface. Laurel creates scenarios and *mise-en-scènes* for participation. Therein lies her contribution to the expanding interface – she uses theatrical settings to create ‘touchpoints’. She achieved this when the visitors who engaged with *Placeholder* became like actors when they used the head mount displays and assumed one of the four roles in the narrative within designated landscape locations (touchpoints).

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<sup>73</sup> MOGGRIDGE, Bill. *Designing Interactions*. MIT Press, 2013. <http://www.designinginteractions.com/interviews/BrendaLaurel> [Accessed March 2013].

<sup>74</sup> Laurel, Brenda. ‘The Six Elements and The Causal Relations Among Them’ in *The New Media Reader*. Pages 49 – 65. 2<sup>nd</sup> ed Reading, Mass. Addison Wesley, 1993. (First edition, 1991.)

An example of Laurel's writing titled *Computers as Theater* (2007) describes the experience of dramatic performance and brings it alive through digital mediums in interactive storytelling. It is Laurel's belief that the concept of "cyberdrama" allows the participant to have an impact on the world contained within the computer's interface. She compares the theater with interface design because "both deal with the representation of action" (Laurel, 1993, p.20)<sup>75</sup>. This can be seen in the way that theatrical plays are written for performers, and that similarly, designed interactive programs provide an opportunity for the user to perform (Ibid, 1993, p.20). As theatrical productions are meant to be played out, Laurel sees similarities in the in the roles used by participants in interactive artworks. These individuals are like audience members who can get onstage and become the characters, changing the story through their own narratives and actions (Strickland, 1993). One of the things that set Laurel apart from other theorists is that she considers cognitive and emotional aspects of the user's experience as becoming 'part' of the interface. Indeed, in the case of *Placeholder*, the users' experiences were recorded and played back so that they could see and hear them. To do this, Laurel created voice objects in the artwork's interface called "voiceholders" that encouraged participants to record their voices and then listen to fragments of narratives as they moved through the environments.

This idea of participatory activity is not only seen in the field of art making but is also seen in popular culture as well. Examples of how participatory activity has evolved in popular culture can be seen when viewers of television shows such as *Survivor*, (2000) *Big Brother* (1999) (Jenkins, 2006 pp.51-52)<sup>76</sup> and other reality TV shows create a 'loop', and viewers become actively involved in decision-making regarding program outcomes. (Ibid 2006, pp.51-52) In theoretical terms, Roy Ascott defines these relationships as

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<sup>75</sup> Laurel, Brenda. *Computers as Theater*. Addison-Wesley. 1993. Page 20.

<sup>76</sup> Jenkins, Henry. *Convergence Culture: Where Old and New Media Collide*. NYU Press. 2006. Pages 51 – 52.

'feedback loops', defined as the route between the first versions of a signal to a subsequent experience of the same signal (Shanken, 2000 pp.2-5)<sup>77</sup>. In context of his theories, a feedback loop is "established so that the evolution of the artwork is governed by the intimate involvement of the spectator" (Packer, Jordan, 2002, p.106)<sup>78</sup>.

### ***The Expanded Interface: David Rokeby and Myron Krueger and the idea of control: 1980s – 2000s***

In the previous section, I examined the ways in which Brenda Laurel used sophisticated computer interfaces and display devices worn on the body that allowed participants to physically enter her narrative artworks. In the development of contemporary Human Computer Interface artworks, artists are continuing to employ other electronic devices such as microprocessors and sensors when they use computer-programming code to create interactive experiences for the viewer. These artworks can be seen as containing "systems" that function as a result of programming code. (Cramer, 2002)<sup>79</sup> The code used to mobilise these works is data that is artfully arranged to create meaningful experiences. In the book *A Touch of Code*, editor Robert Klanten, describes how "works that combine immaterial code with materials and create objects, installations and spaces that invite the user to engage in a dialogue and communicate meaning in an embodied fashion". (Klanten, Ehmann, Feireiss, 2011, preface)<sup>80</sup>

In this section I am going to use examples from the fields of multimedia art and Human Computer Interaction to show that many

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<sup>77</sup> SHANKEN, Edward A. *Cybernetics and Art: Cultural Convergence in the 1960s*. Duke University. 2000. Pages 2-5. Available at: [www.artextra.com/CyberneticsArtCultConv.pdf](http://www.artextra.com/CyberneticsArtCultConv.pdf) [Accessed May 24, 2013].

<sup>78</sup> Packer, Randall (editor). Ken Jordan (editor) 'Roy Ascott: Behaviourist Art and the Cybernetic Vision' in *From Wagner to Virtual Reality*. W.W. Norton and Company. New York, London. 2002. Page 106.

<sup>79</sup> Cramer, Florian. *Concepts, Notations, Software, Art*. Netzliteratur.net. 2002. Available at: <http://userpage.fu-berlin.de/~cantsin> [Accessed August 1, 2013]

<sup>80</sup> Klanten, Robert (Editor), S. Ehmann (Editor), Lukas Feireiss (Editor), Lukas Feireiss (Editor). *A Touch of Code: Interactive Installations and Experiences*. Preface. Professor Joachim Suter, Co-Founder/Director of Art+Com. Prestel Pub. 2011.

contemporary artists experiment with touchpoints, and expanded interfaces. These can be seen as developments of Laurel's work in that these artworks exist beyond the immediacy of computer hardware and software. In this respect, Laurel's points of engagement are similar to my own understanding of touchpoints in that Laurel considers them as part of the art installation. However Laurel's understandings differ from mine in that the touchpoints that she creates are still part of a fixed narrative in locations where the participant assumes pre-planned roles. In the case of my artworks, the original structure of the prototyped art installation is expanded when additional touchpoints are created through *participant* engagement.

When they employ components of computer hardware and software, David Rokeby and Myron Krueger provide immersive, participatory and aesthetic experiences that exist and unfold over a long period of time. They experiment and observe the roles of movement and engagement of participants in their artworks, and, because of their experimental nature, act as prototypes that can be compared to my own art installations. These similarities can be seen in my prototype *Deep* where participant engagement is observed in relation to a prototyped art installation over a significant period of time.

In the previous section I demonstrated how many contemporary interactive artworks involve human/computer interaction, using the idea of networks and touchpoints, between action and reaction. When an audience member uses technological artifacts within a responsive exhibition, events are triggered in the space of the artwork. Sometimes, this participatory aspect is limited. An example of this idea can be seen in Martin Creed's *Work No. 227: The lights going on and off* (Cattelan, 2004)<sup>81</sup>, a work that sees the viewer walking into a room where the lights flash on and off in response to

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<sup>81</sup> CATTELAN, Maurizio. 2004. Available at: <http://www.martincreed.com/site/words/work-no-227-the-lights-going-on-and-off> [Accessed May 29, 2013].

his or her presence. At this point, when the viewer exits the exhibit, his or her participation in the work essentially has limitations and comes to an end, the interface/interactivity remaining in the room. The viewer is swiftly returned to the role of observer. Familiarity with environments that respond to our physical presence in everyday life in a similar manner renders this type of experience familiar and almost expected. In these scenarios, we know what to do and how to set relations into play.

However, due to continuing discoveries and developments incorporated into responsive everyday devices, mere physical presence is only one method used to activate interfaces, and it is a relatively passive one. In terms of this paper, it is useful to consider this example because despite Creed's use of minimal HCI components (in relation to other more elaborate contemporary HCI artworks) it nonetheless serves as a counterpoint of comparison for the more extensive interactive works that I will be discussing in this chapter. Many responsive environments provide opportunities for the audience to input textual, codified or symbolic information directly into the interface. Examples of this in everyday life can be seen in forms in the use of e-commerce websites where individuals input textual information, touchscreens in institutions such as museums and in ATM Bank machines. The ubiquitous existence of these mechanisms, and the public's familiarity with them, has presented opportunities for artists and programmers to embed possibilities for more active and variable engagement, using means such as recognition of specific physical gestures and the potential for collaborative action between viewer and artist. For this reason, in addition to providing touchpoints of interaction, the works of these artists can be considered as artworks that may be seen as prototypes when they use them as opportunities to observe and facilitate, as in Rokeby's case, the interactions of the audience. These works contain artifacts that have the potential to be interactive

but only reach this potential during the period of time when humans come into contact with them. (Svaneas, 2013)<sup>82</sup>

These methods of interaction are seen as being interacticipatory and are built on the idea of human computer interaction when the viewer actively interacts and participates in the work by contributing to it. (Woerde, 2011)<sup>83</sup> Interacticipation is a term that is applied to the “dialogue between the artwork and the viewer”, and where participation is required for full engagement. (Ibid, 2011) In his article ‘Transforming Mirrors’ (1996) artist and writer David Rokeby writes about the growing expectations on the part of the audience member (who he calls the interactor) in relation to interactive artworks. (Rokeby, 1996)

His work *Very Nervous System* (1986 - 1990) is an interactive sound installation. The systems used in this work include those generated by video, image processing, computers and synthesisers. Rokeby employs these systems “to create a space in which the movements of one's body create sound and/or music”. (Rokeby, 1996) Rokeby believes that because the computer is an objective and disinterested object in and of itself, the experience of interactivity should strive to be intimate. In *Very Nervous System*, (Figure 21) he sets up a scenario where a computer tracks and observes the movements of a participant. It proceeds to translate the movements into audio compositions that reflect the nature of the movements themselves. Like Roy Ascott, Rokeby defines these exchanges as feedback loops where “elements, human and computer change in response to each other.” (Rokeby, 2013) This exchange creates a direct and

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<sup>82</sup> SVANEAS, Dag (2013): ‘Philosophy of Interaction’. In: Soegaard, Mads and Dam, RikkeFriis (eds.). *The Encyclopedia of Human-Computer Interaction*, 2nd Ed. Aarhus, Denmark: The Interaction Design Foundation. [http://www.interaction-design.org/encyclopedia/philosophy\\_of\\_interaction.html](http://www.interaction-design.org/encyclopedia/philosophy_of_interaction.html) [Accessed August 4, 2013].

<sup>83</sup> WOERDE, Lotte. ‘Masters of Media, New Media and Digital Culture’. M.A. University of Amsterdam. 2011. <http://mastersofmedia.hum.uva.nl/2011/02/24/interacticipation-ten-artworks-reflecting-the-status-of-contemporary-participation-in-new-media-art>. [Accessed June 30, 2013].

immediate relationship between the participant and the installation via the physical intervention of the visitor's body in the space.

Individualised involvement on the part of the participant sets up an intimate relationship with the artwork as exploration through sound and movement is explored.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 21. *A Very Nervous System*, 1986 – 1990. David Rokeby.**

For some, interaction has become synonymous with control: some people look to interactive experiences for a sense of empowerment. As well as his exploration of the use of touch points in artificial reality, American artist Myron Krueger has also researched into these 'interacticipatory' experiences that Rokeby discusses. He has used interacticipatory video and sound in artworks and describes these scenarios as being "interactions about encounter and not control." (Rokeby, 2013) His first experiments in this area occurred in the 1970's, and were positioned within the realms of virtual and augmented reality. (Krueger, 1991 p.xii) In a 1988 Siggraph interview, Krueger talked about how audiences become increasingly willing to participate when they see themselves 'reflected' in artworks. (Krueger, 1991 p.62) He was struck by participants' natural desire to identify with images and sounds in interactive art, and he realised that a determining factor in the participatory aspect of these works was that people wanted to be able to 'see' themselves in the work. These reflections may be seen as an early model of HCI Interaction and contemporary HCI artworks where the reflection of the participant appears in co-created artworks.

During an experiment in the computer lab at the University of Wisconsin, (*Video Place, 1974*) (Figure 22) images of the audience were projected onto a screen while Krueger used a drawing tablet to draw outlines on and around their projected silhouettes.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 22. Video still from: *Video Place*, Myron Krueger, 1974.**

Audience members were encouraged to interact with the drawings and physically move them around the screen with their hands. As the experiment unfolded it became apparent to Krueger that he was collaborating with the audience in the development of a new medium that he referred to as 'responsive' (Packer, Jordan, 2013).<sup>84</sup> He noticed that participants were drawn to events happening on the screen and this desire to collaborate surfaced when participants realised that they could clearly see themselves in the work. The work itself acted as a mirror – participants could see their likenesses and movements within it. They seemed to show increasing levels of commitment to the developing artwork as they followed the doppelganger-like images on the screen, using the technological systems within the work as touchpoints for participation. (Hinrichsen, Tom Gionfridd, Sonnanburg, 1988)<sup>85</sup>

Theorist Terry Flew in his book *New Media: an Introduction* echoes Myron Krueger's ideas regarding the ways in which interaction is about encounter and not control (Flew, Humphries, 2005, pp.101-104)<sup>86</sup>. Flew writes about 'responsive virtual environments' and compares similar and differing responses of interactors located in exhibition environments to those situated in video game culture. (Rokeby, 1995) In the world of gaming, according to Flew, players are presented with interactive, ego-gratifying experiences where control and gaining points are achieved by responding to the interface.

Flew argues that interaction is more about learning how to relate with an artwork and the presence of "many different variables of control"

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<sup>84</sup> Packer, Randall. Ken Jordan. *ArtMuseum.net with W.W. Norton Co.* <http://www.w2vr.com/timeline/Krueger.html/> [Accessed August 1, 2013].

<sup>85</sup> Hinrichsen, Katrin. Tom Gionfridd, Joan Sonnanburg. *Videoplace '88 Myron W. Krueger.* Museum of Natural History Vernon Connecticut. June 10, 1988. [http://www.youtube.com/watch?v=A6ZYsX\\_dxzs](http://www.youtube.com/watch?v=A6ZYsX_dxzs). [Accessed October 2012].

<sup>86</sup> FLEW, Terry and Humphreys, Sal. *Games: Technology, Industry, Culture.* Oxford University Press. South Melbourne, 2005. pp.101-104.

to choose from, rather than a singular and finite goal of winning a game (Ibid, 2005). Because of the enculturated expectations of competition that may be present in the viewer's attitude towards an interface, the job of the artist is to create a work that takes into account the interactor's sense of control, combining this with a variety of interactive elements that keep the work open to interpretation and further exploration. When an artwork contains elements that allow for experimentation, the interactor may find opportunities for co-creation and in this way allow for the expansion of the artwork through its interface.

### ***Janet Murray***

Media theorist Janet Murray also explores this idea of the interactor's 'sense of control' in digital artworks, when she defines interactivity as the "combination of the procedural and the participatory property which together afford the pleasure of agency" (Murray, 2013). In relation to games and games theory, Murray uses four terms to describe the properties of digital environments that include the spatial, procedural, participatory and encyclopedic (Murray 1997, p.79)<sup>87</sup> indicating that they affect the interactor's experiences. Regarding spatiality, Murray describes how digital environments "represent navigable space...digital environments present space that we can move through (Ibid 1997, p.79). The procedural aspect of interfaces is found in the "procedural power of the computer due to its ability to execute a set of rules" (Ibid 1997, p.71). Murray identifies participatory environments as being procedural when the interactor uses the 'rules' within an interface to observe how his/her participation can observe how input has affected the interface. (Ibid 1997, p.74) Lastly, Murray argues, the encyclopedic qualities of interfaces are found within the computer itself "a medium that contains infinite resources. (Ibid 1997, p.83) It is worth noting that one of the differences between HCI in gaming culture and interactive

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<sup>87</sup> Murray, Janet H. *Hamlet on the Holodeck, The Future of Narrative in Cyberspace*. Free Press, 1997. Page 79.

artworks is that interactive experiences involving art installations involve engagement rather than an attempt to gain control<sup>88</sup> of the scenarios present in *some* games. (Murray 1997, p.83)

In addition, in her book *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*, Murray addresses the interactor's sense of agency in relation to digital narrative. In her chapter titled 'The Shaping Role of the Human Storyteller,' Murray presents scenarios where the *variety and number of choices* presented in digital narratives create an atmosphere of freedom, and where the interactor believes that his or her actions have had a significant impact on the story (Ibid 1997, p.83).

Similar characteristics that allow for these behaviours in the interactor are found in digital artworks and may continue to make the experience of interaction more open-ended. What many of these types of interaction do have in common, however, is that they involve responsive interfaces that involve participants.

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<sup>88</sup> That being said, many game scenarios are in fact, not highly structured. Some ludologists (games theorists) maintain that unstructured games don't conform to these definitions in that they don't have definitive winning and losing states. An example of this would *The Sims*, as well as roleplay and simulation games. In addition, some players who participate in goal oriented games adapt their strategies to involve survival and avoidance techniques, thereby avoiding, for example, achieving goals that are built in and expected to be achieved, such as killing off opponents.

### ***The Expanded Interface: Jeffrey Shaw and the idea of the interactive artwork in architectural space***

Another artist who develops this idea of narrative as the basis of interaction is Jeffrey Shaw. He has been a leading figure in HCI art since the 1960s and is recognised as a pioneer in the use of virtual and augmented reality immersive visualization, navigable cinematic systems and interactive narrative. His work includes performance, sculpture, video and interactive installations (Shaw, 2004).<sup>89</sup>

In an interview that took place in April 2011 (Hui, 2011)<sup>90</sup>, Jeffrey Shaw spoke about his art practice and main influences, discussing a key concept that is relevant to this paper. Shaw questioned the idea that “the notion of the artist as a someone working in inspired isolation who has a privileged and mysterious monopoly on creativity was in the past although continues to be, in some ways, a state of art practice.” He was also interested in the role of the immateriality of electronic/interactive art installations in relation to his art practice. He recognised that virtual space can exist next to materially based sculptural forms, that artist and public no longer deal with enclosed spaces/fixed materials and that spectators can change the artwork. Shaw wrote that art isn’t static in form but is in transition and constantly in a state of transformation because of the embodiment that the viewer experiences. (Shaw, 2004) In his interview with Yuk Hui in April 2011, Shaw said that this transformation is seen in multimedia works based in cinematic experiences that he called “explosive cinema”. Using an example taken from a work called *Corpus Cinema*, he described the positioning of a cinematic window in relation to the architectural space occupied by the audience as Expanded Cinema. In this instance, the screen was a dome, not a

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<sup>89</sup> Shaw, Jeffrey. ‘Web of Life’. ZKM Center for Art and Media in Karlsruhe, Germany. <http://www.web-of-life.de/wolsiteNew/artwork/installationzkmStart.html> [Accessed February 2013].

<sup>90</sup> HUI, Yuk. *Theory, Culture and Society*. Sage Publishing. 2000-2013. <http://theoryculturesociety.blogspot.ca/2011/04/interview-with-jeffrey-shaw-on-new.html> [Accessed June 29, 2013].

flat image, and the video projection was displayed within it. Physical characteristics such as smoke and confetti were added to the screening of the artwork in real time. This arrangement of artwork in relation to the audience established a liminal space where participation was encouraged. Shaw said that the materials used in new media constitute and offered new relationships for the participant through their interactive possibilities. These relationships happened as a result of full body experiences that occur as a result of the materials and technologies used.

The interactive aspects of new media works allow the participant to manipulate and explore through the use of artifacts that have been placed into an exhibition space. Although the participant occupies real space, the materials that he or she is using are based in new media technologies, creating tension between the real and the virtual. It is at the boundary of the two that conversations between participant, the artist and the artwork are generated.

### ***Contemporary notions of interactivity: Rafael Lozano-Hemmer and Marie Hester***

In this section I am moving from the physical and intellectual expansion seen in the artworks of artists described in the previous sections, to those of artists who explore the participation of audiences who co-create and collaborate. I am also shifting into the area of artworks/prototypes that are used to involve audience members as collaborators.

Methods of interacting with art installations demonstrate that viewers are often happy to have a role in assisting artworks to achieve their purposes. One artist who takes into account the layered meaning of space and how audience members contribute to his works is electronic artist Rafael Lozano-Hemmer. Lozano-Hemmer creates interactive installations that are situated at the intersection of architecture, participatory and performance art. His work *Vectorial Elevation*, 1999 is an interactive art installation originally designed to celebrate the arrival of the year 2000 in Mexico City's Zócalo Square.

This work has subsequently been shown in other venues around the world, the last being in Vancouver Canada at the winter Olympics in 2010. In the development of this work, Lozano-Hemmer was particularly interested in the historic implications of situating his work in Zócalo Square. He spoke about the relational aspects of the artwork involving collectives of people in different time periods – at that specific location. The project involved searchlight displays that were created and designed by audience members who used the internet and special interfaces developed for this purpose. As a result, the events that were tied to this work “happened in fields of activity that resonated in several places within networks.” (Lozano-Hemmer, 2007)<sup>91</sup> Lozano-Hemmer was exploring the historic meanings of Zócalo Square by opening up the space to architectonic intervention and the ways in which his work brought additional meanings to that space. (Ibid, 2007) In his on-going practice, Lozano-Hemmer is interested in a variety of technological forms of communication that include internet links, cell phone interfaces, video and ultrasonic sensors, LED screens and other devices. His installations “seek to provide critical platforms for participation” (Ibid, 2007) In this respect, he can be seen as a multimedia artist who is interested in the idea of interfaces and the physical/virtual spaces that they inhabit (Ibid, 2007).

An artwork that deals with the use of interface in public space – *Access* (2003) – is a work by artist Marie Sester and was shown at Ars Electronica 2003. Sester uses space to explore political themes and as an arena for surveillance and control. In her work *Access* she uses tracking technologies in public places to choose viewers and follow them. This artwork uses a responsive technological beam system and spotlight to highlight the body’s movement. Participants feel as though they are trapped in a surveillance system from which they are unable to escape. As the interaction progresses, participants

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<sup>91</sup> LOZANO-HEMMER, Rafael. *Antimodular Research, Vectorial Elevation*. 2007. [http://www.lozano-hemmer.com/vectorial\\_elevation.php](http://www.lozano-hemmer.com/vectorial_elevation.php). [Accessed August 14, 2013].

shift from being passive to active and begin to dictate the directions in which the surveillance beam moves. The spotlight articulates an ephemeral and imaginary architectural space, as the viewer moves through exhibition spaces, up and down a staircase and down a hallway. Other visitors in the space become passive viewers as they watch participants try to escape the spotlight. When comparing Sester's work to Lozano-Hemmer's it can be argued that the spaces these artists choose are staged to "delineate both architectural and social relationships" (Ibid, 2007).

### ***Current Examples of HCI Artworks***

Many contemporary sound artists in the field of HCI are also interested in the dynamics of the interface in relation to architectural spaces. Many use sound to mark and delineate acoustics and hence, architectonic spaces. In some cases, artists are establishing experimental sound collectives where they can develop, collaborate and exhibit their works. The SoundFjord research unit, based in London, England is one such collective. Artist Helen Frosi and sound designer Andrew Riley founded SoundFjord in 2009 with the view of establishing a site for experimentation in sound art. This gallery and research space has been host to exhibits, festivals and experimental events that have included the work of many contemporary artists who use sound and the notions of interactivity as a part of their practice. SoundFjord's experimental and forward-thinking perspective is used to showcase challenging works and trends in the sound art world — those that frequently engage audiences in co-creation. (Frosi, 2013)<sup>92</sup> Two artists who have exhibited with SoundFjord are Shirley Pegna and Wajid Yaseen. These artists explore the resonant frequencies of objects in space in their concurrent installations titled *Singing Windows* and *Ghost Quartet*. The project explores multimedia audio works in relation to objects, the gallery, and indeed the people who enter the exhibition space. (Frosi, 2013) Participants walk through two exhibition spaces carrying portable transducers, in this instance, microphones and earphones. The devices act as amplifiers, allowing observers and participants to expand their understanding of the properties of sound in relation to their own movements and interactions.

### ***Current Examples of HCI Artworks: Critical Art Ensemble***

Critical Art Ensemble is a multidisciplinary collective made up of five new media practitioners who use art interventions to challenge social

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<sup>92</sup> FROSI, Helen. Available at: [http://www.soundfjord.org/SoundFjord\\_Press%20Release\\_Shirley%20Pegna%20and%20Wajid%20Yaseen.pdf](http://www.soundfjord.org/SoundFjord_Press%20Release_Shirley%20Pegna%20and%20Wajid%20Yaseen.pdf). 2011. [Accessed June 30, 2013].

structures while engaging in the politics of resistance. Critical Art Ensemble coined the phrase electronic civil disobedience (Bosma, 2013)<sup>93</sup>, was formed in 1987 and has since explored the connections between technology, art, theory, and activism. Through a series of collaborative projects, this group arranges space to subvert symbolic systems while working against political and economic infrastructures (Thompson, 2011)<sup>94</sup>. Their works have included digital media that include computer graphics, web design, photography, text, books, performances, video, and slide shows. (Brusadin, Mattes, 2004-2013)<sup>95</sup> Critical Art Ensemble began with the intention of emulating other collaborative art collectives from the 1970s and 1980s such as Ant Farm, General Idea, Group Material, Testing the Limits and Gran Fury. These were groups that were termed as being “cellular collectives” – working on the premise that group members shared similarities in approach and skill sets that were useful to the group’s conceptual concerns in the creation of artworks. What made the Critical Art Ensemble different from other collaborative art collectives mentioned in this paper was that each of its five members had a unique skill and worked primarily in a specialised medium. (Kurtz, Barnes, Burr, Schlee and Kurtz, 2013, p.66)<sup>96</sup> Critical Art Ensemble saw this diversity in skills as an advantage as it gave each participant the opportunity to create unique works that formed parts of a whole that were “interrelated and interdependent”. This approach was

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<sup>93</sup> BOSMA, Josephine. [www.nettime.org](http://www.nettime.org) ‘CAE Interview’, V2\_, August 23,1997. Available at: <http://v2.nl/archive/organizations/critical-art-ensemble>. [Accessed August 14, 2013].

<sup>94</sup> Thompson, Nate. ‘Socially Engaged Contemporary Art: Tactical and Strategic Manifestations. Americans for the Arts’. *Animating Democracy, A Program of Americans for the Arts*. 2011. Available at: [animatingdemocracy.org/sites/.../NThompson%20Trend%20Paper.pdf](http://animatingdemocracy.org/sites/.../NThompson%20Trend%20Paper.pdf) [Accessed August 23, 1997].

<sup>95</sup> BRUSADIN, Bani. Eva and Franco Mattes. ‘The Influencers 2004 – 2013’. Available at: <http://theinfluencers.org/en/critical-art-ensemble/video/1> [Accessed August 14, 2013].

<sup>96</sup> KURTZ, Steve. Steve Barnes, Dorian Burr, Beverly Schlee and Hope Kurtz. ‘Observations on Collective Cultural Action’. <http://www.critical-art.net/books/digital/> Critical Art Ensemble. 2009. [Accessed August 13, 2013] Page 66.

important to their aim as art practitioners to establish a solidarity that was based on difference and not similarity” (Kurtz et al 2013).

In a 1999 interview with Jon McKenzie, and Rebecca Schneider (McKenzie, Schneider 2000, p.136)<sup>97</sup> the Critical Art Ensemble referred to the group as being part of a tactical media movement, where participants were not necessarily artists in the traditional sense. They explained that they considered the assigned roles found in traditional art forms to be restrictive and that these roles “excluded access to social and knowledge systems that are the raw materials for the Critical Art Ensemble area of art practice”. In addition they talked about how they valued ‘amateur’ participants in their artworks and that they were open to all types of media used by all participants. This idea of including participants from different walks of life will be explored in relation to my HCI artworks in Chapter 3.

This idea of solidarity through difference is something that Critical Art Ensemble has used when dealing with power structures within their collective of artists. They believe that although democracy has merits, hierarchical structures can also be a productive resource in the production of artworks. Ideas regarding power structures were noted by The Critical Art Ensemble in relation to Michel Foucault (Foucault, 1995)<sup>98</sup> who believed that power is part of a process based on relationships and experienced through the social body (Ibid, 1995). As a result, Critical Art Ensemble uses a “floating hierarchy” when collaborating together as well as with outside participants in projects. That is to say that the power and decision-making related to project outcomes changes depending on the skills sets needed at a given

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<sup>97</sup> McKenzie, Jon. Rebecca Schneider. ‘Critical Art Ensemble, Tactical Media Practitioners, An Interview by Jon McKenzie and Rebecca Schneider’. *The Drama Review* 44, 4 (T168), Winter 2000. 2000. Page 136. New York University and the Massachusetts Institute of Technology. [www.csun.edu/~vcspc00g/301/caeinterview-tdr.pdf](http://www.csun.edu/~vcspc00g/301/caeinterview-tdr.pdf). [Accessed June 13, 2013].

<sup>98</sup> Foucault, Michel. *Discipline & Punish: The Birth of the Prison*. Vintage REP Edition.1995. <http://books.google.ca/books?id=6rfP0H5TSmYC&printsec=frontcover&dq=Discipline+and+punish+google+books&hl=en&sa=X&ei=AM1RUoD8K8PXyAH1yYGABA&ved=0CDwQ6AEwAA#v=onepage&q&f=false> [Accessed June 4, 2013].

time (Critical Art Ensemble, 2009, p.66)<sup>99</sup>. In addition Critical Art Ensemble uses digital technologies because they address the cultural situations that they are currently are involved in and in the process, use the media that is best suited to express their concerns.

Critical Art Ensemble has been instrumental in establishing internet networked projects, such as *Nettime* (Barnes, Bosma, 1997)<sup>100</sup>, an online hub that allows individuals to initiate and display their own projects, as well as post discussions and other exchanges that occur between participants. “From flame wars to long and detailed discussions” (Ibid 2009, p.71) participants are free to “build the virtual architecture” while “directing the flow of information traffic” (Ibid 2009, p.71). Through the evolution of these networked exchanges between participants and the display of their projects, hierarchies become evident when observing individuals’ levels of participation and collaboration. For Creative Art Ensemble, the purpose of this online hub is to foster communities where individuals can collaborate freely. In the spirit of collective art practice, the members of Creative Art Ensemble “believe that artists’ research into alternative forms of social organization is just as important as the traditional research into materials, processes, and products” (Ibid 2009, p.71). They suggest that when they themselves instigate artworks, “hybrid groups are formed, made from different subsystems of society, for the purposes of cultural production. Creative Art Ensemble refers to these hybrid groups as coalitions” (McKenzie, Schneider, 2000). Through the use of digital media Creative Art Ensemble finds ways to be inclusive, by facilitating open-ended projects that encourage all levels of society to participate in their initiatives.

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<sup>99</sup> Critical Art Ensemble. ‘Observations on Collective Cultural Action’. *Autonome media*. 2009. Available at: <http://www.critical-art.net/books/digital/>. [Accessed October 2014]. Page 66.

<sup>100</sup> Barnes, Steve. interview by Josephine Bosma, [www.nettime.org](http://www.nettime.org) ‘CAE Interview, V2\_’, August 23, 1997. Available at: <http://v2.nl/archive/organizations/critical-art-ensemble> [Accessed August 14, 2013].

### ***Current Examples of HCI Artworks: Blast Theory***

Like Critical Art Ensemble, Blast Theory is also an artists' collective that is interested in "new forms of performance and interactive art that mix audiences across the internet, in live performance and digital broadcasting" (Adams, Farr, Tandavanitj, 2013)<sup>101</sup>. In essence, the members of Blast Theory are primarily concerned with the relevance of culture and social aspects in relation to technology (Ibid 2013) and how this may be communicated through their artworks. Blast Theory's art practice is situated within the realm of mixed, or augmented reality, where the group creates the illusion of crossing into and out of the virtual world for the participant (Benford, Crabtree, Flintham, Rowland, Gaver, Adams, Row-Farr, Tandavanitj, Oldroyd, Sutton 2013)<sup>102</sup>. Their projects often take the form of 'augmented reality games' where participants are engaged in real world environments that are augmented with computer technologies such as audio, video, graphic imagery and even mobile devices. Indeed, in a position paper titled "Reflection Through Artistic Games" (Ibid 2013), Blast Theory's members contributed to it in their support of the idea that

A game provokes its players into reflecting on issues concerning the world around them, their relationship to other players, and the nature and role of games and related technologies. This kind of provocation is a particular feature of artistic games, where artists deliberately design a game to pose a question or to explore an underlying issue. (Ibid 2013)

Implementation of the ideas of participation, technology and sociological issues can be seen in Blast Theory's project *A Machine to See With*<sup>103</sup>. *A Machine to See With* (Figure 23) asks the

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<sup>101</sup> Adams, Matt, Ju Row Farr and Nick Tandavanitj. <http://blasttheory.co.uk/bt/about.html> [Accessed June 29, 2013].

<sup>102</sup> Benford, Steve. Andy Crabtree, Martin Flintham, Duncan Rowland, Bill Gaver, Matt Adams, Ju Row-Farr, Nick Tandavanitj, Amanda Oldroyd, Jon Sutton. Available at: <http://blasttheory.co.uk/bt/research.html>. [Accessed June 5, 2013].

<sup>103</sup> *A Machine to See With* was featured and tested at the Banff New Media Institute in 2010.

participant to consider a given location, in this instance the town of Banff, Canada, as a cinematic space, and to take on the role of the main character in a 'movie' about a bank heist. Participants are asked to appear at a pre-determined address in Banff on a designated day, and after receiving messages through a series of telephone calls, move through the city in order to hide money, meet a partner in crime and approach the bank where the heist is ostensibly to occur (Benford et al 2013). Using open source call center software and mobile networks, Blast Theory uses a series of automated phone calls relaying instructions to the waiting participant, in order to create a 'seemingly' personal experience filled with drama, tension and playful fantasy (Ibid 2013).

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 23. Video still from the Banff version of *A Machine to See With*, 2011.**

## ***Greyworld***

An interest in public artworks is realised in the practices of the art collective Greyworld. I have used Greyworld as an example of how artists are using public space and the idea of playful interaction as a way to encourage participation and co-creation in their audiences. Through the use of installation and publically situated interactive installations Greyworld's focus is on "creating public art that involves the human being in an urban context". (Shoben, 2013)<sup>104</sup> Their works are primarily about play and collaboration and endeavour to show how creativity can be initiated in public spaces where these types of activities are normally excluded. (Ng, 2013)<sup>105</sup> Greyworld considers these public spaces as liminal areas — thresholds, or 'grey areas' where everyday mundane activities can become transformed through creativity.

Greyworld's interactive installation titled *Words* involves visitors who upon arrival, are given a white box to hold and are asked to think of a word. After speaking the chosen word into the box, the participant notices that it begins to glow. Visitors are then asked to step into an open space that is surrounded by a red line. It is at this point that they become aware that they have entered a sonic environment filled with the ephemeral auditory sounds of words. Some of these sounds have been pre-recorded and are a permanent part of the installation, while previous visitors have deposited others that can be heard in the space after they have departed. When visitors turn over their glowing boxes, they deposit their words into the installation that can be heard by subsequent visitors (Greyworld, 2013)<sup>106</sup>.

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<sup>104</sup> SHOBEN, Andrew. *Greyworld*. Available at: <http://idnworld.com/creators/?id=Greyworld> [Accessed May 4, 2013].

<sup>105</sup> NG, Laurence. IdN Magazine. Available at: <http://greyworld.org/about> [Accessed August 2, 2013].

<sup>106</sup> Greyworld. Available at: <http://greyworld.org/archives/37> [Accessed May 4, 2013].

## **Conclusion**

This chapter has explored the idea that interfaces found in Human Computer Interface artworks present the potential for expansion of the interface from the physical object to its corresponding digital, or dematerialised form. In these instances, the process of dematerialisation can be seen as being evident when ideas and discourse – rather than the physical and formal characteristics of the artwork – come to the fore. (Lillemose, 2013)<sup>107</sup> In these instances, the way that an artwork is perceived has moved from the visual realm to the other senses. These ways of perceiving artworks include aural, haptic and other forms of communication, as well as new interpersonal human relationships that are built as a result of the creation of artworks. In addition, when developing these artworks, artists do so with the understanding that new media technologies “create a space where participant-viewers share this understanding with artists through various forms of contact and experiences with the artwork” (Kusahara, 2001 p.290).<sup>108</sup>

In chapter 3, I will discuss the mechanisms and instances that cause artworks that are located in gallery spaces to become dematerialised and expanded beyond the walls of physical space.

Similar to the expansion of artworks that Roy Ascott fostered and nurtured in previously mentioned projects such as *La Plissure du Texte*, artists continue to create artworks that expand through collaborations between artists and participants. In 2004, an online music project titled “An End to Masterpieces” was created by a group of musicians and artists. (2013)<sup>109</sup> This was an initiative that was

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<sup>107</sup> Lillemose, Jacob. ‘Conceptual Transformations of Art: From Dematerialisation of the object to Immateriality in Networks’. Available at: <http://www.kurator.org/media/uploads/publications/DB03/Lillemose.pdf> [Accessed June 30, 2013].

<sup>108</sup> Kusahara, Machiko. ‘Device Art: A New Approach in Understanding Japanese Contemporary Media Art’. *Media Art Histories*. Ed Oliver Grau. The MIT Press, Cambridge Massachusetts. 2007. P. 290.

<sup>109</sup> Beck, P. *An End to Masterpieces Compilation*. Available at: <http://www.discogs.com/VariouS-An-End-To-Masterpieces/release/455389> [Accessed May 24, 2013].

started in response to the 9/11 attacks in New York City. It involved the participation of fifty noise/sound artists who contributed to a compilation of audio compositions created in the spirit of the works of playwright and actor Antonin Artaud regarding the degradation of civilization and its purification through destruction. All communications regarding this project were achieved through the use of internet networks, chat rooms and online forums. It could be argued that these meeting places became the 'touchpoints' for the expansion of the interface and the creation of new sound artworks. These spaces demonstrated an expanded notion of touchpoints, one that leaned towards an expanded architectonics. By this I mean that the touchpoints related to structures of people and actions rather than simply structures of spaces within buildings.

