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**Internet Art and Interaction: A study into the Creation of a
Taxonomy of Interaction in Online Art Works.**

by

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Abstract

Using the hypothesis that interaction with net art can be categorised, the primary purpose of the research was to generate a taxonomy of this interaction. Emphasis is given to interactive web based works that require the user to participate by contributing material to the piece.

An initial period of contextualisation was required to position net art within contemporary arts culture this included an examination of previous attempts at categorising interactivity and the exploration of connected historical art practices. Most previous attempts at categorisation either characterise types of interactive work, or detail specific interactive characteristics the work itself may have. This aim of this thesis was to take an alternative approach by focusing on the interaction itself in order to create a taxonomy. To establish this characterisation of interactivity, several practical pieces of internet art were created that doubled as data collection tools.

The main outcome of this project resulted in the development of my own Connected, Partially Connected and Unconnected (C.P.U.) model of interactivity. This in turn necessitated the examination of the interactive process which resulted in defining a 'loop of interaction'. This loop of interaction specifies several separate phases to the interactive process, the C.P.U. model of interactivity occupying one of these phases.

This thesis primarily provides a platform with which to further interrogate interaction with net art. An unexplored area of Human Computer Interaction (HCI) that is specific to net art has been identified and is therefore of use to theorists and researchers working in this area. It is also of use to artists enabling them to better understand how interaction is understood within the context of their own practice.

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Chapter 1 - Introduction

Overview

The primary objective of this PhD is to establish a taxonomy of interaction that is specific to participatory art works that exist in an online scenario, the hypothesis being that online art has its own set of specific interactive responses. Previous research has highlighted how interaction specific to some of my online artworks can be categorised. This thesis attempts to expand on these findings to generate a wider taxonomy of interaction.

Commonly called net art¹, the works relating to this taxonomy are created for and viewed on the internet usually through a browser application such as Internet Explorer or Firefox.

Using previously established taxonomies and categorisations of interaction and the interactive process, such as the analysis of interactive texts on the internet by Lisbeth Klastrup (2003b), my research sought to generate my own taxonomy relative to online art. As there is no established taxonomy specific to the interaction that occurs with net art, the theories and analysis of interaction using a range of subjects, including interactive art, web usability, and computer art, are also examined. In order to test this hypothesis, a series

¹ Definitions of net art are explored further in Chapter 3 where I examine existing attempts to define net art and further propose my own extension to these pre-existing definitions.

of practical net art pieces² have been developed and disseminated to a selected audience, elements of the interaction with these pieces being recorded for analysis. These pieces were specifically designed to be participative in that the audience are required to contribute material to the work.

At the outset the core issue of this project was producing a taxonomy of interaction which would categorise the type of interaction that takes place with participatory internet art. This process would intrinsically incorporate issues of audience, looking at how an audience views pieces of online art and their relationship to other audience members in the process of collaboration. As the research progressed other issues became apparent that were fundamental to the direction of the research. These included balancing the roles of practitioner and researcher, establishing the role of net art within an arts culture, and facilitating a shift in the methodological process.

Developing a taxonomy of interaction specific to net art will lead to a better understanding of the interactive process. This knowledge could then be utilised to establish a set of expected responses to net art works and would

² It must be noted that whilst these pieces rely heavily on text based interaction, they have been generated from a continuation of my own contemporary art practice. The use of text was only introduced to produce what can be deemed as an example of one of the simplest forms of interaction possible within a readily available computerised system. As such, an analytical response to this research using literary theory was never deemed an appropriate or desirable. It is recognised that hypertext and literary theory are useful tools in analysing many online works that rely on a form of narrative structure, whether predominantly text based or otherwise. References are made to hypertext narratives (see Lialina 1996) and the use of text within online art (see Young-Hae Chang Heavy Industries c2001), however, analysis of these works is approached from a contemporary arts perspective.

also allow artists to make more informed decisions on their own creative process.

Rationale

There is an element of inevitability concerning the appropriation of the internet for artistic purposes, with artists utilising the network from its inception into mainstream culture. As this emergent technology became increasingly more accessible, especially through academic institutions, it suggested a reasonable alternative method of cataloguing and disseminating information about artworks. It is useful to briefly explore my education and employment history in order to establish the historical context within which the research question developed. Towards the end of my BA in Contemporary Arts, undertaken at Nottingham Trent University, a degree of experimentation with using the internet as an artistic conduit commenced. This culminated in several undergraduate pieces, mainly video installations, being catalogued in an online portfolio. During the process of establishing this online portfolio it became clear that the internet could be utilised in a way that superseded a mere vessel for publication or promotion. After learning some of the basic scripting methods that facilitated dynamic web page production a number of my previous art works could now be reinterpreted for the internet rather than simply described through images and text. These early experiments with net art resulted in some basic interactive art works that allowed the user to manipulate images and videos. An example of one of these early works included a reinterpretation of a nine screen video installation “Body of Work”

that contained a moving self portrait, each screen representing a different part of the body. The web version of this work consisted of still images from these videos that would change and produce a sound when the mouse was moved over them (figure 1). At this point it was not known that there was an art form being labelled “net art”, assuming that it was considered “contemporary art on the internet”.

After taking a position as a web designer for a small company there was a further expansion of my web development skills. This, coupled with an ongoing experimentation with producing internet art, ultimately led to the motivation behind my MA degree project, again undertaken at Nottingham Trent University. This course was an MA by registered project and incorporated the production of a practical piece of work and accompanying documentation. “Musical Forum” (figures 2 & 3) was created during 2004 and was used to analyse the potential of the internet as a vehicle for creating and disseminating art. This piece was redeveloped for this research and will be described in more detail in Chapter 7.

It was during this period that research revealed the presence of the net.art artistic movement and related theoretical discourse. The term net.art (with a dot between the “net” and the “art”) is used both as a label for internet art in general and, more usually, in reference to a group of artists working between 1994 and 1999, including but not limited to Vuk Ćosić, Jodi.org, Alexei Shulgin, Olia Lialina, and Heath Bunting. The online history of the movement



Figure 1: Body of Work (web version of a video installation) - David Herbert 2000

was accessible through internet works and the increasing amount of articles and papers being published on the web. My “Musical Forum” piece was in part inspired by the early works that were available at the time in that many used and subverted established internet conventions. “Form” (figures 4 & 5) by Alexei Shulgin (Shulgin 1997) for example, was a piece based on the form fields often found on internet web pages. The work is entirely composed of buttons, text boxes, drop-down lists, radio buttons and check boxes, the user being encouraged to click or interact with these components in a playful way.

Several books on net art had also been published by this time, “Arts and the Internet” by V.A. Shiva (Shiva 1996), was an early example of a literary response to the burgeoning medium of net art. Whilst understandably optimistic, due to being published before net art had fully developed, this early title still outlines many prescient concepts that the internet could offer to art. For example, it is often suggested in this text that net art could reach an audience that was previously unattainable except by those exhibiting at large city galleries (Shiva 1996:27). This speculation, whilst not entirely incorrect, clearly stems from an excitement generated by a new vehicle for artistic practice. My own practice was also filled with this optimism at the time and the potential audience for net art became one of the key theoretical considerations throughout my MA and PhD research.

Natalie Bookchin and Alexei Shulgin’s 1999 net art-cum-manifesto “Introduction to net.art” (figure 6) highlights the potential of the internet to deliver works that

incorporate its own critical response. This work, whilst for the most part ironic, delivers a literary critique of net art whilst concurrently performing as a work of art in its own right. Set out in bullet point form, this piece introduces some of the key issues inherent within this genre. Aside from the important subjects of potential audience and maintaining independence from institutions, one idea was particularly pertinent to my work at the time. “Collaboration without consideration of appropriation of ideas” (Bookchin and Shulgin 1999)³ is a key theoretical concern of my MA work. Prior to reading this work by Bookchin and Shulgin I had coined the phrase “unconscious collaboration” to describe works that require audience participation to contribute artistic material to a piece of net art. Rather than simply state that the work is participative I was interested in emphasising the importance of the audience contribution by using the word “collaboration”. The word “unconscious” refers to the fact that the audience member was not conscious of the initial artistic premise or concept. This idea will be discussed further in chapter 4.

Due to the weighting of my MA course, the majority of research was of a practical or technological leaning. The development of the MA project was based around an idea for a practical piece where resulting research was carried out to realise this idea. In this way it was very much a practice led project which, due to the nature of the practice, remained stable throughout the process. It is interesting to note here that there was no friction between the roles of artist and researcher during this time, being an artist in an academic environment revealed nothing to

³ Many of the quotes throughout this thesis were obtained from internet sources and as such are often unable to provide pagination. Where a quote is given without reference to a page number or identifiable place within a page it can be assumed that the source is online.

indicate that there would be issues with combining these roles in further research.

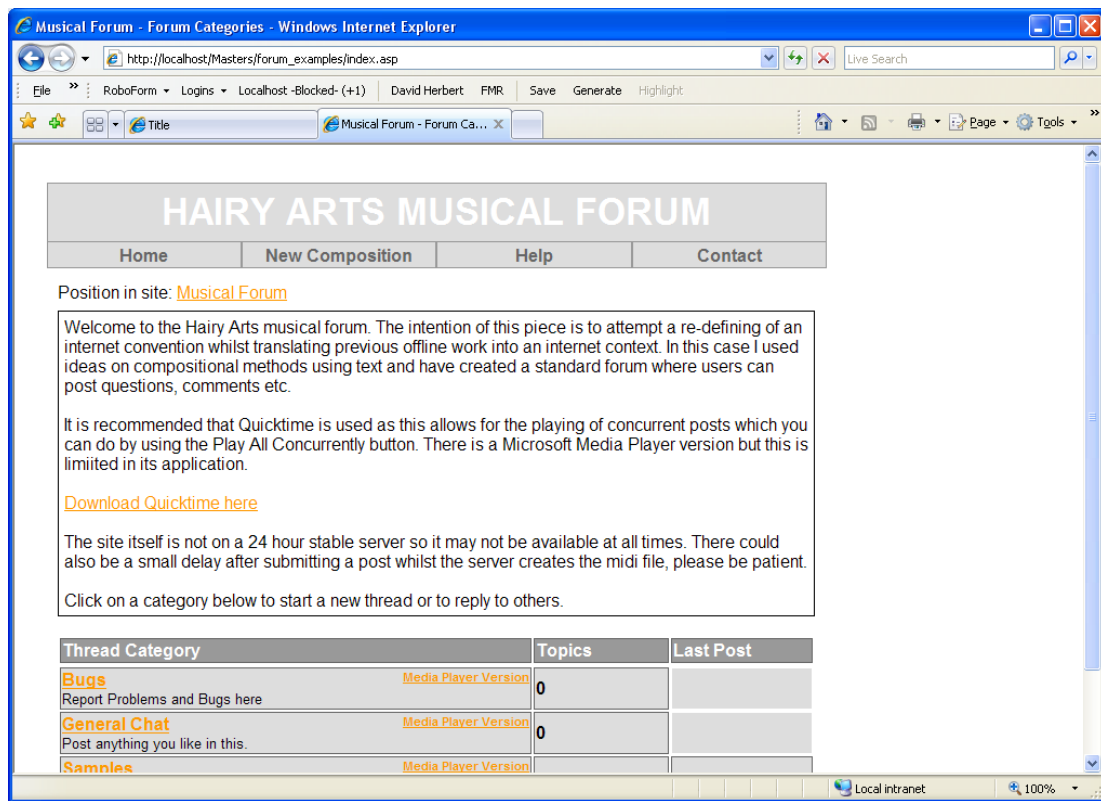


Figure 2: Musical Forum (front page) - David Herbert 2008



Figure 3: Musical Forum (inner page view of individual posts) – David Herbert 2008