As such, these online meeting places can be seen as acting as virtual agoras, where members can meet and exchange ideas and inspirations. For touchpoints are found in interfaces (both seen and invisible) in meeting areas, or agoras, that exist in both public and private spaces. The public spaces where people meet and interact with each other have been historically seen as art galleries, museums, city squares, streets, and cafes. However, due to the advent of information technologies, interpretations of what meeting places are and where they are located have extended to virtual spaces such as chat rooms, WiFi networks, discussion forums, websites and other locations where networked communities exist. (Sennett, 2008)<sup>110</sup> Architecture continues to serve as a structural metaphor in these environments, hence terminology such as the word 'room' that is often used when referring to these meeting places.

Similar open-ended telematic experiences can be encountered in online communities whose purposes have little to do with the

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<sup>110</sup> SENNETT, Richard. Available at: <http://www.richardsennett.com/site/SENN/Templates/General2.aspx?pageid=16> [Accessed April 4, 2013. 2008].

competitive activities found in the gaming world. In these virtual communities, users can expect to participate in responsive environments where “they can contribute, create, appropriate and re-circulate media content” (Flew, Humphreys, 2005, pp.101-114). These activities establish social interactions and collective behaviours between users involved in these activities” (Flew, Humphreys, 2005, pp.101-114). By using such mechanisms as WiFi networks, social forums, discussion threads, blogs, photo/video sharing sites and chat rooms, participants willingly create communities where they can exchange content related to common interests. Examples of these types of relationships can be seen in virtual communities and are supported by committed members who make contributions and create content through continued interactions with each other. Members of these communities establish long-lasting relationships with other individuals who share similar levels of interest. The communications sent through mobile devices, touch interfaces and computer programs can generate emotion, imagination and intimacy and can become an integral part of these exchanges. The participants who engage in these relationships can be seen as an aspect of the architecture/interaction, contributing to the touchpoints in the work as they move towards a more expanded definition.

Within the context of these online communities, it is evident that as an artist, Roy Ascott continues to explore the manner in which these relationships “influence the emergent qualities of artworks, which consist of the ‘ebb and flow’ of electronic information, “linking the mind into a kind of timeless sea”. (Ascott, 2007, p.187)<sup>111</sup> His work is constantly updating itself, in line with thinking around interactivity and participation. Furthermore, this idea of ebb and flow can be visualised and understood through the flow of visitors who visit a gallery, and how that is mapped through the corresponding flow of

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<sup>111</sup> Ascott, Roy (author). Edward Shanken (editor). *The Telematic Embrace, Visionary Theories of Art, Technology and Consciousness*. University of California Press. 2007. Page 187.

information/informant in virtual space. This builds for a strong argument around architectonic understandings of artworks — architecture as a metaphor for structured actions that can take many forms.

The encounter between gallery visitor and interface provides opportunities for play and exploration in response to a number of variables. This level of participation can present more opportunities and touchpoints for further engagement and action/participation and even beyond the material walls of a gallery to parallel locations in virtual space and time. These touchpoints can be seen as being situated in multisensory realms. In the book *Media Archaeology: Approaches, Applications and Implications* (Huhtamo, 2012, p.2)<sup>112</sup> Erkki Huhtamo writes about how the artwork, interactive or not, can almost always be seen as a visual and mental activity in the participant and is useful for thinking about the idea of the development of touchpoints.

Huhtamo refers to the technological artifact and the mechanisms positioned in the art gallery that require the audience to engage with a touchpoint, using both mind and physical touch to fully experience the artwork. This is what distinguishes interaction from co-creation and that the participants who fully experience the work create *additional* touchpoints rather than simply observe and/or participate fleetingly with points in the artwork that have been pre-planned by the artist. The multisensory experiences that result from these touchpoints become lodged in the history of the space, in its original intended usage and in the layered meanings that have been applied to the space over time. (Huhtamo, 2013, p.2) Touchpoints are intended to assist the viewer in his or her explorations and of experiential and immersive artworks. These works employ interfaces that contain mechanisms for these events to occur. As visitors

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<sup>112</sup> Huhtamo, Erkki. 'Trouble at the Interface, or the Identify Crisis of Interactive Art'. p. 2. Available at: <http://www.mediaarthistory.org/refresh/Programmatic%20key%20texts/pdfs/Huhtamo.pdf> [Accessed September 14, 2013].

encounter these scenarios they become involved in an interacticipatory experience when they see themselves reflected in the work as they contribute to it.

Some of the artists mentioned in this chapter have created artworks that resemble 'prototypes' in that they are experimental in nature. Alan Kaprow used the term 'radical prototypes' in relation to the experimental approaches taken in the creation of Happenings in the 1960s – artworks that used prototypical approaches that incorporated sociality. (Rodenbeck, 2011)<sup>113</sup> This idea of a prototyped artwork used within a social context, and indeed, as a test site used by the researcher, is one that I will continue to address and expand in Chapter 3, Understandings of the Expanded Interface, in relation to an expanded notion of the interface.

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<sup>113</sup> Rodenbeck, Judith F. *Radical Prototypes: Alan Kaprow and the Invention of Happenings*. Academia Edu. 2011. Available at: <http://mitpress.mit.edu/books/radical-prototypes>. p.ix. Accessed: May 2013.

## Chapter 3 (Part One) – Understandings of the Expanded Interface

### *Introduction*

I began this course of research because I had questions as to how Human Computer Interaction (HCI) artworks function in the world around them and, specifically, in relation to the audience and common sense notions of ‘interactivity.’ As my research progressed, I discovered that I was observing changing relationships between the artwork and its ‘interactors’ and also between the artwork and its immediate environment(s). Furthermore, these contextual relationships were determining the experience of the artwork on the part of the audience and, hence, my own understanding of HCI artworks with regard to established notions of interaction.

In this chapter I will show evidence of these influencing factors on user engagements with Fine Art installations (in the field of HCI) and begin the process of outlining my contribution to this area of study. I will achieve this by providing detailed descriptions of the prototyped art installations (*Deep* and *Touchpoints I and II*) I have used in my study. Architectonic and touchpoint systems in and around these prototypes will be shown through the use of diagrams that demonstrate how these came into being. I will show how participators have created new touchpoints and how these have contributed to the expansion of artworks within the context of agoras. This chapter will also introduce the idea of configuration of technological devices and how participants have used them to engage with the HCI art installations and prototypes that were used in my study.

As stated in the opening chapter, the methodology used in this process of research was rapid ethnography and that over a period of time, began to include other, more standard ethnographic methods. These methods mimicked those used by many interface designers in

the field of HCI (Card, Moran and Newell, 1983, p.4)<sup>114</sup> to study user interaction. (Isaacs, 2012)<sup>115</sup>

As a result of participant observation-based research in the immediate context of HCI artworks, I have identified three main findings that, I believe, contribute to an understanding of HCI in the field of Fine Art and installation, specifically:

- 1) the interface (within and around the artwork) is *expanded*
- 2) the structure of the artwork is *architectonic*
- 3) the nature of audience interaction is *configured*

In relation to these findings, I have observed that the interface is expanded through the use and deployment of digital, collaborative and social networks. I have discovered how these networks function, combining to form larger architectonic schemes that may be seen as both architectural systems (or physical structures) and systems of knowledge. I have also discovered instances where the idea of 'configuration' – specifically in the area of real time programming in a culture such as that of video games for example – is a concept that is changing perceptions around participation itself because participants, rather than simply responding to an artist's work, have the power to shape and control their experiences of the artwork, particularly in situations where technological devices are connected in real time

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<sup>114</sup>

Card, Moran and Newell argue that the user (participant) is involved in a dialogue with a computer when engaged in the execution of a task. Icons, queries, interruptions, screen displays, keyboards and software programs together comprise 'the interface'. In the case of my prototypes, the interface is found in these components, as well as in the artwork and architectonic systems that surround it.

Card, Stuart K, Thomas P. Moran and Allen Newell. *The Psychology of Human-Computer Interaction*. (Lawrence Erlbaum Associates, 1983). 4 Chapter 1.

<sup>115</sup> In her article 'The Value of Rapid Ethnography', writer and researcher Ellen Isaacs describes a study that she engaged in relating to the use of mobile phones. During the course of her study, she identified four groups of mobile phone users and used video to record their behaviours. The objective was to observe each person's perspective as they connected and disconnected from their phones over a period of time. Isaacs and her team collected 48 hours of recordings and then combed through the material to find information that supported and contradicted their concerns.

Isaacs, Ellen. 'The Value of Rapid Ethnography'. Parc Publications. 2012. Available at: <http://www.parc.com/about/people/86/ellen-isaacs.html> [Accessed June 13, 2013].

with these artworks. This idea of using configuration to shape interactive experiences has become of interest to me in the development of my own HCI artworks where I observe similarities in game play when players configure technological devices in order to participate. In his article in the journal *Games Studies* (2001) games theorist Markku Eskelinen describes how interpretation of the parameters of a game on the part of the player leads to configuration of “ends, rules, means, equipment” and involves “manipulative action” on the part of the player to navigate from beginning to end. (Eskelinen 2012)<sup>116</sup> These concepts around the notions of configuration in the area of computer games are useful to me when thinking about how participants assess levels of engagement in HCI artworks and configure technological artifacts in order to participate with them.

Researchers such as interface designer and theorist Don Norman have determined that Human Computer Interaction has come to require more than simple and straightforward engagement with a static interface containing pre-determined ‘touchpoints.’ Norman has discovered that the interfaces presented to participants typically cause them to adapt their behaviours, particularly when they are seen as ‘co-producers’ of interactive artworks. (Norman, 2012)<sup>117</sup> Norman talks about the changing nature of ‘participant engagement’ with interfaces in relation to a field he calls Human Factor Ergonomics (a sub field of HCI), stating that changes have become necessary because of the ubiquitous presence of mobile

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<sup>116</sup> ESKELINEN, Markku. Available at: <http://www.gamestudies.org/0101/eskelinen/> [Accessed August 1, 2013].

Taken from <http://books.google.ca/books?id=0oGDx8yacwC&pg=PA35&lpg=PA35&dq=Moulthrop+configuration+in+video+games&source=bl&ots=QLZr0n9K6u&sig=NiKzwtzed0f8vOteOI9vyI1YQE&hl=en&sa=X&ei=n5kBUvnwNsnqAGuh4C4Dw&ved=0CDMQ6AEwAQ#v=onepage&q=Moulthrop%20configuration%20in%20video%20games&f=false>

<sup>117</sup> NORMAN, Don. ‘Interaction Design Is Still an Art Form, Ergonomics Is Real Engineering’. Copyright 2007-2012 © Donald A. Norman. Available at: [http://www.jnd.org/dn.mss/interaction\\_design\\_i.html](http://www.jnd.org/dn.mss/interaction_design_i.html) [Accessed March, August 2012].

devices and their frequent use (Ibid, 2012). The interactions users engage in are 'situational,' depending on where and how they are using technologies (Bishop, 2006)<sup>118</sup>. Norman says that due to the advent of mobile devices, issues around interactivity differ from those seen in earlier HCI conventions. For example, in the case of HFE, researchers and interface developers can be seen to structure 'sequences of operations' that deal with problems of human error, of interruption, and of complex task sequencing. (Norman, 2010 p.122) Norman uses a term called "situation awareness" in relation to computer-user interactivity. A practical application of situation awareness can be seen when users customise menus and interfaces in response to particular situations and environments.

As my own installations have shown, as increasing numbers of mobile devices co-exist with static computer devices, the re-configuration of the connections between them is transforming the ways in which human beings perceive their relationships with technological artworks. As a result, the traditional ways of considering and using interfaces are changing. Responses to HCI artworks are now sometimes seen to be dependent on the specific mobile devices used by audience participants, the software programs associated with these devices, as well as the situations and locations where they are being used. This scope for technological interpretation as to how to interact with an artwork not only affects the participant, but also the artist/facilitator who initially plans and configures technological devices and interactive features in a work of Fine Art HCI.

In relation to this question of changing understandings of audience interactivity, my research is generating data that raises questions as

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<sup>118</sup> Philosopher and writer Guy Debord advocated the "construction of 'situations' as an extension of Brechtian theater, calling them constructed situations that were aimed at producing social relationships and thus new social realities".

Bishop, Claire. *Participation*. 'Viewers as Producers'. Whitechapel: The University of Minnesota. 2006. Available at: <https://www.academia.edu/3052583/Participation> [Accessed January 2015]. P.11.

to what extent the artist can be seen as a creator of the HCI interface, especially when members of the audience – complete with mobile devices – not only engage with, but also generate their own ‘touchpoints’. These touchpoints are points of engagement, are presented via a variety of devices through networked locations and offer both artist and audience member an opportunity to construct a configuration that shapes a unique interactive experience.

In this chapter, I am going to discuss the structure of an HCI artwork as well as the process of its construction as a system that is composed of technological, interactive and social systems, that is to say, the composition of an architectonic system. I will explain how, as an artist, I construct architectonic structures rather than finite artworks per se, and explain what my role is within this fluid architectonic scheme. I will describe, by using rapid ethnographic frameworks, how such HCI artworks come into being through configuration and audience input, and in the process will show the growing significance of the artwork as an agora (or one central touchpoint that functions as a site for socio-technological expansion). Showing documentation of the HCI prototypes I have created in the field of Fine Art, I will describe how the evidence I have collected is an integral part of my art practice when the collected data feeds back into the initial installation-situation.

As an aspect of this research, I will discuss the importance of ‘touchpoints’ in HCI artworks and how they provide the basis for understanding their development in architectonic systems. I will explain this transition by focusing on how I incorporate touchpoints into my own installation based artworks and in the process, I will provide examples that demonstrate the ways in which the artworks become architectonic through the combined inputs of artist and participant. I will show how the concept of ‘configuration,’ when considered in relation to interaction, factors the audience into the overall experience and construction of an artwork in the field of Fine Art HCI. Finally, I will conclude this chapter with HCI examples from my own practice that can be understood in relation to the idea of an

artwork as one that uses (architectonic) systems as its actual medium. (Halsall, 2007)<sup>119</sup>

## ***HCI Artworks as Prototypes***

### ***Touchpoints (2012)***

When building HCI artworks I consider them as prototypes because I use them successively as iterations of initial artworks for the purposes of observing participants' levels of engagement. In the previous chapter, secondary source research was used to demonstrate an understanding of experimental prototypes in Fine Art HCI installations in contemporary and historical terms. The works of artists and theorists who have explored Human Computer Interaction in their practices were examined. These were used to show the ways in which digital technologies were incorporated into their respective art practices as well as to demonstrate how this approach has continuing importance when using these technologies in contemporary art making. Many of the artworks – in themselves examples of Human Computer Interaction – were shown to have the characteristics of prototypes and, as such, they provided an experimental foundation for emerging HCI artworks in the contemporary scene. As prototyped artworks, they shared similar approaches and processes, particularly in their development stages, to those that are currently used to measure interaction by HCI designers who are concerned with observation and development. (Norman, 2010)

As iterations of my prototypes successively come into being, I observe – in these and my own artworks – the evolution of architectonic systems within and around them. These systems are made of networked and physical environments that are linked to the artworks, and they provide access for artist and participant. They can

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<sup>119</sup> Halsall, Francis. *Systems Aesthetics and the System as Medium*, Presented at Systems Art Symposium Whitechapel Art Gallery, 2007. Available at: [http://www.systemsart.org/halsall\\_paper.html](http://www.systemsart.org/halsall_paper.html) [Accessed August 3, 2013].

be seen as containing systems of interdependent components forming an architectonic whole (Ibid, 2007). For example, as points of entry in and out of the artworks (for both the artist and participant), they might include social media sites, email addresses, (Figure 24) digital drop boxes, QR Codes, mobile phone applications, interactive menus, sensor systems as well as the artwork itself.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 24. Email sent from a participant in relation to Touchpoints, July 2012.**

**Author: Luba Diduch.**

The willingness of the participant to become engaged with these connected systems is often dependent on his or her knowledge of the technological, interactive and social systems that provide pathways into the artwork. These systems of knowledge can be seen in the writings of philosopher C.S. Peirce when he frames the idea of architectonics in philosophical terms, describing it as an “architectonic scheme that classifies separate streams of knowledge and the relationships that exist between them” (Atkin, 2013)<sup>120</sup>. Indeed, as seen in Peirce’s theory, I use multiple streams of knowledge<sup>121</sup> as pathways that allow the participant to construct and experience my prototype artworks. It is my role as an HCI artist to initiate the process of building these pathways as well as making new pathways and relationships between them possible.

Examples of these systems are present in my work *Touchpoints*. (Figure 25). The knowledge basis needed to engage with the HCI artwork is seen, for example, when participants have to scan a QR code before they can upload a photograph to an email address. In this case, familiarity as *how* to download and configure QR scanning software is needed before fully ‘interacting’ with these artworks, and involves the participant’s familiarity with interactive environments and technologies in order to do so. Each of these ‘streams of knowledge’

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<sup>120</sup> Atkin, Albert. ‘C.S. Peirce’s Architectonic Philosophy’. Internet Encyclopedia of Philosophy. 1995. Available at: <http://www.iep.utm.edu/peircear/> [Accessed May 19, 2013].

<sup>121</sup> Though I have described my observation of the interactions between participants and architectonic streams of knowledge, I have taken into consideration that in the creation of an artwork, architectonics of *meaning* also comes into play. That is to say that an artwork is not only composed of processes and ways of working when built using technological devices, but it is also composed of architectonic streams of meaning in relation to the person who creates it, as well as the viewer who experiences and contributes to it.

represents a way to engage with and contribute to the larger architectonic system of an HCI artwork. (Crehan, 2013)<sup>122</sup>

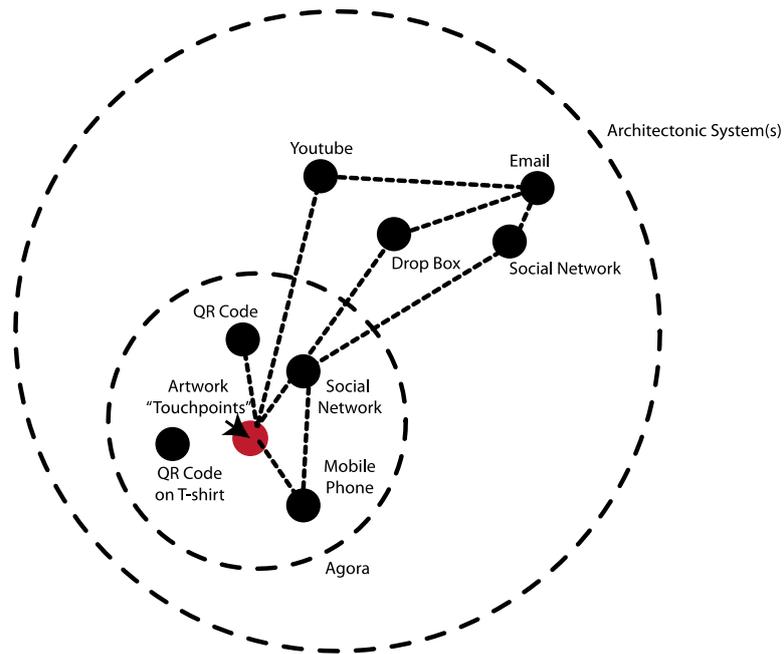
In this chapter, I will describe how relationships between architectonic systems, artist and participant can establish a shared sense of location. I will show how, in relation to prototypes, participants come to feel that they are part of a common collaborative space (agora) – where they are able to communicate with the artist (and each other) while engaging with the artwork (Adamec, Masa, Silondi, Smetana, Zara, 2001 pp. 208-212).<sup>123</sup>

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<sup>122</sup> Kate Crehan mentions a question in her book *Community Art: An Anthropological Perspective* that is also of concern to Nicolas Bourriaud from his perspective — “what form of literacy is needed to participate in a (participatory) democracy?” This makes me think of my prototypes when participants have to find a way to be literate in the technologies associated with my prototypes as co-creators, alongside the artist and learn to participate by using the streams of knowledge that are presented to them.

Crehan, Kate. *Community Art: An Anthropological Perspective*. (London, Berg Publishers, 2013). Page 10.

<sup>123</sup> ADAMEC, J. Jim, Michael Masa. Pascal Silondi, Pavel Smetana, Jim Zara. “Virtual House of European Culture: e-Agora. ICVS '01 Proceedings of the International Conference on Virtual Storytelling: Using Virtual Reality Technologies for Storytelling”. Pages 208-212. Springer-Verlag London, UK. 2001.



**Figure 16. Systems of knowledge - or Architectonic systems - contained in *Touchpoints*. Participants engage with systems of knowledge contained in QR codes, social networks, mobile phone configurations, drop boxes and emails. May 2013. Author: Luba Diduch.**

### ***Touchpoints: A Prototype Artwork***

In the summer of 2012, I constructed a prototype artwork with the intention of investigating this relationship between touchpoints, audiences in social spaces and their importance in expanding architectonic systems. This exhibition, titled *Touchpoints (2012)*, functioned as a test site for this research and was situated in an empty shop space located in a commercial area in Bath. This location was chosen because it was well positioned to take advantage of the flow of traffic and pedestrians who walked by every day on their way to work, to the shops, the center of business, art galleries and other social spaces. I spent a week observing in Broad Street and during this period, began to compile media contributions collected from passersby, as well as from online participants. These contributions included photographs, video clips, audio tracks and text. At the same time, I generated my own media that was used to remix with the contributions from participants. I projected these re-mixed works on the walls of the exhibition space using a DJ software program called Cell DNA<sup>124</sup> (Appendix G).

I noticed that after putting posters into the windows at Broad Street to advertise the event, I did get a response for participation but it was a restrained one. Many people walked by the exhibition space at 33 Broad Street in the week that I was there, but the percentage of visitors who physically entered was quite low in comparison to the number of people who passed by. When visitors did enter, they asked questions regarding my purpose in occupying the space as well as the nature of my project. Most were interested in watching me in the act of remixing other participants' contributions on my laptop computer – fewer were interested in actively contributing to the work. Increasingly aware that some audience members would not want to engage, I realised that these individuals contributed by being

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<sup>124</sup> Cell DNA, Livid Instruments. Available at: [http://lividinstruments.com/software\\_celldna.php](http://lividinstruments.com/software_celldna.php). [Accessed April 22, 2013].

relatively 'passive' observers rather than active participants. That is not to say that this approach to finding active participants was in vain: in a few cases, passersby did in fact take part in the project scanning the QR code so that they could participate in my project at a later date. I considered their queries regarding *Touchpoints* as opportunities to provide my contact information (this being an entry point into the work) and hoped they would send me contributions when they felt more comfortable in doing so. Interestingly, I noted generational differences in that visitors who were of a different generation, were less likely to scan the QR code (Figure 26). I attributed this to the phenomenon of 'streams of knowledge' and levels of technicity that were required to engage and those older individuals might not have possessed the necessary skills or devices. In fact, the multi-generational representation of participants became useful in the polyphonic nature of ethnographic study because it provided a broader variety of perspectives, opinions and engagements. These were reminiscent of James Clifford's writings when he said that while ethnographic study is based in the researcher's findings, it is also dependent on the contributions of many participant voices.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 26. Visitors inquiring about Touchpoints.**

I invited visitors to use my website, QR codes, dropbox and email address to send me text, photographs or video clips – by this intending to introduce would-be participants to more touchpoints around the artwork. Other passersby, without making direct verbal contact with me, remained outside and scanned the QR codes that were printed on the posters hanging in the window. In these instances they found their own way into the points of contact that were there for the taking. I saw these interactions as examples of Don Norman’s term “situation awareness” (mentioned earlier in this chapter) where participants became active when, realizing they could engage with the artwork, began to customise and configure their mobile devices to interact with available QR Codes (Figure 28). In so doing, they found an entrance into the artwork (Figure 27).



Figure 17. Anonymous passersby scanning the QR code at 33 Broad Street, *Touchpoints* (QR code visible in window). July 2012. Author: Luba Diduch.

Rather than an exhibition space where chance visitors provided a ready 'reserve' of participants, I began to think of Broad Street as a social space, with many more possibilities for entry points and exit points than I had previously considered. In addition to the passersby, I realised that I could use social media and email to engage additional participants in this project. It was at this point that I began to send messages to social networks in order to initiate participation. It became evident that it was up to me to 'find' my audience. As a result, the touchpoints that I established at 33 Broad Street using social networks became huge points of entry, and, during the week of my residency, involved 26 active participants who sent me material for use in the project. These interactions established many new touchpoints in the artwork. The surge in participation showed me that the invitation to participate in the shop space through networks proved to be very inviting to online participants who had a keen interest in becoming involved in the project and had the necessary technical knowledge to do so. It was my impression that this was happening because the reward for participation lay in the opportunity to witness one's contribution reflected in the work. It seemed that participants who did respond were excited to be part of a large art installation that was in flux and that could possibly lead to future collaborations amongst themselves. In addition, the goal and purpose of the project was clearer to them than to those who were casual observers in the physical space at Broad Street. It was apparent that these virtual participants possessed higher levels of technicity – their access to streams of knowledge relating to art installations was more developed. The fact that I was able to display their work almost instantaneously to passersby within the physical space at Broad Street, as well as to global audiences through sites like Youtube, Twitter and Facebook demonstrated that the work could be experienced in a variety of ways, from a number of sources – and I believe this was a strong motivator for participation. Most importantly, I as the participant observer could see the ways in which the interconnections between exhibition space, virtual exhibition space, social media sites and email communications had "spatialised

the data field” of the artwork/prototype (Hansen, 2006 p.151)<sup>125</sup> (Appendix G). This spatialization had enacted another polyphonic aspect of my research that enabled a variety of participants who entered through various points of entry to contribute their voices to *Touchpoints* as well as to witness a variety of ways of experiencing the work in both physical and virtual space.

It was during the life span of this artwork in Broad Street that I again began to look more closely at the idea of the exhibition venue itself as an agora around the work, or a social space where the potential for creative production amongst artist, spectators and participants could take place. Since then, I have also viewed the space in Broad Street as an architectonic system that instigated a collaborative artwork that continues to expand and grow. New participants sent their contributions to me in the days following the week spent in Broad Street, and at this point in time, I continue to receive additional works. The participants’ continuing interest is an affirmation that *Touchpoints* as an expanding HCI artwork with an increasing number of touchpoints continues to thrive.

In retrospect, I have observed that in *Deep* and *Touchpoints*, the hierarchy or separation that exists between artist and viewer doesn’t manifest itself in the same ways that may be seen in other art practices. This is because rather than treating the participant as a viewer who engages cognitively, intellectually and with limited interactive engagement, collaboration with others is actively encouraged, requiring more complex involvement where the participant can potentially step into the role of the artist. These collaborations address an important part of my process that involves feeding the participant’s contribution back into the artwork (Ascott,

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<sup>125</sup> HANSEN, B.N. Mark. *New Philosophy for New Media*. MIT Press. Cambridge. 2006. Page 151.

1983)<sup>126</sup>. Involvement of participants also extends the lifespan of the artwork when they return to the agora (collaborative space) to continue and deepen their participation. However, in contrast to the ancient agora where individuals met in physical spaces, the agora used in my work is seen when, I as the artist facilitator, and the participant, 'meet' within the sub-systems (interface menus, emails, forums, social media sites) of the architectonic space to create the artwork together (Appendix G).

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<sup>126</sup> This channeling back into the artwork echoes the idea of the 'feedback loop' described by Roy Ascott and discussed in the previous chapter of this paper.

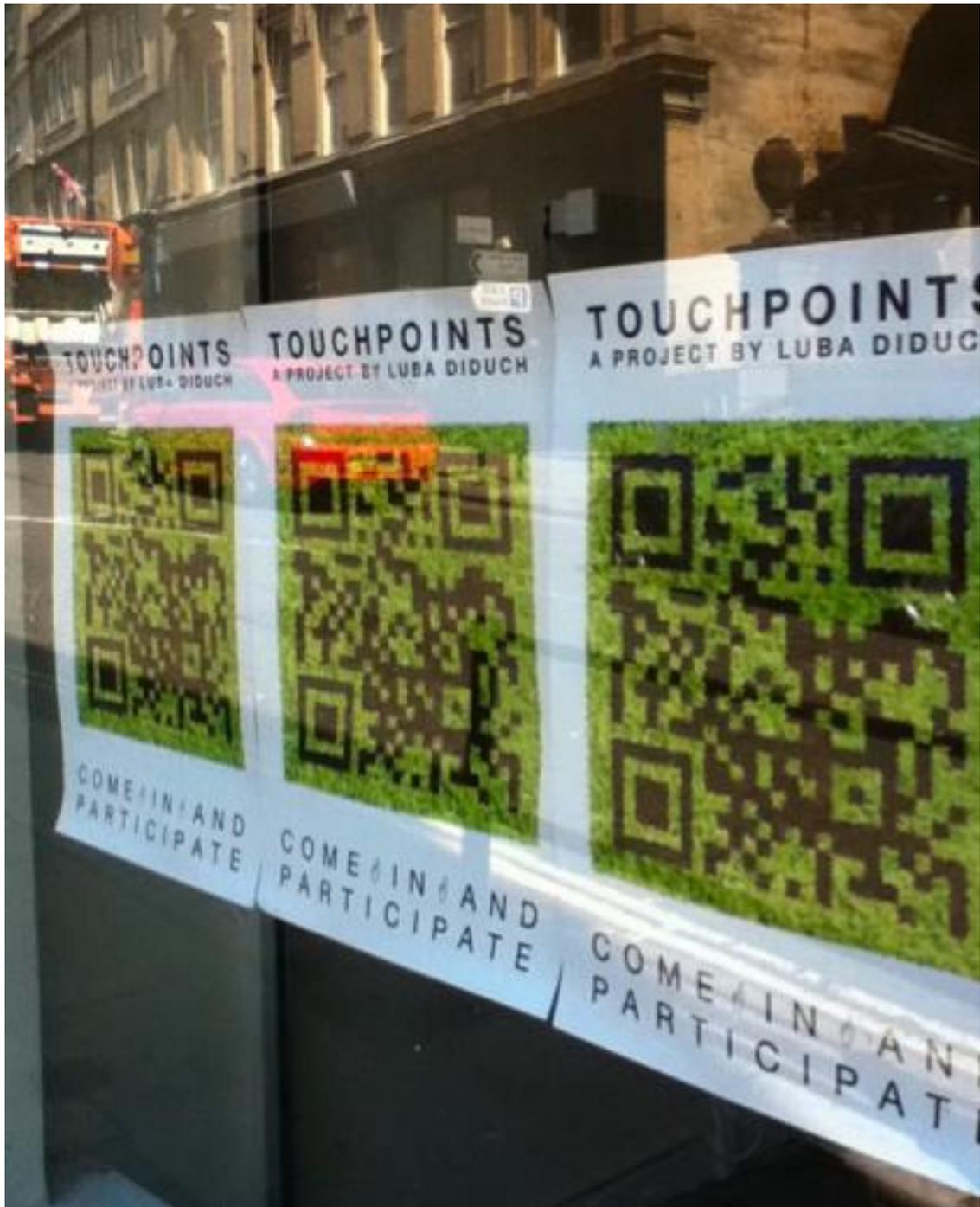


Figure 18. QR code visible in a window at Broad Street. July 2012.  
Author: Luba Diduch.



Figure 19. Re-mixed artwork using Cell DNA. July 2012. Author: Luba Diduch.

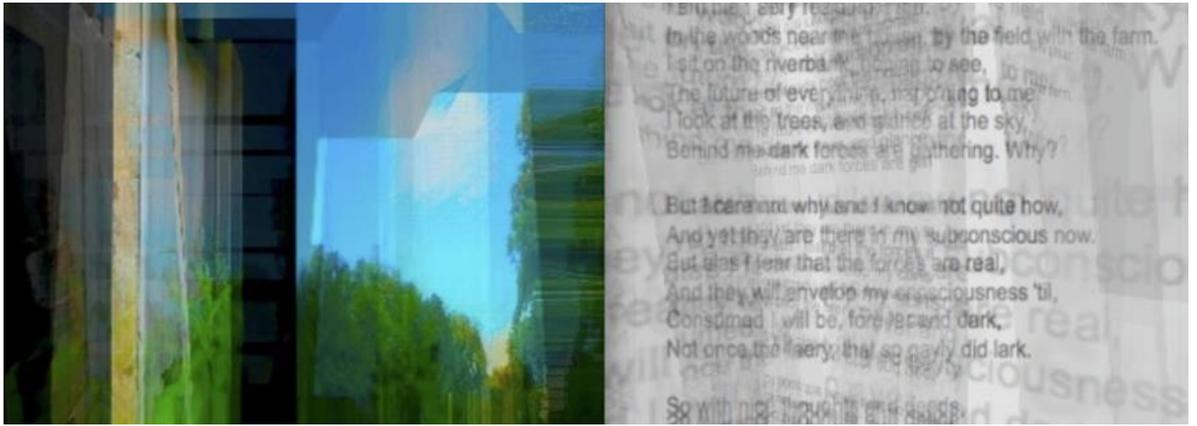


Figure 20. Re-mixed artwork using Cell DNA. July 2012. Author: Luba Diduch.

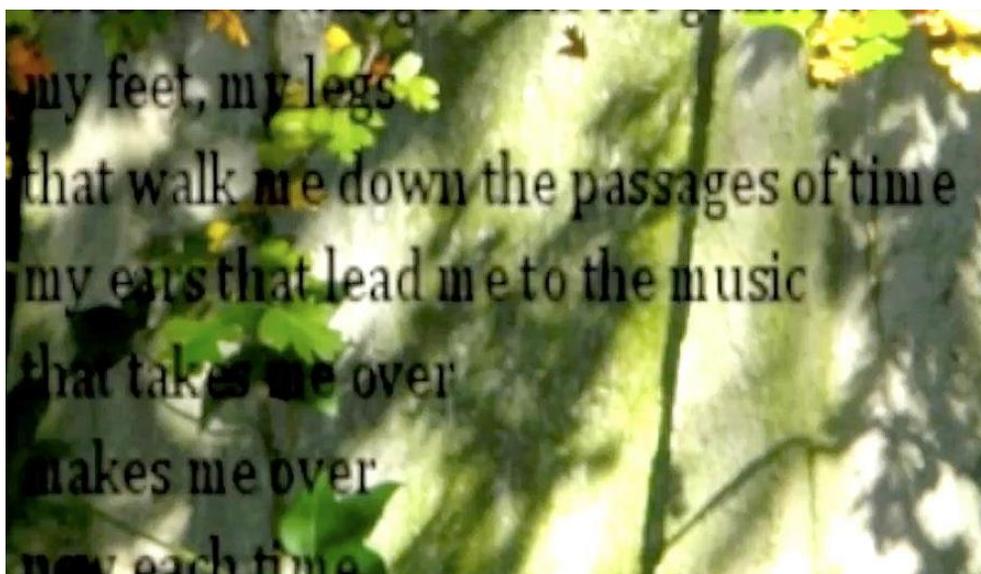


Figure 21. Re-mixed artwork using Cell DNA. July 2012. Author: Luba Diduch.

Upon receipt, the media contributions were manipulated and mixed with the works of previous participants. I was conscious of the fact that I was moving between the roles of artist, observer/audience member and even curator, and by assuming these roles, had facilitated a 'meeting' of the different components of a creative work in virtual space. These 'meetings' resulted in live projections of combined works that were displayed on the wall of the exhibit space at Broad Street (Appendix G). These were created using a live DJ mixing software called Cell DNA. As well as using the QR code to enter the agora, participants also used email address channels to contribute work, as well as through personal interaction with me, and in some cases with each other. Like a group of people entering the ancient agora through a variety of entrances and exits into the public square, individuals came to the work together using whatever avenues (digital and/or physical) were available and convenient for them in the moment. Echoing the ways that the participants in the ancient agora engaged with others in their particular time period, visitors to the agora at Broad Street used methods that were accepted within contemporary digital culture when they used networks and computer devices to engage with myself as the artist, the artwork and other participants.

### ***Touchpoints: a Working Theory***

Encouraging the participant to touch an artwork is associated with the term touchpoints — locations within an artwork that are mapped out and considered by the artist as 'connectors between human being and interface'. (Saffer, 2007, p.4)<sup>127</sup> These ideas regarding touching an artwork were discussed in the previous chapter in relation to touchpoints, interactive works and prototypes. In light of my research I have noted that the presence of touchpoints in an artwork is important in that it offers direct and specific possibilities for experiencing physical and conceptual aspects through active user

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<sup>127</sup> Saffer, Dan. *Designing for Interaction: Creating Innovative Applications and Devices* (2nd Edition). Voices That Matter. Berkeley, California. 2007. Page 4.

engagement. (Saffer, 2007)<sup>128</sup> I have discovered that although touchpoints are first made by the artist to establish a framework for the work, the participant subsequently reproduces them as a result of experiential events. While initial contact with touchpoints on the part of the participant triggers an initial interaction with the work, continued contact will cause touchpoints to multiply. Touchpoints reproduce, acting as nodes (ties, connection and distribution points) (Easley, Kleinberg, 2010, p.48)<sup>129</sup> that link to other parts of the artwork and when grouped, become architectonic systems formed in and around an HCI artwork.

In their book *Networks, Crowds and Markets: Reasoning about a Highly Connected World*, authors David Easley and Jon Kleinberg define these nodes as ‘connectors for social relationships’. (Ibid 2010, p.48) This is relevant to my study because I am seeing instances within my study where similar relationships are established between individuals as well serving as touchpoints and meeting points. These node systems give participants the power to expand the work’s touchpoint system as *collaborators*, both through individual and group input. While observing my artwork/prototypes in use, I am witnessing the manner in which these touchpoint systems reproduce and expand the interface in the HCI artwork and how, collectively, they function as architectonic systems. The location that provides the framework for these interactions to occur is the meeting place of the initial artwork, which functions as a kind of agora. By agora, I mean a place that artist and participants can use as a

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<sup>128</sup> Dan Saffer describes the interface design and thus instrumental in the arrangement of touchpoints as contextual: this way of designing an interactive system solves particular problems within a specific set of circumstances using available materials.

Saffer, Dan. *Designing for Interaction: Creating Innovative Applications and Devices (2nd Edition) Voices That Matter*. Berkeley California. 2007. Page 4.

<sup>129</sup> EASLEY, David. Jon Kleinberg. *Networks, Crowds, and Markets: Reasoning about a Highly Connected World*. (Cambridge University Press, 2010). Page 48.

meeting place to co-produce further iterations of the artwork and is a central touchpoint.

### ***Touchpoints and Reproduction***

In relation to my prototyped artworks, I have noted that touchpoints can “reproduce” after their first contact with the participant, thus extending the perceived boundaries of the artwork. I have observed this happening, for example, when participants create new sites for their own iterations of artworks, such as in the case of Roy Ascott’s networked artwork *Journey to the West: a planetary fairytale* (to be discussed later in this chapter). In this way, the touchpoints can be seen as moving outside of the boundaries of the original artwork while establishing themselves in new interface locations. This research is showing that touchpoints are not static, but in fact have the potential for movement and reproduction. It is through physical contact in an exhibition space — and virtual contact using QR codes and websites — that the participant causes them to reproduce. The newly established touchpoints become potential sites of contact for other participants who then in turn may establish their own. In the end, depending on continued interest, these points may become interactive endpoints and the artwork becomes static or comes to resting (touch)points.

Through the development of several prototyped projects, I have been tracking this phenomenon. I have observed touchpoint reproduction and movement when participants sample my work and then, using computer networks, send their own iterations of the artwork back to me. I first saw evidence of this happening in *Deep* (2011). The touchpoints that I had initially mapped out when I first built the *Deep* prototype began to reproduce and appear in spaces outside of the initial iteration. This was seen in practice when two participants who contributed their digital artworks through Skype created new touchpoints. These works, by Canadian musician and artist Adam Redditt, and Canadian musician Norah Lorweg, were performed at the private view for the exhibit of my prototype *Deep* at the Bath

School of Art and Design. Redditt took the idea of the originary artwork *Deep*, and performed a vocal/music/ rap composition in response to it (Figure 32, 33). This work was projected on a wall at the private view in the Bath School of Art and Design gallery space. Lorweg's composition was played along with ambient water sounds that emanated from the *Deep* prototype during the same private view event. Both participants 'visited' the agora at the Bath School of Art and Design gallery through digitally networked means (Skype), and created new points of engagement when they established touchpoints in software and hardware situated outside of the exhibition space.



**Figure 22. Networked performance by Adam Redditt at the BSAD gallery, May 2011. Authors: Adam Redditt and Luba Diduch.**



**Figure 23. Networked performance at the BSAD gallery, May 2011.  
Authors: Adam Redditt and Luba Diduch.**

Through the duration of the exhibition, I noted that additional touchpoints appeared in the camera interface of the participant who made a series of self-portraits and then posted the photographs in an email. They appeared again when another group of visiting participants in the gallery used the enclosed booth of *Deep* to perform hip-hop performances that were recorded using a video camera. These performances were captured in the cameras' interfaces where new touchpoints were established. From there, the participants could potentially send the images elsewhere, for example to an online photographic gallery that could be viewed on a cell phone or mobile tablet. As a result, the potential for new touchpoints was established. In this sense, both groups of participants created their own touchpoints (that were different from the original ones I had originally mapped out), and by using networks, could ask additional participants to join in by viewing and potentially contributing even more touchpoints. I realised at that point, that some participants would produce finite artworks and some would produce active touchpoints. That being said, and as a result of my observations, my research is showing the possibilities for touchpoints to become dynamic parts of the spatial structure of the artworks that I create and study.

### ***Human Computer Interaction - Deep***

*Deep* contained touchpoints that were present in technological components of the installation. As the artist, I identified their locations in the microphone, video projector, mixing board, and audio speaker systems. As I planned the original installation, I identified each of these as containing potential interfaces rather than touchpoints and then mapped each one as a possible site for interaction. I noted, subsequently, that each hardware and software component contained a menu that provided methods and instructions for its use, and I configured each piece of hardware using its respective menu. My intention in building the artwork in this way was to create an interactive experience for the visitor that would present meaningful experiences through participatory and collaborative activity using, in

retrospect, a relatively static view of the interface. I will be discussing how my viewpoint regarding interactivity in HCI artworks and how it has changed later in this chapter.

The participants' feedback in relaying their own observations, stories and histories regarding *Deep* did in fact indicate that they related to the work on a personal level (Liu, 2013)<sup>130</sup> and that the interaction with the artwork was meaningful for them when they explained the reasons for this to me in my role as the participant observer. (Bishop, 2006)<sup>131</sup> My preparations in configuring the prototype expressed my role as the founding artist of this artwork. Through the configuration of technological components of the installation, participants were encouraged to contribute to an existing soundscape by speaking or making sounds into the interfaces provided. A microphone was used to contribute sounds to the existing ambient 'sub-aquatic scape'. Participants used technological conventions that I had established when they entered the booth/prototype. They immersed themselves in a simulated underwater video environment and tested the capabilities of the microphone, mixing board and speaker systems by using their own voices and other methods to generate sounds (Figure 34).

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<sup>130</sup> Despite the fact that I had configured the hardware and software with a certain plan for *Deep*, on several occasions, participants commented on 'glitches' that they had observed occurring in the booth. The video projection would freeze and digitise, rather than flowing smoothly as had been my initial intention. Aberrations such as these are described in Alan Liu's book "Destructive Creativity in the Information Age" where he describes glitches as "the aesthetics of mutation and remixing that recreate through new technologies - something like the art of quintessential hybridity and chance". Liu asks - does destructive creativity respond to Informationalism and the postindustrial ideology of creative destruction?

Liu, Alan. Accessed June 30, 2013. <http://bbrodzkiart.blogspot.ca/2011/03/hhow-does-destructive-creativity-in.html>

<sup>131</sup> In her book *Participation*, Claire Bishop talks about how the participant "reacts in his or her own way in response to an artwork. These responses are based on personal inclinations and prejudices. Therefore, Bishop says, the originary artwork is changed through individual perspectives."

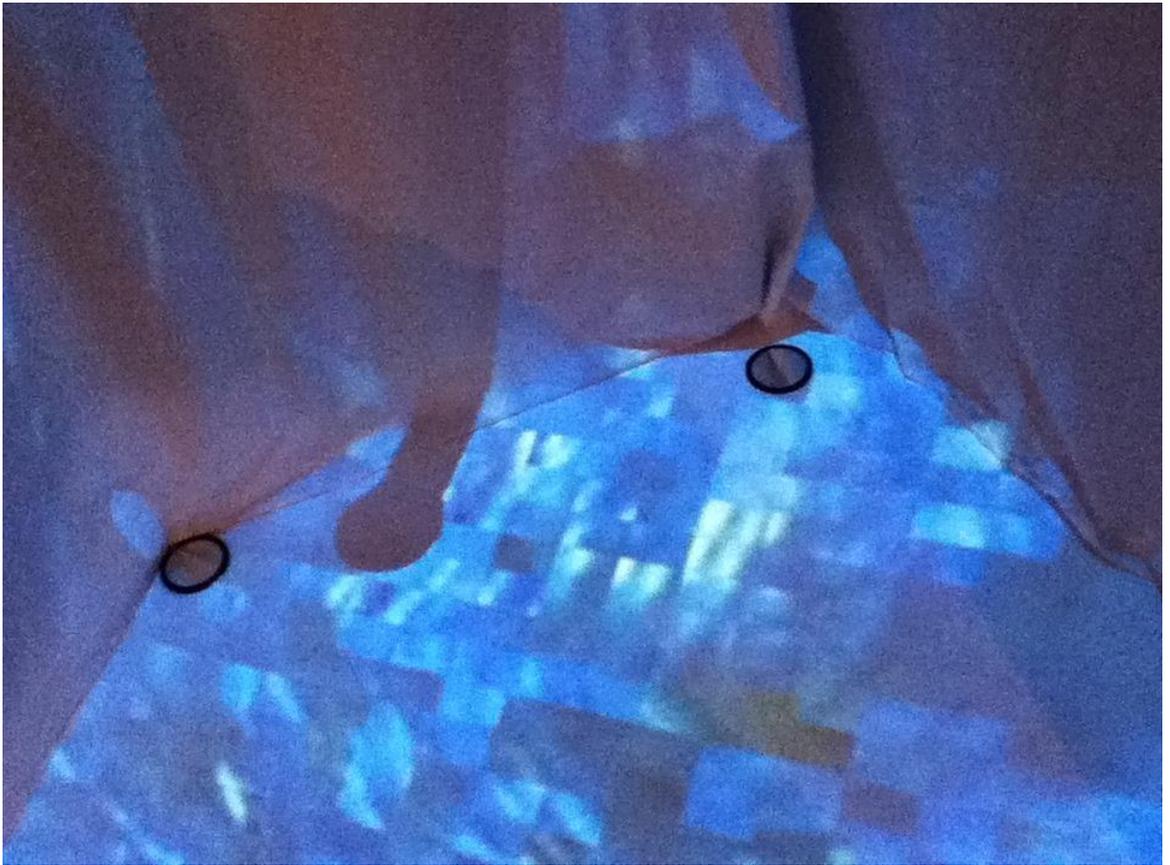


Figure 24. A 'glitch' in *Deep*, 2011. Author: Luba Diduch.

There was no traditional visual interactive menu structure presented for input; instead, participants learned how to use the interface by successively observing the results of their own immediate experiences and vocal inputs. They expanded their experiences of this initial situation by the use of mobile devices, when they further used it to take pictures of themselves and others from within the 'prototype', as they performed songs at the microphone and shared memories and stories that related to underwater experiences. Even when visitors did not consciously stop to engage with the prototype, the microphone installed on the interior of the booth nonetheless picked up and played the sounds related to their presence in the environment, giving the artwork the feel of an agora - a social environment and meeting point. (Fast & Dirty, 2013)<sup>132</sup>

Their activities and contributions to the work – via the use of mobile devices – generated new touchpoints that connected to the original installation based HCI artwork that now took on the function of a re-worked prototype. Their own generated creations were further shared through the use of email and social media websites that continued the expansion of the work by creating additional touchpoints. In this sense, the participants assisted in expanding an architectonic system that connected my work with theirs. Their behaviours and responses also led me to reassess the very nature of interactive artworks.

My role as an author at this stage of prototype development involved pre-selecting options from the out-of-box menus and establishing the artwork as a centre for participation (now seen as an agora). My

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<sup>132</sup> I observed this concept of the meeting point and participation in practice realised when I participated in an exhibit titled 'The Fleeting Glance' at the Shoreditch Gallery, in London England. This exhibit was curated by the Fast & Dirty Collective from Edmonton Canada. My artwork was composed of a wooden box covered in gold leaf, a set of headphones and an mp3 player playing the sounds of an earthquake. Visitors to the gallery were invited to listen to the sounds and to etch their impressions in relation to the earthquake that had recently occurred in Japan. I was interested to see how individuals immediately engaged with the work, apparently because of its subject matter, and how I subsequently, when the box was shipped back to me in Canada, was able to see the level of engagement in relation to the number of messages and drawings that had been inscribed on the box's surface. In addition, the artwork had become a meeting point of sorts, where individuals could express their thoughts and feelings in relation to the devastation that had occurred in Japan. Available at: <https://www.facebook.com/pages/Fast-Dirty/145598425509022> [Accessed August 15, 2013].

conscious intention was to use them to plan the overall configuration of the prototype/artwork so that it suggested a procedural and participatory approach to the participant. (Wardrup-Fruin, Harrigan, 2004 p.2)<sup>133</sup> As the artist, I reconfigured the video and audio components by projecting them into the prototype's interior to create a simulated sub-aquatic space and positioned a microphone within so that it was readily accessible. As a result the media was transformed from functioning as a projection on the wall of a gallery space into a small enclosed environment where the participant could interact and, as it turned out, find meaning through his or her own participation. What makes the configured HCI artwork unique, therefore, is that it serves both as an artefact *and* a situation (that contains a thing *called* an artwork). Furthermore, the artwork is composed not only of technological elements that comprise its physical aspect, but it also serves as a location for experiencing the artwork itself – an agora for generating digital, physical and networked touchpoints that re-define the very spatiality of the originary artwork.

An example of this can be seen in *Touchpoints I*, where a QR code acted as the first touchpoint for entry into a wider set of locations. When participants made contact in an initial HCI situation/iteration in Broad Street, the artwork served as an agora, which 'appeared' within and around the exhibition space. I came to this conclusion when I saw that participants on the sidewalk scanned the QR code, sometimes individually, and at other times in groups, seemingly collaborating and exchanging ideas informally as they did so. They used the QR code device via their mobile phones to follow a 'digital pathway' that led to an email address and drop box that were embedded in the QR code. As seen in Figure 35, these contributions included poetry sent in email format.

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<sup>133</sup> Wardrip-Fruin, Noah. Pat Harrigan. 'First Person: New Media as Story, Performance and Game'. From *Game-Story to Cyberdrama*. Janet Murray. MIT Press. 2004. Page 2.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 35. Poetry uploaded to an online dropbox. July 2012. Author: Luba Diduch.**

These additional works arrived and were collected in an archive before being integrated with the larger artwork (Appendix G). As this process was unfolding, I observed how the artwork (and its attendant agora) further manifested itself in the exhibition space (Figure 36) when the participants interacted with me, the artist/participant observer, who was present in the exhibition space. This occurred when visitor/participants entered and inquired about my project while watching me creating real-time remixes using the archived email contributions. As an added feature, I wore a copy of the same QR code on the back of my shirt (Figure 37, 38) so that participants could scan it and participate in the artwork as I walked through the streets of Bath, as well as when they encountered me inside the exhibition space. It was at this point that I realised that I, as the artist/participant observer, had become part of the interface, and a touchpoint within the overall architectonic structure of the artwork.

Along with myself in the roles of artist/facilitator and touchpoint, participants also had access to a social media site that enabled them to communicate with me as they sent contributions through this additional entry point. As I witnessed these activities happening simultaneously, I could see that the touchpoints within the artwork/agora were multiplying and shifting between the virtual and physical and that my role within the architectonic scheme was apt to shift and change depending on the circumstances. (Burnett, 2007, pp.313, 319, 328)<sup>134</sup>

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<sup>134</sup> Burnett, Ron. 'Projecting Minds' in *Media Art Histories*. Oliver Grau (editor). MIT Press. Cambridge Massachusetts. 2007. pp. 313, 319, 328.



Figure 25. Sidewalk and traffic outside of 33 Broad Street, *Touchpoints*. July 2012. Author: Luba Diduch.



Figure 26. QR code displayed on a shirt. July 2012. Author: Luba Diduch.



**Figure 27. QR code displayed on my shirt. July 2012. Author: Luba Diduch.**

In the case of my artworks, the process of research has indicated that the agora can emerge as a gathering place where individuals collaborate around the work. My research suggests that in the case of HCI artworks the agora seems to be mobile because it may be situated wherever the participant is engaging with or creating touchpoints at a given time. (Hassan, Thomas, 2006, p.271)<sup>135</sup> As a result of my observations, I don't think the agora is a clearly defined online or physical environment. It is a distributed space that flows amongst various physical and virtual locations and devices. (Ascott, 2007, p.195) This is because in a sense, the agora transforms in response to the participants who enter it: they are individuals who are mobile themselves and are apt to establish the parameters of the space of engagement by making decisions as to how they will use the technologies they carry with them. In addition, participants have the power to configure these technologies according to personal knowledge, preferences and needs. (Dovey, Kennedy, 2007, p.6)<sup>136</sup> As part of my study I have seen evidence of configuration occurring when participants download specific mobile applications (such as QR

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<sup>135</sup> This mobility seen as a characteristic of the agora is described in Lee and Liebnau's chapter in *The New Media Theory Reader* titled "Time and the Internet". Here the authors describe human behaviours in relation to physical and virtual space and that there has been "a weakening of the relevance of physical location".

Hassan, Robert and Julian Thomas. *The New Media Theory Reader*. Open University Press, 2006. Page 271.

<sup>136</sup> In their article *Technicity: Power and Difference in Game Cultures*, Jonathan Dovey and Helen Kennedy describe technicity as being related to "easy adoption and facility with technology and a fundamental aspect of an idealised contemporary subject". They maintain that "not every participant has the same level of 'technical virtuosity' in relation to available technologies". Their frame of reference is based on studies in game culture regarding participants' perspectives, habits and inclinations, and these are the factors that form an identity, or culture of technicity. Dovey and Kennedy go on to say that individuals who possess these identities form collective groups where activities involving the use of these technologies flourish. This line of thinking is in line with the research I have done in relation to Deep and Touchpoints I and II when I have observed participants who have taken on identities as co-creators in an artwork, gathering within a particular agora space to contribute to artworks.

Dovey, Jonathan and Helen Kennedy. 'Technicity: Power and Difference in Game Cultures'. Digital Cultures Research Centre University of the West of England. 2007. Page 6. Accessed August 12, 2013. [http://www.dcrc.org.uk/sites/default/files/technicities-keynote\\_dovey\\_0.pdf](http://www.dcrc.org.uk/sites/default/files/technicities-keynote_dovey_0.pdf)

Code scanning software) in order to personalise their experiences with my prototypes.<sup>137</sup>

An agora can also appear as a “pop-up” art installation in an art exhibition. I saw this occur in 2011 when I participated at the Creative Environment for Emerging Electronic Culture (CE3C at the Alberta College of Art and Design) with an artwork titled *Growl*. (see figure 39). This artwork was composed of a pre-recorded track of dogs barking and growling, a large speaker covered in “claws” and an audio recorder mounted on a microphone stand. Passersby contributed “human growls” by speaking into the recorder, the main touchpoint in the work. Once their contributions were recorded, participants were subsequently able to play them back in unison with the dog growls that were continuously playing on a loop. Although participants were not inclined to use personal mobile devices in this particular work as far as I was aware (they may well have recorded the sounds with their own devices without my knowledge), the experience as such did give me an idea of the degree that participants would interact with an artwork like *Growl* (Figure 39). I observed that participants were intrigued by the *configuration* of hardware and software that was presented to them, and once they understood that they could make a contribution, the experience became a performative one, where participants created unique and unusual sounds. The “agora” that resulted included a number of people who were intrigued by the sounds emanating from the space, and who, when entering the agora, contributed to the work. From this shared space, the participants expanded the original artwork that was emanating from the speaker, into a work that was interactive and reciprocal.

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<sup>137</sup> Participant Richard Oxenham contributed some writing after he downloaded QR scanning software and scanned the QR code on the back of my shirt, at Corsham, Mix: Transmedia Writing and Digital Creativity Conference, Corsham, UK. 2012.



**Figure 28.** *Growl*, 2011. Creative Environment for Emerging Electronic Culture (CE3C). Author: Luba Diduch.

One of the things I learned about the nature of an agora is that as a community driven space it often comes with a history of customs, meaning and interpretations. This became relevant when I first installed my prototype *Deep* at the Bath School of Art and Design Gallery. The original title of this work was *I Saw You Drown* and this title was used because of the underwater 'simulacrum' that the work presented to the viewer when he or she entered a 'subaquatic' environment (Appendix F). For reasons that stemmed from my own art practice, the title was an index for the digital media used in the work in order to communicate the state of being immersed, or 'drowning' in the media that were being poured into the work. However, due to the fact that there had been an accidental drowning among the student body in Bath that same year, I was asked to change the title of the artwork. I readily did so, as I realised that the original title might have caused some sensitivity around these issues in the BSAD community and I did not want to offend the community that I was entering as an ethnographic researcher.

As a result of my readings of ethnographer and philosopher Wilhelm Dilthey writings, (and detailed in the first chapter), I was struck by how "multiple voices and points of view" lead to the recognition of others in a shared world". (Walton, 1993, p.379)<sup>138</sup> My realizations in relation to these ideas created a new level of meaning in the works that I was creating and studying. In retrospect, what I learned from the *Deep* experience was that an agora existed at the BSAD before I installed my art installation, and that there were certain processes, conventions and perceptions that were already in place before I arrived and installed the artwork in question. As an artist and ethnographer embarking on a research project at the BSAD, it was important for me to assimilate into the community in order to conduct

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<sup>138</sup> WALTON, Susan. 'Jean Briggs's Never in Anger as an Ethnography of Experience'. Sage Journals Online. Critique of Anthropology December 1993 vol. 13 no. 4 379-399. University of Michigan.1993. p. 379. Available at: <http://deepblue.lib.umich.edu/bitstream/handle/2027.42/66542/10.1?sequence=2> [Accessed July 2012].

my ethnographic research effectively – changing the title of the exhibit helped to achieve this purpose.

I first observed the tendency to re-configure mobile devices in practice at the *Transmedia: Mix* conference I attended in 2012 at Corsham, England. As a presenter at the conference, I wore a shirt with a QR code imprinted on its back. Before fellow conference delegates could engage with the project I was presenting at the conference (*Touchpoints*), they were required to download scanning applications on their mobile phones and devices. This meant that they had to configure the experience for themselves — thus creating scenarios where they could engage with the work within their own spheres of control. Once they had downloaded the requisite software, participants were ready to engage with *Touchpoints*. Richard Oxenham, a participant at the *Mix: Transmedia* conference at Corsham in 2012 was happy to contribute some text. Before he could make his contribution, he first had to configure his mobile phone by downloading QR scanning software.

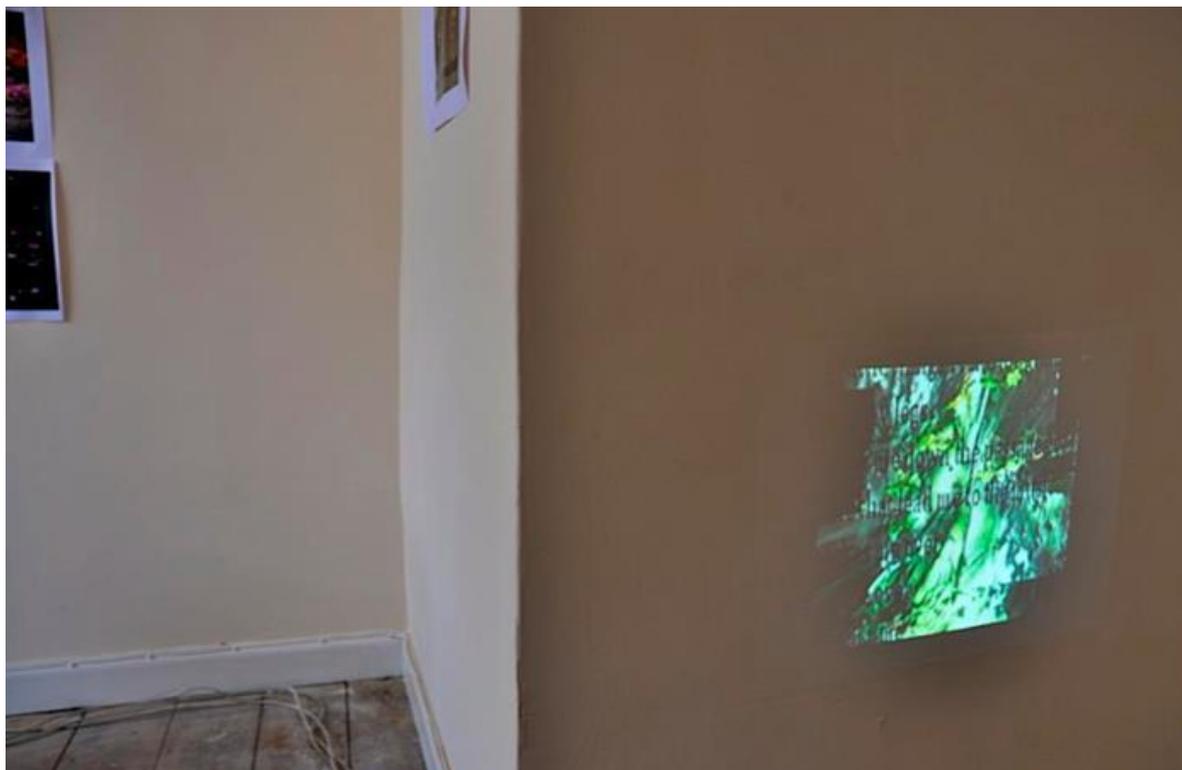
The meaning of an agora in this instance, is a location containing an artwork comprised not only of artifact/s that compose its physical aspects, but also digital, physical and networked touchpoints that delineate its spatiality. The agora can ‘appear’ on the street outside of an exhibition space for example where the main structure of the artwork resides and a QR code is visible in a window. There, on a public sidewalk, participants can come together to collaborate and contribute to an artwork.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 40. Participant's contribution. July 2012. Author: Amanda Goode.**



**Figure 29. Poem and printed remixed images – 33 Broad Street.  
July 2012. Author: Luba Diduch.**



**Figure 30. Printed versions of collaborations and one live projection in process. Broad Street July 2012. Author: Luba Diduch.**

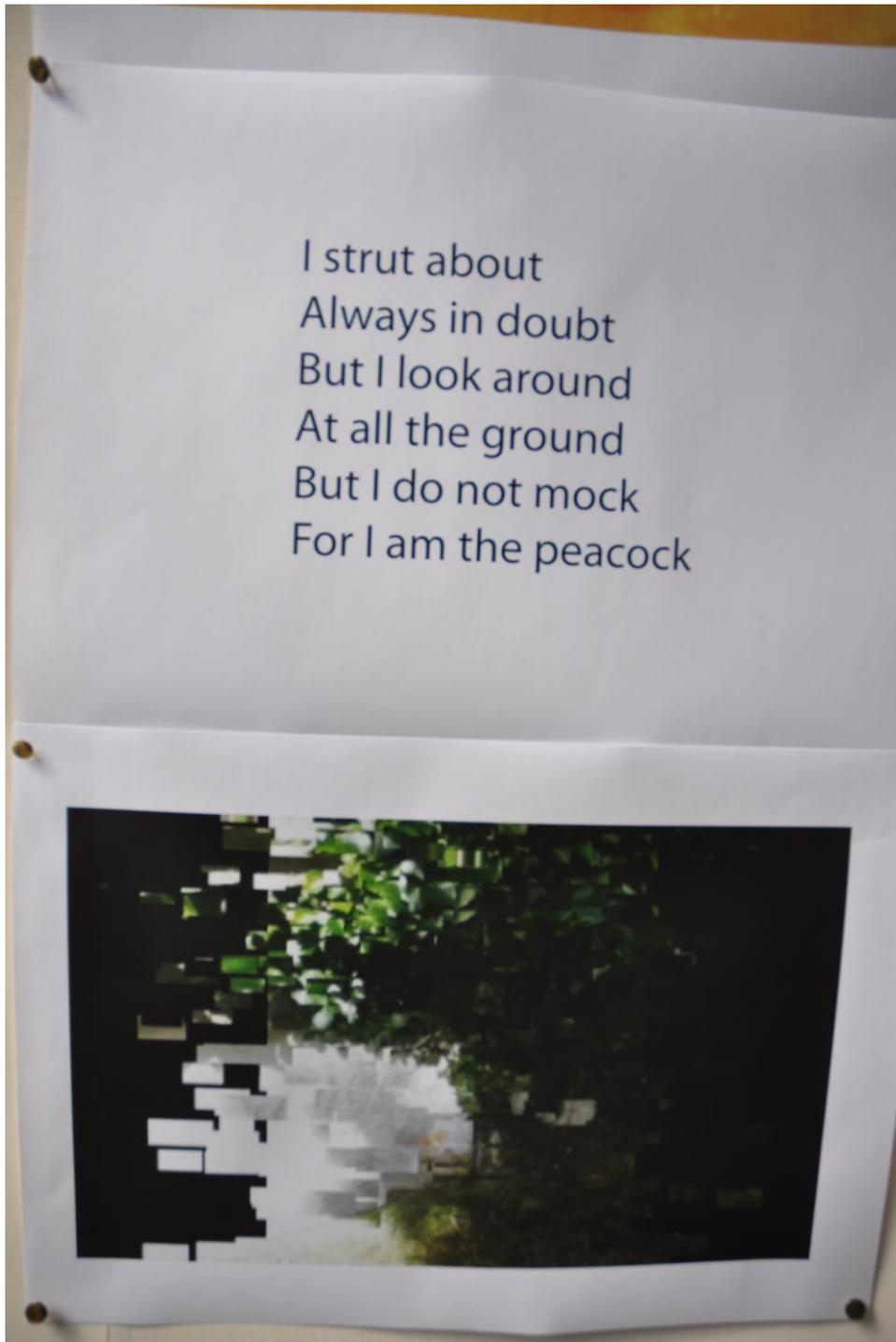
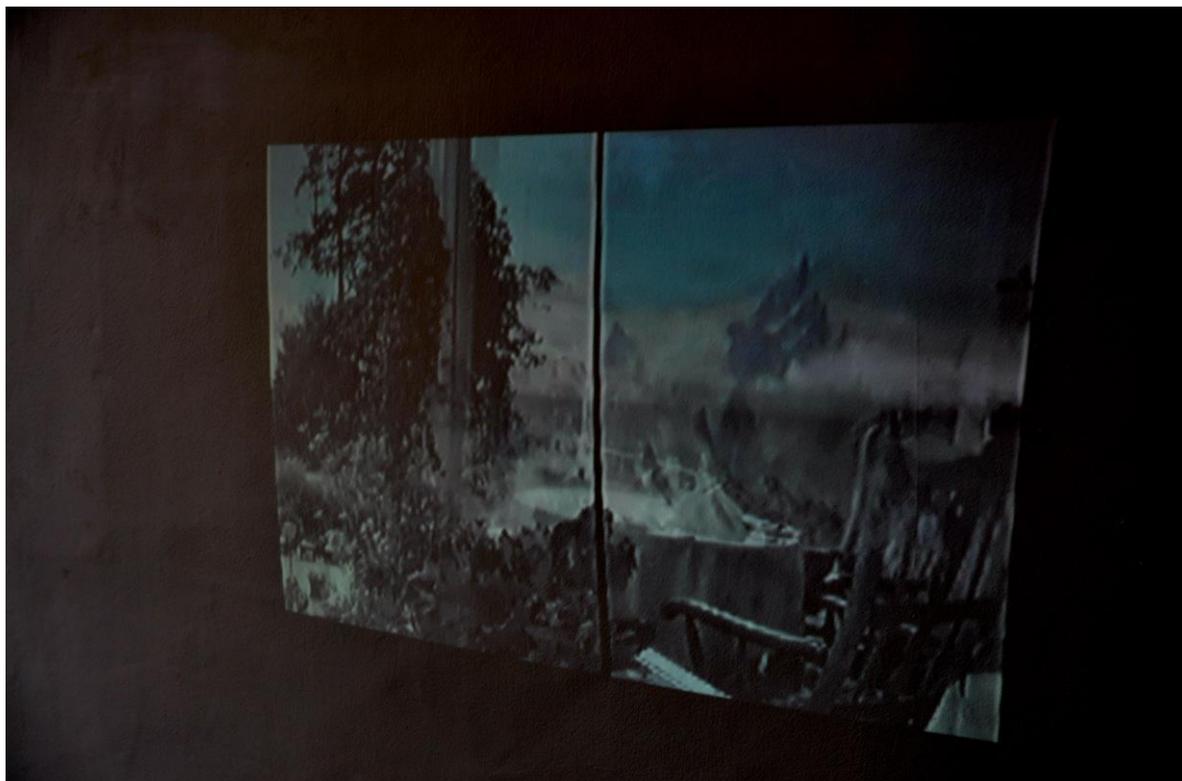


Figure 31. Poem contributed by participant. Broad Street July 2012. Author: Luba Diduch



**Figure 32. Live remix projection in progress. Broad Street July 2012.  
Author; Luba Diduch.**



**Figure 33. Live remix projection in progress. Broad Street July 2012.  
Author: Luba Diduch.**

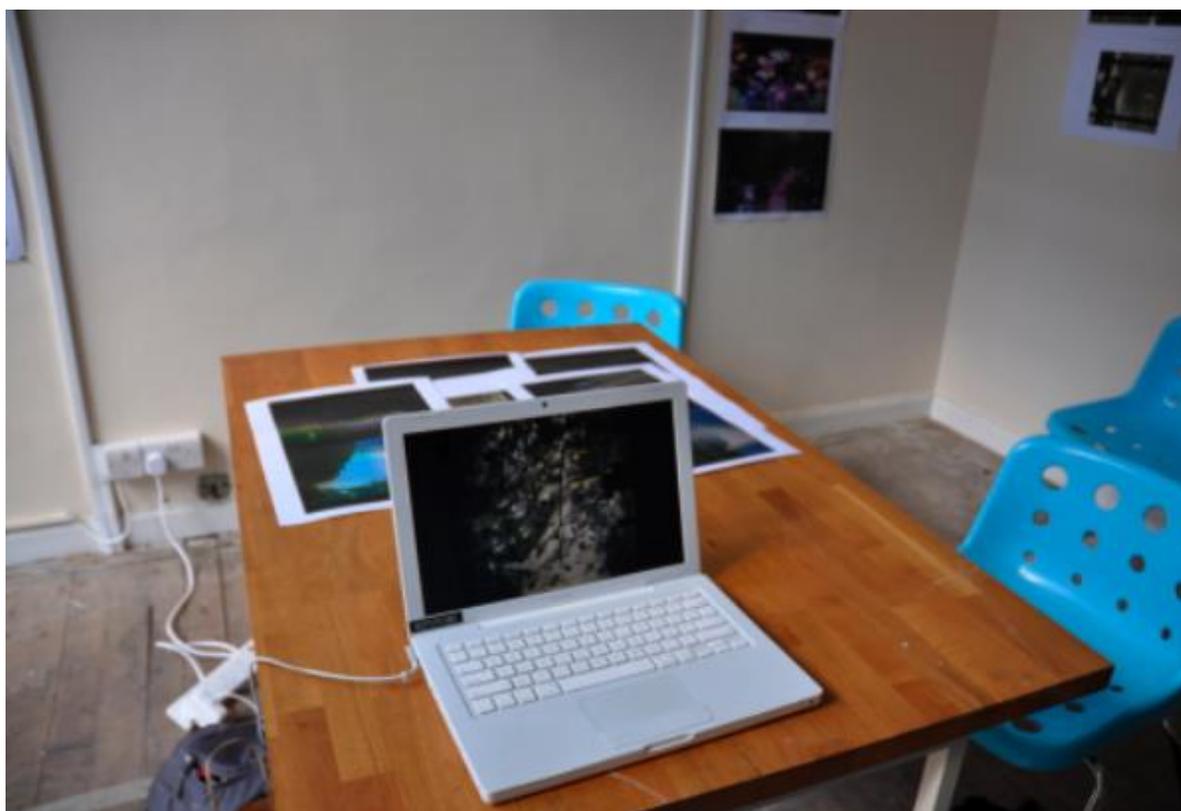
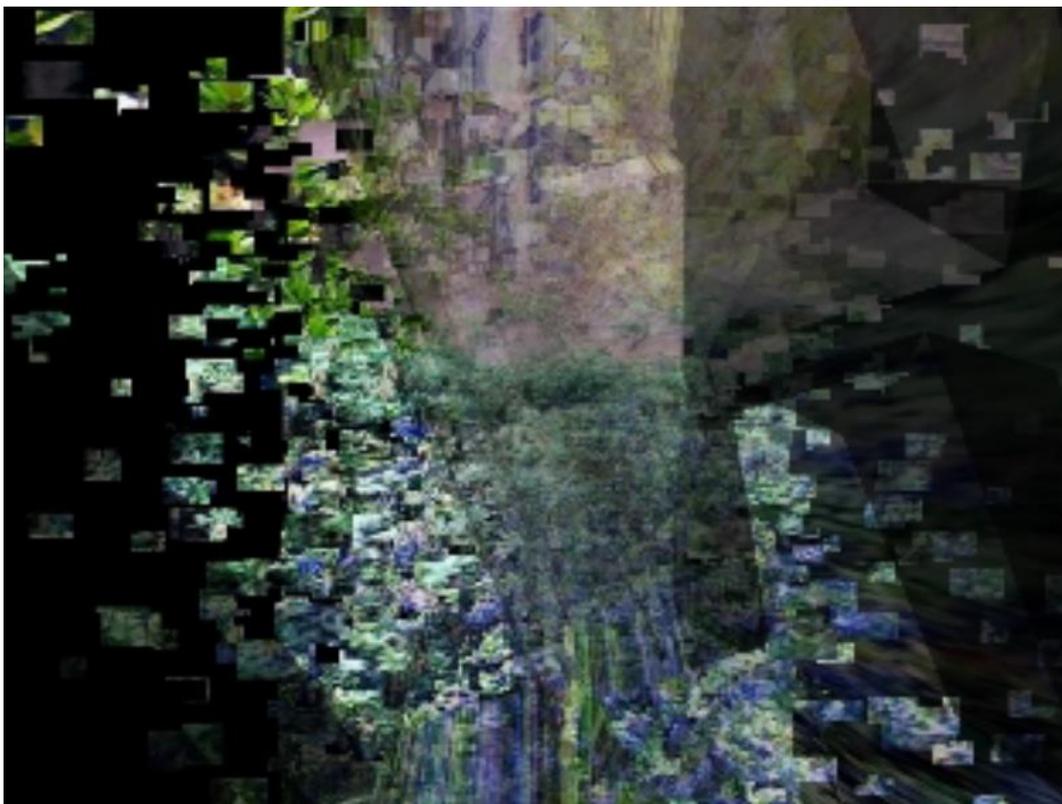


Figure 34. Remix shown on laptop computer. July 2012. Author: Luba Diduch.