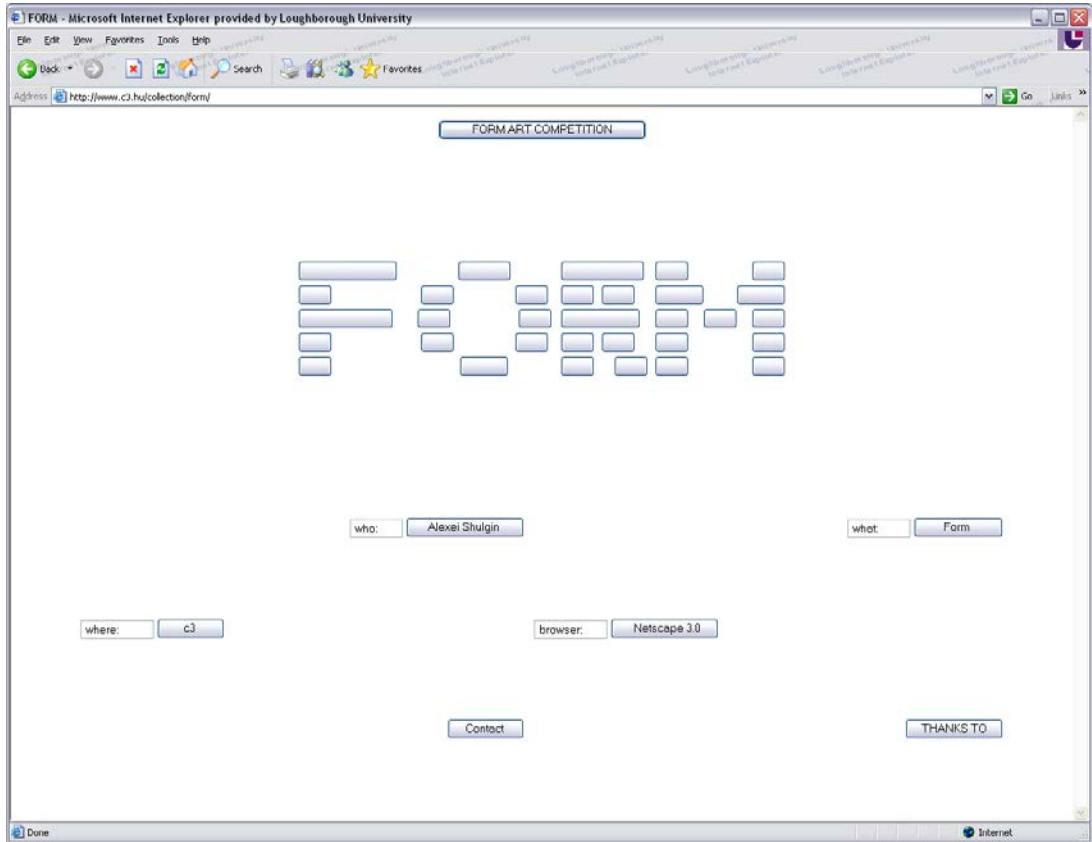


Figure 4: Form (homepage) - Alexei Shulgin 1997

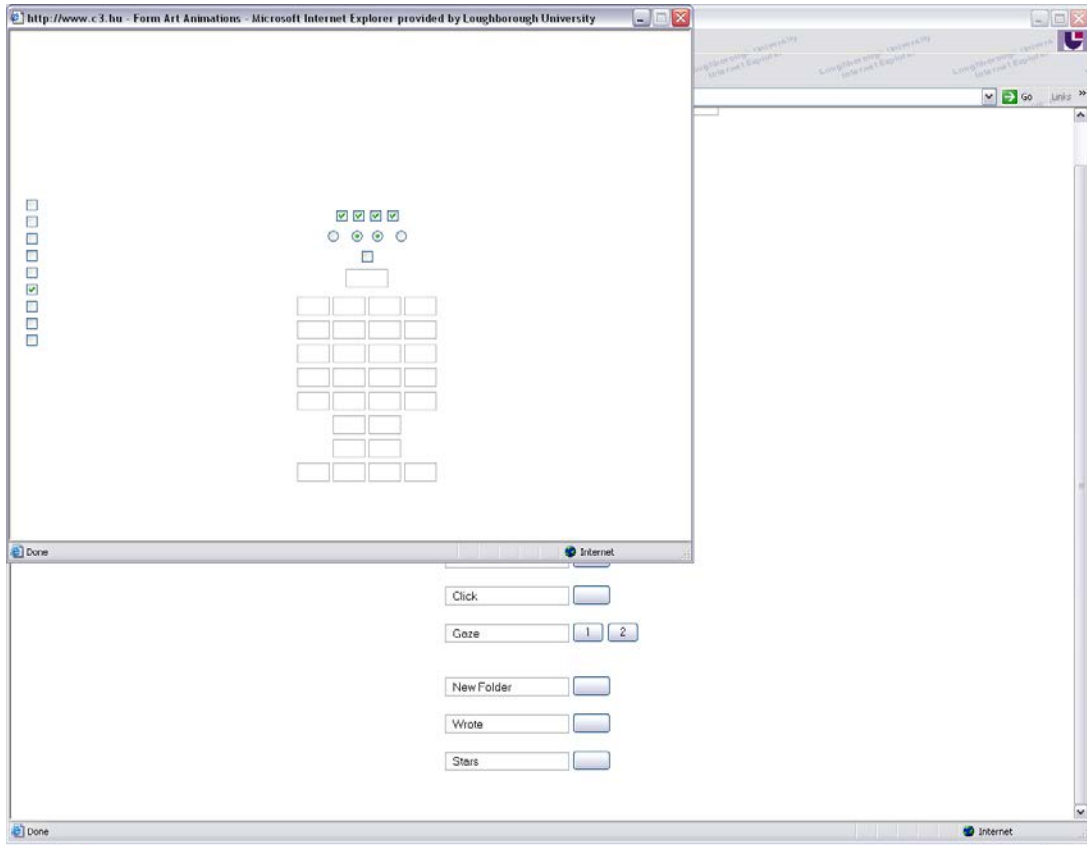


Figure 5: Form (example inner page) - Alexei Shulgin 1997

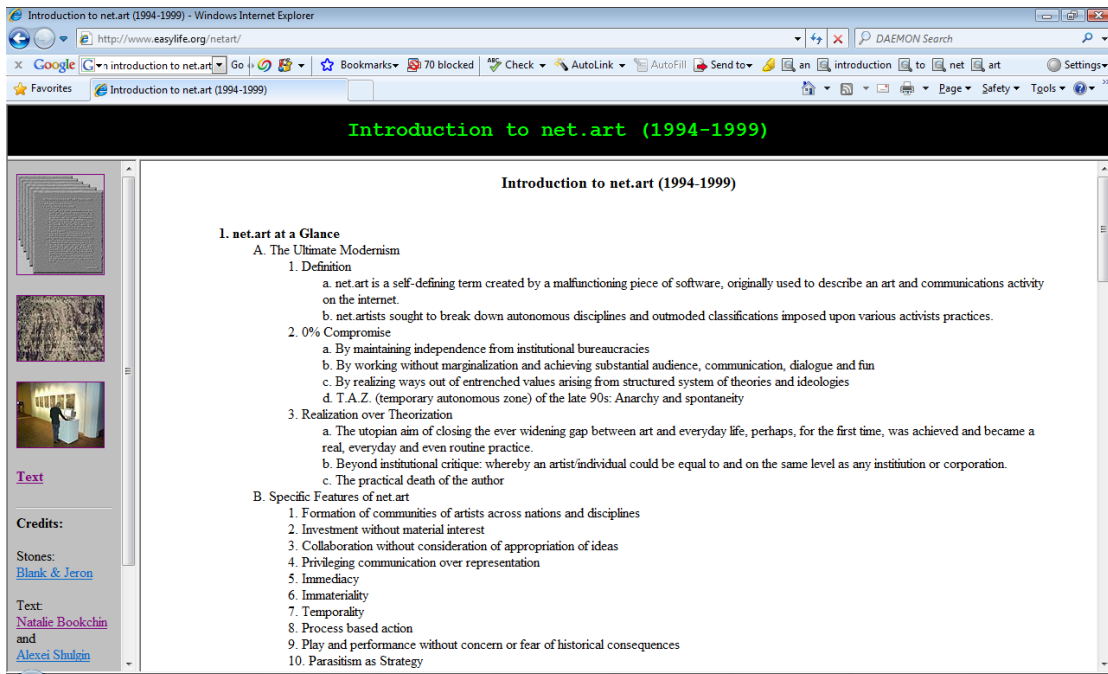


Figure 6: An Introduction to net.art - Bookchin and Shulgin 1999

As it transpired, a schism between these roles of practitioner and researcher appeared during this PhD research, having a major effect on the development and flow of the work. This issue contributed to an essential shift in the methodological process and is discussed throughout this project where appropriate.

The internet has a potentially vast repertoire of art work that may be developed for it. Pieces utilising hypertext fiction, flash animation, video streams, images, sound and many different combinations of these media are prevalent on the web. However, the concept of participatory art works, whatever the media used, held the greatest interest. Within an internet context these works are given a variety of names, participatory, collaborative, and user completed are all labels in frequent use within net art rhetoric. Whilst my own early attempts at producing net art were firmly aimed at recreating the video installation experience, this emphasis soon shifted towards the participatory potential of the network. This coupled with the possibility of the internet to reach any audience, or at least a wide and diverse audience as speculated by Shiva (Shiva 1996:27), suggested a positive direction for my own practice.

As a specific response to the “Musical Forum” work created during this MA course, a simple categorisation of the interactivity that took place was

developed. I theorised that the audience interacted in one of three different ways⁴:

Conscious Interaction is where the user is aware of the purpose of their interaction and generates material knowing there is a purpose or resolution to this interaction. For example, users would respond to others within the context of the piece and would try and develop meaningful textual threads or collaborative music with other people.

Unconscious Purpose driven Interaction, the user is aware that they are generating material in an artistic fashion but it is only for them. This type of interaction would involve users creating their own threads independent of others. However, the posts would be related to each other and there would be attempts to generate artistic material either through text or sounds.

Unconscious Interaction, the user interacts with the work without prior knowledge of artistic perpetuation. Here the user would usually respond by entering one post that is unrelated to any other. Often with few words or a series of characters seemingly entered to “see what happens”.