**Figure 35. Cell DNA interface shown exporting remix file 33 Broad Street. July 2012. Author: Luba Diduch.**



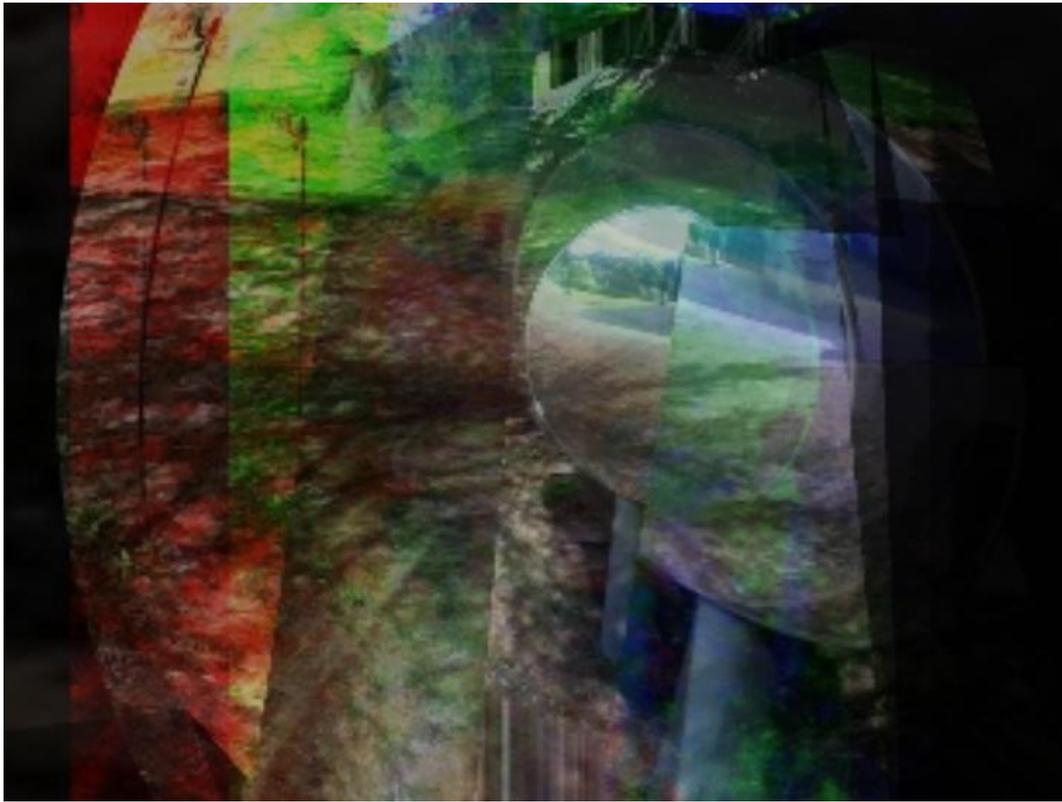
**Figure 36. Remixed image. Broad Street July 2012. Author: Luba Diduch.**



Figure 37. Remixed image. Broad Street July 2012. Author: Luba Diduch.



Figure 38. Remixed image. Broad Street July 2012. Author: Luba Diduch.



**Figure 39. Remixed image. July 2012. Author: Luba Diduch.**



**Figure 40. Remixing, with QR posters in the window. July 2012.  
Author: Luba Diduch.**

In counterpoint to the phenomenon of engaging willing participants, I have encountered some individuals who are unwilling to participate at all (see Figure 26). The visitor in the picture was in fact *not* willing to participate, and became visibly uncomfortable when I took his picture when asked if he would be willing to contribute to the artwork in some way (he left soon after). As artist and theorist Allan Kaprow writes in his article *Notes on the Elimination of the Audience* (Bishop, 2006, p103).

To assemble people unprepared for an event and say they are participating...the response of this audience may be half-hearted or reluctant. (Ibid, 2006, p.103)

This reluctance on the part of some passers-by (who declined to engage) in relation to *Touchpoints*, made me think of Nicolas Bourriaud who writes about conviviality and encounters with strangers in his book *Relational Aesthetics*. Bourriaud refers to artworks as ‘random relational devices’ in that they may possess a “degree of randomness when provoking and managing individual, chance or collective encounters” (Bourriaud, 2003, p.30)<sup>139</sup> citing Braco Dimitrijevic’s work titled *Casual Passer-by*, as an example. Dimitrijevic is an artist who uses advertising such as billboards, banners and public transit vehicles to display the faces of strangers whom he encounters. (Bourriaud, 2003, p.30) In this way, a passerby can become part of the fabric of the artwork (Figure 53, 54). In relation to my own prototyped artworks, my connection with people in the street was part of the experience of *Touchpoints* and revealed as much about individuals who don’t want to engage with an artwork as those who do. This became valuable to the ongoing polyphonic nature of my research.

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<sup>139</sup> BOURRIAUD, Nicolas. *Relational Aesthetics. Les presses du réel*. 2002. “Conviviality and Encounters”. P. 30.



Figure 41. Passersby at 33 Broad Street. July 2012. Author: Luba Diduch.



Figure 42. Passersby at 33 Broad Street. July 2012. Author: Luba Diduch.

When *Touchpoints* was installed in Broad Street during the summer of 2012, a good number of participants readily took advantage of virtual networks situated in their mobile devices and computers to communicate with me as artist/facilitator as well as with each other when co-creating and contributing to the artwork. Most were artists dedicated to their particular art or new media practices, others were casual passersby who were interested in participating. While carrying mobile phones with photographic and video capabilities, they were readily able to do so. This presented the possibility that, “the intermedia network has made all of us artists by proxy”. (Youngblood, 1970, p.339)<sup>140</sup>

I saw this happening in practice when I witnessed several individuals who were not involved in the recognised art community, happily contributing to the project. They used mobile devices to upload their photographs and other recordings of artworks to various locations on the internet, with the knowledge and expectation that their contributions would be used as part of a larger work that involved a number of other contributors (Dovey, 2013 p.4)<sup>141</sup>. This understanding came as a result of my invitation to participants for contributions to the artwork, as well as my establishment of the ground rules for participation. My role as artist was clearly to establish the initial parameters for participation and to encourage an agora to develop. Participants returned to the online locations that I had established in order to view the results of the live remixes that I was projecting onto the wall of the gallery and at the same time took

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<sup>140</sup> Youngblood, Gene. *The Expanded Cinema*. Clarke, Irwin & Company Limited, Toronto and Vancouver. 1970. pp. 63, 54, 339.  
[http://www.vasulka.org/Kitchen/PDF\\_ExpandedCinema/book.pdf](http://www.vasulka.org/Kitchen/PDF_ExpandedCinema/book.pdf) [Accessed August 12, 2013].

<sup>141</sup> In his paper *Technicity, Power and Difference in Game Cultures*, Jonathan Dovey discusses how “operations like Wikipedia, MySpace, Flickr, YouTube, Technorati, and Digg are the locations for new media era user-generated content where we are all enjoined to be creatives in order to have a voice, a place and space in the new knowledge based digital economies”.

Dovey, Jonathan. Available at: [http://www.dcrc.org.uk/sites/default/files/technicities-keynote\\_dovey\\_0.pdf](http://www.dcrc.org.uk/sites/default/files/technicities-keynote_dovey_0.pdf) [Accessed February 10, 2013]. Page 4.

advantage of digital technologies (Appendix G) and agora-like structures I had built to connect their works and thoughts together.

As all of these processes in experimentation unfold, I have begun to think about my role of facilitator of the artwork and builder of the architectonic systems within it when I use mechanisms such as social media sites, face-to-face meetings, emailed content and remixing software to select, combine and exhibit the contributions of participants. I see similarities between these activities and those found in the role of a curator. In their book *Rethinking Curating: Art after New Media*, Beryl Graham and Sarah Cook quote Barnaby Drabble when they say that “a curator acts as an ‘interface’ between artist, institution and audience in the development of critical meaning in partnership and discussion with artists and publics”. (Graham, Cook, 2007 p.10)<sup>142</sup> Graham and Cook question how “emerging practices in relation to production and exhibition of new media artworks have transformed the roles of artists, audiences and curators” (Ibid, 2007 p.10). Indeed, the remixed artworks that I showed at 33 Broad Street, under the title, *Touchpoints* were not conceptualised or planned ahead of time – instead the participatory aspect of *Touchpoints* changed “the artwork’s content in an atmosphere where the contributions were basically open submissions that were accepted and ‘curated’” by myself, the artist/facilitator (Ibid 2007, 113). In addition it was the *process* of the remix, and my role as facilitator/curator (Gaskill, 2011)<sup>143</sup> that in part, formed the groupings of remixed artworks that were shown at 33 Broad Street. (Graham, Cook, 2007, p.113) This idea of ‘curation’ in

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<sup>142</sup> GRAHAM, Beryl. Cook, Sarah. *Rethinking Curating: Art after New Media*. The MIT Press; First Edition edition. 2007. Pp. 10, 113.

<sup>143</sup> There has been a shift in perception in relation to artworks that are no longer created to be standalone objects, but come about and are dependent on the architectonic systems that surround them. This approach has an impact on contemporary curatorial practice and how it is embracing the use of alternative spaces that allow for these processes to flow in the development of an artwork.

Gaskill, Karen. *Curatorial Cultures – Considering Dynamic Curatorial Practice*. Presented at ISEA 2011 Istanbul. Available at:

<http://isea2011.sabanciuniv.edu/paper-session/curating-and-archiving-new-media-art> [Accessed August 15, 2013].

relation to *Touchpoints* has also become significant in issues related to archiving the data and media that is being used in this artwork.

As I observe the unfolding of these prototyped artworks, I see that they begin their life spans as solitary works, but then later become meeting places when artist and participants meet in physical and virtual space. The *Touchpoints* community has continued to grow and form a larger expanse in anticipation of exhibiting the work for a second iteration in an exhibition in October. For example, participants from Toronto, Canada, have recently supplied me with more photographs. Other examples include contributions from North Carolina, USA and Saltspring Island Canada.

This second iteration of *Touchpoints*, *Touchpoints II* was in fact shown in September 2013 at the Beakerhead Art and Technology festival (Maker-Faire) in Calgary Canada. (Beakerhead, 2013)<sup>144</sup> The following images show remixes from *Touchpoints II* as well as some screen captures of live remixes (also see Appendix H for recorded remixes).

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<sup>144</sup> Participation in the Beakerhead Festival allowed for an opportunity to observe yet another audience in relation to *Touchpoints II*. The Beakerhead participants were highly engaged, very willing to participate and to become co-creators. By this time *Touchpoints II* had evolved into a project that examined not only changing notions of interactivity but also issues such as changing world weather patterns and climate change. This was because I noticed that most participants were contributing media that seemed to relate to landscape and nature. When I asked the participants about this, they did indeed seem to have concerns about changing world weather patterns. The fact that the content of this project had become related on an issue that most people have an opinion about, showed me that having a theme like this one was central in creating and facilitating an artwork that was productive when seeking an engaged audience for an HCI artwork.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 55. Correspondence from a participant regarding her contributions at the Beakerhead Festival. Author: Luba Diduch.**



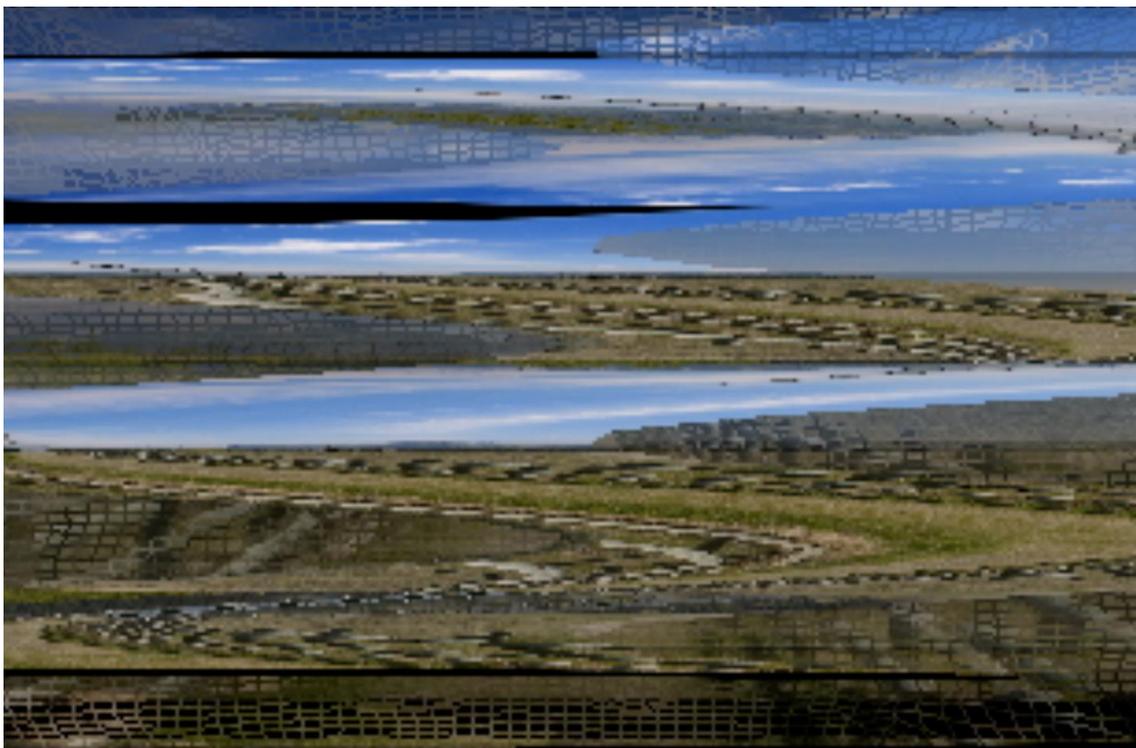
Figure 43. Participation and engagement with the QR code at Beakerhead Festival. Date: September 2013. Author: Luba Diduch



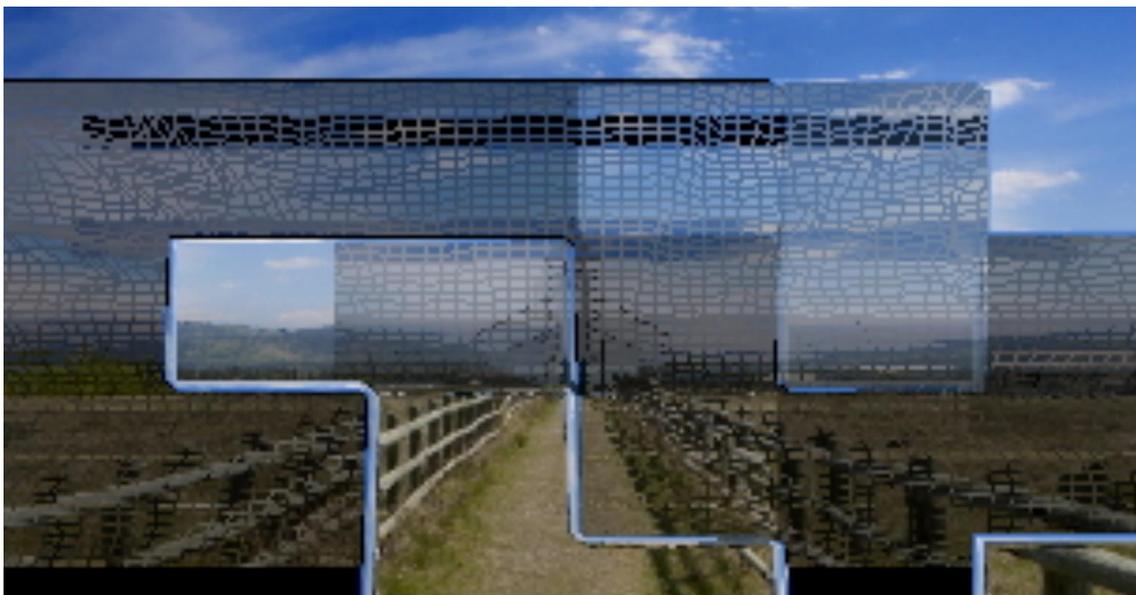
**Figure 44. Participation and engagement with the QR code at Beakerhead Festival. Date: September 2013. Author: Luba Diduch**

**Image redacted in this digitized version due to potential copyright issues.**

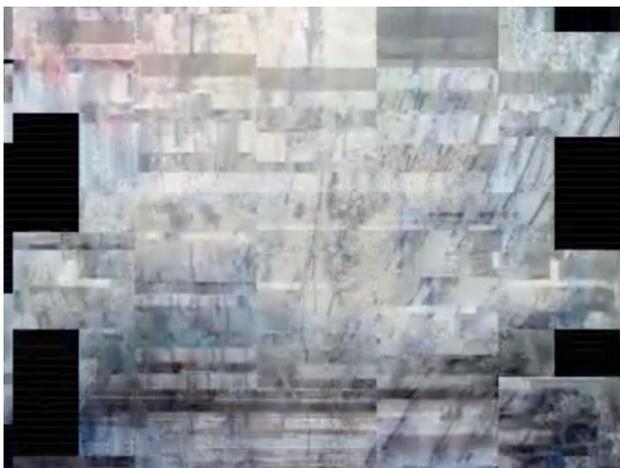
**Figure 58. Participation and engagement with the QR code at Beakerhead Festival. Author: Luba Diduch.**



**Figure 45. Screen capture of a live remix at Beakerhead Festival. Date: September 2013. Author: Luba Diduch**



**Figure 46. Screen capture of a live remix at Beakerhead Festival. Date: September 2013. Author: Luba Diduch**



**Figure 47. Screen capture of a live remix at Beakerhead Festival. Date: September 2013. Author: Luba Diduch**



**Figure 48. Screen capture of a live remix at Beakerhead Festival. Date: September 2013. Author: Luba Diduch**

I suspect the fact that *Touchpoints* has a history and has already once appeared in a geographically located agora location may have helped in encouraging new participants.

It is encouraging that participants who contributed to last year's iteration of *Touchpoints* have expressed interest in continuing their involvement. My role as the artist is to facilitate this process of participation and co-creation, while providing instructions on how to get to the 'agora' as well as what to expect upon arrival. My expectations have been exceeded regarding this project because I have witnessed a sustained interest on the part of the original participants as well as the arrival of new ones. They have been willing to continue their participation because they have been interested in how their individual contributions will be a part of the artwork's evolution.

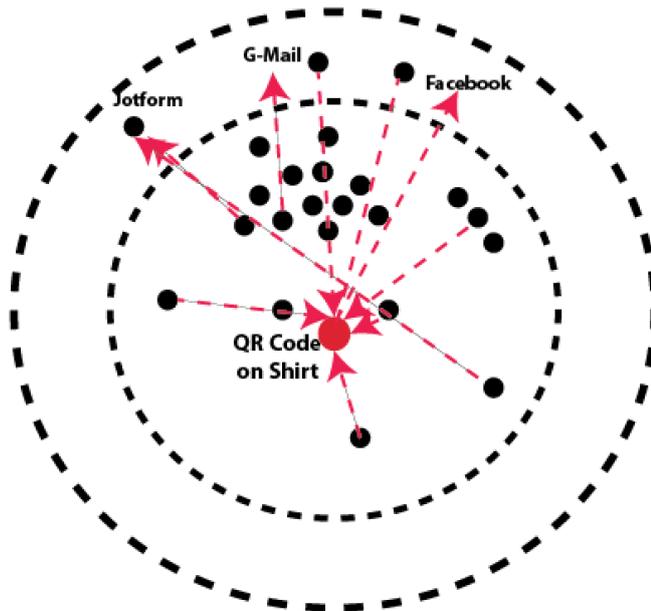


Figure 49. An 'agora' formed around *Touchpoints II* at the Beakerhead Festival, September, 2013 in Calgary, Canada. This diagram shows participants in the exhibition hall (as touchpoints) that were established during this event. The QR code appeared on my shirt, on a flyer and on the computer screen itself. This diagram also shows how *Touchpoints II* expanded within the architectonic systems that were present around the work. Author: Luba Diduch.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 64. Message from participant. Author: Luba Diduch.**

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 65. Email showing participant involvement. Author: Luba Diduch.**

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 66. Email showing participant involvement. July 2012. Author: Luba Diduch.**

In the case of both art installations, *Deep* and *Touchpoints*, I witnessed the ways that, through audience participation and social groupings, the prototype artworks expanded into places and formations that I had not initially considered or imagined. (Mitchell, 2010 p.1)<sup>145</sup> When I first planned and built my prototype artworks I had anticipated a limited form of interaction. Instead, there was a sense of exceeding expectations of audience and their levels of interaction in relation to the interactive artwork, and the suggestion – as a result – that the nature of interactivity needs to be re-considered. (Bourriaud, 2002)<sup>146</sup> This is why I have shifted my own thinking towards notions of touchpoints, agoras and configured artworks.

I first noticed this change in my thinking when I acted as a participant observer in the gallery space for the duration of the exhibition *Deep*. I learned many things through informal interviews - in the form of conversations - with the visitors and participants who attended. After interacting with the prototype/artwork, some stopped to talk to me about their immediate experience, as well as to share thoughts and memories that had been triggered as a result of interacting with the piece. I used hand drawn charts and notes (Figure 35) to record the number of attendees per day as well as to show whether or not they approached and used the prototype directly. As visitors walked through the gallery, I documented the prototype artwork itself using video, audio and photographic formats (Appendix F).

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<sup>145</sup> In his book, *Heidegger Among the Sculptors*. Mitchell explains Heidegger's idea relating to how participants now enter exhibition spaces that are designed to be participatory, collaborative, mediated and welcoming.

Mitchell, Andrew. *Heidegger Among the Sculptors*. (Stanford University. Stanford California. 2010). Page 1.

<sup>146</sup> In his book *Relational Aesthetics*, Bourriaud describes technologies such as the internet as a way for individuals to become part of a "collective desire" to create sites of communication and "introduce new types of transaction with regard to the cultural object".

Bourriaud, Nicolas. *Relational Aesthetics*. Les presses du réel. 2002.



**Figure 50.** *Deep* an audio touchpoint for participants to use. May 2011. Author: Luba Diduch.

For example, on May 28, between 9:45 and 10:15 am in the morning, I noted that 50 people had passed through the gallery space. These individuals mostly included art and design students and faculty (approximately 20 to 40 years in age) but also included visitors to the gallery who were not connected directly with Bath School of Art and Design. When they realised that I was connected to the work, they approached me and talked about their bodies in relation to the prototype, and how when they entered the video/audio booth, they felt 'immersed' in the video and sound projections. Several talked about related experiences when they recalled swimming underwater, sleeping in the cabins of boats and perceptions related to what it must have been like to be 'in the womb'. Many of my 'informants' described the installation as having an 'experiential' quality. Others mentioned that they visited the artwork/prototype several times, going in to sing a song, for example, and then to 'think and relax.' These informants were an integral part of my data gathering process when they provided me with personal and unique responses to *Deep*, as well as related stories and narratives that they relayed to me as we stood alongside the work. The narratives included exchanges I had with informants such as Kate Bailey, a first year painting student who commented on May 27<sup>th</sup> at 9:45 am that she enjoyed spending time in the booth because it was 'a relaxing experience.' She likened it, to 'diving into water.'



With other visitor participants, I had conversations about the experiential aspects of the work, and how the audio component was important to them. Several made comparisons between the water sounds they were hearing with the sounds of earthquakes – the natural rhythms found in these phenomena and that they could be compared with each other. Some commented that the artwork was not restricted to the gallery space – that because of *Deep's* expansive sound component the installation extended and 'spilled out' into ancillary spaces around the gallery. These conversations opened up my thinking to the possibility that the experience of the artwork had a broader scope than I had initially thought about as being a possibility. (Mitchell, 2010, p.1)<sup>147</sup> It was through these exchanges with participants and visitors that I began to regard *Deep* as not only an art installation but increasingly as one that was at the center of a growing socially networked space.

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<sup>147</sup> Heidegger says that the 'limit' of something marks the beginning of a thing, not its end—this is the point when it enters into relationships with the world. Limits are not borders of confinement but of introduction. This has me thinking about his thoughts regarding "the elasticity of space that bridges distances". I see similar spaces of potential in the connections between touchpoints in my prototypes.



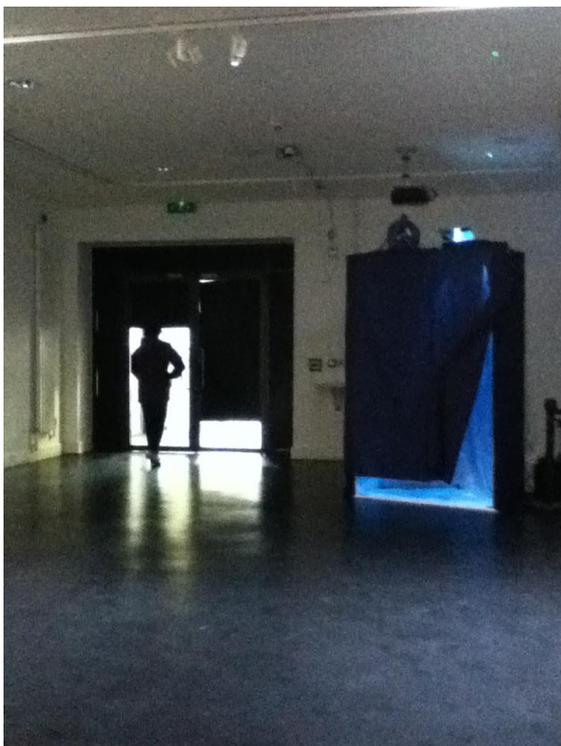
**Figure 52.** Participant interacting with *Deep*, 2011. Author: Luba Diduch.



**Figure 53. Participants interacting with *Deep*, 2011. Author: Luba Diduch.**



**Figure 54. Participants interacting with *Deep*, 2011. Author: Luba Diduch.**



**Figure 55. Installation view, *Deep*, 2011.  
Author: Luba Diduch.**



**Figure 56.** Architectural spaces around, *Deep*, showing accompanying video on small screen outside the BSAD gallery May 2011. Author, Luba Diduch.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 74. Photographic contribution courtesy of Amanda Goode, Bath Spa University. May 2011. Author: Luba Diduch.**

## Chapter Three (part two): From Architecture to Architectonics

As well as organizing architectonic schemes and facilitating evolving agoras via the production of artwork prototypes, part of my research has included my own participation – as co-creator – in the projects of others. I consciously set out to do this in order to get a sense of the participant’s experience when becoming involved in an art project involving an HCI artwork. (Osthoff, 2013)<sup>148</sup>

Due to previous research, I was already aware of Roy Ascott’s work (featured in the previous chapter), and this led to my participation in a new work by at the 9th Shanghai Biennale from 2 October 2012-31 March 2013. The artwork was created, organised and facilitated by Ascott and was called *Journey to the West: a planetary fairytale*. For this piece, he established a virtual chat room using *Skype* (the video networking software) and through an online call for artists, chose fifty participants from social networking websites who were asked to contribute to the project.<sup>149</sup>

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<sup>148</sup> The spectator/participant experience was outlined in Frank Popper’s book *Art-Action and Participation*. Popper described spectator participation as part of a movement and that László Moholy-Nagy, Yaacov Agam, Roy Ascott and Lygia Clark were instrumental in making discoveries in this area.

Osthoff, Simone. ‘Lygia Clark and Hélio Oiticica: A Legacy of Interactivity and Participation for a Telematic Future’. Leonardo Online.

<http://www.leonardo.info/isast/spec.projects/osthoff/osthoff.html>[Accessed May 15, 2013].

<sup>149</sup> *Journey to the West: a planetary fairytale* was located in an online chat area where participants wrote a contemporary narrative based on a traditional Chinese folktale, *Journey to the West*. Each participant was assigned a persona/avatar that was borrowed either from an Eastern or Western folktale - my own was the character Little Red Riding Hood. The central character in the story was the Monkey King. The project was intended to be a collaborative story-telling project and took the form of a narrative structure that contained not only the unfolding stories of its participants, but also used this structure to provide a framework for collaboration, between characters as well as between characters and artist. Like Brenda Laurel’s work outlined in the previous chapter, narrative was the placeholder in this interactive work and the anticipated outcome was to create a contemporary version of the ancient fairy tale about the Monkey King. In line with the results of my own rapid ethnographic research, it appears that Ascott’s work provided the possibility of “looking away” from the central narrative artwork to create parallel or unique artworks, although interestingly, he does not appear to have consciously done so. I observed this process occurring in practice when the avatar named Medusa created a video and musical composition based on his/her experience in *Journey to the West*. Thus, the original narrative structure that Ascott mapped out in the *Skype* chat room extended outside of it – in unanticipated ways - when characters established their own ‘touchpoints,’ using sites such as Youtube and Gmail to display the artworks they had created while ‘looking away’ from Ascott’s work. I was able to

see this as an extension of the author's original and intended interactivity only because I had become sensitive to the possibility of an agora opening up in relation to HCI artworks through my own research in this area.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 57. First contact established by Roy Ascott in email, an invitation to participate — *Journey to the West, a planetary fairytale*.<sup>150</sup>**

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<sup>150</sup> This work did not invite participants to add links and pictures. In the instance of *Journey to the West*, Ascott is trying to hold onto the structure of the artwork rather than build an expanding agora or expansive architectonic scheme. The work is held in place by the rules of participation and narrative.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 76. Roy Ascott's *Journey to the West, a planetary fairytale*, 2012.**

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 77. Avatar participants typing narrative for Roy Ascott's *Journey to the West*, a planetary fairytale, shown in the Skype window.**

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 78. Roy Ascott's exhibit at the Shanghai Biennale where the narrative was projected.**

## ***Contemporary Architectonics: The Agora***

It is not about simply sending images or sound - it is about connecting people and creating a virtual "commons."  
Gene Youngblood (Hohl, 2005)<sup>151</sup>

Through generating HCI artworks (in the form of research-based prototypes) and participating in the works of others, my understanding of what interactivity means has changed, from interactive participation in exhibition spaces (that focus on the physical body in space) to the production of agoras that can materialise and function in different locations. This means that I see the participants who gather in the agora as members of 'collectives' who are co-creators and who have the capability of establishing agoras.

Furthermore, my understanding of what an agora means has also changed, in keeping with the specific context of Fine Art HCI. In ancient times, an agora was visible as a location within physically defined architectural structures, ones that opened up to social gatherings and meetings. Now they can open up in the architecture of interactive interfaces and networked spaces in the virtual world, in ways that exceed the parameters of the initial meeting place eg. a narrative structure (Turkle, 2005, p.131)<sup>152</sup>. The agora can be seen as a focal point for social activity, in projects such as *Journey to the West*, where groups of people take the opportunity to interact and collaborate with each other in virtual space. However, rather than

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<sup>151</sup> Hohl, Michael. Peak District 2005. <http://www.hohlwelt.com/en/books/gyngbld.html> [Accessed July 22, 2013].

<sup>152</sup> In her book *The Second Self*, Sherry Turkle explores the manner in which individuals engage intimately with digital mediums from a social perspective and how these interactions have come to emulate direct human encounters while impacting human behaviours in relation to each other as well as the world. This reading made me think of the differences that I encountered between face-to-face and digital interactions that I saw in the agora that I set up at Touchpoints, 33 Broad Street.

Turkle, Sherry. *The Second Self, Computers and the Human Spirit*. MIT Press, Twentieth Anniversary Edition. 2005. Page 131.

establishing a location that is mutable in virtual space, Ascott's work defines the areas that are specially designed for this purpose: he identifies a core that apparently constitutes the work itself.

Nevertheless, in spite of such architectural restrictions placed on the work, the agoras would appear to multiply beyond the confines of the initial 'narrative' structure as they develop their own streams along improvised architectonic schemes; so there is a need to define HCI artworks in terms of those who define the agora and those who actively encourage the agora to expand and proliferate.

The agora was first seen in Ancient Greece and was used as a site for public gathering where citizens of a city contributed artistically, economically, intellectually and politically. The agora was dependent on architectural as well as social structure, in that it was typically situated in an urban location such as a city square that was often surrounded by public buildings. Here, within the ancient cityscape, individuals observing accepted traditional customs and behaviours, met and participated in community events, social activities and other group activities. (Wycherley, 2011)<sup>153</sup>

I have been considering how this idea of the ancient agora can be useful in considering possibilities for engagement in the space of the artwork and how it can re-interpreted in contemporary settings. I have been using this idea of a meeting place to study the structure and dynamics of participation and how an artwork may develop within the architectural structures of social media. These ways of re-imagining the agora in contemporary technological settings, in fact, are being considered by architects who view space in context of the digital infrastructures present in the urban spaces of modern life.

### ***Architecture and Architectonics***

Architects such as Rem Koolhaas explore the idea of an agora-like space in relation to contemporary architectural space within urban

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<sup>153</sup> Wycherley, R.E. *Literary and Epigraphical Testimonia: The Athenian Agora V3*. Literary Licensing, LLC (Oct 15, 2011).

settings. In his own practice, Koolhaas considers his buildings as “architectural configurations” built with the intention of creating a “democratic sense of organisation with non-hierarchical suggestions of movement – every user is left equally free to inhabit and absorb the surroundings he creates. (Delalex, 2006)<sup>154</sup> In this sense, Koolhaas is looking at architectural arrangements as having characteristics that lend themselves to social activity and as locations where users have a role in defining how the spaces are used. In this regard, it can be said that Koolhaas’ sees his user as a contributor to the architectonic framework of his projects. One way to understand his approach to designing spaces is through his study of the Pearl River Delta (Koolhaas, 2000 writes about this in the book of the same name)<sup>155</sup>, a developing megalopolis in China. Here Koolhaas describes the evolving urban space as a series of parts that are in a state of perpetual adjustment, ones that define themselves in relation to all other parts and where fragmentation, continuity and difference are complementary to each other”. (Delalex, 2006)

When comparing the concepts found in Koolhaas’ architectural theory to architectonic spaces in my own prototypes/artworks, I find that there are some similarities. Like his ideas regarding urban spaces as being zones of change that re-adjust themselves in response to each other (Everett, Caldwell, 2003, p.82)<sup>156</sup>, the architectonic spaces that I have been observing contain fluid systems that inter-relate and change as a result of inputs into networked

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<sup>154</sup> Delalex, Gilles. *Go with the Flow, Architecture, Infrastructure and the Everyday Experience of Mobility*. Gummerus Printing. Printed in Vaajakoski, Finland, 2006. [http://200.145.152.5/~paula/Paula/go\\_with\\_flow.pdf](http://200.145.152.5/~paula/Paula/go_with_flow.pdf) [Accessed August 10, 2013].

<sup>155</sup> Koolhaas, Rem. *Pearl River Delta*. Monacelli Press, U.S. 2000

<sup>156</sup> This makes me think of the interplay between the digital and physical in my prototypes, and how they respond to each other, as in the case of *Deep*. In the book *New Media: Theories and Practices of Digitextuality*, Lev Manovich talks about “architects and artists are overlaying dynamic and contextual data as part of a general aesthetic paradigm”, and that the virtual has an impact on the physical when it merges with physical structures, such as gothic windows in a church. In this way, the data becomes an “immaterial layer over real space”.

Everett, Anna. Tom Caldwell. *New Media: Theories and Practices of Digitextuality, The Poetics of Augmented Space*. Routledge. 2003. P. 82.

connections and change as a result of these inputs. Koolhaas considers users in an urban environment as having the capacity to move freely in non-hierarchical environments while at the same time, contributing to them. This expectation of active involvement that he has towards his users is echoed in the approach that I take regarding the participants who contribute to my HCI artworks.

The theory of architecture (Salingaros, 2006)<sup>157</sup> therefore offers useful definitions regarding the changing relationships and meanings applied to arrangements of space. In addition, it relays concepts that are potentially valuable to artists in the definition of architectonic systems in HCI artworks. Although seen in the past as physical structures that were essentially static, some architects now see architectural spaces as having fluidity when considered in relation to technological infrastructures within them (Salingaros, 2006)<sup>158</sup>.

Architecture determines how linear elements in building structures establish points in space, around which social groupings and individual usage are organised (examples of these points in space can be seen in rooms that are meeting spaces, waiting areas or larger buildings such as theaters or arenas). These structures represent possibilities for movement across and through space, providing meaning to human circumstances, needs and aspirations (Salingaros, 2006). When similar architectonic structures are applied to an HCI artwork they can be seen as forming an architectonic whole involving several connected structures containing points that are each uniquely designed and formed for a specific purpose in relation to human participants.

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<sup>157</sup> Salingaros, Nikos. *A Theory of Architecture*, 2006. Umbau-Verlag, Solingen. Available at: [http://books.google.ca/books?id=FV\\_0\\_RHD4cQC&pg=PA2&lpg=PA2&dq=Salingaros.+Nikos.+A+Theory+of+Architecture+2006.+Umbau-Verlag.+Solingen.&source=bl&ots=d5FiTp0FBY&sig=OLcWJcKk9DHs4yIII3MCRRz6DY&hl=en&sa=X&ei=0b1RUpmDGqSayQH2rID4Ag&ved=0CFEQ6AEwBw#v=onepage&q=Salingaros%2C%20Nikos.%20A%20Theory%20of%20Architecture%202006.%20Umbau-Verlag%2C%20Solingen.&f=false](http://books.google.ca/books?id=FV_0_RHD4cQC&pg=PA2&lpg=PA2&dq=Salingaros.+Nikos.+A+Theory+of+Architecture+2006.+Umbau-Verlag.+Solingen.&source=bl&ots=d5FiTp0FBY&sig=OLcWJcKk9DHs4yIII3MCRRz6DY&hl=en&sa=X&ei=0b1RUpmDGqSayQH2rID4Ag&ved=0CFEQ6AEwBw#v=onepage&q=Salingaros%2C%20Nikos.%20A%20Theory%20of%20Architecture%202006.%20Umbau-Verlag%2C%20Solingen.&f=false) [Accessed June 22, 2013].

<sup>158</sup> Salingaros, Nikos. *A Theory of Architecture*. 2006. Umbau-Verlag, Solingen.

This idea of an artwork in context of the architectural space that it occupies is seen in art historian R.H Wilenski's book *The Modern Movement in Art* where the author refers to the artist as "spectator" of his or her own artwork. Wilenski describes the artist, even of this time period, as being concerned with the architectural – one who considers an artwork within the context of an enlarged architectural experience, (Wilenski, 1935, p.155-157) rather than being something that is separate from the architecture that surrounds it. (Causey, 2004, p.10)<sup>159</sup> In this instance, Wilenski writes that the "artist qua architectural-experiencing artist communicates the experience of an artwork to him/herself qua spectator" (Wilenski, 1945, pp.155-157)<sup>160</sup>. He refers to all artworks as 'architectural' because he views the artists who create them as instrumental in enlarging experiences of formal relations through artworks themselves, and in context of the environments that surround them. (Ibid, 1945, pp.155-157) That is to say that, in Wilenski's view, the artist's experience is an enlarged architectural one (as a result of the relationships between the artwork and the architectural structures around it) that occurs from his or her own perspective. It was after encountering Wilenski's ideas that I began to articulate the ways in which HCI artworks differed architectonically, in that they contained conceptual and technological properties that differed from formalism. (Bourriaud, 2002, p.13)<sup>161</sup> Artworks that are formalist in nature are perceived for their physical and visual properties. Formalism is explained in the writings of

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<sup>159</sup> Wilenski thought of three-dimensional objects within architectural spaces as part of a universal system of form and "the concept of all human, animal and vegetable forms as different manifestations of common principles of architecture". Getsy, David. Ed. 'Wilenski and the Meaning of Modern Sculpture'. *Sculpture and the Pursuit of the Modern Ideal in Britain 1890 – 1930*. R.H. Andrew Causey author. Ashgate Publishing House, Hants, England. 2004. Page 10.

<sup>160</sup> Wilenski, R.H. *The Modern Movement in Art*. London : Faber, 1945. Pages 155-157.

<sup>161</sup> "Art in the age of modernism was intended to prepare and announce a future world: today it is modeling possible universes." With this view Bourriaud differentiates modernist artworks from contemporary artworks when he describes them as those that present proposals to the viewer/participant for engagements with the world that cause successively new relations. Bourriaud, Nicolas. *Relational Aesthetics. Les presses du réel*. 2002. Page 13.

philosopher Immanuel Kant, who says that “an emphasis is on the aesthetic *form* of an object” (Carroll, 2008, p.1).<sup>162</sup> This perspective is in contrast to HCI artworks that are considered and experienced beyond their physical forms when they exist within the realms of conceptuality, interactivity, virtuality, social intervention and collaboration. (The Banff Centre, 1997)<sup>163</sup>

Up until now in this chapter, I have been exploring this idea of enlargement in relation to architectonics and HCI artworks that initially, was awakened as a result of reading of Wilenski’s writings. However, my argument regarding the expansions of the artwork (or the prototype/interface) differs from that of Wilenski’s formalist view in that the enlargement of an HCI artwork does not happen simply as a result of the perceptions of the artist in relation to architectural structures around the artwork, but occurs due to audience perceptions and actions within the structures contained in architectonic systems.

These multi-structured architectonic systems can be seen as relating to architecture and design, but can also from a philosophical point of view, when seen as systems of knowledge. (Wrenn, 2012)<sup>164</sup> In his book *Information Explosion – Knowledge Implosion*, artist and sociologist John McHale examines the idea of systems of knowledge. His argument is that “knowledge is not simply accumulated facts but the reduction of unrelated and often apparently irrelevant elements into new conceptual wholes.” (McHale, 1968)<sup>165</sup> This is useful to my

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<sup>162</sup> Kant describes the beauty of an object and he often refers to aesthetic judgment that relates to form and less to concepts.  
Carroll, Leanne, K. ‘Distinguishing between Aesthetic Judgment and an Overall Response to Art in the Critique of Judgment’. *Canadian Aesthetics Journal/Revue canadienne d’esthétique*. Volume 14. (Fall/Automne 2008). 2008 Canadian Society for Aesthetics. Societe canadienne d’esthétique. Page 1.

<sup>163</sup> *Experiential Design, A Critical Diary of New Media*. (Video). The Banff Center. Banff, Canada. 1997.

<sup>164</sup> Wrenn, Chase B. ‘Naturalistic Epistemology’, *The Internet Encyclopedia of Philosophy*, ISSN 2161-0002. <http://www.iep.utm.edu/> [Accessed August 24, 2012].

<sup>165</sup> McHale, John Lawrence (ed). *Information Explosion— Knowledge Implosion, Good News*. New York: Columbia University Press. 1968.

account because I consider each seemingly unrelated system in an artwork, be it a physical installation or a virtual representation of that artwork, as part of the whole. I retrieve these disparate elements around the artwork via the device of the expansion of the interface, with its agoras and proliferating architectonic schemes. Each has the potential to successively generate additional systems that are triggered through interaction, which cumulatively form into a larger system. The logic within each system in an artwork dictates that the participant has enough knowledge around that system to cause engagement and participation to occur. This is seen in practice in relation to my works *Deep* and *Touchpoints* when participants need to be familiar – or familiarise themselves with technologies – that are integral to the artworks. I, as the artist, plan these artworks, identifying points in space that become meeting points available to the participants and myself. Unlike Roy Ascott et al however, I try not to set limits but go with the flowing streams of interaction.

The touchpoints within the artwork come to life through audience engagement in these spaces and the systems that surround them, providing mechanisms for expansion of the interface within the prototype/artwork, when the architectonic relationships are activated. That is to say that the interface and artwork/prototype as systems contained within a larger, expanding architectonic system don't live, exist and grow by themselves: in order to fully function they rely on the structures and systems that surround them, these being stimulated by both artist and participant. Hence, feedback exists between these systems, which are open and dependent on other systems. These conditions are seen in the universe as a whole when processes affect other processes. (Youngblood, 1970, p.63) In the case of an HCI artwork, the conditions of feedback that cause architectonic systems to exist may include the system of the artwork itself, electronic and technological infrastructures, social and cultural systems as well as communities of individuals who bring their knowledge and experience with them when they collaborate with artwork/prototypes.

## ***Architectonics and Social Computing***

Researcher and interaction designer Thomas Erickson refers to the ways that a system of digital systems can support social interaction not only within the central agora/architectonic structure but also among those that proliferate among the co-creators. In his article titled *Social Computing*, Erickson writes: “In social computing we are concerned with how digital systems go about supporting the social interaction that is fundamental to how we live, work and play”. (Erickson, 2011)<sup>166</sup> Authors and theorists Monge and Contractor present a similar thesis in their book *Theories of Communication Networks*, where they describe social networks as being “patterns of contact that are created by flows of messages among communicators through time and space” (Monge, Contractor, 2003)<sup>167</sup>. Within the context of information technologies, they describe nodes (which by their nature resemble touchpoints) as locations where flows of information exist between artist, artwork and participant. Monge and Contractor see these networks as clusters of points with connections between them and they categorise them according to size, density and link strength (Ibid, 2003)<sup>168</sup>. These clusters manifest themselves in computer networks that “link people as well as machines that become part of social networks” (Ibid, 2003). Virtual communities form, often comprised of like-minded individuals (Wellman, Salaff, Dimitrova, Garton, Gulia, Haythornthwaite, 1996)<sup>169</sup>.

In relation to my own HCI prototypes, I view these node-and-tie structures as the ‘building blocks’ that link and produce social

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<sup>166</sup> Erickson, Thomas (2011): ‘Social Computing’. Soegaard, Mads and Dam, Rikke Friis (eds.). *Encyclopedia of Human-Computer Interaction*. Aarhus, Denmark: The Interaction Design Foundation. [http://www.interaction-design.org/encyclopedia/social\\_computing.html](http://www.interaction-design.org/encyclopedia/social_computing.html)

<sup>167</sup> Monge, Peter R., Contractor Noshir S. *Theories of Communication Networks*. Oxford University Press. USA. 2003.

<sup>169</sup> Wellman, Barry. Janet Salaff, Dimitrina Dimitrova, Laura Garton, Milena Gulia, Caroline Haythornthwaite. *Computer Networks as Social Networks: Collaborative Work, Telework, and Virtual Community Centre for Urban and Community Studies*. University of Toronto, Toronto, Canada. 1996.

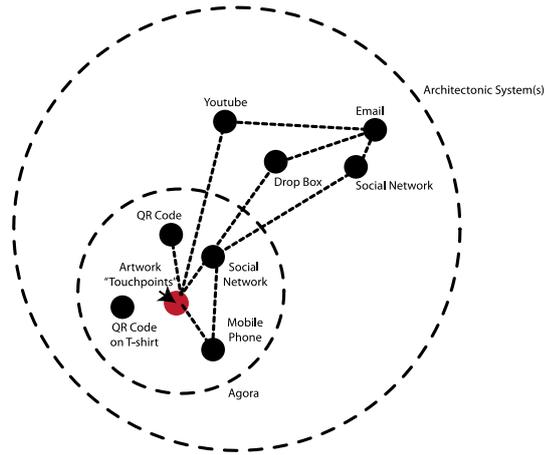
systems, and that as they *reproduce* they form into more elaborate architectonic systems. In essence, touchpoints come together to form these larger architectonic systems that eventually expand the scope of an artwork, even when an artist – like Ascott – would prefer to keep the parameters of the agora within the architectural remit of the initial narrative structure. These ideas regarding connecting points relate to my own concerns as an artist, because I am interested in the capacity to build frameworks for social activity within a gallery setting that transcend the physical walls of a traditional exhibition space and even the parameters of the interactive artwork.

The densities of touchpoints and link-strengths between them – in the context of architectonic systems – are key factors in determining the range and expansion of an artwork. This is because once they begin to reproduce, they begin to appear when they re-spatialise the boundaries of the artwork (Figure 49). Indeed, digital networks, such as those found on the internet, have been compared to organically networked systems within the human body by architectural theorist Nikos Salingaros (Salingaros, Mehaffy, 2013)<sup>170</sup>. Salingaros maintains that these networks resonate in the human scheme due to “biological systems function similarly via interconnected network structures (for example circulatory systems, or connected neuron systems in the brain)” (Salingaros, 2007).<sup>171</sup>

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<sup>170</sup> Salingaros, Nikos. Michael Mehaffy. 'Toward Resilient Architectures'. Available at: <http://www.metropolismag.com/Point-of-View/March-2013/Toward-Resilient-Architectures-1-Biology-Lessons/>

<sup>171</sup> Salingaros, Nikos. 'Connecting the Fractal City'. University of Texas at San Antonio. ISI Distributed Titles (May 31, 2007) Available at: <http://www.math.utsa.edu/~yxk833/connecting.html>. [Accessed September 3, 2013].



**Figure 58. Diagram of architectonic systems at 33 Broad Street, *Touchpoints*<sup>172</sup>. Author: Luba Diduch**

<sup>172</sup> Note fluid areas shown in dashed lines. These allow for possibilities of the establishment of new touchpoints and further expansion of the architectonic systems. The black dots represent touchpoints.

## ***Architectonics and Social Network Theory***

While considering these touchpoint formations, I am reminded that they can be seen as linked to social network theory. This is a field of study where facilitators are interested in the “processes, networks and social outcomes that are precipitated by nodes<sup>173</sup> and how they are a part of object production” (Leach, 2003)<sup>174</sup>. An example of this kind of a system can be seen in theorist Alfred Gell’s writings, when he describes relationships established with an artwork in context of social systems or environments (Leach, 2003). In his book *Art and Agency, An Anthropological Theory*, Gell uses the idea of social agency to explain social structures. He refers to “the immediate other” or the social agent – as the one who exercises agency.

It is interesting to note that Gell believes that these agents do not have to be human when they are seen within the context of interaction (Gell, 1997, p.17)<sup>175</sup>. This makes me think of touchpoints as being part of HCI interfaces that although not human, but due to their technological and interactive nature, connect ‘organically’ to other touchpoints within an architectonic system. The external observer (participant observer) can see this because he or she can see the possibilities are varied but not limitless. John McHale identifies architectonic schemes as “environments that for contemporary humanity is the intermedia network” (Youngblood, 1970, p.54). My research explores this idea when I have studied human interaction around my own artwork/prototypes and have seen that touchpoints can be seen as building blocks of networks. As the networks grow, they cause artworks to become re-spatialised. This is

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<sup>173</sup> In a communications system, a node is a network junction or connection point.  
<http://computer.yourdictionary.com/node>

<sup>174</sup> Leach, James. *Differentiation and encompassment: A critique of Alfred Gell’s theory of the abduction of creativity*. King’s College, Cambridge. King’s College, King’s Parade, Cambridge. 2003. [www.jamesleach.net/downloads/Leach%20TTTT%20final.rtf](http://www.jamesleach.net/downloads/Leach%20TTTT%20final.rtf)

<sup>175</sup> Gell, Alfred. *Art and Agency An Anthropological Theory*. Oxford University Press. Oxford. 1997, Page 17.

particularly the case when the artworks are re-established beyond the territorial parameters of the original art installation (situated in an exhibition space, for example) and archived in computer and networked devices (Paul, 2005)<sup>176</sup>.

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<sup>176</sup> Digital scholar and curator Christiane Paul discusses the issues around archiving HCI artworks and that “while immateriality and dematerialization are important aspects of new media art, it would be highly problematic to ignore the art’s material components and the hardware that makes it accessible. Many of the issues surrounding the presentation and particularly preservation of new media art are related to its materiality”. This makes me think about the HCI artworks that I create and how their digital aspects keep them archived within hardware devices and lie dormant until I activate them for exhibition or creation.

Paul, Christiane. ‘The Myth of Immateriality -- Presenting & Preserving New Media’. <http://www.banffcentre.ca/bnmi/programs/archives/2005/refresh/lisiten.asp> [Accessed June 2, 2013].

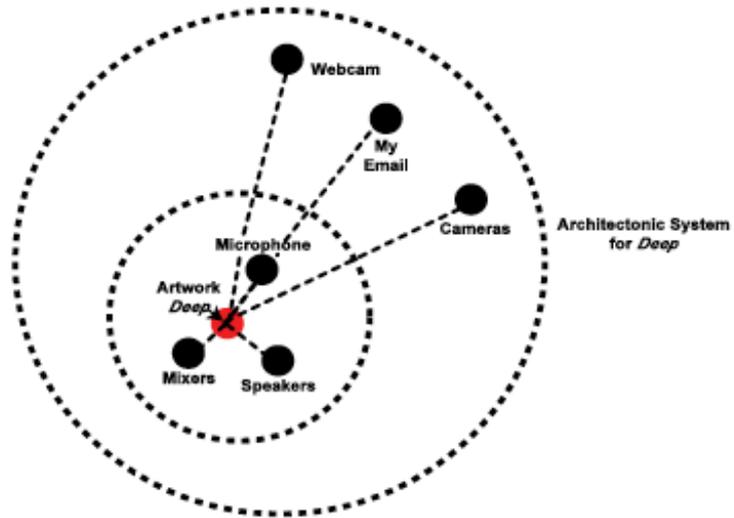


Figure 59. Diagram show architectonic system for *Deep*<sup>177</sup>.  
Author: Luba Diduch.

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<sup>177</sup> Sketch of architectonic systems at Bath School of Art and Design Gallery - *Deep*.  
Note fluid areas shown with dashed lines. The black dots represent touchpoints.

In the case of artworks initiated in galleries but transcribed online, the touchpoints are established sites in networked locations where photographs, recordings of audio, video, poetry and writings can be found. The potential for the reproduction of the touchpoints increases as participants continue to access the online and physical spaces that are associated with the artworks. The strength of links between touchpoints and their arrangement establish parameters (or lack thereof) and create a physical and perceptual image of where the artwork begins and ends. The artwork has the potential to be mapped and documented when touchpoints are archived in locations such as *Youtube*, *Facebook* pages, email boxes, *Google Documents*, and even in locations where the artworks are first created. In the instance of my own artworks, I facilitate new systems of touchpoints, as well as create maps of interaction to show their relationship structures.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 81. Touchpoint established by three participants at *Touchpoints*.**

Multiplicity of touchpoints is seen in the number of locations that the artwork may potentially occupy and is echoed in the idea of “looking away” (Butt, Rogoff, 2005, Chapter 6)<sup>178</sup> when participants and collaborators avert their gaze from the artwork (as they did with Ascott’s work *Journey to the West*) to create their own iterative works in locations that they have themselves established. It is as a result of this process that participants create links between my architectonic prototypes in the gallery space (and online) and the works they themselves create in the co-creative process discussed earlier. These extensions of the artwork are then instrumental in re-defining the physical and conceptual space that an artwork/prototype occupies as it expands.

Part of the process of building artwork/prototypes and observing the scenarios they present for participants has included the search for evidence to show the frequencies and specific instances when participants create their own touchpoints of engagement with these artworks. I believe that frequency of interaction increases when participants realise that their contributions will have an outcome on the final artwork. This behaviour is reflective of the age we live in: as mentioned in Chapter 2 of this paper in relation to Norbert Wiener’s theories, we are in a Cybernetic age where control of the environment involves participation and recreation of the environment both physically and metaphysically. (Youngblood, 1970, p.54, 55) If the participant is curious about outcomes and how their contribution will affect the formation of an artwork, he or she will visit and revisit it more than once. Participants are interested in their own “performances” and are committed to monitoring their impact. In the case of *Touchpoints*, participants who collaborated with me in the summer of 2012 in Broad Street, continue to stay in touch with me checking on the progress of the final work that is still in process.

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<sup>178</sup> Butt, Gavin. Rogoff, Irit. *Looking Away: Participations in Visual Culture*. Wiley Publishers. 2005. Chapter 6.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 82. Response from participants regarding continuing participation  
*Touchpoints II*, April, 2013 and June 3, 2013. Author: Luba Diduch.**

These observations regarding the events in relation to *Touchpoints* have caused me to question why these participants have sustained their interest, all the while prolonging the lifespan of the project. This makes me think of Gene Youngblood's chapter titled 'The Intermedia Network as Nature' in his book *Expanded Cinema*, where he describes how humanity's engagement with networks "act as a social organism, establishing meaning in life, and create mediating channels between man and man, man and society" (Youngblood, 1970, p.54). Similar connections exist in my prototype artwork, when touchpoints form groupings and begin to arrange themselves into larger systems that comprise an ever-expanding architectonic system – this happens because of sustained participant interest. (Lacan, 1930)<sup>179</sup>

The idea that multiple elements that comprise HCI artworks and contain multiple nodes or points of engagement that are presented to the participant, shows that these nodes have the capability to behave as variable elements. This means that when a participant comes into contact with a touchpoint, anything can happen in the 'void of reflection' – the moment before the participant makes the decision to engage. The artwork/prototype's direction of expansion is related to a variety of possibilities available to the participant and through his or her action, the manner in which he or she decides to expand an architectonic system.

## Architectonics and Authorship

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<sup>179</sup> I have been thinking about these artworks that are dependent on social systems, and the reasons that participants are drawn to them, I reminded of Jacques Lacan and his writings regarding The Mirror Stage. Lacan defined the mirror stage as the process of identifying oneself in context of the other. This idea is important to me as an artist in my current practice because of the interest I have in collaborative works. There is also the question as to why participants would be interested in contributing and becoming part of works that I have presented for collaboration. It is my feeling that the artwork provides a mirror for both participant and myself and, as Lacan phrases it, "offers a glimpse of the self (the world) becoming. This vision provides context, a comfort zone, for the artist (and participant) to create and meaning for the art (artifact) left behind". 1930.

<http://www.lacan.com/leadashf.htm>

<http://plato.stanford.edu/entries/lacan/#MirStaEgoSub>

At a recent online conference at CUNY University in New York City (March 2013), presenter Olivia Rosane, an editor and blogger at the publication *The State*, presented a paper about how a shift in understanding regarding non-hierarchical spaces that are distributed between the physical and virtual are upsetting the existing hierarchy of creative production (Rose, 2013)<sup>180</sup>. Given the idea of authorship of artworks produced in non-hierarchical environments, Rosane questioned whether artworks are still considered to be original acts on the part of the artist. She wondered if artists and participants who are breaking down existing hierarchies are eclipsing accepted conventions in creative production (Crehan, 2012)<sup>181</sup>. This made me think about my own work and the ways in which I am abandoning existing structures where the artist has traditionally been understood as being the sole creator of an artwork.

This idea of shifting hierarchies in the production of artworks has been being explored by writer Pierre Bourdieu. As a sociologist, anthropologist, and philosopher Bourdieu uses his book *The Field of Cultural Production: Essays on Art and Literature* to argue against,

The still prevailing view is that the perspective of the artist is dominant in a work of art. Within the context of art and its reproduction of social structures the agent (participant), and situates his or her actions within the context of social relations. (Bourdieu, 1993, p.3)<sup>182</sup>

In addition, theorists such as Nicolas Bourriaud have added to the

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<sup>180</sup> Rosane, Olivia. In Sarah Wanenchak (Chair). 'The Republic of Tweets'. Theorizing the web 2013, New York, New York. Available at: <http://justpublics365.commons.gc.cuny.edu/ttw13-conference/> [Accessed on September 2, 2013].

<sup>181</sup> The breaking down of existing hierarchies made me think of Kate Crehan's book when she mentions Nicolas Bourriaud. Bourriaud describes participatory artworks (through relational aesthetics) as new forms of democracy. Crehan, Kate. *Community Art: An Anthropological Perspective*. Bloomsbury Academic. 2012. P.10.

<sup>182</sup> Bourdieu, Paul. *The Field of Cultural Production: Essays on Art and Literature*. Columbia University Press. 1993. Page 3.

discourse related to co-creative new media artworks in such publications as *Postproduction, Culture as Screenplay: How Art Reprograms the World*. Bourriaud writes about how in recent years,

An ever-increasing number of artworks have been created on the basis of pre-existing works: more and more artists interpret, reproduce and re-exhibit or use works made by others or available cultural products. (Bourriaud, 2002, preface)<sup>183</sup>

Bourriaud says that artists who combine their works with those of others contribute to new considerations, specifically regarding:

[the] additional distinctions between production, creation and copy, readymade and original work. They are using art objects that are already in circulation in the cultural marketplace. In this way, creators are taking already existing cultural objects and inserting them into new contexts. (Ibid, 2002)

Bourriaud's ideas regarding combined artworks are relevant to my research in that the HCI artworks that I facilitate are in fact combinations of works that come from different sources and are based on an existing artwork that I have established as a preliminary prototype (Mitchell, 2010, p.26)<sup>184</sup>. In addition, the ideas of Bourdieu and Bourriaud, as well as more recently of writer and activist Rosane, have also become useful to me in exploring the meaning of authorship in relation to HCI artworks. This is because my research shows that through the use of networked technologies, agents (participants) who take action when contributing to my artworks are becoming an integral part of the creative process as co-creators in my HCI artworks.

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<sup>183</sup> Bourriaud, Nicolas. *Postproduction, Culture as Screenplay: How Art Reprograms the World*. Has and Sternberg. New York. 2002, Preface page.

<sup>184</sup> Mitchell talks about circulating media as part of the Heidegger's standing reserve. No longer pieces of modernist objective presence, but in existence due to the fact that they are carried by. This makes me think of the media pieces that participants are sending to me. They have circulated through networks to get to me and are a standing reserve that can be used in Touchpoints.  
Mitchell, Andrew. *Heidegger Among the Sculptors*. Stanford University, 2010. Page 26.

This change to my perception has affected the ways in which I look at my relationships with the participants who contribute to my HCI artworks. The hierarchies that exist in the roles of artist and viewer differ from other art practices in that I as the artist/facilitator actively encourage and seek out collaboration with others. In addition, at times I step out of the role of artist and into the role of audience observer. This has happened specifically when participants have 'looked away' from my HCI artworks and have created new iterations. In these instances, I stand back and view these new artworks as an audience member. In addition, connections made with participants are resulting in artworks that contain collective decision-making regarding how the artwork will look and sound. This means that the participants have a role in ownership of the artwork. These collaborations address an important part of my process that involves incorporating the participant's contributions.

More significantly, I have changed my views regarding previous notions of the meaning of interactivity. This has occurred because of the discoveries I have made in relation to my own HCI artworks where I have witnessed participants re-configuring technological devices and software programs when engaging in interactivity. This new perspective has developed as a result of my observation of an earlier approach that I took to planning and constructing an HCI artwork such as *Deep* (mentioned earlier in this chapter). When I installed *Deep*, I wasn't thinking about the role of participants as configurators: rather, I saw myself as the creator of the work who was wholly responsible for configuration of the HCI artwork. The fact that participants were actively shaping their own experiences through configuration has made a difference in my thoughts regarding interactivity and has contributed to my wider understandings of HCI.

In their chapter titled *User Technology Relationships, Some Recent Developments*, (The Handbook of Science and Technology Studies) Nelly Oudshoorn and Trevor Pinch address the role of the participant, (or in their terms, 'user'), in relation to the social construction of technology as "the part played by users as relevant

social groups and *agents* of technological change” (Hackett, Amsterdamska, Lynch, Wajcman, 2007)<sup>185</sup>. This has relevance to my account in that in order to create a collaborative space, I use the agora as a situating point for the artwork that provides a location for social groups to assemble. Here, participants make contributions to an HCI artwork that becomes an important part of its development. The conventions that participants observe in engaging in these activities are connected to having access to a computer or mobile device, an email address, as well as knowledge of scanning software and other technological tools that can be employed to contribute to digital artworks. These digital creation practices can be seen in the area of information technologies where many “open source and distributed expertise systems (for example, Wikipedia), employ users as creators of content” (Ibid 2007).

The concept of the agora is seen in the structures that I have laid out and when, I as the artist meet the participant(s) within adjoining systems (interface menus, emails, forums, social media sites) of the architectonic space to create the artwork together. Similar to the activities that occurred in its ancient iteration, visitors to the contemporary agora observe customs and behaviours that are appropriate and productive within contemporary digital culture. These behaviours were seen in my artwork *Deep* that was situated in the gallery space (agora) at the Bath School of Art and Design. This is an institution where visitors meet to share in creating, building and critiquing artworks. The BSAD gallery contains architectural systems and infrastructures that are used to regularly mount art exhibitions. At the same time this gallery space holds unseen structures that, rooted in contemporary life, represent an ever-present technological presence. This presence lives in network cables, WiFi systems and mobile devices that provide digital pathways into the gallery space,

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<sup>185</sup> Hackett, Edward J. ed. Olga Amsterdamska ed., Michael E. Lynch ed. Judy Wajcman ed. *The Handbook of Science and Technology Studies*. MIT. Cambridge. 2007.

augmenting those in physical space which include doors, hallways and studios and meeting rooms.

### ***Human Computer Configuration***

As I have progressed through my research and observations of HCI artworks, I have seen how Human Computer Interaction is being re-addressed in everyday practice as a way for establishing relationships between artist and audience. In my research I have noted how configuration, rather than simply interaction, is becoming useful in helping to shape the participant's experience when relating to an HCI artwork. This is because many of the tools used in the creation of such works have the potential for individual configuration in the form of mobile phones, computers and various software programs that are related to an HCI artwork.

A great number of 'ready-made' touchpoint locations can be readily seen in commodity devices (Penny, 2012)<sup>186</sup> such as computer hardware, mobile devices, software programs as well as in QR Codes, microprocessors, sensors, and customised programming code. Each of these electronic systems contains unique interfaces within, meaning they provide built-in points of contact for navigation. In many cases the menus are designed with predetermined functions for a consumer audience that uses these technological devices for specific purposes, such as those found in business or educational environments. The interfaces are accessible and malleable through the use of designed menus, in themselves providing systems of navigation that contain the potential for action by the participant through visual, audio and other means.

Despite an accepted 'out-of-the-box' consumer philosophy regarding the production of individual components and their built in menus, both hardware and software systems have the potential for

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<sup>186</sup> Penny, Simon. *Designing Embodied Interaction: Aesthetic, Technical and Theoretical Issues*. <http://www.youtube.com/watch?v=I2TU0FipXes>. [Accessed October 21, 2012].

reconfiguration by both artist and participant. The possibilities for customization of technological devices fits with an architectonic artwork, in that systems within hardware and software can be seen as knowledge systems. This is because people have to know how to use them, how to configure them, and how these systems relate to each other in a larger scheme in order to effectively interact with them (Dovey, Kennedy, 2007)<sup>187</sup>. This larger scheme is called the architectonic artwork.

In a talk at Northwestern University in 2011, artist and writer Simon Penny presented some of his definitions and insights regarding the meaning of interactivity in relation to technological devices. It was his view that an artist working in HCI is likely to use a commodity device, such as an iPad (and the software capabilities contained within it) but will find alternate and innovative ways to use it to meet individual conceptual and aesthetic goals. He talked about how software, hardware and pre-existing programming structures are commodified, pre-packaged and because of intended use for a commercial market, relatively restrictive in terms of creative possibilities. His theory was, however, that in spite of the way that technological devices are developed and manufactured for mass-market consumption, artists tend to overcome the limitations built into them by 'repurposing' them when building their own artworks. Penny discussed how in his own practice, he tends to write his own software programs to realise his goals in artworks. In so doing, he creates new touchpoints in his artworks that stem from the original out-of-the-box features. In this sense, Penny is holding onto a traditional notion of the author-artist as an originator of original artworks. My practice differs in that I consider myself to be a creator of entry levels within prototypes that

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<sup>187</sup> New media practitioners Jonathan Dovey and Helen Kennedy argue that through configuration "differential systems of power are not effaced but are frequently re-inscribed in the configurative processes of software development, the processes of content production and through conditions when access to technology is possible. Dovey, Jonathan. Helen Kennedy. "Technicity: Power and Difference in Game Cultures"

can be seen as focal points of co-creative interactions. In the two prototypes that I have built, I have used out-of-the-box technologies in anticipation of the fact that participants may find them familiar and will more willingly engage with them.

As an art practitioner, I have seen that when I arrange touchpoints in ways that will constitute a type of visual and auditory language that allows the participant to understand the meaning and potential of the artwork. My intention is to suggest to the participant, an engagement that is both experimental and open-ended. In the case of *Deep*, I too, used the type of out-of-the-box software and components that Simon Penny describes, configuring and shaping them in relation to my own conceptual concerns. These are in relation to my research agenda, one that is interested in audience response/interaction whereby the open-endedness of the work allowed space for the participant to provide his or her own unique content. These experiences and observations in relation to *Deep* have triggered questions in my own mind regarding reconfigurations not only of hardware and software but also in a broader sense regarding the potential of HCI or HCC (Human Computer Configuration). I have been considering the ways in which the approach that I used in my prototype *Deep* is one that is potentially seen in contemporary art practice as a whole, as well as in the attitudes and behaviours of other HCI artists and participants who engage with their artworks.

### ***The Re-evaluation of Interaction***

Interaction is about the interplay between fiction,  
the reality of the moment and projection. (Burnett,  
2007, pp.313, 319)<sup>188</sup>

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<sup>188</sup> In video games, players throw themselves into virtual worlds, all the while using their imaginations as they participate. This frame of mind on the part of the participant, is, Burnett says, linked to similar experiences to those that film or theater participants experience. This buying into a virtual space reminds me of the participants in my HCI artworks who learn that they can use their imaginations to contribute to and make an impact on the originary artwork. It is this combination of play, desire for control and the use of the imagination that is seen in interactive media.

Burnett, Ron. 'Projecting Minds' in *Media Art Histories*. Oliver Grau (Editor). MIT Press. Cambridge Massachusetts. 2007. Page 313, 319.

The idea of involving groups in the development and experience of HCI artworks can be seen in parallel and in relation to social play and gaming (Norman, 2006). This idea is explored in the book *Game Culture: Computer Games as New Media*, where authors John Dovey and Helen Kennedy describe the ways in which video games, which occur in social spaces, “are part of an intermedial cultural landscape of mediated experiences” (Dovey, Kennedy, 2006 p.84)<sup>189</sup>. These experiences have had an impact in the way we behave in groups as well the ways in which we relate to others in the world and how they are re-contextualised when using technological artifacts and products (Thompson, 1995 p.45)<sup>190</sup>. Game theorist Sue Morris refers to the behaviours involved in games as having the power to “structure and mediate communication between large numbers of people, spawning social practices that extend beyond the game itself” (Morris, 2013)<sup>191</sup>. Morris is concerned with the ways in which activities by participants in games result in co-creative relationships and self-governance.

In his book *The Meaning of Video Games: Gaming and Textual Studies*, writer Stuart Moulthrop describes games as being systems, and the communities that are involved with them as “worlds”. He describes how “comic book artists, writers, filmmakers, and advertisers” (Moulthrop, 2004)<sup>192</sup> are in some ways involved in the development of games, but often deviate from the original game creator’s intentions when they uniquely augment aspects of these game worlds. Moulthrop also describes the ways in which games are

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<sup>189</sup> Dovey, John. Helen Kennedy. *Game Culture: Computer Games as New Media*. Page 84. Open University Press. 2006.

<sup>190</sup> Thompson, John B. *The Media and Modernity: A Social Theory of the Media*. Stanford University. 1995. Page 45.

<sup>191</sup> Morris, Sue. *Co-Creative Media: Online Multiplayer Computer Game Culture*. Accessed June 13, 2013. [http://scan.net.au/scan/journal/display.php?journal\\_id=16](http://scan.net.au/scan/journal/display.php?journal_id=16)

<sup>192</sup> Morris, Sue. *Co-Creative Media: Online Multiplayer Computer Game Culture*. Available at: [http://scan.net.au/scan/journal/display.php?journal\\_id=16](http://scan.net.au/scan/journal/display.php?journal_id=16) [Accessed June 13, 2013].

played in “amorphous, shifting spaces” (Moulthrop, 2013)<sup>193</sup> that include activities occurring outside of the actual gameplay and which extend the life of both the game and the community of gamers (Ibid, 2013). The existence of these activities is relevant to and can be compared with the discussion of ‘looking away’ from the artwork, when the community of participants begins to create their own game-related activities outside of the parameters of the original game structure.

Morris’ and Moulthrop’s concepts refer to how games exist in parallel with communities of players. This makes me think of my own prototypes, when I as the facilitator of the HCI artwork set out the parameters and structure of a work within a community of participators. I observe the ways that my directives are interpreted, and at times, I am aware that participants create iterations of the work outside of the original prototype. In this sense, my role resembles that of an author or games producer. Within the architectonics of a game – the code is scripted, but the gamer comes in to this ready code to choose the story and to cause it to unfold. Similarly, in my HCI artworks, I present the participant with a pre-planned structure that includes different modes, choices and decision-making opportunities. The difference between my HCI artworks and games, is that Morris and Moulthrop are talking about are complex structures where the players who engage with them are goal oriented. HCI artworks differ in that they are open-ended and there is no particular ‘goal’ for the participant to achieve through competition. More significantly, *meaning* in relation to an HCI artwork as opposed to a game may continue to be generated through participation and are not exhausted (Huhtamo, 2009)<sup>194</sup>.

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<sup>193</sup> Moulthrop, Stuart. ‘From Work to Play’. Available at: <http://www.electronicbookreview.com/thread/firstperson/molecular>. [Accessed June 22, 2013].

<sup>194</sup> Hutamo, E., 2009. *Seven Ways of Misunderstanding Interactive Art*. [online]. Minnesota: Minnesota. Available at: <http://blog.lib.umn.edu/willow/makingartinteractive/interaction.pdf> [Accessed June 15, 2013].

An artwork requires something else, a kind of surplus of inspiration and signification which will transcend the rational assembly of the "machine parts", melt them together and give them a *raison d'être* on a higher level of abstraction. This is something different than creating an involving plot for a video game (Ibid, 2009).

Moulthrop also identifies an important aspect of games theory as *configuration* – a method or a strategy used by a game participant to improvise his or her way through a game. In this instance, game console technologies, which can be configured, and are used as part of game play, help to shape the form and meaning of the games that are formed by these technologies (Jones, 2008, p.6)<sup>195</sup>. In this way, the players are collaborating with the game creator, as well as with other participants. Through the process of observing prototypes, I have realised that this idea of configuration has become increasingly important when participants shape their experiences as they customise technological devices in order to engage with my prototypes (Jenkins, 2013, p.158)<sup>196</sup>. Through the act of configuration, they co-create with me in shaping their own interactive experiences and in this way, have a role in determining the form and meaning of the HCI artwork.

### ***Touchpoints II***

Since its inception, *Touchpoints* has evolved into *Touchpoints II*. A new participant who contributed to the architectonic system of the prototype artwork was a musician from Pittsburgh USA. He learned of the project through messages posted on a Facebook page. He initially contributed several audio tracks, but then 'looked away' from

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<sup>195</sup> Hutamo, E., 2009. *Seven Ways of Misunderstanding Interactive Art*. [online]. Minnesota: Minnesota. Available from: <http://blog.lib.umn.edu/willow/makingartinteractive/interaction.pdf> [Accessed June 15, 2013].

<sup>196</sup> Although configuration is a factor in participating in an HCI artwork, participants often have to learn how to do so and they can acquire these skills by watching. Media scholar Henry Jenkins describes participants as those who are first "lurkers who observe from the margins, that certain activities represent stepping stones to full participation and that key individuals help others to engage."

the artwork and composed a related audio work titled *Dead Basic*. One of the questions in my mind since the construction of my first prototype *Deep* has related to why individuals continue to participate in and contribute to HCI artworks. After speaking with this participant, I discovered that his contribution was motivated as a result of his desire to create, and that participating in a collaborative HCI artwork provided stimulation and new inspirations in his own creative practice.