⁴ It must be stressed that these terms are not drawn from psychoanalytical discourse and have no intended connection to any similar terms that may be used in other research or disciplines. They should be viewed as indicators of how users engage and perceive their participation with interactive work and have been created as a very specific response to my own research process. They should not be viewed as an attempt to link the research to psychology as such a link would require a separate project and is beyond the scope of this thesis.

All responses to the “Musical Forum” could be placed under one of these terms and this categorisation is the progenitor of the research delivered here, providing the basis with which other forms of categorisation are analysed and developed. However, these terms specifically focus on the imaginary construct of the audience member in relation to how they are interacting within a creative and artistic context. As the project progressed it became apparent that this was not the specific area that was to be analysed resulting in new but related terms being coined. These previous terms are useful for analysing or characterising the transparency of an audience’s intentions and awareness with regard to creative activity. These terms have now been renamed Conscious, Semi-Conscious and Unconscious creativity and will be referred to as the C.S.U. model of creativity⁵ throughout the rest of this thesis. It became apparent that it was necessary to concentrate not on what the user thinks when they interact but how the interaction appears in relation to the framework within which they interact. This phenomenon can be better understood using the updated terms “Connected Interaction”, “Partially Connected Interaction”, and “Unconnected Interaction” which will be referred to as the C.P.U. model of interaction throughout this thesis. The focus for the analysis became rooted in the outcome of the interactive process rather than

⁵ The CSU model of creativity could possibly sit within the wider concept of co-creation. This concept originated in marketing and relates to closer relationships between business and consumer, as well as interactions within the business itself (see Wong 2010). Co-creation is a very broad term and can be defined as “any act of collective creativity” (Sanders and Simons 2009) and its scope has expanded beyond a business marketing strategy to other areas such as the arts (see Schrag 2009). Although it can be seen as a term that would cover the CSU model of creativity, Sanders and Simons state that Co-Creation differs from collaboration in that “the intent is to create something that is not known in advance” (Sanders and Simons 2009). When this is applied to the creative participation suggested through the CSU model of creativity, a framework for the material has already been created. It is beyond the scope of this research to further investigate the connection between Co-Creation and the CSU model but considering the broad scope of Co-Creation it is clear that the CSU model, even if it can be included within Co-Creation, is a distinct model of analysis.

suggesting a reliance on conscious activity of the user within this interactive process. This concept is a key part of the analysis of interaction and will be discussed further in later chapters.

Developing a Research Question

“it [net art] is an emerging area of practice that has no taxonomy”

(Thomson cited in Frost 2003)

Thomson, from the artist duo Thomson and Craighead, highlights the lack of net art taxonomies that existed at the time. He further suggests that, as there is no taxonomy, it is acceptable to discuss and refine the terms and definitions of media art practice. Despite the length of time since this comment, there still has been relatively little investigation into the categorisation of net art.

One reason why terminology and definitions have not become established is due to continued technological development. The rapidity of advancements in the technology of the internet cause many aspects of the art that uses these technologies to be re-evaluated. It may appear then, that due to continued technological development, attempts at categorisation would be as ephemeral as the pieces themselves and they may become obsolete as quickly as the technology. In this sense, net art will always have the appearance of emergence due to the rapid and continual technological developments. Whilst the changing nature of the technology is not invariant over time, more stable

areas of research do exist that remain open for categorisation⁶. As already mentioned, the importance of generating a taxonomy lies in creating a greater understanding of the interactive process. For the artist, knowledge of this process would be beneficial in the development of the art work and would be useful in ascertaining how users would interact with their work. Furthermore, it would give the artist a deeper understanding of how audience members connect to each other through their interaction. A unique element of my taxonomy is that it attempts to categorise the interaction that takes place with an online work. The existing taxonomies mentioned in this thesis either categorise the art work as a whole or categorise the characteristics of the art work. So whilst these established taxonomies are useful to analyse in relation to creating this research, my own taxonomy is an important progression. This will be discussed in more detail in Chapter 5.

Sociologist, researcher and writer, Jean-Paul Fourmentraux, generated a net art taxonomy which though characterised by generalisation gives us a starting place for talking about certain types of net art.

...three principal forms of net art: works of media contamination, works of algorithmic generation and works of interactive communication
(Fourmentraux 2007)

⁶ In particular, the methods of interaction with websites have remained stable despite changing technologies. For example, even though there are different input technologies (mice, joystick, touch-screen, keyboard, etc), the method of general interaction still takes a similar form. The user will click, type, draw and move a cursor around the screen.

Fourmentraux generates these “forms” as a broad response to the position of net art after ten years or more of development. He further explains that Media Contamination refers to the content, whatever media that may be, video, text, images or sounds. Algorithmic generation refers to scripts or computer code that manipulates the content. Interactive communication refers to the structure of the interaction, what happens when you click this, hover over that, and so on. These forms can be more simply referred to as content, code, and structure. Whilst Fourmentraux does explore these forms in more detail, the main point of concern is the fact that an attempt has been made to categorise an aspect of net art. An absence of academic research is made apparent by the virtue of this being one of the few attempts at a net art taxonomy.

The initial proposal sought to establish broad outcomes concerning interaction with net art, including the artist / audience collaborative process, and a definition of the relationship between audience, interactivity, and collaboration. Using a similar methodology to Graham’s 1997 thesis on computer based interactive works this would have involved a detailed analysis of audience types and how they related to the types of interaction that took place. The focus became much narrower leaving further analysis, particularly of audience types and their relation to interaction, for future research. The main concern developed into establishing the types of interaction that take place with net art, specifically net art which has a component of collaborative participation. The underpinning research agenda of this piece became the development of a taxonomy that tested the participatory and collaborative nature of net art. In doing so, this recognised how net art may be developed or how a set of tools

might be created in order to properly analyse what net art is and how it functions.

This question is approached by establishing three separate areas of enquiry, interaction, participation, and audience. Although there is often resilience to the concept of categorisation and quantification, particularly in areas such as art where subjectivity is an intrinsic and accepted attribute, it can also be enlightening and helpful in both a pragmatic and theoretical way. Ultimately a greater understanding of the interaction that takes place with works of participative net art is the subject I wish to explore. This gives information on how the audience responds to participatory art works and details a range of their expected responses. This in turn highlights the issues faced by artists when considering the creation of participative works, including possible pitfalls and obstacles.

Aside from the very practical notions of determining and categorising the nature of interaction, many more questions became apparent through the process of research. In particular the assumed democratic nature of net art was interrogated. As the artist Daniel Stringer notes, net art actively strives to act independently of institutions (Stringer 2001), it had therefore been assumed that, due to its means of distribution and exhibition, net art was not something that happened in relation to established arts culture. It was important to consider the responses to my previous internet works, "Musical Forum" in particular, which exhibited a reasonable level of participation from a seemingly diverse audience. This is consistent with the wider debates

articulated by Greene (Greene 2000) and Graham (Graham 1997:37) questioning the desirability of the incorporation of net art into the mainstream establishment and consequently supporting the view that the net art audience is democratic in nature.

One of the issues that therefore emerged from my own practice was the way in which artists or the general public might be involved in some model of arts practice. Establishing whether net art attracts a broad cross section of internet surfers or whether it is an online reserve for those already established within the wider arts culture became a key concern. An important link between theoretical debates and my own practice is the nature and definition of the art work itself. It may be that net art has a very particular definition and reaches a potential audience, however, this is uncertain and part of my research is addressing that idea.

The online situations that are being described here might be viewed as an act of deliberate art making within an arts culture or they may be viewed as online scenarios that are encouraging creative and artistic endeavour but do not necessarily have an arts culture attached to them. Within this argument is the notion that you do not have to be an artist to contribute to the practical work that has been set up. A situation that is explored further in Chapter 3 is the idea that many works of net art are produced by those that do not consider themselves artists. This suggests that there is scope for a non artist to participate but by the same token, if they do not have an arts background,

questions are raised as to whether these participants engage in the act of art or in an act of creative practice⁷. Therefore the notion of net art, what it is and how it is viewed by the general public and artists was brought into question. Rather than affirm the assumptions that were made, the research process led to a line of questioning whereby the data can now be used as a provocateur in testing the validity of some of the presupposed notions of what net art is.

Context

Net art is a branch of digital art that involves the internet in the creation of art work. It can also come under the banner of new media art, or more recently, media art. Other terms in common usage are:

- **net.art** (with a full stop between the “net” and “art”) – as previously mentioned refers to both a specific group of artists and the work being produced on the internet up to the year 2000. Coined by Pit Shultz in 1995 (Debatty 2006).
- **net art** – this term has effectively replaced “net.art” thus reinforcing the historical context of the previous term.

⁷ Whilst it is important to recognise the inherent issues concerning art and creativity in relation to participative art works, it is beyond the scope of this thesis to explore this in further detail. It is not my intention to enter into a debate on the difference between creativity and art. The previously mention CSU model of creativity is connected to this issue and can be expanded to cover to notion of audience perception of their own activities. This is discussed in Chapter 9 in the section on further research.

- **web art** – Tisma uses this term in his net art definition (see Tisma 2002). Strictly speaking web art suggests art on the World Wide Web which is not the same as the internet⁸
- **internet art** – a variant of net art
- **browser art** – The Tate website defines browser art as “a sub-genre of Net art”⁹ suggesting it specifically involves the development of a bespoke browser that is used in an artistic way as opposed to using a browser to view artistic web pages.

As net art has the potential to contain multiple media, it is unhelpful to view it as a medium in its own right (metamedia might be a more accurate description¹⁰). Its form is manifold with the ability to present to the audience a variety of media including text, images, video, and sound. The potential for interaction and dynamism further complicates a neat description of this genre.

A common misconception is that net art relates to any art on the net, for example, photographs of artefact art in online galleries (see Ippolito 2000). The simplest way of describing net art is to say that it is art that “uses” the internet in the process of it becoming art. Andrej Tisma gives a comprehensive and specific definition of net art:

⁸ Although the terms “web” or “www” are used interchangeably with “internet” they are not synonymous. The internet is the physical network of computers whereas the web is the software created for accessing these computers.

⁹ Definition supplied by The Tate Online
<http://www.tate.org.uk/collections/glossary/definition.jsp?entryId=577>

¹⁰ metamedia is a term coined by Marshal McLuhan in 1964 to describe the relationship between form and content with new technology (see McLuhan 1964). Meta-media has also been more recently used by media theorist Lev Manovich to describe how new media no longer attempts to construct new representations of the world but instead uses previously developed media in new ways (Manovich 2002).

Web.art works are created exclusively for the Internet, for its language and technical capacities, and they address solely the users of this world wide computer network. Therefore, not only are they created in the language of the network, but are the most comprehensible and most effective in that environment and communicable by network distribution and presentation, i.e. through computer monitors and speakers. It is the configuration in which those works are at their most natural and in which they facilitate an active attitude of the viewers during reception.

(Tisma 2002)

Tisma stresses the idea of “language” here, highlighting the importance of recognising the distinct codes and conventions of the network as opposed to other computer based scenarios. A further investigation of the defining characteristics of net art will be presented in Chapter 3.