One of the methods that I have used to notify the *Touchpoints* community of updates to this project has been by writing a blog (<http://touchpointsii.wordpress.com/>). In recent conversations with two *Touchpoints* participants, I have discovered that they participated, and then looked away from the originary artwork, and now collaborate on projects outside of the scope of *Touchpoints*. This is another example of how architectonic schemes *expand* beyond HCI artworks, and occur through the engagement of their participants.

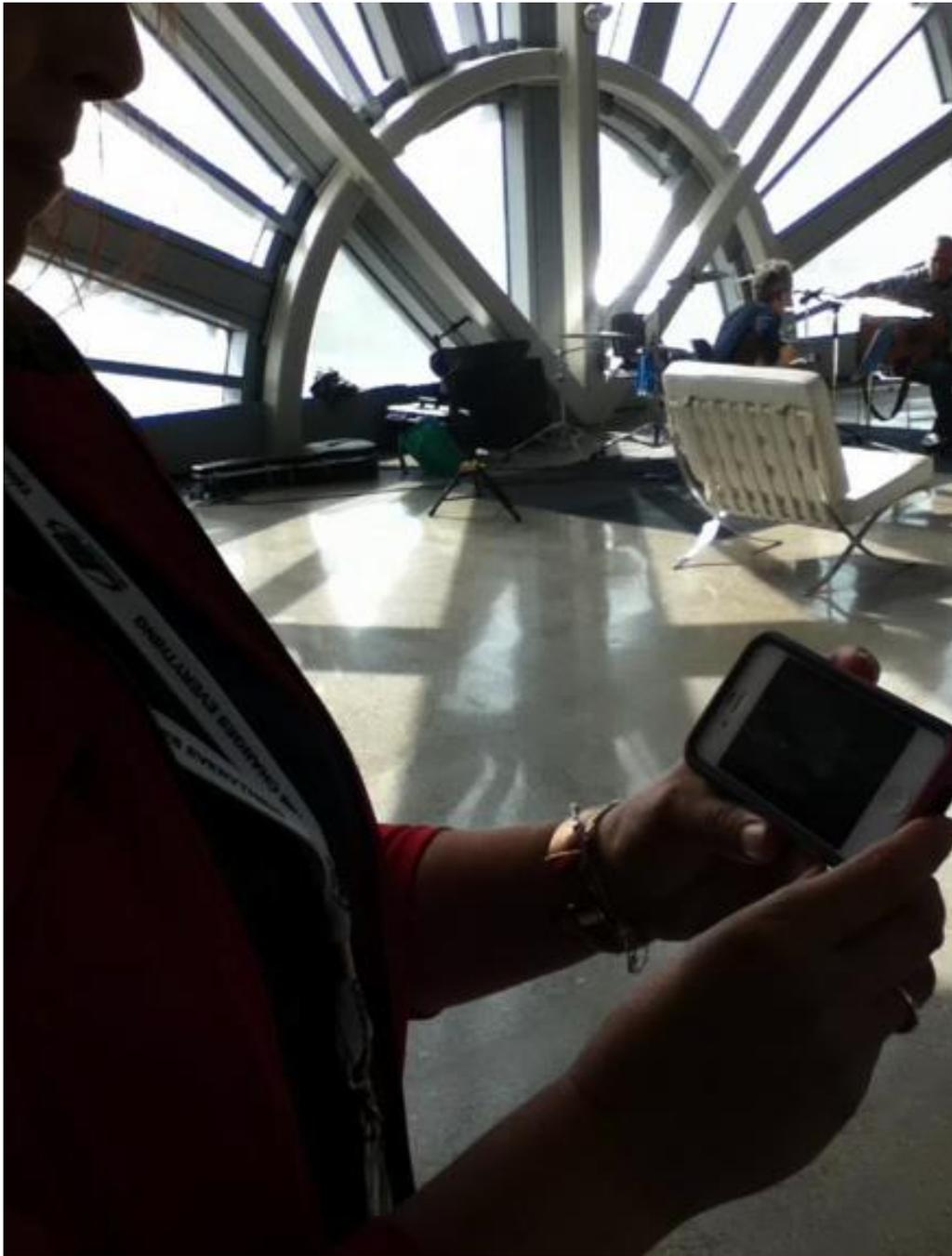


Figure 60. Participant contributing a photograph to *Touchpoints II* in Calgary. September 2012. Author: Luba Diduch.

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 84. Note from participant, *Touchpoints II*. 2012. Author: Luba Diduch.**

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 85. YouTube contribution from participant looking away from *Touchpoints II*.**

## **Conclusion**

Throughout my research process I have been gathering secondary data as a researcher based in contemporary HCI artworks in the area of interactivity, as well when I have acted as a participant in several collaborative and interactive artworks. This has given me the opportunity to observe the nature of interactivity in a variety of scenarios that exist outside of my own artworks. As a participant in *Journey to the West, a Planetary Fairytale* for example, I was able to observe the artist maintaining the structure of an interactive and participatory artwork. This approach was different from the development of an expansive architectonic system that would have moved the artwork outside of the artist's pre-set parameters. As a consequence, I was able to see that my approach to creating HCI artworks differed from other artists' approaches to interactivity because rather than setting limits, I constructed open-ended architectonic schemes and entry points that allowed for the participant to make his or her own decisions regarding participation (*Touchpoints* figure 41).

This fluid quality in an HCI artwork was seen in *Touchpoints*, where I provided several pathways into the work including a QR code placed in the window of the test site, a QR code printed on the back of my shirt, a web site, and a social media page. This structure allowed participants to work in any digital media (including textual), as well as to make choices as to what and how they would contribute. Although I witnessed side project artworks as they were being created in response to, for example, Roy Ascott's work, these seemed to be undertaken outside of the originary artwork without the artist's knowledge. I realised that it was because I as participant was 'looking away' from the artwork, and that I was able to see the ways in which co-creativity can function. My perceptions became rooted in rethinking interactivity and seeing interactive artworks as architectonic, rather than static structures.

## Chapter 4 – Epilogue

As mentioned in the previous chapter, my thoughts in relation to interactive artworks have changed. Rather than regarding them as static structures, I have begun to see them as being fluidly architectonic. I have seen that participants not only engage with scenarios mapped out by an artist facilitator, but they may begin to 'look away' when using architectonic systems surrounding the prototype in order to create their own parallel artworks. In this chapter I am going to show the ways in which several distinct groups of participants in this study have become increasingly productive within the interactive experience.

I tested this idea of increasing productivity in the 4<sup>th</sup> iteration of *Touchpoints II* at the Fringe Arts Bath festival in May 2014. This 4<sup>th</sup> iteration presented an opportunity to apply an updated research design that built upon the one originally used in the 1<sup>st</sup> and 2<sup>nd</sup> iterations of *Touchpoints* used in this study. The hardware and software configurations that were provided for the participant consisted of a projector, projection screen, audio/video mixing board and laptop. A version of this configuration had been used in the *Deep* prototype at the beginning of my study where the site for participant interaction was focused on a microphone. However, the opportunities for interaction in the *Deep* prototype were fairly limited in contrast to successive prototypes. For example, in *Touchpoints III*, which was shown at the Fringe Arts Festival, participants were presented with more variations and options than had been available in *Deep*. In *Touchpoints III* participants could assess and modify their own levels of engagement when using an audio mixing board, a QR code and mobile phone to upload their contributions. Indeed, they could even use the webcam in the computer to place themselves into the remix. This was seen in the video recordings that were made at the festival (Appendix D). The audio/video mixing board displayed levers, buttons and knobs, along with an array of media and effects used by participants to remix media. Their creations could be viewed by

visitors and other participants on a presentation screen and through archived remixes that I uploaded to Fringe Art Bath's website. The diagram below shows the hardware and software elements that I as the artist facilitator, constructed for use by participants.

## CONFIGURATION USED AT FRINGE ARTS BATH

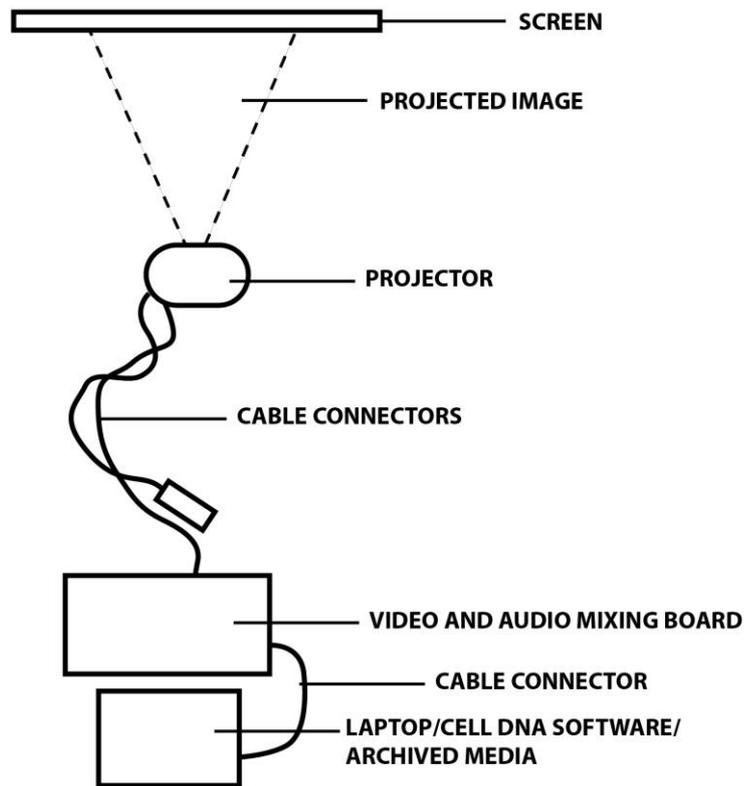


Figure 86. Configuration of hardware components at Fringe Arts Bath. May 2014. Author, Luba Diduch.



**Figure 87. Configuration showing presentation screen and Cell DNA mixer at Fringe Arts Bath. May 2014. Author, Luba Diduch.**

## Evolution of Ethnographic Methods in *Touchpoints II*

As mentioned at the beginning of this paper, I first chose rapid ethnography as my research methodology in order to study participants' levels of engagement in HCI artworks and to discover if and how, their inputs into a prototype would cause artworks to expand.<sup>197</sup> However as research progressed, I realised that rapid ethnography as a methodology had to be reconsidered. I arrived at this conclusion because it became apparent that my approach needed to be more responsive to increasing levels of participant engagement. Some important patterns of behaviour had emerged that could not be recorded solely through rapid ethnographic methods that were gathered in short time periods. It became necessary to observe participants through a larger set of activities (those seen in more standard ethnographic methods), rather than confining them to a narrower set of rapid ethnographic methods (Millen, 281). When I realised that a broader set of ethnographic methods were going to be necessary in my study, I was reminded again of James Clifford (mentioned in Chapter 1 of this paper) and his thoughts on the relationship of the participant observer in communities where sustained relationships and a broad range of data collection methods are necessary to learn about behaviours and perspectives of these communities.

Rapid ethnography is typically used in contexts where decisions regarding prototypes are time sensitive and need to be resolved in a matter of weeks or days. (Plowman, 35). As discussed previously in this paper, these rapid methods (as used in relation to the prototype *Deep*) include quick interview notes, hand drawn floor plans, photographs of the exhibition environment and prototyped processes (Millen, 281). However, although this rapid method was effective in recording data that presented itself quickly in the case of *Deep*, it

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<sup>197</sup> The initial research design included the use of an interactive prototype, a webcam, handwritten notes, video and photographic documentation and spontaneous interviews and conversations with individuals who interacted with the prototype.

became apparent that although participants initially may have engaged for brief periods, some began to be involved further during longer, sustained time frames. Using sustained methods in relation to a broad set of activities over time became necessary and useful when I saw that the relationships I had first established with participants at the beginning did not necessarily end after my first contact with them. Indeed, several participants continued to participate through all phases of my study. More importantly, I saw a direct connection between the *sustained relationships* that were established and the manner in which they were instrumental in *expanding the artworks*. That is to say, the longer participants continued to interact with *Touchpoints*, the more touchpoints they added and the more the interface/artwork expanded.

### **The Fringe Arts Festival**

In order to further test this relationship between sustained engagement and increasing touchpoints in an artwork, I attended the Fringe Arts Bath Festival 2014 and showed the 4<sup>th</sup> iteration of *Touchpoints II*. Before the festival began I conducted some research regarding the history of this event, so that I could better understand the audience that would be attending. I discovered that the Fringe Festival evolved from the Walcot Festivals of the 1970s and 1980s that presented theatrical productions, music, happenings, eco-activism and work by local artists. The festival also included interactive street art and public interventions. This historical perspective was an indication of the kind of audiences that would be engaging with *Touchpoints II*.

As participant observer, I noted that visitors at Fringe Arts Bath included families, tourists, students, members of the Bath art community, as well as visitors from Bristol, and London (The Tate Gallery). This was a diverse group who, I discovered, was interested in art and the experiences surrounding the artworks on display that were theirs for the taking. The significance of the historic and interactive aspect of the Fringe Art Festival in Bath became more

apparent when visitors mentioned their involvement in the interactive and theatrical public interventions that were happening simultaneously in the streets of Bath and how they felt their visits to the Fringe Arts Bath exhibit (located in the Stall Street location) were an extension of these activities. This made me think that the audience attending Fringe Arts Bath was open to having interactive experiences and this set an expectation for the audience members as to what might happen at the Fringe Arts Bath exhibits at Stall Street.

### **Participants in my study – 4 Main Groups**

When I returned to Bath for FAB, I was aware the number of participants in my study was about to increase. It became useful in this study to group participants in relation to their levels of participation. This led to an arrangement of participants into four groups. Keeping the characteristics of these groups in mind (active participants, observers, anonymous participants, those committed to short term and long term participation), I designed my research methods in a way that I could observe levels of engagement in the four groups. These methods included multiple forms of observation:

- 1) Hand-written notes and drawings; (Appendix A)
- 2) Photographs and video clips that captured descriptions of people, environments and interactions; (Appendix D)
- 3) A questionnaire filled out by participants; (Appendix C)
- 4) Skype interviews with participants; (Appendix E)
- 5) Posting of remixed work on the Fringe Arts Bath Blog<sup>198</sup>

This research design was used so that activities could be viewed from the participant observer's perspective as well as those of the

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<sup>198</sup> I organised artifacts created by initial contributors and participants at the festival on the Fringe Arts Bath Festival blog. This allowed all participants to see contributions in context of each other in an organised fashion, before they filled out the questionnaire and/or participated in the Skype interview.

participants' and recurring themes and patterns could be revealed in the collected data.

In the process of developing these research design components, I became increasingly aware that I had witnessed a trajectory of the initial participants' involvement in my study from the moment they began their participation in the 1<sup>st</sup> iteration (*Deep*) to those who continued to engage up until the 4<sup>th</sup> iteration (*Touchpoints III*) at the Fringe Arts Bath Festival. It became apparent that in general terms, the last group became more involved in the 4<sup>th</sup> iteration than they had been in the first iteration. This was evidenced by their willingness to continue involvement by responding to questionnaires and engaging in recorded interviews. As they participated in these activities they continued to 'look away' from the prototyped artwork to contribute touchpoints, narratives, stories and remixes.

As participant observer, I studied each of these groups keeping in mind that they had demonstrated "social relations that were bound in particular time frames and spaces" (Madden, 8). Indeed, as an observer, I noted differences in the level of engagement and approach between these groups, and that these differences became evident as a result of how, when and where they approached the interface. The video footage collected showed these differences (Appendix D). As shown in these videos, participants became absorbed in the types of changes they could make in the artwork. They 'looked away' from the prototype as a whole and were interested in how their inputs would change the existing artwork. I noted that some participants were willing to engage because of their levels of technicity and expectations for participation, while others preferred to stand back and observe. This observation confirmed Don Norman's theory that individuals' engagements depend on situational awareness (mentioned earlier in this paper). In addition, as facilitator and participant observer, I observed that the entry point used by the participant to enter a prototyped artwork affected the level and nature of the participant's engagement and in turn, the expansion of the artwork. For example, if a participant used a QR

code to contribute to the work, they were less likely to continue to participate. They seemed to enjoy their anonymity and typically didn't, as far as I could observe, engage again with the prototype.

### **Group 1 – First participants, 2011**

This was the first group of participants (26 individuals in all) to contribute artworks in response to my general call for participation in the first iteration of *Touchpoints*. Their contributions were collected and provided evidence of the many voices participating to this work. The contributions were added into the clip banks of the *Touchpoints* interface (Figure 96).

This group began to connect with *Touchpoints* when they first responded to a call for media content that was sent primarily through social media. Participants used email, QR codes, and mobile device networks to enter the agora – described in Chapter 3 as a place where participants contributed their works, discussions and engagements. As the prototypes came into being, I noted that some of the initial participants became increasingly invested and involved in the final artwork as it evolved through four iterations.

These participants were also the ones who, through the choice of the contributions they had created, determined the direction for the project and its focus on specific types of images and sounds. The decisions they made became acts of co-creation because they played an important part in determining evolving themes in *Touchpoints*. One can say that my fieldwork in this instance was influenced by the concerns of the participants. (Mitchell, Introduction).<sup>199</sup> In my initial call for contributions, I asked for a variety of media and did not put any thematic restrictions on the kind of media to be submitted. However, I noticed that the participants again (as with previous prototypes) 'looked away' from *Touchpoints* in order to put energy into creating artworks that they were interested making. Although I left the subject matter for the works open and up

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<sup>199</sup> Mitchell. Jon P, Melhuus, Marit. *Ethnographic Practice in the Present*.

to individual interpretation, the majority of contributors coincidentally sent me media that showed landscapes and more rarely, urban settings. Following their lead, and acting as curator, I archived these contributions together in clip banks within the software program with the intention of moving them forward to the next phase of the project. Contributors continued to communicate with me, the participant observer, through email and social media, thus demonstrating their continued interest in learning about the outcomes of their contributions. Sustained interest in *Touchpoints II* and its connection to their own works were demonstrated and confirmed in a later phase of my research when I conducted questionnaires and Skype interviews, asking participants for anecdotes relating to their contributions (Appendix C, E). Their rich and personal narratives regarding their experiences with the prototype indicated that additional areas for study remained and that this research had further potential.

### **Group 2 – Active Participants**

Some of the members in the first group also participated in online questionnaires and video chat interviews that occurred after the 4<sup>th</sup> iteration presentation at Fringe Arts Bath. These data collection methods were introduced because it was apparent that rapid ethnographic methods had evolved into more sustained methods, given the behaviours and commitments of the participants involved. The methods were instrumental in collecting data that revealed long term commitments on the part of the participants, and as a result, further potential for the creation of new touchpoints.

The data collected at the festival were eventually used together with the questionnaires and video chat interviews and viewed as a whole, demonstrating the polyphonic nature of this study. In the Skype video chat interviews with Group 2 participants, indirect questions were used to initiate open conversations with the view that respondents would provide tangential and unique personal information that could provide a rich narrative – adding to the conversations and activities that had already been recorded in the field (Appendix E).

In addition, some examples of participants engaging in dialogue with me, the participant observer, are seen in the video clips that I collected at the FAB. The clips show the participation of a variety of age groups and individuals with different levels of technological expertise as well as the everyday minutiae of attending an art exhibit. Visitors come from different walks of life and from different countries again providing varied voices and points of view in relation to my study. The video documentation shows participants conversing, exploring, experimenting and collaborating within the exhibition space (Appendix D). The use of video to document these types of activities is seen, for example, in the work of Rachel Strickland who uses video to “explore and represent the dynamic the ephemeral dimensions of architectural space” (Strickland, 2003)<sup>200</sup>. Her project *Portable Effects* explores the relationships between behaviour, materials and problem solving when using iterations of several prototypes (Ibid, 2003) and was useful in this study when configuring prototypes.

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<sup>200</sup> Strickland. Design Research, Methods and Perspectives - ed Brenda Laurel).

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 88. Skype Participant. Author: Luba Diduch.**

### **Online Questionnaire**

The questionnaire used in this study was designed to tease out responses from participants related to their reasons for taking part in *Touchpoints II* as well as to gather anecdotes relating to the theme of climate change, which, towards the end of my study, had become the central theme in the project. I designed the questionnaire in this way in order to determine the reason for sustained participation, which I had already learned, was important in creating increasing numbers of touchpoints (Appendix C). The questions were written to elicit responses from participants regarding their impressions and experiences relating to the prototype and its theme, which in the case of the final prototype, was climate change. The individual narratives supplied by the participants added another level to the polyphonic aspects of the methodology used, while the Skype interviews provided a very direct view of participants' involvement. These participants had begun their interest in previous prototypes and had continued to be involved in the installation of the final prototype at Fringe Arts Bath.

Out of 26 initial participants, 12 participated in the online questionnaire and three eventually participated in Skype interviews. This decline in the number of participants indicated that although many more were apt to co-create and engage directly with a prototype artwork, many preferred to remain anonymous and did not want to be recorded on camera.

Their responses to questions in the online questionnaire and video chat interviews supplied some evidence for the theories I was developing during the course of my research regarding the issues I had encountered along the way. I was discovering that participants continued to engage with HCI artworks based on personal experiences with collaborative artworks, as well as the satisfaction of seeing their contributions combined in a larger artwork. One of the questions in the questionnaire addressed this idea of collaboration and asked if participants had collaborated with others in the past.

Their responses indicated that they had experiences that sometimes were fruitful and satisfying and sometimes were not.<sup>201</sup>

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<sup>201</sup> Quotes from respondents: "Collaborations help you see beyond yourself and see creation from various perspectives. I learn a lot about creation itself and the person with whom I've collaborated" and "I was eager to see what the visitors would come up with. I was pleased that someone actually had taken the time to play with the work." (Appendix C)

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## Touchpoints II Questionnaire

Form Description

**What is your age?**

18-24

25-34

35-49

50-65

65+

**Have you collaborated in the past with other artist/s when creating artworks?**  
If so, were these experiences satisfying or not, and briefly, why?

**Briefly describe how you felt about having your artwork remixed by visitors in the Fringe Arts Bath community.**

**Have you created any artworks (after you participated in Touchpoints) that were inspired by that experience?**  
Did participating in Touchpoints inspire you in any way?

Yes

No

**Please briefly recount an anecdote or story that took place in a landscape or urbanscape in your past, and that continues to endure in your memory.**  
How would you feel if this site disappeared forever? Would it matter to you one way or another?

**Would you be willing to participate in a Skype interview with me regarding your experience with Touchpoints?**

Yes

No

**Figure 89. Sample questionnaire distributed to participants. Author: Luba Diduch, 2014 (Appendix C).**

Evidence of these collaborations were posted on the Fringe Arts Bath website, which served as a reference point for all participants. (<http://www.fringeartsbath.co.uk/touchpoints/rss.xml>). The development of this web page and its contents were related to Lacan's *The Mirror Stage*, mentioned earlier in this paper. My intention in creating this archive was to offer participants a mirror so that they could see themselves reflected in the architectonic artwork.

Through a collection of specific responses I was able to witness deeper and more sustained connections with *Touchpoints* and in the process, learned that participants liked to collaborate because they wanted to learn more about themselves and were interested in how their contributions connected with those of other collaborators in an HCI artwork (Appendix C). This use of specific questions deepened the findings I collected using the initial rapid ethnographic methods used at the beginning of my study (in *Deep* for example) where I engaged with participants using very brief, spontaneous and rapid conversations, interactions and connections. When I considered both approaches together in my study – rapid ethnographic and standard ethnographic methods – I began to understand more fully why participants wanted to engage. It was evident that it was important to show participants the results of their inputs and engagements and this was done when I uploaded screen captures of their remixed contributions to the Fringe Arts Bath website (Appendix H).

### **'Looking away' – Personal Narratives**

One section in the online questionnaire asked for a cherished memory that was connected to a favourite landscape. The stories were contributed (by the participants) in relation to the contributions they had made to the artwork. These narratives turned out to be similar in tone to those provided by visitors and participants in the first prototype in my study (described in Chapter 3 regarding *Deep*) because they were personal and unique to each participant and again, indicated a "looking away" from the artwork.

The narratives were an indication that participants might be willing to expand projects such as *Touchpoints* even further in the future. This once again demonstrated the potential for fluidity of an artwork and that possibilities for the creation of even more touchpoints and architectonic entry points continued to exist.

As I read through the narratives, I noted that many of these accounts had a poetic, nostalgic quality.<sup>202</sup>

In addition to these questionnaire responses, spoken narratives were collected at the private view opening of Fringe Arts Bath. Alongside the projections of visitors' remixes of media contained in the laptop (Figure 86) I collected participants' accounts that made me think about cultural, and very personal identifications with landscape – and how as a Canadian, my connection to my country's landscape related to those of many of the visitors to the festival. One visitor in particular spoke to me about how he had seen an exhibit of Canadian landscape painting many years ago, and that *Touchpoints* resonated for him in relation to that experience. In another conversation, two visitors approached me and we talked about the construction of wind turbines in the UK – how they potentially could make a difference in preserving the earth's landscapes as we know them, yet how some individuals have an aversion to this mode of power due to the appearance of turbines in residential areas.

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<sup>202</sup> 'The water is so deep and fierce in some sections of the river that when you submerge your head, to escape from the heat of the sun, you can hear large rocks rumbling along the riverbed. In August, when I walk across the windy train bridge towards the oxbow, the water is so clear that I can see the salmon slowly making their way towards their spawning grounds. Every summer I worry that I might not make it back or that other people will discover it. This solitude may only survive in my memory.'

"My main subjects are trees that I paint and my work is now evolving into creating sculptures from wood and stones...the inspiration behind my work is my dearest friend, who lived and died in the woods...I spent alot of time with him there, I found him when he died and now I continue to create his forest around me."

"Sunrise over the Irish Sea - watching it aboard a ferry crossing from Wales to Cork, Ireland, breathtaking and brief. The sun rose and disappeared into the overcast sky."



**Group 3**

Group 3 was the smallest group in this study. These individuals contributed anonymously when they used QR codes to access an online dropbox created for their use. These became “anonymous digital voices” that due to their anonymous nature, added yet another polyphonic dimension to my study.



**Figure 91.** QR code used by participants to “enter” the artwork. Author: Luba Diduch, 2014.

#### **Group 4**

Group 4 used the 4<sup>th</sup> iteration of *Touchpoints* as an application of my research design that evolved from my initial rapid ethnographic methodology. This group used clip banks of contributions collected from Group 1 – some of whom had been involved since the beginning of my study. Group 4 decoded and used the configured software and hardware interface to create remixes, accessing the initially contributed works as their medium (Appendix H). Most of these participants were from the United Kingdom, although some international visitors were involved as well. I was able to witness the ways in which these participants added their own perspectives, ideas and anecdotes to *Touchpoints* in the immediate exhibition space at Fringe Arts Bath.

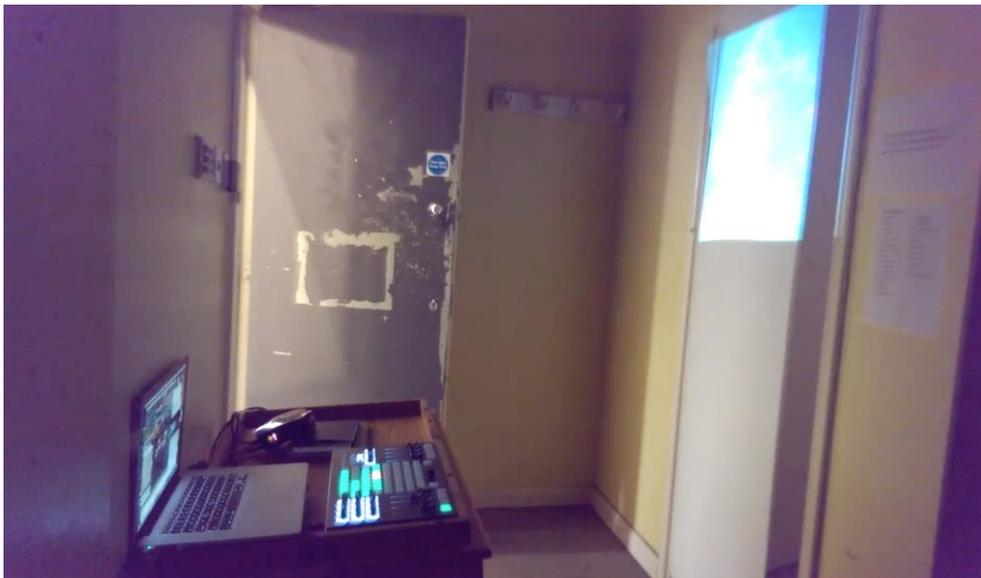
Group 4 participants' connection to *Touchpoints* differed slightly from that of the other groups when they came into contact with the prototype at FAB. Although most showed a fleeting interest in the contributions from earlier participants and other remixers at the festival, their behaviours often seemed more focused on using the configured mechanics of the interface itself. As they engaged with the prototype, they generously shared their experiences, questions and perspectives. Indeed, as shown in video documentation, they were able to physically touch the hardware and software interfaces, describing their experiences in physical space (Appendix D). Their physical engagements with the prototype allowed them to become immediately productive within the interactive experience and their connections to the configured interface revealed that they were engaged in analysis and exploration. This was demonstrated in the responses and actions that were captured in video and audio recordings (Appendix D). Participants' questions and responses related to explorations as to how the interface functioned, what specific effects and components in the audio/video mixer were useful to them in creating specific remixed effects as well as observations of the projection screen to see what they had produced. As participant observer, my thoughts regarding participant observations, and

indeed, my own thoughts and perspectives regarding the artwork prototype were recorded in my notebooks over the course of Fringe Arts Bath (Appendix A, Fringe Arts Bath Notes). These notes – used as a rapid ethnographic tool – and read weeks and months after Fringe Arts Bath had ended, reminded me of events that happened in the immediacy of my role as participant observer in this study (Appendix A, Fringe Arts Bath Notes).

## **Conclusion**

As mentioned at the beginning of this chapter I have shown several distinct groups of participants in this study and the ways in which they have become increasingly productive within the interactive experience. The idea of 'looking away' from the prototype to create work that exists beside, yet is created in context of the prototype, has been shown to occur in several instances.

For example, it is interesting to note that early participants in my study – such as Adam Redditt – (introduced in Chapter 3, Part 1) continued to create musical compositions after their initial contributions to the prototype. Redditt composed music for his first engagements with *Deep* but also contributed a newer composition to the final prototype shown at Fringe Arts Bath several years later. Other participants who joined midway through the study continued to create works in response to the *Touchpoints* prototypes after initial contributions, and submitted many more photographs that were ultimately used in the final prototype remix. The actions of participants such as these indicated that the longer they sustained interest and participation, the more touchpoints were added and as a result, the architectonic structure of the artwork continued to expand even as they 'looked away' from the prototype.



**Figure 92. *Touchpoints III* at Fringe Arts Bath, May 2014.  
Author: Luba Diduch, 2014.**

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 93. *Archived Images, Videos and Sounds*. Author: Luba Diduch.**

**Image redacted in this digitized version due to potential copyright issues.**

**Figure 94. Participant at Fringe Arts Bath, *Touchpoints III*. Author: Luba Diduch.**

## Conclusion

The contribution to knowledge advanced in this thesis is derived from using ethnographic tools to study audience engagement with interactive artworks in the field of Human Computer Interaction. My research has focused on the modes in which audiences 'look away' from the interactive artwork. This research has demonstrated that audiences do not simply engage directly with the immediate interface, and not merely its range of interactive functions, but employ a range of devices around the artwork in support and development of the original artefact that extends its range of activities.

This thesis has advanced the idea that common sense notions of interactivity and the interface need to be reconsidered in light of the full range of audience engagements. The 'stable' perception of an HCI artwork has been replaced with the notion of an evolving architectonic system that is seen to expand around an original site of engagement. This in turn, has shifted an understanding of the stable interactive artwork towards a tentative prototype.

In the process of this research, I have built HCI artworks/prototypes in order to study them within a swiftly evolving technological landscape where audiences have immediate access to emerging technologies and have the power to configure their experiences. I have argued that the availability of mobile devices and technologies, specifically, facilitate co-creativity in relation to artworks. This has led me to rethink the very concept of interactivity as well as to embrace the idea of the ongoing development of artworks created in real time. Far from a new way of viewing present developments, I have demonstrated that there is a role for revisiting modernist architectonic theory (R.H. Wilenski) in order to fully understand the implications of levels of co-creativity specifically in relation to the notion of touchpoints while comparing it to fluid architectonic systems present in and around HCI artworks.

Borrowed terminologies, including terms such as *architectonics*, *touchpoints*, *configuration* and *agora* have been used in describing

interactive processes when these terms are introduced into the field of Fine Arts and HCI based installations. These are terms that are derived from the past and present, and that reference terminologies from several sources: the language used by R.H. Wilenski when he describes the relationships between art, architecture and the artist/spectator from a modernist perspective; current and past understandings of interactivity; and terms used by contemporary interface designers such as HCI designers Don Norman and Dan Saffer. These terms are employed when looking beyond the limitations and structure of the artwork to the architectonic schemes that reside within and around HCI artworks. The HCI artwork, as well as the process of its construction as a system, is shown to be composed of technological, interactive and social systems, that is to say, the composition of an architectonic system.

### ***Limitations***

Throughout the period of my research I have been aware that not every visitor or participant is willing to engage and contribute to an artwork, and that not everyone possesses a similar level of 'technicity' (understanding and access to technology). These realities have presented challenges and limitations when I have presented my prototypes in environments where participants seemed unprepared to engage with technological artifacts. In these instances, I have been reminded that in order to gather material for research, one must develop appropriate ways to approach participants and in so doing, find an audience for the work. Indeed, as James Clifford's writings suggest, understanding larger cultural and social issues must be taken into account. Identifying levels of technicity in participants, as well as providing clear and accessible structures for entry into artworks are necessary. Outlining clear instructions for engagement are needed for deeper levels of audience engagement, leading to new touchpoints being formed. In essence, 'finding the audience' for HCI artworks is integral to this type of research, because then participants will be prepared to engage more fully and co-creatively. It is as a result of these deeper levels of engagement that

participants will tend to contribute over longer time periods, thereby expanding the architectonic systems in artworks.

### ***Looking Away***

Through the course of my research, I have discovered that in the act of 'looking away', viewers become fully active participants in the creation of HCI artworks. Participants become engaged in activities that occur alongside these artworks, as they build architectonic structures via the process of proliferating touchpoints. In relation to three prototypes – *Deep*, *Touchpoints*, *Touchpoints II and III* – I have observed how the participants' use of 'ready-at-hand' technologies, (in this case personal and mobile devices), extends possibilities for interactive experiences in relation to HCI artworks. As a result of my research, I have noted that in this act of 'looking away' from the prototype, the participant becomes conscious of devices and technologies that are present in the architectonic systems in and around the artwork, and in turn, uses them to shape interactive experiences through acts of *configuration* (Human Computer Configuration).

The actions involved in configuring experiences on the part of participants, as well as the technologies related to the construction of my prototypes, have highlighted the questions posed by participants who have asked about the methods and processes used in media and remixing technologies in three prototypes: *Deep*, *Touchpoints I* and *Touchpoints iterations II and III*. Participants' questions have related to the digital technologies used in building these prototypes and how they as co-creators who 'look away', can create their own iterations that will ultimately become part of an expanded version of the originary artwork.

### ***Methodology***

Chapter 1 identified rapid ethnography, and eventually ethnography as appropriate methodologies for studying audience engagements with HCI artworks. Ethnography is a methodology borrowed originally

from the humanities (and anthropology specifically) – one that has been adapted by the field of interaction design, where it has been re-interpreted as an approach called rapid ethnography used for the purpose of studying Human Computer Interaction (HCI) artworks. This methodology is seen to exist in a wider “ethnographic turn” within Fine Art criticism, which looks away from the artwork to the audience and questions the issue of authorship in artworks ie. roles of the artist and the participant in the creation of an HCI artwork. The ‘ethnographic experience’ is presented as a way to reveal a ‘bricolage’ of data: constructed of “clues, traces and gestures,”<sup>203</sup> all of which can illuminate the relationships between an HCI artwork, artist and participants’ behaviours within an exhibition space.

This chapter introduced the concept of ‘looking away’ from the artwork and how the audience moves to the foreground of experience – yet through its related activities remains in the context of, and in contact with, the work. The use of ethnography in relation to the experience of the audience is inspired by James Clifford’s writings regarding ethnographic practices that address the idea of studying communities, and how they are implemented with the view of understanding larger cultural and social issues.

The chapter also discussed the specific research methods and approaches found in ethnography and how they are used in my study. These are presented in relation to the field of HCI where participant observation, the use of multiple key informants, fieldwork, data collection and data analysis are used to study communities around HCI artworks, and how these methods are carried out within compressed, abbreviated time frames as well longer sustained time frames.

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<sup>203</sup> Clifford, James. *The Predicament of Culture*. Harvard University Press, 1988

## **Chapter 2**

Chapter 2 introduced and contextualised the work of artists who are engaged in research in the field of HCI artworks and who use Human Computer Interaction to explore the idea of expansiveness through spectator participation in the field of interactivity. The research community in the field of Fine Art interaction installation was identified in this chapter, and artists and theorists who have contributed to this area of research were discussed. Dada, the Fluxus group, Happenings and artists of the '60's scene' were featured as examples of art practices that are conceptual and interdisciplinary in nature. These were considered as 'historic' anticipations of subsequent 'interactive' art practices, and were used as an introduction to the HCI artworks of contemporary practitioners.