The apparent standing of net art as a fringe activity may well make the theorisation of this model more complex, but this may also have inhibitions and indeed inspirations to explore. Considering the lack of written material and critical response to net art, locating material relating to specific elements can be problematic, often resulting in the need to reference related art practices. Its dynamism and continued technological development can also be considered problematic in that issues are constantly changing and being revised. It is in a state of flux which is unlikely to be resolved; a critical or aesthetic response to an element of net art may then quickly become

obsolete. However, these issues would suggest that there is always potential for fresh input and theoretical critique. The lack of material is an opportunity to plug the gaps and the ever changing technology continually affords new thoughts and directions. Furthermore, elements that refer to a now obsolete technology can usefully be assigned a historical reference.

At the most basic level, net art can be constructed using HTML (HyperText Markup Language), the most common language used for websites. As previously established, the focus of this project is on participatory or collaborative works where the audience supply material within a framework created by the artist. In order for these works to exist they require certain technologies that can be utilised alongside HTML to create dynamic web pages. In order to better understand these technologies a distinction needs to be made between 'client side' and 'server side' technologies. These are common and established terms within internet and network development that describe where the content of a web page is programmatically processed. Client side applications are processed on the user's computer by their own browser whilst server side refers to technologies that use the serving computer to process information, scripts, and applications that are then presented back to the user through their browser. Whilst a small degree of interactivity can be presented with client side, particularly through JavaScript¹¹, there is little scope for presenting the complex and rich interaction that can occur when using server side technologies. The works

¹¹ JavaScript is a programming language commonly used to add interactive features to web pages. More information can be found here: https://developer.mozilla.org/en/About_JavaScript

presented in this project all make use of ASP (Active Server Pages)¹² a Microsoft server side technology that allows web pages to be created dynamically therefore enabling users to effectively change the web page through interaction. It should be noted that server side and client side technologies are not mutually exclusive and both can be utilised by a web page.

As already established, there is an issue with the speed with which the internet and related technologies evolve. It would therefore seem plausible that temporality and time would be a crucial aspect of any taxonomy of interaction. However, as already discussed, the C.P.U. model that is the centre of this research is concerned with the outcome between interactive acts. The time scale of these interactions is irrelevant to the model that has been created. Chapter 6 discussed this further in relation to the C.P.U. model of interaction and my theorised “loop of interaction”.

It is important to establish that whilst there is reference to net art in general, the main focus of the project is on net art that incorporates certain characteristics. As previously mentioned, participation is a principal element of the art works being analysed, significance being placed on pieces that facilitate the creation or addition of artistic material within an artist generated framework. This paradigm is epitomised by the piece “Monsterland” (Norcott

¹² Active Server Pages are used to create dynamic and interactive web pages. The pages contain programming code which is interpreted into HTML before sending them to the users' browser. In the context of this project ASP is mainly required in order to connect to a database, the pages both displaying the contents of the database and writing information inputted by the user into the database. See <http://msdn.microsoft.com/en-us/library/aa286483.aspx> for more information

2007). “Monsterland” (figures 7 & 8), which is similar to the parlour game Consequences and the surrealist game Exquisite Corpse, involves drawing the top, middle, and bottom of an image. Up to three users contribute to the creation of each image, which usually involves the drawing of characters or monsters. Each user draws a section in turn but is only permitted to see a small portion of the previous section. The interactive responses from users is varied, some offering skilful and realistic renderings, whilst others drawing primitive or naïve sketches. There is a very implicit artistic notion in this piece, from the drawing of the actual images to the concept of displaying these images in an online gallery.

The dynamic qualities of net art range from completely static and non interactive to participative and highly interactive. A more static work, for example, would allow for very little interplay between the audience and the work. This could be limited to mouse clicks or movements, “Why was he sad” (figure 9) by Rafaël Rozendaal (Rozendaal 2002), for example, is a Flash animation of cartoon clouds that can be removed when the user moves over them with their mouse.



Figure 7: Monsterland - Dan Norcott 2007

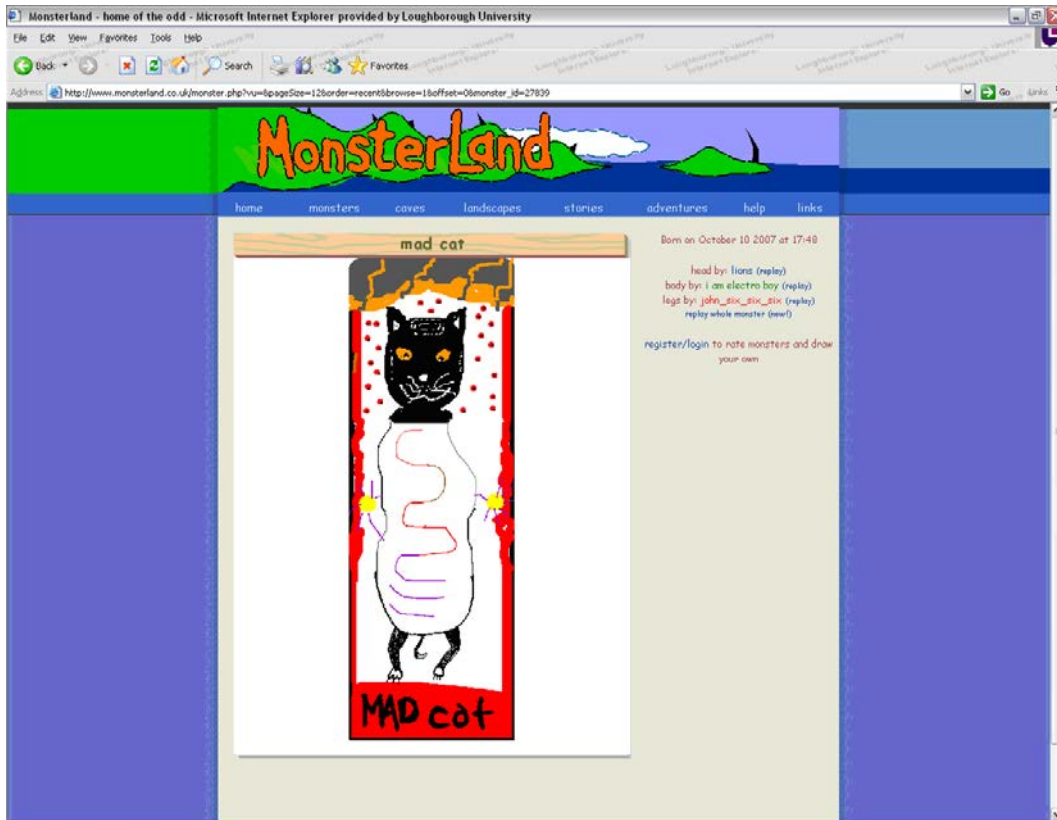


Figure 8: Monsterland - Dan Norcott 2007

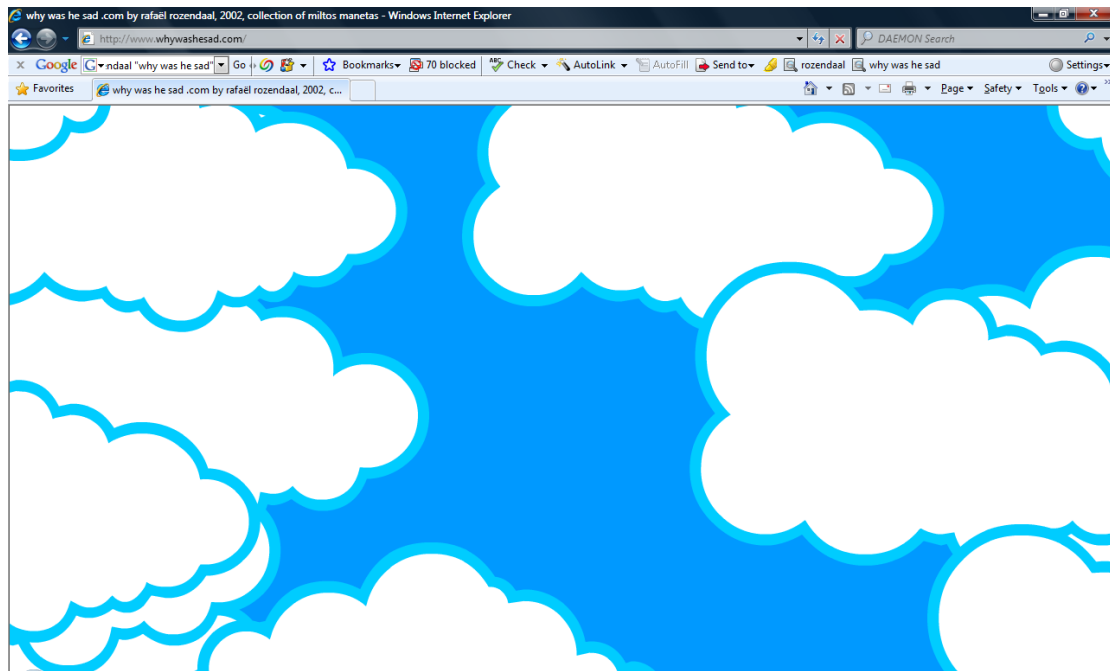


Figure 9: Why was he sad - Rafaël Rozendaal 2002

Other pieces may simply involve viewing material such as video. Andreyev's "Hush City" (Andreyev 2009), for example, uses flash to create a four part video using animated photos (figures 10 - 13). Hush City and other pieces that essentially deliver "viewable" material can almost be seen to occupy a grey area of net art that could possibly be effective in another environment, the TV screen or a gallery projection for example. Referring back to Tisma's definition shows that net art should actively involve the network:

It is the configuration in which those works are at their most natural and in which they facilitate an active attitude of the viewers during reception.

(Tisma 2002)

Pieces of such simplicity as Hush City may not necessitate an active response from the user, no more so than playing a DVD for example, but they are created specifically for the network environment. The use of the web standard animation software “Flash” goes some way in establishing “Hush City” as net art, however, this still remains open for debate and will be discussed further in Chapter 3.