The chapter provided examples of HCI artworks executed by a series of artists, and demonstrated how their artworks were consciously enlarged beyond their immediate physical and intellectual parameters, in particular through the use of 'the unified interface' — that is to say the interfaces that exist between programmed software programs, hardware and human beings. The artists and theorists mentioned in this chapter were involved in the creation and/or written theory in the field of HCI artworks and their practices were used to show a shift from architecture to architectonics in contemporary concerns with interactive artworks.

## **Chapter 3**

In chapter 3, keywords that are employed in research practice were identified and were used to demonstrate how they can be used to provide highly nuanced understandings of interactivity in relation to HCI artworks and their expanding interfaces. The chapter demonstrated how the increasingly ubiquitous use of technological devices has been instrumental in changing ways of thinking regarding the *configuration* of a participant's experience with HCI artworks. It showed how the proliferation of *touchpoints* in an HCI artwork reproduces and *expands* the *interface* in the original artwork

from a central touchpoint grouping or 'architectural' source. This central location functions as a site for socio-technological expansion and has been identified as an *agora* in this thesis. The concept of the *agora* has been used to show how the relationships between architectonic systems, artist and participant can establish a shared sense of location, and where participants come to feel that they are part of a common collaborative space. As in the case of the exhibition *Deep* at the BSAD gallery, it was noted that in the act of recording participants' stories, the researcher (myself) used the prototype as a site for the flow of conversations, interactions, connections and resulting artworks that occurred in the agora.

The agora was identified as a location that can be inhabited by participants through their interaction with it. Through an examination of several *prototyped* HCI artworks, the chapter demonstrated the ways in which *architectonic schemes* are structured through the reproduction of touchpoints, and the role of these systems in the expansion and growth of these architectonic schemes. Experiments and prototypes were presented alongside documented observations that were gathered using rapid ethnographic tools and I described my approach to the study of *participation* and the nature of interactivity in audiences who 'look away' from HCI artworks. The chapter showed how an HCI artwork can be created in real time through a combination of artist facilitation and audience participation. The process of research revealed that live, casual passersby who have little preparation for interacting with HCI artworks are less likely to participate than individuals who connect through the use of QR codes and social media sites. Also discussed was how an HCI prototype continues to expand and grow over a period of time through generation of new touchpoints on the part of existing participants, as well as through the engagement of future participants who learn about a project through social networks, QR codes and other means of entering the agora. This differs from existing understandings of HCI and interactivity because while artists have intuitively created touchpoints in their interactive works, they may not

have explored this idea consciously. My study takes into account the moment when the spectator makes contact with the interface through physical and cognitive means, looks away from it, and expands the artwork through the creation of a touchpoint. This touchpoint emerges as a site for subsequent interactive events that lead to new iterations of the original artwork: an extension of the artwork that takes it, eventually, beyond the time/space of the original artwork.

Through the experience of making prototypes and studying them, I am contributing to a shared field of knowledge in the area of interactivity in that my research adds to existing understandings of HCI and interactivity. Through this research, I am sharing my view that the body is one that is technologised when it comes in contact with HCI artworks. While others focus on the artwork itself, I have looked at the interactor who engages and becomes productive in relation to the artwork, rather than the user who relates to an artwork as a body in space. I have examined the shift from body in technological space to agoras where audiences and artists meet. This change in understanding presents ongoing questions regarding existing understandings of HCI and interactivity, because the use of mobile devices in relation to social networks involves the issue of configuration as one that is altering interactivity. Configuration of technological devices changes these understandings because it gives the participant the ability to configure technological devices in order to be able to interact with HCI artworks, and subsequently, empowers the participant to shape his or her interactive experiences in a way that differs from previous notions of interactivity.

The participant's ability to configure and engage with artworks alters understandings of HCI artworks and interactivity because it changes the ways in which the artist relates to his or her audience and vice versa. Due to the possibility for the configuration of technological devices, the participant can use these devices to impact an artwork's evolution as well as shape his or her unique interactive experience. As referenced at the beginning of this paper, ethnographic participant observation involves moving between the "inside" and the "outside"

of events. This has relevance in HCI artworks, when the participant has an opportunity to step into the role of artist/creator, and, in turn, the artist can also at times act as the audience. The HCI artworks themselves are formed through flows of engagement between participant and artist, and act of creation is composed of media, devices, participants and networks. In the process, all of these become integral parts of the whole HCI artwork.

### **Chapter 4**

In chapter 4, a description of successive iterations of prototypes demonstrated how varying levels of commitment in participants continued to cause increasing expansion of the architectonic artwork. The 4<sup>th</sup> and final prototype featured at Fringe Arts Bath was identified as a site for the flow of engagement and connections that had been described previously in chapter 3. Chapter 4 also outlined the manner in which a group of participants who had become involved with the first prototypes configured for my study, continued to engage with the final *Touchpoint* prototype.

Chapter 4 described how opportunities for interaction became more complex in the 4<sup>th</sup> iteration when participants were able to choose from a wider variety of choices for interaction than they had been able to do in earlier prototypes. Listing components of the research design as well as describing the ways in which the prototype was configured were used to document the structure of the prototype. Through the use of video documentation, participants were to shown to explore and manipulate the direct interface in longer and more complex ways than in previous prototypes. In all, 4 groups of participants were described as contributing to the research at different times and for varying durations.

In Chapter 4, the rapid ethnographic methodology initially used in studying the first prototype *Deep* was described as having evolved in later prototypes when participants were seen to engage for more extended periods of time while forming relationships with the participant observer. This necessitated the introduction of

ethnographic methods that would be more appropriate for longer periods of participant interaction. These methods had included participant observation for short time periods within the gallery context. However, ongoing dialogues were established outside of the exhibitions of the prototypes through the use of questionnaires, interviews and dispersement of artworks produced by participants through computer networks. The questionnaires and interviews were designed to gather thoughts and perspectives from participants after the physical prototype in the exhibition space was dismantled. The methodology evolved from its rapid ethnographic beginnings and began to encompass a larger range of ethnographic methods than initially seen when rapid ethnographic techniques were used at the beginning of this study.

Chapter 4 also included examples that demonstrated how participants continued to 'look away' from the HCI artwork to create collaborations, personal work and narratives using computer networks as well as direct contact with the prototype. Participants' highly differential levels of commitment with an HCI artwork and understandings of co-creativity continued to reveal the ways in which increasing numbers of touchpoints that were created by these participants were instrumental in the expansion of an HCI artwork.

### ***Future Goals***

As a researcher and artist in the field of HCI artworks, my thoughts have shifted from considering 'a body' in technological space that interacts with an artwork, to understandings of interactivity in relation to agoras, social networks and mobile devices. My thinking and research direction have moved from previous perceptions regarding interactivity where the participant engages with scenarios largely delineated by the *artist*, to the ways in which configuration also empowers the *participant* to become productive within the interactive experience. By studying the participation with, and architectonic systems around 4 prototypes, I have been able to identify new directions in my research when examining sustained participation by the participants, more complex interactions with the HCI artwork as

well as future directions in narratives obtained through the use of questionnaires and interviews. I have observed that there is potential in these approaches for both future work and collaboration with current as well as future participants and I will continue to document these projects on my website at <http://www.lubadiduch.com/>.

In two upcoming projects taking place in 2015 (please see the exhibitions section at the end of this paper for more details), I will be continuing my research and artmaking through by exploring the agora as a site for collaboration, as well as the idea of 'looking away' as a mechanism for expanding architectonic systems in HCI artworks.

## Bibliography

- ADAMEC, J. Jim, Michael Masa. Pascal Silondi, Pavel Smetana, Jim Zara. 'Virtual House of European Culture: e-Agora. ICVS '01 Proceedings of the International Conference on Virtual Storytelling: Using Virtual Reality Technologies for Storytelling'. Pages 208-212. Springer-Verlag London, UK. 2001.
- ADAMS, Matt, Ju Row Farr and Nick Tandavanitj. Accessed June 29, 2013. <http://blasttheory.co.uk/bt/about.html>
- ADAMS, Matt. Farr, Ju Row. Tandavanitj, Nick. *A Machine to See With*. vimeo.com/channels/sirrah/20877386 Retrieved June 4, 2013.
- ADAMS, Matt, Ju Row Farr and Nick Tandavanitj. *A Machine to See With*. Accessed August 13, 2012. 2010. vimeo.com/channels/sirrah/20877386
- ADAMS, Matt. Farr, Ju Row. Tandavanitj, Nick. [http://blasttheory.co.uk/bt/work\\_amachinetoseewith.html](http://blasttheory.co.uk/bt/work_amachinetoseewith.html) [Accessed June 4, 2013].
- ADAMS, Matt. Farr, Ju Row. Tandavanitj, Nick. <http://blasttheory.co.uk/bt/about.html> [Accessed June 6, 2013].
- ADRIAN, Robert. *Telenoia, Interview with Roy Ascott*. Web, <http://v2.nl/events/telenoia>. [Accessed August 1, 2013.]
- ANDRAOS, Mouna. Mongiat, Melissa. Snook, Kelsey. Schindler, Eva. Thirion, Pierre. <http://livingwithourtime.com/work/bloc-jam> [Accessed June 7, 2013].
- AN END TO MASTERPIECES COMPILATION. 2004. Available from: <http://www.discogs.com/Various-An-End-To-Masterpieces/release/455389> [Accessed May 24, 2013].
- ARNS, Inke. *Interaction, Participation, Networking Art and Communication*. Available from: <http://umintermediat501.blogspot.ca/2007/12/interaction-participation-networking.html> [Accessed February 11, 2015].
- ASCOTT, Roy (ed). *Art, Technology, Consciousness: Mind @ large. The Building of Sentience*. Bristol, UK: Intellect Books. 2000.
- ASCOTT, Roy. (ed) Eugene, Carl (ed). *Connectivity: Art and Interactive Telecommunications*, a special issue of Leonardo (Vol. 24, No.2) 1991 ISAST.
- ASCOTT, Roy. *Aspects of Gaia, Ars Electronica 1989*. Available from: Syncretic Archive, Youtube. <http://www.youtube.com/watch?v=6IKmCkGsM1E> [Accessed September 12, 2013].

- ASCOTT, Roy. (author). *Edge-life: Technoetic Structures and moist media*. 2000. Art, technology, consciousness: mind@ large. The Building of Sentience. Bristol, UK: Intellect Books. Page 5. Accessed June 16, 2013.  
[http://books.google.ca/books?id=xPRT0ytFgacC&printsec=frontcover&source=gbs\\_ge\\_summary\\_r&cad=0#v=onepage&q&f=false](http://books.google.ca/books?id=xPRT0ytFgacC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false)
- ASCOTT, Roy. 'Is There Love in the Telematic Embrace?' *Art Journal*. Vol. 49, No. 3, Autumn, 1990.  
[http://www.academia.edu/740563/Is\\_there\\_love\\_in\\_the\\_telematic\\_embrace](http://www.academia.edu/740563/Is_there_love_in_the_telematic_embrace) [Accessed September 2012]
- ASCOTT, Roy. *La Plissure du Texte, a distributed authorship for ARTEX*. December 11 – 23, 1983.  
<http://alien.mur.at/rax/ARTEX/PLISSURE/plissure.html>  
 [Accessed June 2013].
- ASCOTT, Roy (author). 'Moistmedia, Technoetics, and the Three VRs'. Taurus, Lionel, Lionel Bonnaz, Alexis Chazard (editors). ESAD Grenoble Valence, Site de Valence. [http://www.erba.valence.fr/modules/documents/isea00/isea00\\_tout.htm](http://www.erba.valence.fr/modules/documents/isea00/isea00_tout.htm)  
 [Accessed June 1, 2013].
- ASCOTT, Roy (author). Edward Shanken (editor). *The Telematic Embrace, Visionary Theories of Art, Technology and Consciousness*. University of California Press. 2007. pp. 185, 187, 195.
- ASCOTT, Roy. Loeffler, Carl Eugene. (editors) 'Connectivity: Art and Interactive Telecommunications', a special issue of *Leonardo* (Vol. 24, No.2. 1991. © 1991 ISAST.
- BAILEY, Liz. 'Why have some artists turned to anthropology in their practice and how has this turn been interpreted and critiqued?' Available from:  
[http://www.lizbailey.org.uk/painting\\_pages/essay%20pages/artist%20as%20anthropologist.htm](http://www.lizbailey.org.uk/painting_pages/essay%20pages/artist%20as%20anthropologist.htm) [Accessed June 2011].
- BANFF CENTRE. *Experiential Design, A Critical Diary of New Media*. (Video) Banff, Canada. 1997.
- BANFF CENTRE, Banff Canada. Available from:  
<http://www.banffcentre.ca/programs/program.aspx?id=1028>.  
 [Accessed June 4, 2011].
- BANFF NEW MEDIA INSTITUTE. Available from:  
<http://www.banffcentre.ca/bnmi/>. [Accessed July, 2010.]
- BARKER, Philip. *Michel Foucault, an Introduction*. Edinburgh University Press. 1998. Available from:  
[http://books.google.ca/books?id=OpEBZeNWohsC&printsec=frontcover&source=gbs\\_ge\\_summary\\_r&cad=0#v=onepage&q&f=false](http://books.google.ca/books?id=OpEBZeNWohsC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false)  
 [Accessed June 4, 2013].

- BARNES, Steve. Interview by Josephine Bosma, [www.nettime.org](http://www.nettime.org) "CAE Interview," V2\_, August 23, 1997, August 14, 2013, <http://v2.nl/archive/organizations/critical-art-ensemble>
- BEAKERHEAD. Available from: <http://beakerhead.org/> [Accessed September 30, 2013].
- BEDELL, Jack. 1930. Available from: <http://www.lacan.com/leadashf.htm> <http://plato.stanford.edu/entries/lacan/#MirStaEgoSub>. [Accessed June 4, 2013].
- BENFORD, Steve. Andy Crabtree, Martin Flintham, Duncan Rowland, Bill Gaver, Matt Adams, Ju Row-Farr, Nick Tandavanitj, Amanda Oldroyd, Jon Sutton. Available from: <http://blasttheory.co.uk/bt/research.html>. [Accessed June 5, 2013].
- BISHOP, Claire (editor), *Participation, Documents of Contemporary Art*. 2006, MIT Press, Cambridge. p.103.
- Bishop, Claire. *Participation*. 'Viewers as Producers'. Whitechapel: The University of Minnesota. 2006. Available at: Available from: <https://www.academia.edu/3052583/Participation> [Accessed January 2015]. P.11.
- BISHOP, Claire. (ed) 'Clark/Oiticica/Letters'. *Participation*. Whitechapel, London MIT Press. 2006. The MIT Press, 2006. Page 22.
- BLACKSTOCK, Lena. 'Rapid Ethnography and Finding the Right Problem'. Stokefire. Available from: <http://www.stokefire.com/2011/06/rapid-ethnography-and-finding-the-right-problem/> [Accessed August 28, 2013].
- BLOMBERG, Jeanette. 'Ethnographic Field Methods and Their Relation to Design'. D. Dchuler and A. Namioka (Eds.) Erlbaum Associates, 1993. pp.123-155.
- BLUM, Frank, Muller. 'Digital Interactive Installations: Programming interactive installations using the software package Max/MSP/Jitter'. Diplomata VDM Verlag. Druck Und Bindung: Books on Demand GmbH. Norderstedt Germany. 2006.
- BODEN, Margaret A. Edmonds A. Ernest. 'What is Generative Art?' Centre for Cognitive Science, University of Sussex. Creativity and Cognition Studios, University of Technology, Sydney. This paper forms part of the research supported by AHRC Grant no.B/RG/AN8285/APN19307: 'Computational Intelligence, Creativity, and Cognition: A Multidisciplinary Investigation'. [Accessed June 19, 2013].
- BOLT, Barbara. *Art Beyond Representation: The Performative Power of the Image*. I.B. Tauris, 2007. P. 61.

- BOSMA, Josephine. [www.nettime.org](http://www.nettime.org) 'CAE Interview V2\_', August 23, 1997. <http://v2.nl/archive/organizations/critical-art-ensemble> [Accessed August 14, 2013].
- BOSMA, Josephine. V2. Interview with Critical Art Ensemble. Institute for the Unstable Media. 1997. <http://v2.nl/archive/organizations/critical-art-ensemble>. [Accessed June 2013].
- BOUIRRAUD, Nicolas. 'Postproduction, Culture as Screenplay: How Art Reprograms the World'. Has and Sternberg. New York. 2002. Preface. Available from: <http://faculty.georgetown.edu/irvinem/theory/Bourriaud-Postproduction2.pdf> [Accessed February 2015].
- BOURRIAUD, Nicolas. *Relational Aesthetics. Les presses du réel*. 1998. 'Conviviality and Encounters'. P. 13, 21,30.
- BOURDIEU, Pierre. *The Rules of Art*. Stanford University Press. Stanford, 1992. pp. 89.
- BOURDIEU, Paul. *The Field of Cultural Production: Essays on Art and Literature*. Columbia University Press. 1993. Page 3.
- BRIGGS, Jean. 'Never in Anger as an Ethnography of Experience Critique of Anthropology December 1993 13: 379-399, Sage Journals'. Available from: <http://coa.sagepub.com/content/13/4/379.full.pdf+html> [Accessed June 2011].
- BRUSADIN, Bani. Mattes, Eva. Mattes, Franco. 'Critical Art Ensemble'. (a.k.a. 0100101110101101.ORG) (C) The Influencers 2004-11 Available from: <http://theinfluencers.org/en/critical-art-ensemble/video/1> [Accessed June 2013].
- BRUSADIN, Bani. Eva and Franco Mattes. 'The Influencers 2004 – 2013'. Available from: <http://theinfluencers.org/en/critical-art-ensemble/video/1> [Accessed August 14, 2013].
- BULATOV, Dmitry (curator). Roy Ascott. *Interactive Art: Doorway to the Post-biological Culture. Biomediale*. <http://biomediale.ncca-kaliningrad.ru/?blang=eng&author=ascott> [Accessed September 2012].
- BURNETT, Ron. 'Projecting Minds'. *Media Art Histories*. ed. Oliver Grau. MIT Press. Cambridge Massachusetts. 2007. pp. 313, 319, 328.
- BUTLER Brian, (editor), Blake Hobby (editor) Mary Emma Harris. 'John Cage at Black Mountain: a Preliminary Thinking'. *The Journal of Black Mountain Studies*. 2011. Available from: [http://www.blackmountainstudiesjournal.org/wp/?page\\_id=1276](http://www.blackmountainstudiesjournal.org/wp/?page_id=1276) [Accessed July 22, 2013].

- BUTT, Gavin. Irit Rogoff. *Looking Away: Participations in Visual Culture*. Wiley Publishers. 2005. Chapter 6.
- CARD, Stuart K. Thomas P. Moran. Allen Newell. *The Psychology of Human Computer Interaction*. Lawrence Erlbaum Associates. 1983. Page 4.
- CARROLL, Leanne, K. 'Distinguishing between Aesthetic Judgment and an Overall Response to Art in the Critique of Judgment'. *Canadian Aesthetics Journal/Revue canadienne d'esthétique*. Volume 14. (Fall/Automne 2008). 2008 Canadian Society for Aesthetics. Societe canadienne d'esthétique. Page 1.
- CATTELAN, Maurizio. 2004. Available from:  
<http://www.martin Creed.com/site/words/work-no-227-the-lights-going-on-and-off> [Accessed May 29, 2013].
- CELL DNA, Livid Instruments. Available from:  
[http://lividinstruments.com/software\\_celldna.php](http://lividinstruments.com/software_celldna.php). [Accessed April 22, 2013].
- CHANG, Angela and Conor O'Sullivan. 'Describing Haptic Phenomena'. Department of Computing Science, Motorola Inc. Cambridge. Available from:  
<http://www.yumpu.com/en/document/view/9721333/describing-haptic-phenomena-department-of-computing-science> [Accessed August 1, 2013].
- CLARKE, Joseph. 'Polemics of a Cybernetic Future'. Pratt Undergraduate Future. Available from:  
<http://www.pratt.digitalfutures.info/?p=73> [Accessed February 2015].
- CLIFFORD, James. (1988) *The Predicament of Culture, Twentieth Century Ethnography, Literature and Art*. Harvard University Press. USA. 1988. p.9, p.36
- COLEMAN, E. Gabriella. 'Ethnographic Approaches to Digital Media'. *Annual Review of Anthropology* Vol. 39: 487-505 (Volume publication date October 2010) First published online as a Review in Advance on June 21, 2010. DOI: 10.1146/annurev.anthro.012809.104945
- COLES, Alex (ed). 2000. *Site Specificity – The Ethnographic Turn*. Black Dog Publishing. (pp. 94-114).
- CONSTANTINE Stephanidis. Savidis, Anthony. 'The human-computer interaction handbook'. L. Erlbaum Associates Inc. Hillsdale'. NJ, USA ©2003. Available from:  
<http://dl.acm.org/citation.cfm?id=772139> [Accessed June 1, 2013].
- CONSTANTINE Stephanidis. 'Unified User Interface'. Ercim News Online Edition. ERCIM News No.28 - January 1997.

Available from:

[http://www.ercim.eu/publication/Ercim\\_News/enw28/stephanidis.html](http://www.ercim.eu/publication/Ercim_News/enw28/stephanidis.html) [Accessed June 30, 2012].

COOK, D.A. (1981). *A History of Narrative Film*. New York. Blomberg, W.W.Norton. New York. 1990.

CORMEN, Thomas H., Charles E. Lieserson, Ronald L. Rivest, Clifford Stein. *Introduction to Algorithms*. MIT Press. 2003. p.5.

CRAMER, Florian. *Concepts, Notations, Software, Art*. Netzliteratur.net. 2002. <http://userpage.fu-berlin.de/~cantsin> [Accessed August 1, 2013]

CREED, Martin. <http://www.martincreed.com/site/words/work-no-227-the-lights-going-on-and-off> [Accessed August 2012].

CREHAN, Kate. *Community Art: An Anthropological Perspective*. Berg Publishers, Bedford Square, London. 2013. p.10

CRITICAL ART ENSEMBLE. *Observations on Collective Cultural Action*. *Autonome Media*. 2009. <http://www.critical-art.net/books/digital/> pp. 66, 71. [Accessed June 15, 2013].

DANIELS, Dieter. Rudolf Frieling, Heike Helfert (Inke Arns for «Survey of MediaArt») Media Art (editors). Medien Kunz Netz/Media Art Net. "Cybernetic Serendipity". Zentrum für Kunst und Medientechnologie Karlsruhe Lorenzstraße 19. Available from: <http://www.medienkunstnetz.de/exhibitions/serendipity/> [Accessed June 2013.]

DAWES, Brendan. *Analog In, Digital Out*. New Riders. 2007.

DELALEX, Gilles. Aalto Arts Books. 'Go with the Flow, Architecture, Infrastructure and the Everyday Experience of Mobility'. Gummerus Printing. Printed in Vaajakoski, Finland, 2006. [http://200.145.152.5/~paula/Paula/go\\_with\\_flow.pdf](http://200.145.152.5/~paula/Paula/go_with_flow.pdf) [Accessed August 10, 2013. P. 26].

DENZIN, Norman K. Yvonna S. Lincoln. (2005) *The Sage Handbook of Qualitative Research*. Sage Publications, Thousand Oaks, California. pp. 4-6.

DE OLIVEIRA, Nicolas, Oxley, Nicola. Petry. Michael. *Installation Art in the New Millenium, The Empire of the Senses*. Thames and Hudson. London. 2003.

DICTIONARY.com. <http://dictionary.reference.com/browse/participant+observation> [Accessed November 29, 2010].

DIX, Alan. *Human Computer Interaction*. Third Edition. 2012. Available from: <http://www.hcibook.com/e3/chaps/ch3/resources/> [Accessed 2013].

- DIXON, Steve. *Digital Performance A History of New Media in Theater, Dance, Performance Art, and Installation*. Cambridge: The MIT Press. 2007.
- DOURISH, Paul. Bell, Genevieve. 'Divining a Digital Future Divining a Digital Future: in Ubiquitous Computing'. MIT Press, April 2011.
- DOVEY, Jonathan. Helen Kennedy. *Game Culture: Computer Games as NewcMedia*. Open University Press. 2006. Page 84.
- DOVEY, Jonathan. Helen Kennedy. 'Technicity: Power and Difference in Game Cultures'. Digital Cultures Research Centre University of the West of England. 2007. pp. 4, 6.  
[http://www.dcrc.org.uk/sites/default/files/technicities-keynote\\_dovey\\_0.pdf](http://www.dcrc.org.uk/sites/default/files/technicities-keynote_dovey_0.pdf) [Accessed August 12, 2013].
- DRAVES, Scott. *Electric Sheep*. 'Electric Sheep'. Available from:  
<http://www.electricsheep.org/> [Accessed June 16, 2013].
- DRISCOLL, Dana Lynn, Dr. Paul V. Anderson. 2013. 'Ethnographic (Observational) Research, Interviews, and Surveys Purdue University' Dr. Paul V. Anderson, Miami U., Ohio.  
[www.allenbrizee.com/Obs\\_Int\\_Surveys.pdf](http://www.allenbrizee.com/Obs_Int_Surveys.pdf). [Accessed July 2013].
- DUCHAMP, MARCEL. *The Creative Act*. New York. Paragraphic Books, 1959, pp. 77/78.
- EASLEY, David. Jon Kleinberg. *Networks, Crowds, and Markets: Reasoning about a Highly Connected World*. Cambridge University Press, 2010. p. 48.
- EDUEDA THE EDUCATIONAL ENCYCLOPEDIA OF DIGITAL ARTS. This page was last modified: 19:36, October 18, 2011. Available from:  
[http://translate.google.ca/translate?hl=en&sl=it&u=http://www.edueda.net/index.php%3Ftitle%3DArte\\_cinetica\\_e\\_programmata&rev=/search%3Fq%3DEduEda%2BThe%2BEducational%2BEncyclopedia%2Bof%2BDigital%2BArts%2BArte%2BProgrammata.%26biw%3D994%26bih%3D704](http://translate.google.ca/translate?hl=en&sl=it&u=http://www.edueda.net/index.php%3Ftitle%3DArte_cinetica_e_programmata&rev=/search%3Fq%3DEduEda%2BThe%2BEducational%2BEncyclopedia%2Bof%2BDigital%2BArts%2BArte%2BProgrammata.%26biw%3D994%26bih%3D704)  
 [Accessed June 10, 2013.]
- ENGELBRECHT, Lloyd C. 2009. 'Moholy-Nagy, Mentor to Modernism'. Flying Trapeze Press. Available from:  
[http://www.flyingtrapezepress.com/Chapter%20Six%20PDF%20from%20Moholy-Nagy\\_Mentor%20to%20Modernism.pdf](http://www.flyingtrapezepress.com/Chapter%20Six%20PDF%20from%20Moholy-Nagy_Mentor%20to%20Modernism.pdf)  
 [Accessed July 1, 2013].
- ERICKSON, Thomas. 'Social Computing'. In: Soegaard, Mads and Dam, Rikke Friis (eds.). *Encyclopedia of Human-Computer Interaction*. Aarhus, Denmark: The Interaction Design Foundation. 2011. [http://www.interaction-design.org/encyclopedia/social\\_computing.html](http://www.interaction-design.org/encyclopedia/social_computing.html) [Accessed May

[2013](#)].

ESKELINEN, Markku. <http://www.gamestudies.org/0101/eskelinen/>  
Available from: <http://books.google.ca/books?id=-0oGDx8yacwC&pg=PA35&lpg=PA35&dq=Moultrop+configuration+in+video+games&source=bl&ots=QLZr0n9K6u&sig=NiKzwtzEd0f8vOteOI9vy11YQE&hl=en&sa=X&ei=n5kBUvnwNsnqAGuh4C4Dw&ved=0CDMQ6AEwAQ#v=onepage&q=Moultrop%20configuration%20in%20video%20games&f=false> [Accessed August 1, 2013].

EVERETT, Anna and John T. Caldwell. *New Media: Theories and Practices of Digitextuality, The Poetics of Augmented Space*. Routledge, New York. 2003. p. 82.

FAST & DIRTY. Available from:  
<https://www.facebook.com/pages/Fast-Dirty/145598425509022>  
[Accessed August 15, 2013].

FLEW, Terry and Sal Humphreys. *Games: Technology, Industry, Culture*. Oxford University Press. South Melbourne, 2005. pp.101-104.

FRANKEL, Lois. "Communicating Design Research Knowledge: A Role for Ethnographic Writing" Concordia University and School of Industrial Design, Carleton University. Ottawa, Canada.

FROSI, Helen. Available from:  
<http://www.soundfjord.org/galleryexhibitions.htm> [Accessed May 2012].

FROSI, Helen. Available from:  
<http://www.soundfjord.org/aboutsoundfjord.htm> [Accessed May 2012].

FOUCAULT, Michel. *Discipline & Punish: The Birth of the Prison*. Vintage REPEdition. 1995.

FRIEDMAN, Ken. (editor). *The Fluxus Reader*. Academy Editions, a division of John Wiley and Sons. West Sussex. 1998. Page ix.  
[http://www.nomads.usp.br/pesquisas/cultura\\_digital/arte\\_em\\_processo/Processo/Textos/Fluxus%20Reader.pdf](http://www.nomads.usp.br/pesquisas/cultura_digital/arte_em_processo/Processo/Textos/Fluxus%20Reader.pdf) [Accessed May 2013].

FROSI, Helen. <http://www.facebook.com/groups/SoundFjord/>  
Available from: <http://www.soundfjord.org/exhibitions.htm>,  
<http://www.soundfjord.org/exhibitions.htm#538559377> [Accessed June 30, 2013].

GAMEL, Terry. 'Summary of Lacan's The Mirror Stage as Formative of the Function of the I, as revealed in Psychoanalytic Experience'. Northeastern State University. 2009. Academia Edu. Available from:  
[https://www.academia.edu/1539509/Summary\\_of\\_Lacan\\_s\\_The](https://www.academia.edu/1539509/Summary_of_Lacan_s_The)

[Mirror Stage as Formative of the Function of the I as Revealed in Psychoanalytic Experience](#) [Accessed April 19, 2013].

- GAMMA, Erich; Ralph Johnson, John Vlissides. *Design Patterns: Elements of Re-usable Object-oriented Software*. Addison-Wesley, 1995.
- GASKILL, Karen. *Curatorial Cultures – Considering Dynamic Curatorial Practice*. ISEA Conference, 2011. Istanbul.
- GELL, Alfred. *Art and Agency: An Anthropological Theory*. Oxford University Press. Oxford. 1997. P. 17.
- GENA, Peter. 'Cage and Rauschenberg: Purposeful Purposelessness Meets Found Order. 1992. Museum of Contemporary Art.' Chicago. Available from: <http://www.petergena.com/cageMCA.html>. [Accessed November 2011.]
- GETSY, David. Ed. *Wilenski and the Meaning of Modern Sculpture. Sculpture and the Pursuit of the Modern Ideal in Britain 1890 – 1930*. R.H. Andrew Causey author. Ashgate Publishing House, Hants, England. 2004. Page 10.
- GRAHAM, Beryl. Cook, Sarah. *Rethinking Curating: Art after New Media*. The MIT Press; First Edition edition. 2007. pp 10, 113.
- GRAU, Oliver. *Virtual Art, from Illusion to Immersion*. The MIT Press. October 1, 2004.
- GRAU, Oliver. *Media Art Histories*. The MIT Press January 31, 2007. p.1.
- GREYWORLD. Available from: <http://greyworld.org/archives/37> [Accessed May 4, 2013].
- HACKETT, Edward J. ed. Olga Amsterdamska ed., Michael E. Lynch ed. Judy Wajcman ed. *The Handbook of Science and Technology Studies*. MIT. Cambridge. 2007.
- HALLER, Michael. (author, editor) Billinghamurst, Mark (editor). Thomas, Bruce H. (editor) *Emerging Technologies of Augmented Reality: Interfaces and Design*. Igi Global; 1 edition (2007) 1 edition p.330.
- HALLER, Michael. Mark Billinghamurst. Bruce H. Thomas. *Emerging Technologies of Augmented Reality: Interfaces and Design*. 1 edition (November 10, 2006). Page 330.
- HALSALL, Francis. *Systems Aesthetics and the System as Medium*, Presented at Systems Art Symposium Whitechapel Art Gallery, 2007. Available from: [http://www.systemsart.org/halsall\\_paper.html](http://www.systemsart.org/halsall_paper.html) [Accessed August 3, 2013].

- HAMMERSLEY, Martyn. Atkinson, Paul. *Ethnography: Principles in Practice*. Tavistock Publications. Routledge. New York. 2005.
- HANSEN, Mark B.N. *Bodies in Code, Interfaces with Digital Media*. Routledge, Taylor & Francis Group. 2006.
- HANSEN, B.N. Mark. *New Philosophy for New Media*. MIT. Cambridge. 2006. P. 151.
- HASSAN, Robert. Thomas, Julian. *The New Media Theory Reader*. Open University Press, 2006. p. 195.
- HEGARTY, Paul. *Noise/Music, A History*. The Continuum International Publishing Group Inc. 2007.
- HIGGINS, Hannah. *Fluxus Experience*. Chapter 3. University of California Press; 1<sup>st</sup>. edition. Berkeley and Los Angeles California. (December 2, 2002).
- HILLER, Susan. Barbara Einzig. *Thinking about art: conversations with Susan Hiller*. Manchester University Press, Manchester. (1996).
- HINRICHSEN, Katrin. Tom Gionfridd, Joan Sonnanburg. Videoplace '88 Myron W. Krueger. Museum of Natural History Vernon Connecticut. Available from: [http://www.youtube.com/watch?v=A6ZYsX\\_dxzs](http://www.youtube.com/watch?v=A6ZYsX_dxzs). June 10, 1988. [Accessed October 2012].
- HOEY, Brian A. Brian A. Hoey PhD. 'What is Ethnography?' Available from: <http://brianhoey.com/research/ethnography/> [Accessed August 11, 2013].
- HOUSER, N. Kloesel, C. eds. *The Essential Peirce*, (Vol. 1) and the Peirce Edition Project (Vol. 2). (Bloomington IN: Indiana University Press). 1992-94.
- HUHTAMO, Erkki (editor). Parikka, Jussic (Editor). *Media Archaeology: Approaches, Applications, and Implications*. University of California Press. 2011.
- Huhtamo, E., 2009. *Seven Ways of Misunderstanding Interactive Art*. [online]. Minnesota: Minnesota. Accessed June 15, 2013. Available from: <http://blog.lib.umn.edu/willow/makingartinteractive/interaction.pdf>
- HUHTAMO, Erkki. 'Trouble at the Interface, or the Identify Crisis of Interactive Art'. Available from: <http://www.mediaarthistory.org/refresh/Programmatic%20key%20texts/pdfs/Huhtamo.pdf> Page 2. [Accessed September 14, 2013].

- HUI, Yuk. *Theory, Culture and Society*. Sage Publishing . 2000 – 2013. <http://theoryculturesociety.blogspot.ca/2011/04/interview-with-jeffrey-shaw-on-new.html> [Accessed June 29, 2013].
- ISAACS, Ellen. 'The Value of Rapid Ethnography'. Parc Publications. 2012. Available from: <http://www.parc.com/about/people/86/ellen-isaacs.html> [Accessed June 13, 2013].
- JENNER, Walter. 'Art and Electronic Media'. Compart center for excellence in digital art, University of Bremen. 2009. Available from: <http://artelectronicmedia.com/artwork/aspects-of-gaia-trolley-under-brucknerhaus-with-networked-led-messages> [Accessed June 2013.]
- JENKINS, Henry. *Convergence Culture: Where Old and New Media Collide*. NYU Press. 2006. pp. 51-52.
- JENKINS, Henry. Sam Ford. *Creating Value and Meaning in a Networked Culture, Spreadable Media*. New York University Press, 2013. P. 158.
- JENKINS, Henry. Janet, Murray. *Before the Holodeck: Translating Star Trek into Digital Media*. Publications. Available from: <http://web.mit.edu/cms/People/henry3/holodeck.html> [Accessed June 13, 2013].
- JENNER, Walter. 'Art and Electronic Media'. Compart center for excellence in digital art, University of Bremen. Available from: <http://artelectronicmedia.com/artwork/aspects-of-gaia-trolley-under-brucknerhaus-with-networked-led-messages> [Accessed June 2013].
- JONES, Caroline A. *Sensorium, Embodied Experience, Technology and Contemporary Art*. The MIT Press. Cambridge, Massachusetts. 2006.
- KALLEKLEV, Katrine. 'Magifabrikk'. December 2014. Available from: <http://www.magifabrikk.no/> [Accessed September 2015].
- KAYE, Nick. *Multi-Media: Video, Installation, Performance*. Routledge; 1<sup>st</sup> edition published in Abington Oxtan. (May 22, 2007)
- KLANTEN, Robert (Editor), [Sven Ehmman](#) (Editor), [Verena Hanschke](#) (Editor), Lukas Feireiss (Editor). *A Touch of Code: Interactive Installations and Experiences*. Prestel Pub. 2011.
- KUECHLER, S. (2002) 'The Art of Ethnography: The Case of Sophie Calle'. In Coles, A, (ed.) *Site-Specificity: The Ethnographic Turn*. (p. 94 -114).Black Dog Publishing: London. Available from: <http://discovery.ucl.ac.uk/119309/> [Accessed May 2012].
- KUSPIT, Donald. 'The Matrix of Sensations'. Artnet Worldwide Corporation, New York, NY, USA. Available from:

<http://www.artnet.com/magazineus/features/kuspit/kuspit8-5-05.asp> [Accessed January 2012].