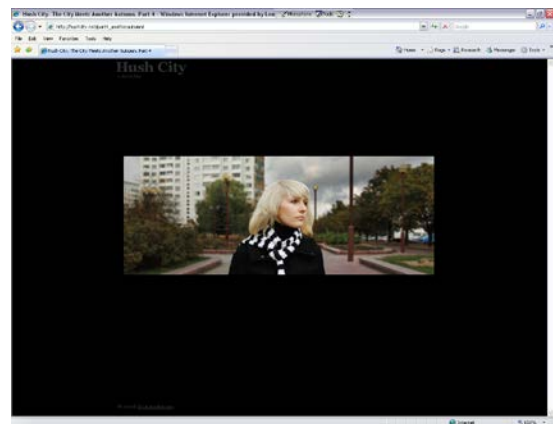
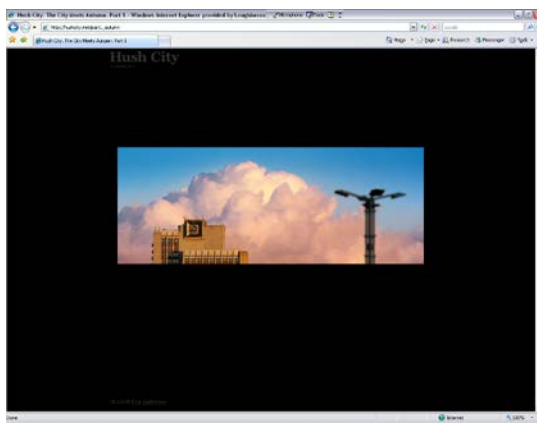
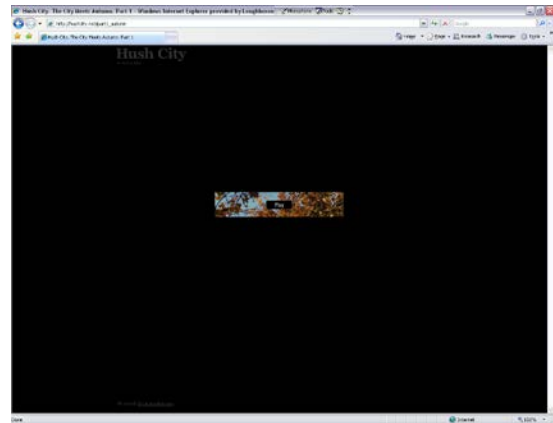
As the work becomes more interactive there is greater scope for contribution from the audience, ultimately allowing the user to add or change material within the work itself (This characterisation is, of course, not suggestive of quality and is applied to establish a definition of the work being examined). Works that allow for audience participation and collaboration are by their nature highly interactive.

Interactivity is a broad and widely used term that requires some degree of clarification. Whilst this subject is to be dealt with in Chapter 4 it would be useful to outline here the specificities of interaction in relation to this work. The Oxford Dictionary of English defines interactivity as the following:

1 influencing each other.

2 (of a computer or other electronic device) allowing a two-way flow of information between it and a user, responding to the user’s input.

(Oxford Dictionary of English 2005:901)



Figures 10-13: Hush City – Ilya Andreyev

Despite the clearly stated computer specific definition of interactivity, it is useful to outline the use of interactivity within art. Christiane Paul gives us a definition of interactive art in her book, “Digital Art”.

Interactive art is a genre of art in which the viewers participate in some way. Unlike traditional art forms wherein the interaction of the spectator is merely a mental event, interactivity allows for various types of navigation, assembly, and/or contribution to an artwork, which goes far beyond purely psychological activity.

(Paul 2003:67)

Much contemporary interactive art uses technology and computers in some way that respond to different types of user input. Aside from the standard computer interfaces such as mouse and keyboard, interactive art often uses sensors to detect movement, sound, light and other stimuli. The notion of interactivity within the arts is often debated and there are those that argue interaction occurs with certain types of artefact art such as Lev Manovich (Manovich, 2001:71) for example. This will be discussed later in chapter 4.

As the type of art that is being dealt with is computer and internet specific it is also relevant to consider the notion of interactivity with websites that are not considered net art. Most analysis of the interaction with commercial websites is focused on how to improve the user experience. Much of this comes under the heading of “web usability”, Jakob Nielsen being the most prominent protagonist in this area. Aspects of good web design practices that facilitate ease of use are the main concern of web usability. Nielson’s website¹³ publishes reports, studies and papers on web usability issues, many of these specifically pertaining to the interaction of users.

Interactivity is often described in a quantitative manner and many attempts have been made to categorise the degrees and types of interactivity that occur within computer related media. Kjastrup (Kjastrup 2003b), for example, defines levels of interaction within Hypertext narratives. These are described as Static, Pseudo-dynamic and Dynamic. Static texts offer the user a simple

¹³ View Jakob Nielson’s website for more information on web usability: <http://www.useit.com/>

choice of interaction, a basic choice between clicking links. Pseudo-dynamic is where the user is given responses that look as if they have had an effect on the content and Dynamic texts produce content based on choices made by the user.

Cornock (Cornock 1977 cited in Graham 1997:39) categorised the degrees of interactivity within art, establishing a division between “Static Art Systems” and “Dynamic Art Systems”, the latter being concerned with art of an interactive nature. Further divisions of “Dynamic Art Systems” are suggested which establish different types of interactive art. This model was later re-interpreted by Graham (Graham 1997:42-48) and applied specifically to computer based interactive artworks. Graham uses a metaphor of conversation to interpret the categories in relation to the computer. Rather than specific categories or levels to interaction, Shedroff (Shedroff 1994) discusses the continuum of interactivity. Essentially, the continuum of interactivity consists of six spectrums, Feedback, Control, Creativity, Productivity, Communications, and Adaptivity. Each of these areas is a continuum ranging from Passive to Interactive; Shedroff suggests that all experiences can inhabit a continuum ranging from static to highly interactive.

The above definitions and analysis provide a reasonable and general framework within which the concepts of interaction can occur. Taking the premise that the parties involved in the interactive process are “influencing each other” (Oxford Dictionary of English 2005:901), it is often observable and

obvious whether a piece of art is interactive. However, it is not necessarily observable what influence, if any at all, is being exerted on the user via the artwork. Graham (Graham 1997:32) notes that any mental affect that an artwork may have upon a viewer may have to be assumed as observation is not possible. That is not to say the effect of the artwork is completely immeasurable, qualitative methodological techniques could be employed to assess the thoughts of individual users. This could involve an audience reception model including questionnaires and interviews that would give some indication of how users were influenced.

One limitation of the reception model is that of reliability. Questions on the interactive process posed to an audience member “after the fact” could elicit inconsistent responses. There is the potential, particularly with computer or web based interactive works, to collect qualitative enquiries in real time. For example, each response that was entered by an audience member could induce a question to appear on screen asking for their reasons for interacting in the way that they did. Unless this was specifically part of the piece however, this method would disrupt the flow and feel of any interactive work.

Whilst my own reaction to these possible methodologies is speculative, there was also a time issue involved. In terms of developing my own methodology the process of generating questionnaires and including them in the interactive process of each art work was deemed impractical considering the time scale of the project. For these reasons notions pertaining to the interactivity of the

audience and their thought processes with regards to this interaction are largely avoided in this thesis. An attempt at realising the initial proposal highlighted these issues of establishing the cognitive aspects of audience interaction and focus was necessarily reconfigured to specifically refer to the types of interaction that occur in relation to the artwork. The scarcity of research into this very specific element of the interactive process in relation to art also proved significant enough to dismiss the notion of interaction in relation to audience thought processes. The use of non-interruptive analytical methods such as eye and mouse tracking were considered a possibility throughout the early stages of this research. However, it soon became apparent that these methods of data generation would also be impractical both from the perspective of time scale and the above mentioned focus of the research.

Although there is much use of the word interactivity in the general sense of the word, where necessary there are distinctions made as to the specific nature of this interactivity. As previously mentioned, interactivity will be discussed in much greater depth in Chapter 4.

Aesthetic responses to the nature of the most usual viewing platform of net art, the network and computer screen, have been a primary area of exploration and attempts have been made to develop an understanding of the aesthetics of net art (see Stallabrass 2003). This however, constitutes the requirement to look at the multiple media landscape of internet art and to draw from other critical responses, for example, interaction design (see Heller

2005), computer art (see Manovich 1994), and interactive art (see Cham 1999).

One fundamental aspect of this research is the shift in methodology from a Practice Led model to one that is Practice Based¹⁴. How this came about and the significant changes in structure and analysis that resulted from this shift are just as much part of this project as the analysis of the practical pieces themselves. Due to the pervasive nature of this changing process it has become a running theme throughout this text. Whilst this issue is not confined to a single chapter I have outlined the significant elements of this below.

The project was conceived as practice led in that I produced several artworks that sought to test the notion of participative interaction that would be developed through a continual process of dissemination, interaction, and analysis. User interaction would influence the flow of development with the intention of there being several distinct points where progress would be analysed. This practical process would reflect the hypothesis or the development of a taxonomy of interactivity which would then be tested through the process of feedback and production. The pieces would be a visualisation of the attempt at a taxonomy and they would intrinsically contain the outcomes of the research. The initial intention of the project was to evaluate and extend the notion of art that was placed in the public domain of the internet. Although the artworks were created, the shift of emphasis in

¹⁴ Definitions for practice led and practise based research are supplied in the Loughborough University School of Art and Design Handbook for Postgraduate Research Students. This is no longer available online so a copy has been included in Appendix A

response to those artworks required that I also had to shift how I understood my own methodology and practice.

As previously noted, there had been a set of assumptions formulated as a response to the outcomes of previous artworks and to the debates surrounding the role of net art within a wider arts culture. My early research into the literature regarding net art led me to conclude that net art had a democratic standing with a large and disparate potential audience, net art was considered to be an open art form accessible to all. It was also assumed that whilst net art had not been colonised by contemporary arts culture as a whole, there did exist a core group of practitioners, theorists and interested parties that would be included in the audience for net art. Part of my role as an artist assumed that this would be the case but my imperative as a researcher necessitated that I test these assumptions. These notions on the existence of an audience, the democratic nature of net art, and the progressive standing of net art within contemporary arts culture were all questioned as part of the process.

It was also assumed that my position as an artist would enable me to produce a creative solution to the question. There was a belief that the process of creating art would not change from a personal perspective. Producing art for art's sake had not been deemed radically different from producing art that would suitably interrogate the research question. The development of my work and my status as an artist in relation to an assumed culture of net art was paramount in this working model.

The process of working this through meant that the assumed conditions that established the starting place for this research became contested and challenged. This led to a revised approach in relation to the questions that were being asked within the practice. Inevitably my role as a practitioner, the response to the proposed art, the notion of whether what I was producing was art, and the assumed constituency of the participants were all areas that changed or were brought into question. Having learned these factors, a fundamental shift in the methodological process from Practice Led to Practice Based was decided upon. The project became based on the analysis of data from one piece that was tested through a process of production with feedback occurring through the work, not through an analysis of reception of what people thought about the work. This involved a greater reliance on testing whether my previous notions on interactive categories stand up whilst developing these in relation to existing taxonomies of interaction. The project became a model of pure research¹⁵ in that there is an element of attaining further knowledge of interaction with net art. Wanting to find out whether a taxonomy of interaction with net art can be formulated and questioning the current or previously established notions of how to categorise interactivity became the primary concerns.

A key event in the process was the realisation that practical production within the framework of research was not a natural development in my own artistic

¹⁵ Pure Research, sometimes known as Basic Research, is a model of research that seeks to gain knowledge in a particular area where an immediate practical application is not the main purpose. This is in opposition to Applied Research where the main purpose is to solve a specific problem that often has a practical implication in the real world (see Brown et al 2004).

practice. This led to tension between my own identity as an artist and the necessity to incorporate a new identity as a researcher. The artistic subjectivity that was a signature of my previous practice had to incorporate a more objective research criterion. Issues that arose from this tension included questioning artistic integrity and quality, inspiration for the development of the pieces, and indeed whether the work being produced was art. Due to the foreign condition of having two seemingly opposed forces necessarily working together solicited a fundamental shift in the methods of practice previously employed. Questioning my role as both practitioner and researcher was essential in order to reconcile these positions and enable progress. Again much of this relates to the shifting methodology and how personal definitions of practice had to be redefined in order to realise this project. The assumed audience was another causative factor in the shift from practice led to practice based. Lack of audience participation prohibited the intended method of development involving production related to feedback.

It was my intention to create several pieces of work that would be continually maintained and updated through the feedback generated through them. This in turn would provide continual feedback and analysis for a taxonomy which would then be used to update the pieces accordingly, specifically to find information that had been identified as being required through each analytical stage. The shift in methodology led to the creation of works where the data was gathered and used to create and interrogate the research question without feeding back to the pieces. This process is discussed further in chapter 6.

Structure

Chapter 2 highlights some of the published literature that deals with net art including Rachel Green's "Internet art" (Greene 2004), "net.art 2.0" by Tilman Baumgärtel (Baumgärtel 2005), and Mark Amerika's "META/DATA" (Amerika 2007). Published literature that is specifically written on net art is particularly sparse, however, there exists a plethora of articles, papers, interviews, blogs and other texts from such contributors as Richard Rinehart, Vuk Ćosić, Jon Ippolito, Mark Tribe, and Steve Dietz. Perhaps unsurprisingly, many of these appear in digital form usually published on the internet. Through these texts it is possible to deduce the most pressing and interesting debates surrounding net art, which are discussed in this chapter. Relevant theses are also discussed with valuable contributions to the debate coming from Graham (Graham 1997), Berry (Berry 2001), Suliman (Suliman 2004), Miller (Miller 2005) and Stewart (Stewart 2006). The literature surrounding the related area of interaction with art and the internet, and relevant aesthetics are also explored.

Chapter 3 looks at net art itself, including a brief overview of the concepts and forms often found within this area. It explores some published definitions of the genre (for example Tisma 2002) as well as investigating the distinctive qualities of Ross (Ross 1999) and Fourmentraux's principal forms of net art (Fourmentraux 2007). This chapter develops a historical taxonomy which is important in helping to understand the context within which this research and the practical pieces are placed. Important net art practitioners such as Alexei

Shulgin, Heath Bunting, and Young-Hae Chang Heavy Industries are introduced, highlighting seminal works from these and others. It attempts to define the medium and suggests links with other art forms such as interactive, participative, and computer art. Finally chapter 3 establishes the specific context for this project by defining the sub section of participatory and interactive net art that is being analysed.

There is further contextualisation of the three main areas of this project and how they relate to the research in chapter 4. It addresses each subject in turn and discusses the main issues attached to them. The section on interaction further explores interactivity in both general and artistic terms using definitions from various fields including digital art, interactive art and web usability. It defines interactivity in the context of this work and outlines the specific area of the interactive process that is being analysed. Participation is again defined from the perspective of the internet and is then discussed in relation to the work. A definition for my term “unconscious collaboration” is also given, which refers to the participation of an audience member who contributes artistically to the piece but is not involved creatively with the creation or concept of the framework within which they are contributing. The section on audience deals with the issue of the potential constituents that net art offers. It also talks about the assumptions made of this potential audience, in particular that there existed a group of people that would interact with any given work.

Chapter 5 explores previous attempts to categorise interaction and further explores how they may be developed and combined with my own attempts at

a taxonomy. Whilst there have been no specific taxonomies of interactivity specifically related to net art, there have been attempts made to categorise interaction in relation to other art forms and interaction in general. Berenguer's (Berenguer 1997) and Laurel's (Laurel 1991/1993) characteristics of interactivity, Klastrop's (Klastrop 2003b) interactive levels, Graham's (Graham 1997:112-114) graphical representation of interactivity, Mongiat and Snook's Fundamental Components of Interaction (Mongiat and Snook c2007), and Shedroff's Continuum of Interactivity (Shedroff 1994) are all included in this discussion. This section looks at these attempts and compares them with my own net art specific taxonomy, suggesting further modifications and possible developments.

Chapter 6 looks at the methodology used and discusses in more detail the shift from practice led to practice based. In particular the changing methodological viewpoint that developed from this shift. One of the most interesting aspects of this shift is the change of perspective from an artist to theorist and how that affected the work as a whole. In particular issues surrounding personal artistic practice and how that had to be modified in order to be productive.

The process and methods used in developing the practical pieces are examined in chapter 7. Four pieces were developed for this project, "Collaborative Book", "Fun Mining", "Monstertext", and "Musical Forum". This section is where the interrogations of the process enabled me to look at some of the issues involved in the creation of these pieces, including the

challenges, strengths, weaknesses and shortfalls. It also examines the practical and conceptual limitations within which the work was to be produced, looking further at the ways in which some of the assumptions I had as an artist were retested and reconfigured by my role as a researcher

Chapter 8 examines the data collected from the practical pieces concentrating on statistical analysis, these statistics being taken from “Collaborative Book” which was the only piece to generate enough information to analyse. This section also includes some very specific responses to this data in relation to “Collaborative Book” highlighting the different ways users have interacted with the work. This includes exploring the act of interaction as an individual action in relation to the artwork and the relationship between multiple interactions from the same user.

The results of the data analysis are discussed in chapter 9. This process is continued by examining how my own taxonomy relates to some established methods of interaction categorisation. Particular focus is given to Berenguer’s (Berenguer 1997) and Laurel’s (Laurel 1991/1993) characteristics of interactivity, Kjastrup’s interactive levels (Kjastrup 2003b), and Mongiat and Snook’s Fundamental Components of Interaction (Mongiat and Snook c2007). Further examination of the methodological successes and shortfalls that have affected this data are also carried out including analysis of how the data relates to Nielsen’s notion of Participation Inequality (Nielsen 2006a). A discussion on the possible extension of the interactive taxonomy is developed leading to ideas on how interaction can be further categorised. This chapter

also deals with the use of net art and establishes ways in which a piece of online art is experienced from the perspective of an audience member. Considering the ludic quality of pieces such as Dominguez and Fusco's (Dominguez and Fusco 2005) political board game "Turista Fronterizo", whether a piece of net art is actually viewed as art, a game, or a puzzle is a key concern of this section

Chapter 10 concludes the research by developing an overview of what has been achieved. It then discusses the significance of this and where it can be placed within the current debates around net art. It also discusses the ways in which this research could be beneficial to artists producing work on the internet. Some possible areas of research development are also highlighted, including further examination of the interactive process and further testing of the taxonomy of interaction using other online work.

Chapter 2 - Overview of current Literature and Debates

Introduction

Whilst there may not be a large amount of literature specifically relating to or focused on interaction and collaboration within net art, there is a rich and expansive selection of material that addresses the key questions and core principals raised by this research. Much of the literature presented here deals with net art in general and the many related areas from computing, the internet, interaction, design and aesthetics.

As previously mentioned in chapter 1, the rate at which internet technology is developing has an effect on the formulation of terms and definitions. This phenomenon also has a major effect on the issues and debates that are discussed within the culture of net art. The direction and flow of net art dialogues are often dictated by the continued technological development of the internet with the consistent and rapid advancement of internet technology allowing for an equally rapid turnover of ideas and theories related to these technologies. This continued technological innovation and subsequent critical response gives the impression that the genre is continually emerging and highlights how the internet itself is not necessarily a medium in its own right but a conduit for multiple media and a distribution system. Indeed

Fourmentraux describes the internet as “...simultaneously a medium, a tool and a creative environment” (Fourmentraux 2007).

The fact that the technology has changed so dramatically and frequently has the effect of delivering new debates around net art as if each major technological development is a new medium in its own right. For example; the development of graphic enabled browsers delivered the first realistic option for multimedia art development; CGI (Common Gateway Interface)¹⁶ established the potential for dynamic content creation through participation and collaboration; webcams gave the internet user another level of connection with others and established questions on privacy and voyeurism; web 2.0¹⁷ technologies continued the evolution of content creation and through the ability to appropriate information easily from other sites it opened up the debate on ownership and authorship even further.

Whilst these overlapping areas of debate have varying degrees of relevance they all impact upon my research in some way. Those that do not have a major degree of significance still afford some understanding of the medium and are therefore relevant to discuss in order to establish a wider context for net art itself.

¹⁶ CGI allows external programs or scripts to be run on a Web Server. Common uses of such scripts are to pass data from the web page to a program or database. This data can then be processed by the CGI script and a result can be returned to the web page. A good definition of CGI is available her <http://www.webopedia.com/TERM/C/CGI.html>

¹⁷ Web 2.0 is an umbrella term for several concepts that appeared in relation to the World Wide Web. These include user generated content and cloud computing. Whilst user generated content is especially relevant to this thesis and is considered throughout, it is not relevant to discuss this issue in relation to Web 2.0. O'Reilly (O'Reilly 2005b) delivers an excellent article on Web 2.0 and its related technologies.

There are some general theoretical texts of import that feed into the debates, Benjamin's 1936 essay "The work of art in the age of mechanical reproduction" (Benjamin 2005)¹⁸, for example, is an often referenced essay in relation to digital media¹⁹. In his essay Benjamin discusses how the development of photography and film caused a shift in the perception of art. One of the key elements being his concept of the "aura", representing the originality of an artwork and is consequently lost through the process of reproduction. Some of the most prominent texts that cite Benjamin's essay include "The Aesthetics of Interactive Art" by Karen Cham (Cham 2009). This paper addresses the aesthetics of interactive art using Benjamin's essay as a reference point for the consideration of digital and interactive aesthetics. She concludes that this work is important in ascertaining certain aspects of the mechanically reproduced artefact though it should not necessarily be used as a basis for addressing the aesthetics of interactive art. Also Berry (Berry 2001), in her generalised analysis of net art, takes Benjamin's concept of the aura and suggests that net art has a potential for retaining this idea by virtue of it being distinguishable as art. The significance of Benjamin's essay is also evident in a talk given by David Ross (Ross 1999) entitled "Net.art in the age of digital reproduction". Aside from referencing the title Ross cites Benjamin in his talk, identifying the questions posed by Benjamin as being relevant for the latest technological development of the internet. Ross attempts to address some of the questions posed by Benjamin, in particular understanding

¹⁸ Whilst the theorists highlighted here have used the work of Benjamin as a fundamental component of their research it should be understood that the references to this work are included to highlight the significance of this work in a wider digital arts context.

¹⁹ Benjamin's work is not limited to digital media and has been especially influential within cultural studies (see Johnson 1987) and media theory (see Russell 2004).

“aesthetic change wrought by the relationship of mechanization to modernity” (Ross 1999) drawing parallels in the questions posed by Benjamin in response to the development of mechanical reproduction through the advent of photography.

Malina comments that interactive art is in the age of “post mechanical reproduction” which aims to reproduce items “as different as possible from each other while still observing the same rules” (Malina 1990:160). He refers to this as “generative reproduction” and goes on to state that this art form “changes the role of the observer, the status of the artist and the nature of the artwork itself” (Malina 1990:160).

Similarly, Barthes’ essay “Death of the Author” (Barthes 1993) is often referenced in relation to notions on the blurring of the relationship between artist and audience, particularly within interactive and digital art²⁰. For example, Ross talks about how net art is capable of “collapsing the notions of reader and writer” (Ross 1999). The status of the author can also be altered by the appropriation of material created by others with digital media easily facilitating this artistic “borrowing”.