- KNOWLES, J. GARY. Adra L. Cole. *Handbook of the Arts in Qualitative Research*. Sage Publications. Thousand Oaks, California. (2008)
- KO, Andrew J., Myers, Brad A. *Human Factors Affecting Dependability in End user Programming*. ACM. New York. 2000.
- KOOLHAUS, Rem. *Pearl River Delta*. Monacelli Press, U.S. 2000.
- KRUEGER, Myron. *Artificial Reality 2*. Addison-Wesley Professional. 1991.
- KRYSA, Joasia. Lillemose, Jacob. 'Curating Immateriality. Conceptual Transformations of Art: From Dematerialisation of the object to immateriality in networks.' 2006. Available from: <http://www.data-browser.net/03/> [Accessed May 3, 2013].
- KURTZ, Steve. Steve Barnes, Dorian Burr, Beverly Schlee and Hope Kurtz. *Observations on Collective Cultural Action*. Available from: <http://www.critical-art.net/books/digital/> Page 66. [Accessed August 13, 2013].
- Kusahara, Machiko. 'Device Art: A New Approach in Understanding Japanese Contemporary Media Art'. *Media Art Histories*. Oliver Grau (ed). The MIT Press, Cambridge Massachusetts. 2007. Page 290.
- KWON, Miwon. *One Place after Another, Site-Specific Art and Locational Identity*. The MIT Press. 2002.
- LACAN, Jacques. *Ecrits*. W. W. Norton & Company; 1 edition. 2007.
- LAUREL, Brenda. *Computers as Theater*. Addison-Wesley. 1993. pp. 15, 20.
- LAUREL, Brenda. (ed) *Research, Methods and Perspectives*. MIT Press, 2003.
- LAUREL, Brenda. *Computers as Theater*. 2nd ed. Reading, Mass.: Addison-Wesley, 1993. (First edition, 1991) Two Selections. Pp. 49 – 65, 563.
- LAURENZO, Tomás. *HCI in New Media Art Practices* Instituto de Computación, Facultad de Ingeniería. Universidad de la República. Montevideo, Uruguay.
- LEACH, James. *Differentiation and encompassment: A critique of Alfred Gell's theory of the abduction of creativity*. King's College, Cambridge. King's College, King's Parade, Cambridge.

- LEAVY, Patricia. *Method Meets Art, Arts-Based Research Practice*. The Guilford Press. New York. 2009.
- LECOMPTE, Margaret D. Goetz, Judith Preissle. 'Problems of Reliability and Validity in Ethnographic Research'. *Review of Educational Research*. Spring 1982, Vol. 52, No. 1, Pp. 31-60.
- LEUNG, Ken. 'Evolution of Immersion in 20th Century Media Art'. 2012.  
Available from: <http://www.kenleung.ca/portfolio/evolution-of-immersion-in-20th-century-media-art>. [Accessed August 12, 2013.]
- LILLEMOSE, Jacob. 'Conceptual Transformations of Art: From Dematerialisation of the object to immateriality in networks'. Available from: <http://www.kurator.org/media/uploads/publications/DB03/Lillemose.pdf> [Accessed June 30, 2013].
- LIU, Alan. Available from: <http://bbrodzkiart.blogspot.ca/2011/03/hhow-does-destructive-creativity-in.html> [Accessed June 30, 2013].
- MELHUUS, Marit. *Ethnographic Practice in the Present*. Berghahn Books. 2010
- MANOVICH, Lev. 'On Totalitarian Interactivity' (notes from the enemy of the people). Available from: <http://manovich.net/TEXT/totalitarian.html> [Accessed May 23, 2013].
- MARINETTI, F.T. 'Manifesto of Tactilism'. 1921. Read at the Theatre de l'Oeuvre (Paris), the World Exposition of Modern Art (Geneva), and published In Comoedia in January 1921. Available at: [http://peripheralfocus.net/poems-told-by-touch/manifesto\\_of\\_tactilism.html](http://peripheralfocus.net/poems-told-by-touch/manifesto_of_tactilism.html) [Accessed June 11, 2013].
- MAXWELL, I.J., Pigram, D.A. 2010, 'Supermanoeuvre - Inorganic Speciation: Matter, Behaviour and Formation in Architecture'. *Contemporary Digital Architecture: Design and Techniques*. Links International, Barcelona, pp. 208-227.
- MCKENZIE, Jon. Rebecca Schneider. 'Critical Art Ensemble, Tactical Media Practitioners, An Interview by Jon McKenzie and Rebecca Schneider'. *The Drama Review 44, 4 (T168), Winter 2000*. 2000. Page 136. New York University and the Massachusetts Institute of Technology. Available from: [www.csun.edu/~vcspc00g/301/caeinterview-tdr.pdf](http://www.csun.edu/~vcspc00g/301/caeinterview-tdr.pdf). [Accessed June 13, 2013].
- MITCHELL, Andrew. *Heidegger Among the Sculptors*. Stanford University, 2010. pp. 1, 26.
- MOGGRIDGE, Bill. *Designing Iterations*. MIT Press, 2013. Available from:

<http://www.designinginteractions.com/interviews/BrendaLaurel>  
[Accessed March 2013].

MOHOLY-NAGY, Laszlo. *The New Vision*. 1928. Monoskop.org.  
Available from: [http://monoskop.org/images/a/af/Moholy-Nagy\\_Laszlo\\_The\\_New\\_Vision\\_and\\_Abstract\\_of\\_an\\_Artist.pdf](http://monoskop.org/images/a/af/Moholy-Nagy_Laszlo_The_New_Vision_and_Abstract_of_an_Artist.pdf)  
[Accessed December 2014].

MONGE, Peter R., Contractor Noshir S. *Theories of Communication Networks*. Oxford University Press. USA. 2003.

NORMAN, Don. 'Natural User Interfaces are not Natural'. 2007-2012.  
<http://www.ind.org> [Accessed May 14, 2013].

JACKSON, Robert. 'Heidegger, Harman and Algorithmic Allure'.  
Presented at the *Association of Art Historians Conference*,  
Glasgow, 2010.  
[www.academia.edu/313558/Heidegger\\_Harman\\_and\\_Algorithmic\\_Allure](http://www.academia.edu/313558/Heidegger_Harman_and_Algorithmic_Allure) [Accessed June 22, 2013].

JENKINS, Henry. Sam Ford. *Creating Value and Meaning in a Networked Culture, Spreadable Media*. New York University Press, 2013. Page 158.

JORDAN, Brigitte ed. Isaacs, Ellen. *The Value of Rapid Ethnography*. Parc Publications. 2012.  
<http://www.parc.com/about/people/86/ellen-isaacs.html>

Koolhaus, Rem. *Pearl River Delta*. Monacelli Press, U.S. 2000

Krueger, Myron. *Artificial Reality 2*. Addison-Wesley Professional. 1991. pp.xii, 62.

KRUEGER, M.W., T. Giofriddo, K. Hinrichsen. Artificial Reality Lab, The University of Connecticut. *Videoplace Sampler Experiments in Man Machine Interaction*. 1985. [Online] Available from:  
<https://www.youtube.com/watch?v=d4DUleXSEpk>  
[Accessed September 2014]

LAUREL, Brenda. 'Monoskop - a collaborative wiki research on the history of media art and culture'. Last modified on 16 March 2013.  
Available from: [http://monoskop.org/Brenda\\_Laurel](http://monoskop.org/Brenda_Laurel) [Accessed May 2013].

LAUREL, Brenda. Rachel Strickland. 'Placeholder, Landscape and Narrative in Virtual Environments'. Interval Research Corporation, Banff Center for the Performing Arts. Published in ACM Computer Graphics Quarterly Volume 28 Number 2 May 1994.  
[http://www.tauzero.com/Brenda\\_Laurel/Placeholder/Placeholder.html](http://www.tauzero.com/Brenda_Laurel/Placeholder/Placeholder.html) [Accessed June 25, 2013].

LAURENZO, Tomás. 2008. 'HCI in New Media Art Practices'. Instituto de Computación, Facultad de Ingeniería. Universidad de la República. Montevideo, Uruguay. Available for:

<http://www.aipo.es/articulos/2/46.pdf> [Accessed February 2012].

Leach, James. *Differentiation and encompassment: A critique of Alfred Gell's theory of the abduction of creativity*. King's College, Cambridge. King's College, King's Parade, Cambridge. 2003. Available from: [www.jamesleach.net](http://www.jamesleach.net) [Accessed September 2015].

LECOMPTE, Margaret D. Goetz, Judith Preissle. 1982. 'Problems of Reliability and Validity in Ethnographic Research'. *Review of Educational Research*. Spring 1982, Vol. 52, No. 1, Pp. 31-60.

LIU, Alan 'Destructive Creativity in the Information Age'. Available from: <http://bbrodzkiart.blogspot.ca/2011/03/hhow-does-destructive-creativity-in.html> [Accessed June 1, 2013].

LOZANO-HEMMER, Rafael. Antimodular Research, 'Vectorial Elevation.' 2007. Available from: [http://www.lozano-hemmer.com/vectorial\\_elevation.php](http://www.lozano-hemmer.com/vectorial_elevation.php). [Accessed August 14, 2013].

MADDEN, Raymond. *Being Ethnographic: A Guide to the Theory and Practice of Ethnography*. Sage Publications. 2010.

Maxwell, I.J., Pigram, D.A. 2010, 'Supermanoeuvre - Inorganic Speciation: Matter, Behaviour and Formation in Architecture', *Contemporary Digital Architecture: Design and Techniques*. Links International. Barcelona. pp. 208-227.

MCKENZIE, Jon. Rebecca Schneider. 'Critical Art Ensemble, Tactical Media Practitioners'. An Interview by Jon McKenzie and Rebecca Schneider. *The Drama Review* 44, 4 (T168), Winter 2000. Copyright © 2000 New York University and the Massachusetts Institute of Technology. Available from: [www.csun.edu/~vcspc00g/301/caeinterview-tdr.pdf](http://www.csun.edu/~vcspc00g/301/caeinterview-tdr.pdf) [Accessed August 2, 2013].

MCHALE, John Lawrence (ed). *Information Explosion – Knowledge Implosion, Good News*. New York: Columbia University Press. 1968.

MILLEN, David R. 'Rapid Ethnography: Time Deepening Strategies for HCI Field Research'. AT&T Labs-Research. Proceeding DIS '00 Proceedings of the 3rd conference on Designing interactive systems: processes, practices, methods, and techniques. New York, NY, USA ©2000. Available from: [http://onemvweb.com/sources/ethnography/rapid\\_ethnography.pdf](http://onemvweb.com/sources/ethnography/rapid_ethnography.pdf) [Accessed October 2012].

MIRIORAMA 16. Mostra Collettiva. 50 Anniversario del Gruppo. Milano. CLP Relazioni Pubbliche. Fondazione Mudima. Arte.go. Available from: [http://www.arte.go.it/eventi/2010/e\\_1805.htm](http://www.arte.go.it/eventi/2010/e_1805.htm) [Accessed July 24, 2013.]

- MOHOLY-NAGY, Laszlo. *The New Vision, from Material to Architecture*. Brewer, Warren & Putnam 1932.
- MONGE, Peter R., Noshir S. Contractor. *Theories of Communication Networks*. Oxford University Press, USA (March 27, 2003)
- MONOSKOP - a collaborative wiki research on the history of media art and culture. Last modified on 16 March 2013. Available from: [http://monoskop.org/Brenda\\_Laurel](http://monoskop.org/Brenda_Laurel) [Accessed May 2013].
- MORRIS, Sue. *Co-Creative Media: Online Multiplayer Computer Game Culture*. Available from: [http://scan.net.au/scan/journal/display.php?journal\\_id=16](http://scan.net.au/scan/journal/display.php?journal_id=16) [Accessed June 13, 2013].
- MOULTHROP, Stuart. *From Work to Play Molecular Structure in the Time of Deadly Games. First Person: New Media as Story, Performance and Game*. Ed. Noah Wardrip-Fruin and Pat Harrigan. Cambridge, MA: MIT Press. 2004. Pp.56-69. <http://www.electronicbookreview.com/thread/firstperson/molecular>. [Accessed June 22, 2013].
- MOULTHROP, Stuart. 'From Work to Play' in *The Meaning of Video Games: Gaming and Textual Studies*, by Steven Jones. Routledge, New York and London. 2008. Taylor and Francis Group. Pp. 6, 62.
- MURPHY, Dr. Michael. *Anthropological Theories*. The University of Alabama. Tuscaloosa. 2009.
- MURRAY, Janet. 'From Game-Story to Cyberdrama'. Noah Wardrip-Fruin. (editor) Pat Harrigan. (editor) *First Person: New Media as Story, Performance and Game*. MIT Press. Cambridge. 2004. Page 2.
- MURRAY, Janet H. *Hamlet on the Holodeck, The Future of Narrative in Cyberspace*. Free Press. 1997. pp. 71, 74, 79, 83.
- MURRAY, Janet. 'MIT CMSW Comparative Media Studies'. Cambridge, Massachusetts. Available from: <http://web.mit.edu/cms/People/henry3/holodeck.html> [Accessed July 7, 2013].
- NG, Laurence. IdN Magazine. <http://greyworld.org/about> [Accessed August 2, 2013].
- NOBLE, Joshua. *Programming Interactivity: A Designer's Guide to Processing Arduino and Open Frameworks*. O'Reilly Media. 2009.
- NODELMAN, Sheldon. 'Disguise and display: recent publications detail a long-neglected aspect of Marcel Duchamp's seminal oeuvre—installation design as a work of art - Duchampiana I – analysis'. *Art in America* - Critical Essay. 2003.

- NORMAN, Don. *Living with Complexity*. The MIT Press, Cambridge, Massachusetts. 2010. pp.122, 186.
- NORMAN, Don. 'Interaction Design Is Still an Art Form, Ergonomics Is Real Engineering'. Copyright 2007-2012 © Donald A. Norman. Available from: [http://www.jnd.org/dn.mss/interaction\\_design\\_i.html](http://www.jnd.org/dn.mss/interaction_design_i.html) [Accessed March, August 2012].
- NORMAN, Don. 'Natural User Interfaces are not Natural'. Available from: <http://www.jnd.org> Copyright 2007-2012 © Donald A. Norman. [Accessed March 2012].
- NORMAN, Don. Bahar Wadia. 'Opportunities and Challenges for Touch and Gesture-Based Systems'. jnd.org. 2013. Available from: [http://www.jnd.org/dn.mss/opportunities\\_and\\_ch.html](http://www.jnd.org/dn.mss/opportunities_and_ch.html) [Accessed August 2014]
- OSTHOFF, Simone. 'Lygia Clark and Hélio Oiticica: A Legacy of Interactivity and Participation for a Telematic Future'. *Leonardo Online*. 2013. <http://www.leonardo.info/isast/spec/projects/osthoff/osthoff.html> [Accessed May 15].
- PACKER, Randall and Ken Jordan. *Multimedia, From Wagner to Virtual Reality*. W. W. Norton & Company. 2002. Page 104.
- PACKER, Randall (editor). Ken Jordan (editor) 'Roy Ascott: Behaviourist Art and the Cybernetic Vision'. *From Wagner to Virtual Reality*. W.W. Norton and Company. New York, London. 2002. Page 106.
- PACKER, Randall. Ken Jordan. ArtMuseum.net with W.W. Norton Co. Available from: <http://www.w2vr.com/timeline/Krueger.html/> [Accessed August 1, 2013].
- PAUL, Christiane. 'The Myth of Immateriality -- Presenting and Preserving New Media' Available from: [http://www.banffcentre.ca/bnmi/programs/archives/2005/refresh/li\\_siten.asp](http://www.banffcentre.ca/bnmi/programs/archives/2005/refresh/li_siten.asp) [Accessed June 2, 2013].
- PEARSON, Matt. *Generative Art*. Manning Publications; Pap/Psc Edition. (July 7 2011). Page xviii.
- PENNY, Simon (editor) *Critical issues in Electronic Media. Article titled Utopian Plagiarism, Hypertextuality, and Electronic Cultural Production*. Suny Series in Film History and Theory. 1995. Available from: [http://books.google.ca/books/about/Critical\\_Issues\\_in\\_Electronic\\_Media.html?id=MsRZ-z9VjFoC&redir\\_esc=y](http://books.google.ca/books/about/Critical_Issues_in_Electronic_Media.html?id=MsRZ-z9VjFoC&redir_esc=y) [Accessed September 2014].
- PENNY, Simon. *Designing Embodied Interaction: Aesthetic, Technical and Theoretical Issues*. Available from:

<http://www.youtube.com/watch?v=l2TU0FipXes>. [Accessed October 21, 2012].

PICKERING, Michael ed. *Research Methods for Cultural Studies*. Edinburgh University Press. 2008.

POISSANT, Louise. 'The Passage from Material to Interface', in *Media Art Histories*. Edited by Oliver Grau. Cambridge: MIT Press, 2007. Chapter 12. Page 229.

POOLE, David, Sophie Le-Phat Ho. 'Digital Transitions and the Impact of New Technology' On the Arts Canadian Public Arts Funders (CPAF) network. Available from: [www.cpafo-opsac.org/en/themes/.../DigitalTransitionsReport-FINAL-EN.p...](http://www.cpafo-opsac.org/en/themes/.../DigitalTransitionsReport-FINAL-EN.p...) [Accessed June 2011].

POPPER, Frank (2007). *From Technological to Virtual Art*. Cambridge, MA: MIT Press. p. 77.

POPPER, Frank. *Art, Action and Participation*. London. Studio Vista. 1975.

PORTH, Eric. Kimberley Neutzling. Jessica Edwards. 'Anthropological Theories, A Guide Prepared for Students by Students'. The University of Alabama, Department of Anthropology. 2009. Available from: <http://anthropology.ua.edu/cultures/cultures.php?culture=Functionalism>. <http://www.metropolismag.com/Point-of-View/March-2013/Toward-Resilient-Architectures-1-Biology-Lessons/> [Accessed June 1, 2011].

REINHARDT, Jasia. *Cybernetic Serendipity*. Media Kunz Netz. Available from: <http://www.medienkunstnetz.de/exhibitions/serendipity/> [Accessed August 1, 2013].

REICHARDT, Jasia (ed). *Cybernetic Serendipity, The Computer and the Arts*. Frederick A. Praeger Inc Publishers. New York, New York. 1960. pp. 5, 45.

REISER, Martin. 'The Art of Interactivity: From Gallery to Street'. 2002. [www.martinrieser.com/Rieser\\_Art&Computers.pdf](http://www.martinrieser.com/Rieser_Art&Computers.pdf) [Accessed July 3, 2013].

RODOWICK. D.N. ed. *Afterimages of Gilles Deleuze's Film Philosophy*. University of Minnesota. Minneapolis. 2010.

ROGOFF, Irit. 'Looking Away, Participations in Visual Culture'. Histories and Theories of Intermedia. University of Maine. December 27, 2009. Available from: <http://umintermediai501.blogspot.ca/2009/12/irit-rogoff-looking-away-participations.html> [Accessed June 2012].

ROSTEK, Philip. *Journey to the West/Medusa*. 2012. [Online].

Available from: [http://www.youtube.com/watch?v=620\\_ogCXMTY](http://www.youtube.com/watch?v=620_ogCXMTY).  
[Accessed July 16, 2013].

ROBINSON, Laura. (2009). 'New Avenues for Sociological Inquiry: Evolving Forms of Ethnographic Practice'. *Sociology*. August 2009, vol. 43 no. 4. Sage Journals. BSA Publications, 2013. [soc.sagepub.com/content/43/4/685.full.pdf](http://soc.sagepub.com/content/43/4/685.full.pdf) [Accessed August 5, 2010].

Rodenbeck, Judith F. *Radical Prototypes: Alan Kaprow and the Invention of Happenings*. Academia Edu. 2011. <http://mitpress.mit.edu/books/radical-prototypes>. Page ix.

ROKEBY, David. 'The Harmonics of Interaction'. Available from: <http://www.davidrokeby.com/harm.html> [Accessed August 13, 2013].

ROKEBY, David. 'Transforming Mirrors: Subjectivity and Control in Interactive Media'. *Critical Issues in Electronic Media*. Edited by Simon Penny. State University of New York Press, 1995. Page 133.

ROKEBY, David. 'Transforming Mirrors'. 1996. *Very Nervous Systems*. <http://www.davidrokeby.com/mirrorsmirrors.html> [Accessed on June 5, 2013].

ROKEBY, David. <http://www.see-this-sound.at/print/work/104>  
[Accessed August 1, 2013].

ROSANE, Olivia. (2013, February). In Sarah Wanenchak (Chair). *The Republic of Tweets*. Theorizing the web 2013, New York, New York. Available from: <http://justpublics365.commons.gc.cuny.edu/ttw13-conference/>  
[Accessed September 2, 2013].

RUCHEL-STOCKMANS, Katarzyna. 'Image and Narrative', *Online Magazine of the Visual Narrative*. Issue 14. 2006. [http://www.imageandnarrative.be/inarchive/painting/kasia\\_ruchel.htm](http://www.imageandnarrative.be/inarchive/painting/kasia_ruchel.htm) [Accessed June 2011].

RUCHEL-STOCKMANS, Katarzyna. 'Impossible Self-representation'. *Image And Narrative, Online Magazine of the Visual Narrative*. Issue 14. Painting/Portrait. July 2006.

SAFFER, Dan. *Designing for Interaction: Creating Innovative Applications and Devices* (2nd Edition). Voices That Matter. Berkeley, California. 2007. p.4.

SALINGAROS, Nikos. 'A Theory of Architecture'. 2006. Umbau-Verlag, Solingen. Available from: [http://books.google.ca/books?id=FV\\_0\\_RHD4cQC&pg=PA2&lpg=PA2&dq=Salingaros,+Nikos.+A+Theory+of+Architecture+2006.+Umbau-Verlag,+Solingen.&source=bl&ots=d5FiTp0FBY&sig=OLcWJCKk](http://books.google.ca/books?id=FV_0_RHD4cQC&pg=PA2&lpg=PA2&dq=Salingaros,+Nikos.+A+Theory+of+Architecture+2006.+Umbau-Verlag,+Solingen.&source=bl&ots=d5FiTp0FBY&sig=OLcWJCKk)

[k9DHs4yIII3MCRRz6DY&hl=en&sa=X&ei=0b1RUpmDGqSayQH2rID4Ag&ved=0CFEQ6AEwBw#v=onepage&q=Salingaros%2C%20Nikos.%20A%20Theory%20of%20Architecture%202006.%20Umbau-Verlag%2C%20Solingen.&f=false](http://www.metropolismag.com/Point-of-View/March-2013/Toward-Resilient-Architectures-1-Biology-Lessons/) [Accessed June 22, 2013].

SALINGAROS, Nikos. Michael Mehaffy. 'Toward Resilient Architectures'. *Metropolis Magazine*. Available from: <http://www.metropolismag.com/Point-of-View/March-2013/Toward-Resilient-Architectures-1-Biology-Lessons/> [Accessed June 22, 2013].

SALINGAROS, Nikos. 'Connecting the Fractal City'. University of Texas at San Antonio. ISI Distributed Titles (May 31, 2007). Available from: <http://www.math.utsa.edu/~yxk833/connecting.html>. [Accessed September 3, 2013].

SCHLOSSBERG, Edwin Susskind (editor). Lawrence McHale (editor), John. (editor) *Information Explosion— Knowledge Implosion, Good News*. New York: Columbia University Press, 1968.

SCHULER, Douglas. Aki Namioka. *Participatory Design: Principles and Practices*. Lawrence Erlbaum Associates. New Jersey, 1993.

SCHNEIDER, Arnd, Christopher Wright (Eds). *Between Art and Anthropology: Contemporary Ethnographic Practice*. 2010. Available from: <http://www.qualitative-research.net/index.php/fqs/article/view/1901> [Accessed July 2012].

SENNETT, Richard. 'The Public Realm'. 2008. Available from: <http://www.richardsennett.com/site/SENN/Templates/General2.aspx?pageid=16> [Accessed July 2012].

SENNETT, Richard. 2008. <http://www.richardsennett.com/site/SENN/Templates/General2.aspx?pageid=16> [Accessed April 4, 2013].

SERRES, M. and B. Latour (1995) *Conversations on Science, Culture and Time*. Michigan UP, Michigan.

SHANKEN, Edward A. 2009. *Art and Electronic Media*, Phaidon Press. P. 85.

SHANKEN, Edward. 'From Cybernetics to Telematics'. In: *The Telematic Embrace*. 2007. Page 50.

SHANKEN, Edward A. *Cybernetics and Art: Cultural Convergence in the 1960s*. Duke University. 2000. [www.artextra.com/CyberneticsArtCultConv.pdf](http://www.artextra.com/CyberneticsArtCultConv.pdf) [Accessed May 24, 2013]. Pages 2 – 5.

SHANKEN, Edward. 'From Cybernetics to Telematics'. *The Telematic Embrace*. 2007. Page 53.

- SHARP, Miranda. 'Crossing Territories: Live Art as a Mediator of Intimacy'. 2011. *Visual Communication Sage Publications*. Available from: <http://vcj.sagepub.com/content/10/3/325.full.pdf+html> [Accessed August 1, 2013].
- SHAW, Jeffrey. 'Web of Life'. ZKM Center for Art and Media in Karlsruhe, Germany. Available from: <http://www.web-of-life.de/wolsiteNew/artwork/installationzkmStart.html> [Accessed February 2013].
- SHOBEN, Andrew. Available from: <http://idnworld.com/creators/?id=Greyworld> [Accessed May 4, 2013].
- SNOOK, Kelsey. 'Daily Tous Les Jours'. Available from: <http://www.dailytouslesjours.com/>[Accessed June 4, 2013].
- SOEGAARD, Mads (ed). *Interaction Design Foundation*. [https://www.interaction-design.org/tv/categories/interactive\\_design.html](https://www.interaction-design.org/tv/categories/interactive_design.html)
- STEINER, Hadas A. *Archigram*. Routledge. Taylor and Francis Group. New York and London. 2009. Page 18.
- STRICKLAND, Rachel. 'Placeholder'(1993). Available from: <http://vimeo.com/27344103> [Accessed September 10, 2013].
- SUSSMAN, Elizabeth and Fred Wasserman. *Eva Hesse*. Yale University Press. 2006.
- SVANEAS, Dag (2013): 'Philosophy of Interaction'. In: Soegaard, Mads and Dam, Rikke Friis (eds.). *The Encyclopedia of Human-Computer Interaction*, 2nd Ed. Aarhus, Denmark: The Interaction Design Foundation. [http://www.interaction-design.org/encyclopedia/philosophy\\_of\\_interaction.html](http://www.interaction-design.org/encyclopedia/philosophy_of_interaction.html) [Accessed August 4, 2013].
- SWEENEY, Robert. *Networked Artworks: Complex Connections in New Media Education*. Proceedings of the Digital Arts and Culture Conference, After Media, Embodiment and Context. University of California. Digital Arts and Culture. eScholarship University of California at Irvine. 2009. Page 2. Available from: <http://www.escholarship.org/uc/item/4sk9195w#page-1> [Accessed July 22, 2013].
- TEJASAPUTRA, Adi B. 'Supporting Rapid Ethnography for HCI Field Research with Pair Writing'. Available from: [http://www.the2the.com/adi/publications\\_presentations/supporting\\_rapid\\_ethnography\\_hci\\_field\\_research\\_pair\\_writing.pdf](http://www.the2the.com/adi/publications_presentations/supporting_rapid_ethnography_hci_field_research_pair_writing.pdf). [Accessed July 22, 2013].

THE BANFF NEW MEDIA INSTITUTE. 'Experiential Design, A Critical Diary of New Media'. Banff, Canada. 1997. (Televised video).

THOMPSON, John B. *The Media and Modernity: A Social Theory of the Media*. Stanford University Press. 1995. p. 45.

THOMPSON, Nate. 'Socially Engaged Contemporary Art: Tactical and Strategic Manifestations'. *Americans for the Arts. Animating Democracy, A Program of Americans for the Arts*. 2011. Available from: [animatingdemocracy.org/sites/.../NThompson%20Trend%20Paper.pdf](http://animatingdemocracy.org/sites/.../NThompson%20Trend%20Paper.pdf) [Accessed May 2013].

TURKLE, Sherry. *The Second Self, Computers and the Human Spirit*. Twentieth Anniversary Edition. MIT Press. Cambridge MA. 2005. P. 131.

TURKLE, Sherry. 'How Computers Change the Way we Think.' *The Chronicle of Higher Education*. 1995. Available from: <http://www.udel.edu/educ/whitson/897s05/files/turkle.htm> [Accessed May 25, 2013].

USSULMAN, Rainer. Available from: <http://www.rainerusselmann.net/2008/12/dilemma-of-media-art-cybernetic.html> [Accessed July 17, 2013.]

VAN-DE-VELDE, Zoe. 'Photography and Narrative'. *Sophie Calle Images: Making Life into Art*. Bright Hub. June 20, 2011. Available from: <http://www.brighthub.com/multimedia/photography/articles/119810.aspx> [Accessed November, 2012]

WALKER, Stephen. Gordon Matta-Clark. *Art, Architecture and the Attack on Modernism*. I.B.Tauris and Company Limited. London. 2009.

WALTON, Susan. 'Jean Briggs's Never in Anger as an Ethnography of Experience'. *Sage Journals Online, Critique of Anthropology*. December 1993 vol. 13 no. 4 379-399. University of Michigan. Ann Arbor. 1993. p. 379. Available from: <http://deepblue.lib.umich.edu/bitstream/handle/2027.42/66542/10.1?sequence=2> [Accessed July 2012]

WELLMAN, Barry, Janet Salaff, Dimitrina Dimitrova, Laura Garton, Milena Gulia. Caroline Haythornthwaite. 'Computer Networks as Social Networks: Collaborative Work, Telework, and Virtual Community' Centre for Urban and Community Studies. University of Toronto, Toronto, Canada. 1996. Available from: [http://www.itu.dk/stud/speciale/specialeprojekt/Litteratur/Wellman\\_1996%20-%20computer%20networks%20as%20social%20networks.pdf](http://www.itu.dk/stud/speciale/specialeprojekt/Litteratur/Wellman_1996%20-%20computer%20networks%20as%20social%20networks.pdf) [Accessed December 2013].

- WANDS, Bruce. *Art of the Digital Age*. Thames and Hudson. 2007.
- WATSON, Walter. *The Architectonics of Meaning: Foundations of the New Pluralism*. State University of New York Press. Albany, 1985.
- WEIBEL, Peter. 'It is Forbidden not to Touch: Some Remarks on the (Forgotten Parts of the) History of Interactivity and Virtuality'. pp. 21, 39. *Media Art Histories*. Ed Oliver Grau, The MIT Press, Cambridge Massachusetts. 2007. P. 21.
- WILENSKI, R.H. *The Modern Movement in Art*. Faber and Faber. 1935. pp.155 -158.
- WOERDE, Lotte. 'Interacticipation: Ten Artworks Reflecting the Status of Contemporary Participation in New Media Art.' *Masters of Media*. University of Amsterdam. 2011. Available from <http://mastersofmedia.hum.uva.nl/2011/02/24/interacticipation-ten-artworks-reflecting-the-status-of-contemporary-participation-in-new-media-art/> [Accessed June 2012].
- WOERDE, Lotte. 'Masters of Media, New Media and Digital Culture' M.A. University of Amsterdam. Amsterdam. Available from: <http://mastersofmedia.hum.uva.nl/2011/02/24/interacticipation-ten-artworks-reflecting-the-status-of-contemporary-participation-in-new-media-art>. [Accessed June 30, 2013].
- WRENN, Chase B. 'Naturalistic Epistemology', *The Internet Encyclopedia of Philosophy*, ISSN 2161 0002, <http://www.iep.utm.edu/> [Accessed August 24, 2012].
- WYCHERLEY, R.E. 'Literary and Epigraphical Testimonia: The Athenian Agora V3'. [Online]. Literary Licensing, LLC (Oct 15 2011). eBook3000.com [http://www.ebook3000.com/R--E--Wycherley---Literary-and-Epigraphical-Testimonia--Athenian-Agora-vol--3-\\_44799.html](http://www.ebook3000.com/R--E--Wycherley---Literary-and-Epigraphical-Testimonia--Athenian-Agora-vol--3-_44799.html) [Accessed December 2011]
- YOUNGBLOOD, Gene. *The Expanded Cinema*. Clarke, Irwin & Company Limited, Toronto and Vancouver. 1970. pp. 63, 54, 339. Available from: [http://www.vasulka.org/Kitchen/PDF\\_ExpandedCinema/book.pdf](http://www.vasulka.org/Kitchen/PDF_ExpandedCinema/book.pdf) [Accessed August 12, 2013].
- YUAN, Juliette. <https://www.facebook.com/roy.ascott>  
Available from: <https://www.facebook.com/photo.php?fbid=10151283213862718&set=t.554994561&type=3&theater> [Accessed September 30, 2012]
- ZIELINSKI, Siegfried. 'Deep Time of the Media, Toward an Archaeology of Hearing and Seeing by Technical Means'. MIT. Cambridge. 2006.

## Conferences, Publications and Exhibits

### Conferences

*Interactive Screen, Beautiful Lives Conference.*

At The Banff Centre

*Inner Beauty.* 2010.

<http://www.banffcentre.ca/programs/program.aspx?id=1028>

*Mix Conference in Transmedia Writing and Digital Creativity.*

Bath Spa University, Corsham Court. 2012.<http://mix-bathspa.org/>

*Touchpoints PhD research presented at Cenovus Energy Center, SAIT Polytechnic*

Presentation of video documentation and PhD research related to Touchpoints project. This project continues to evolve and involves 50 international contributors. 2012.

*SAIT Polytechnic Faculty Showcase*

Presented PhD research methodology in relation to rapid ethnography. 2013.

### Publications

*Virtual Mercury House Planetary and Interplanetary Events DAVINIO, Caterina.* Virtual Mercury House Planetary and Interplanetary Events. 53ma Esposizione Internazionale d'Arte de Biennale di Venezia. Edizioni Polimata, Roma, 2012. Page 91.

*Sublimation: An Exercise in the Immersive*

SoundFjord. Critical essay for Sublimation: An Exercise in the Immersive. For an exhibit at Oboro, New Media Center in Montreal, Quebec. 2012.

*EMMedia, Handheld Media*

An article about the Mix:Transmedia and Digital Creativity Conference that took place in Corsham UK, July 2012. 2012.

[http://emmedia.ca/?page\\_id=650](http://emmedia.ca/?page_id=650)

*TRUCK Contemporary Art, Calgary Canada*

Critical essay for TRUCK exhibit titled *La Chambre* by Jacinthe Lessard. June 2014.

### Exhibitions

*Doctoring Art Practice*

September 2012

Exhibit at the Salisbury Arts Center, Wiltshire, UK.

*Radeq Radio Live At Soundfjord 2012,*

London UK

Environmental Remix sound work broadcast as part of Radeq's sound streaming project from the Soundford Studio.

*Collected Silences Sound Composition Workshop*  
with Softday July 2012. Contributed to sound project and performance coordinated and curated by Softday from The University of Limerick, Ireland. At SOUND/SPACE Bermondsley London, UK.

Acted as participant in *JOURNEY TO THE WEST: A Planetary Fairytale*.

October 2012 – April 2013. At the 9th Shanghai Biennale at the Shanghai Contemporary Museum. Contributed to a collaborative narrative developed via networks — a reprise of *La Plissure du Texte* re-imagined for the Shanghai Biennale by artist and new media pioneer Roy Ascott. 2012.

*SoundShare | Show & Tell | November Edition | SoundFjord*.  
Sound Art Project – *St. Christophe* at this event at SoundFjord, London England. 2012.

*Waxen Wings Winter Compilation*  
2013. Collaborative experimental audio compilation.

*Lights Out Listening, 2013*  
Audio piece *Collected Silences: Sunday Taxi* recorded as part of *Collected Silences* series by Softday of Limerick Ireland, 2012. *Lights Out Listening* series, Glasgow Scotland, 2013.

*Touchpoints, Bath UK*  
33 Broad Street 2013.

*Beakerhead, Alberta College of Art and Design*  
*Touchpoints II* Calgary Canada.

*Fringe Arts Bath 2014*  
*Touchpoints II* Bath UK.

*The Vernal Pool, 2014 with Karen Abel*  
The Gladstone Hotel,  
Toronto, Canada.

### **Upcoming**

*Fringe Arts Bath 2015*  
*Disobedient* curated by Fay Stevens.  
Work title: *Don't Let Go*.

*Artscape Youngplace, 2015*  
Toronto, Canada  
Work title: *The Eastern Gap*  
Ethnographic research and artwork to be created with residents of Toronto Island in July 2015.

## **APPENDICES**

[redacted in this digitized version due to potential copyright issues]

*Appendix A: Fieldwork Data Collection for Deep*  
Fieldnotes for *Deep* and *Touchpoints at Fringe Arts Bath*

*Appendix B:*  
Webcam animations

*Appendix C: Fieldwork Data Collection for Touchpoints*  
*Touchpoints* Questionnaire

*Appendix D: Fieldwork Data Collection for Touchpoints III*  
Fringe Arts Bath 2014.

*Appendix E: Fieldwork Data Collection for Touchpoints III*  
Video Chat Interviews

*Appendix F: Documentation of Artwork*  
Documentation of *Deep*

*Appendix G: Documentation of Artwork*  
Documentation of *Touchpoints I* at 33 Broad Street.

*Appendix H: Documentation of Artwork*  
Documentation of *Touchpoints II (Beakerhead)*, and *III (Fringe Arts Bath)*

*Appendix I: Documentation of Artwork*  
Documentation of animations from *Viva*

**My thanks to all the Touchpoints Participants**

Mark Allard

Kaitlin Bentkowski

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Helen Frosi

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Suzy Lake

Donna Merineau

Richard Oxenham

Brendan Pittman, Subsenient

Heather Hughes Plimmer

Adam Wyzaker Redditt

Byron Rich

Lia Rogers

Philip Rostek

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Peter Tarn

Kris Thoreson

Colin Tyler

Bruce Watson

Anonymous participants