The 'death of the author' is perhaps epitomised by the digital 'sampling culture' of borrowing parts of images/sounds from other authors, and in the power of the reader to not only re-read, but to change the order and form of, say, interactive multimedia artworks on CD-ROM

²⁰ Again, reference to this seminal Barthes essay is not limited to the digital arts and can be seen in other disciplines such as Feminist Theory (see Walker 1990).

(Graham 1997:36)

There are those that treat this concept more literally than others, Bookchin and Shulgin's "Introduction to net.art (1994-1999)" states that net art allows for the "Practical death of the author" (Bookchin and Shulgin 1999). Huhtamo (Huhtamo 1995:4), however, refutes such an extreme manifestation of this concept in the interactive arts suggesting that the presence of the artist is always implied. Art works that have an element of interactivity and participation allow for a closer relationship between author and audience thus opening up such debates. Polaine comments that, despite the fact that an artist is creating a piece of work, the nature of interactivity itself "changes the traditional relationship of author and audience" (Polaine 2005:2). This is a major issue in the digital arts and is discussed further in relation to net art below.

Net art has not had a huge amount of coverage in the printed journal sector although there have been some minor articles in journals such as Leonardo. There has been more exposure in electronic journals, CIAC Electronic Magazine²¹ for example, which charts the progress of Canadian net art from 2000 onwards. Other journals of note that cover media and digital art include; Scan²², a journal of media arts and culture; and Mute²³, an online magazine

²¹ The English version of CIAC can be found here <http://magazine.ciac.ca/en/summary.html>

²² SCAN has been developed by the Media Department of Macquarie University in Australia and explores the aesthetics and politics of media arts. It is published three times a year and can be found at the following web address: <http://www.scan.net.au/scan/index.php>

²³ Mute magazine covers a broad spectrum of subjects relating to cyberculture and online activity including net art. Online articles are published weekly and the magazine can be found here: <http://www.metamute.org/>. A print version that compiles selected online articles and other content is produced biannually.

covering culture and politics in relation to networked societies. Other online material of note that have some relation to net art include ninthletter²⁴ and Grand Text Auto²⁵. This is naturally not an exhaustive list of online resources but does give some indication of the scope of material that is available within the journal and magazine genre.

There are a number of organisations and conferences that cover net art. CHArt (Computers and the History of Art), for example, is an organisation that is open to those that have an interest in using computers in their study of art and design. They hold an annual conference in London covering subjects such as History and Preservation, Digital Archiving, and Visual Perception in a Digital Culture. The Ars Electronica Festival in Austria has been running since 1979 and is one of the foremost events in the Media Art calendar. The festival incorporates art shows and talks from artists, scientists and theorists and is based on a different theme every year. ISEA (International Symposium of Electronic Art) was founded in 1988 and is held at a different location every year. This symposium brings together artists and theorists from around the world and consists of talks, panels and exhibitions relating to digital art.

Other areas of popular culture can sometimes produce useful information some popular magazines include “.net” and “computer arts”. Whilst both of

²⁴ Ninth letter is a collaborative arts project created by students and staff at the University of Illinois. The online version of Ninthletter is actually a compliment to the print version rather than a digital copy and includes some original digital art. The web edition can be found at the following address: http://ninthletter.art.uiuc.edu/printed_journal/

²⁵ Grand Text Auto is presented in Blog format and has contents directed towards computer based works of all forms including net art. Access to Grand Text Auto can be found here: <http://grandtextauto.org/>

these publications are general to their industry, occasionally some useful information can be obtained.

Due to the lack of specific texts that are directly related to this research it is worth noting some possible relevant theories and texts that whilst mentioned are not fully explored in this thesis. Due to this work being practice based, the following theoretical concerns are beyond the scope of this thesis to explore in greater detail and therefore should be viewed as brief introductions to their possible relevance. The original proposal of this work never sought to explore the concept of interactivity with internet based works through a specific theoretical construct, rather, it would attempt to discover a taxonomy based on analysis of practical works and the practical applications of interactivity.

The Actor-Network Theory (ANT) of Bruno Latour ((see Learning-Theories.com 2012; Latour 1998a, 1998b) has some significance with the context of the art works that are specific to this project. ANT is a sociological theory that analyses the relationship of 'actors' within a network of elements. These actors are not necessarily human and can consist of machines or organisations. All actors within the network are considered to have equal importance therefore displaying a non-hierarchical topology. An ANT based analysis of net art might consist of contemplating the relationship between audience and author.

Likewise, Umberto Eco's "The Open Work" (Eco 1989) feeds into the debate on authorship. In this book Eco discusses the openness of art and how this

allows for continual interpretation of the work due to factors such as cultural contexts and personal experiences. He suggests that the open work requires the audience or reader create the composition with the composer; it is the role of the artist to start a work and the viewer to finish it (Eco 1989:12).

Due to the internet based nature of this project it would also be relevant to mention George Landow who is a key figure in the field of hypertext theory (see Landow 1994, 1996). It must be stressed that despite the fact that this research utilises text based practical pieces, it is not situated within literary theory or within the context of hypertext theory. It is natural however to form a link with this area due to the position of the practical application of hypertext being the underlying conceptual foundation of the World Wide Web.

net art

The most prominent publications that discuss net art in general include “Arts and the Internet” by V.A. Shiva (Shiva 1996), “Internet art: the online clash of culture and commerce” by Julian Stallabrass (Stallabrass 2004), Rachel Greene’s “Internet art” (Greene 2004) and “net.art 2.0” by Tilman Baumgärtel (Baumgärtel 2005). Other books such as Christiane Paul’s “Digital Art” (Paul 2003) and “Art of the Digital Age” by Bruce Wands (Wands 2006) have sections dedicated to net art. These texts are good introductions to the concept of net art and do deliver insightful information on the form and content of the genre. Due to their generalised nature, however, they are unable to convey much conceptual depth and are therefore best viewed as useful

introductions to the subject. Other prominent publications include “META/DATA: A Digital Poetics”, by the net artist Mark Amerika (Amerika 2007) which is a blend of art theory, personal memoir, satire, and fictional narratives whilst “At the Edge of Art” by Joline Blais and Jon Ippolito (Blais and Ippolito 2006) considers the impact of the digital age and the internet on the meaning of art.

Whilst there have been relatively few printed publications on the subject, there exist many rich sources of written work online. Papers, essays, and articles, by such theorists and practitioners as Richard Rinehart, Vuk Ćosić, Jon Ippolito, Mark Tribe, and Steve Dietz are common and easily accessible through the internet, examples of these are considered below.

There are also many contributors to the thematics of net art who make use of blogs, forums, message boards, mailing lists²⁶ and other online resources and communities such as Rhizome.org. These sources are at the very forefront of the critical debates surrounding the genre and also serve to record an evolving history of this discourse as it develops throughout these communities. They are therefore considered a necessary inclusion within the formulation of a wider contextual viewpoint within which to discuss net art.

David Ross discusses some of the “distinctive qualities” of net art in “Net.art in the age of digital reproduction” (Ross 1999). This often quoted text highlights

²⁶ There has been a particularly large amount of net art discourse occurring on mailing lists including nettime (<http://www.nettime.org/>), netbehaviour (<http://www.netbehaviour.org/>) and spectre (<http://post.in-mind.de/cgi-bin/mailman/listinfo/spectre>)

some of the characteristics of the net art experience, including notions on the ability to assemble audiences, the difficulty in commodifying net art, and its subversive and anarchic qualities. This again, can be seen as a general overview of some of the most pressing debates but lacks sufficient depth in analysing the individual aspects.

“The Straw that Broke the Museum’s Back” is a popular article by Richard Rinehart (Rinehart 2001), in it he discusses the curatorial and preservation issues surrounding digital media. He continues this theme with many other articles and papers including a proposal for a “Media Art Notation System” (Rinehart 2004). The paper outlines a formal notation system for classifying works of digital media, analogous to a musical score. Other contributors to this important net art discourse include the artist and curator Jon Ippolito who outlines what he terms as the “Variable Media Initiative” (Ippolito 1998) the premise of which is to collect as much information about the piece, including close contact with the creator.

Despite being highlighted and discussed on email lists and forums, there seems to be very little substantial research or debate on the subject of net art economies in published texts. In her E-commerce section, Greene (Greene 2004:184-188) merely highlights pieces that have tackled the issue of commerce and offers no insights into the debate as to whether net art is commodifiable. Madre (Madre 2004) does discuss the possibility of creating an economic model for net art, however, it affords little on what these models could be and how they could work. A more recent and serious attempt at

researching the economy of net art is promised in the as yet unpublished study outlining a proposal for an “Online gallery package deal” (PLUG.IN 2007).

From an individual artist’s perspective, ascertaining the viability of the internet in making a living could be of considerable importance. Whilst this is a significant issue for some, not everyone agrees that net art should be commoditised. Many artists choose to work on the net to avoid commoditisation, the artist Robert Adrian X for example recognised the lack of financial return and used other methods to fund his net art (Baumgärtel 1998b), still clearly willing to work in this environment despite the inability to commoditise his work. In a wider internet context there is a large amount of support for the free web, where information and services are available without cost. These organisations, such as the Open Source Initiative (OSI)²⁷ and the Free Software Movement (FSM)²⁸, are supported by many artists working on the web. David Miller for example, uses free and open source software and technologies for his MA project “Corrugation Street” (Miller 2005).

²⁷ The Open Source Initiative is an organisation dedicated to promoting the benefits of working with software where the source code is readily available. See <http://opensource.org/> for more information on the OSI

²⁸ The FSM is a political and social movement that promotes the freedom to change and distribute software for free (see this page <http://www.gnu.org/philosophy/free-software-intro.html> for more information on the FSM). It needs to be mentioned that there is a distinct difference between the OSI and FSM in that the FSM is concerned with social freedom and not just the practical advantages of free software (see <http://www.gnu.org/philosophy/open-source-misses-the-point.html> for a fuller explanation of the differences between the FSM and the OSI). Richard Stallman is credited with the forming the movement through the creation of the GNU project, a free computer operating system (see <http://www.gnu.org/gnu/linux-and-gnu.html>). Stallman also founded the Free Software Foundation (FSF) as a non-profit organisation designed to supports the FSM (<http://www.fsf.org/>).

One of the most widely discussed issues surrounding net art is that of the gallery and institutions, specifically whether an offline gallery is relevant to net art or whether net art should try to avoid contact with the institution altogether. Bookchin and Shulgin (Bookchin and Shulgin 1999) suggest in their net art manifesto that art institutions should be avoided and Stringer (Stringer 2001) addresses the fact that many net artists aim to produce art without censorship or interference from organised bodies. Not everyone agrees that the art institutions and galleries are irrelevant to net art. Golonu (Golonu 2001) proposes it is more of a compromise, artist should be aware that their work could become less effective when shown in a gallery but in return the artist does get exposure. Greene (Greene 2004:79) echoes this sentiment detailing how the support of museums gave net artists a degree of exposure they may not have otherwise received.

Berry (Berry 2001) was one of the first theses to examine the subject of net art specifically. This work delivers an overview of net art from 1994 to 2001 using examples to establish the key themes and practices of net art. Whilst this large text covers many of the themes permeating the culture of net art, one of the main elements of this text involves using “The Work of Art in the Age of Mechanical Reproduction” (Benjamin 2005) to analyse net art. She concludes that net art is able to retain its aura whilst at the same time facilitating avant-garde ideas on the nature of authorship and the commingling of art and life.

Following this is Suliman's (Suliman 2004) thesis which again discusses net art almost exclusively with particular emphasis on the way it is viewed. Her thesis examines how the non-linear, fragmented structures made possible by the web, effect the viewers experience, drawing on the theory of the Rhizome postulated by Deleuze and Guattari in "A Thousand Plateaus: Capitalism and Schizophrenia". Suliman raises the concern of commercial and governmental factors influencing the web, arguing that these affect the democratic potential of net art. She compares this to the notion of Smooth and Striated, also proposed by Deleuze and Guattari, in relation to the flow of information in cyberspace, suggesting that the free utopian ideal is the smooth and the commerce and government is the striated (see also Moulthrop 1994). The democracy of the internet, particularly the idea of net art being democratic, is consistent with notions on the potential audience that became an important issue within my own work.

There are other related papers that have contributed to my research. Stewart (Stewart 2006) is primarily concerned with computer mediated textual art. Whilst this can include textual or narrative art that exists outside of the internet, there is a large amount of net art that is text based. Stewart's own accompanying practical piece to his research "homecoming" is created in Flash and disseminated via the internet. This thesis looks at the formation of aesthetics in relation to computer mediated textual art, in particular looking for a theory of value. In order to investigate this Stewart takes the work of the

philosopher Mikhail Bakhtin²⁹, developing a structure within which to discuss ideas on meaning-making. In terms of supplying relevant material for my own research, this thesis provides useful insights into the aesthetics of hypertext literature and details considerations in determining practice based research methodologies. This includes concepts on research methodology such as 'research-as-instrument' posited by Robson "in which the judgments of the researcher and their further analysis of those judgments are the research outcome" (Stewart 2006:117). As mentioned previously, this research does not come from the perspective of literary theory. However, the influence of hypertext theory has to be recognised as relevant to this research, particularly through the types of net art that make use of text and online narrative. One contribution is in the argument over the notion authorship and the changing roles of the author and audience facilitated by the advent of electronic media (see Landow 2006; Patterson 2004). The changing roles of author and audience are considered briefly below and in greater detail in Chapter 4.

Miller (Miller 2005), tackles narrative based internet art with particular focus on collective authorship and interactivity. He concludes that the internet encourages participation, openness, and sharing although this is often impersonal and chaotic. The idea of control is also discussed in relation to participative pieces, articulating that it is not always apparent whether it is the author or collaborator who controls the proceedings. There is a suggestion

²⁹ Mikhail Bakhtin was a Russian philosopher and literary critic who produced writings on a variety of subjects including literary theory and the philosophy of language. It is not my intention here to highlight the work of Bakhtin as relevant to this thesis, rather it is Stewart's own thesis that formed a contribution to my own work. However, if the reader is interested in reading more on the work of Bakhtin then the following link may be useful: <http://www.iep.utm.edu/bakhtin/>

that this causes a blurring between art and game and Miller also makes some conclusions on the blurring of fact and fiction, playing on the large amount of fake information on the web. Blank (Blank 1996) also references this use of the fake within net art, declaring that by incorporating mainstream website contexts, net artists can occupy spaces on the net without explicitly exposing their work as art. This often manifests itself in the form of copies or fake websites that are intended to mimic other official or commercial sites.

“spacer.gif {Art}” by Mark Cooley (Cooley 2005) for example, attempts to parody the commercial software art site “software ART space” by copying the design of the site and selling digital prints of ‘spacer’ GIF files³⁰. Stallabrass (Stallabrass 2003) discusses this notion of the artist deliberately removing the focus from an arts context by avoiding labelling their work as “art”. The notion of how an audience views net art is a key area of exploration within this project.

Related to this is the nature of the relationship between artist and audience, particularly how the internet facilitates the potential to collaborate thus questioning the notion of authorship. As touched upon above with the reference to Barthes’ “Death of the Author” (Barthes 1993), this concept is common amongst net and digital art discourse³¹. Stalbaum opines that it is the network where “the often speculated implosion of distinction between the artist and the audience” (Stalbaum 1998) can be seen. Stalbaum believes

³⁰ A spacer gif file was a common method of creating space in a webpage that is structured using HTML tables. The image file itself would be a transparent GIF file that could be resized to allow the web designer to create blank space within the table layout.

³¹ The concept of the changing roles of author and audience are not limited to internet rhetoric, an example of offline art practice that incorporates these notions can be seen in Augusto Boal’s “Theatre of Oppressed” where he attempts to eliminate the player /audience divide (see Paterson 1999).

that the ontology of net art can be found in its potential for collaboration and participation, proposing further that “the boundaries between participant and creator can be viewed as blurred” (Stalbaum 1998). Whilst the use of the word “blurred” doesn’t go as far as to suggest “the practical death of the author” as postulated by Bookchin and Shulgin (Bookchin and Shulgin 1999), it would seem that there are many who would suppose the presence of an author in any participative work. The artist Alexei Shulgin (Baumgärtel 1997b) in an interview with Tilman Baumgärtel unequivocally demonstrates his position on this idea by proclaiming that interactive art that allows participation does not infer authorship status upon the user:

There is always the author with his name and his career behind it, and he just seduces people to click buttons in his own name
(Baumgärtel 1997b)

Shulgin is referring here to artists that play on the notion that participation facilitates a shift in the roles of audience and he seems to be suggesting that all artists that use art in a participative way are making claims to a deferred authorship.

if an artists proposes an interactive piece of art, they always declare:
"Oh, it's very democratic! Participate! Create your own world! Click this button, and you are as much the author of the piece as I am." (*sic*)
(Baumgärtel 1997b)

Of course, not all artists working with interactive media make the claim that authorship is transferred and many would wish to remain in control of their role as author. Miller discusses this, commenting that there is a difference between participating creatively within a framework and creating the framework itself (Miller 2005:20). Blank also makes the suggestion that there is always an author for net art stating “there is a retraceable starting point, an author, so to speak” (Blank 1996)

There is also the notion that digital or computer based art that automatically produces creative output through computer code can be viewed as a method of creativity that defers authorship, in this sense, to the computer rather than the audience. Ward and Cox (Ward and Cox 1999) discuss how authorship of generative art might be viewed, highlighting how it is the process that becomes valued due to the reproducibility of digital art. Clearly referencing Benjamin’s notions of authenticity and aura they go on to say that it has been argued that this undermines “conventional notions of authorship” (Ward and Cox 1999). Whilst not disagreeing that there is a shift in the emphasis or position of the author, they conclude that:

responsibility for the concept as well as the criteria for the rules and code, remains in the domain of the author

(Ward and Cox 1999)

This reference to Benjamin is also made apparent by Roger Malina when he suggests that interactive art is in an age of “post mechanical reproduction” commenting that:

the nature of the generative reproduction made possible by interactive computer art changes the role of the observer, the status of the artist and the nature of the artwork itself
(Malina 1990:160)

Another interesting slant on this notion of authorship is given by Andy Deck

My title will be the "maintainer" of this project, echoing open source terminology
(Deck 2007)

Here, Deck eschews the role of author in favour of the more democratic title “maintainer”, simultaneously commenting on the previously mentioned notion of the free web and on the notion that there is an authoritative author. An attempt is made here to equalise himself with the participating audience. However, he further writes that:

in the absense of active participation, I ended up taking charge of virtually every phase of production, including its visual and narrative dimensions (*sic*)
(Deck 2007)

This coincides with issues pertaining to potential audiences and their participation in such projects, which along with the concept of artist / audience blurring, is a key element of my research.

Interactivity

Whilst the net art debates delivered above are important to establish a wider context they rarely tackle the issue of interactivity explicitly. A preferred method is to broach ideas on interactivity through other areas such as audience. As the main components of this research is to establish a taxonomy of interactivity it is essential that the literature on interaction is explored. Texts that deal with interaction also have their problems however. The term interaction itself covers a huge area and it can often be difficult to establish whether a particular view on interaction is pertinent to online, collaborative interaction.

One thesis of prominence in this area is the work of Beryl Graham (Graham 1997). Whilst coming from the angle of gallery based computer art, it has much significant material on interaction. In this thesis Graham takes previous attempts at the categorisation of interactivity by Stroud Cornock (Cornock 1977 cited in Graham 1997:39) and reinterprets them using a metaphor of conversation (Graham 1997:42-48). Whilst the main question in the thesis focuses on interactive art works that promote interaction between users, the results are more from a statistical and demographic viewpoint. The emphasis

is on the quantity of interaction that occurs rather than focusing on how the audience are interacting with the work. Being one of the first relevant texts to be found, this thesis was helpful in determining appropriate directions for my own research, particularly in identifying other theorists and specific papers for further study.

There have been attempts made to categorise interaction. These include interactive taxonomies and categorisations in relation to participatory art, interactive art, hypertext and everyday experiences.

In her book “Computers as Theatre”, the researcher and writer Brenda Laurel asserts that interaction can be mapped onto three characteristics:

Frequency, how often the user can interact.

Range, how much interaction takes place.

Significance, how deep is the interaction.

(Laurel 1991 / 1993:20)

Interestingly, the academic Xavier Berenguer in his paper “Writing Interactive Programmes” (Berenguer 1997) also gives a very similar model of interactivity:

Autonomy: what the user can do, where to navigate, etc.

Interaction: the amount of interaction.

Presence: how immersive the interaction is through the use of images, sounds, etc.

This paper discusses the general concept of creating “interactives” (Berenguer 1997) which generally involves computer programmes or the creation of computer interfaces. It is made clear, however, that this can cover a wide range of possibilities including “artistic expression” (Berenguer 1997). These models can effectively be combined as they both refer to the same characteristics.

Frequency / Autonomy - interactivity from the audience perspective, what they can do and how often they can interact.

Range / Interaction - what the interactive system offers the audience in terms of the potential to interact.

Significance / Presence - the sense of depth the system gives the user. How closely involved does the user feel with the system.

Again, neither suggests a direct relation to net art, however these are both useful models that can be utilised in analysing the interactive process.

The researcher Lisbeth Klastrop cites Laurel in her article “Paradigms of interaction” (Klastrop 2003b) and continues to discuss interactivity in relation

to computer games and digital narratives. She applies a hierarchy of interactivity by dividing texts into three distinct forms:

Static texts offer the user a simple choice of interaction, a basic choice between clicking links.

Pseudo-dynamic delivers responses that appear as though they have had an effect on the content, although Klastrop is explicitly referring to hypertext artworks, a related example of this type of text is employed on the site amazon.co.uk. When you login you are greeted with a personal message, "Hello David" for example.

Dynamic texts produce content programmatically based on choices made by the user.

This model can be seen as a breakdown of Laurel's "Range" (Laurel 1991/1993) and Berenguer's "Interaction" (Berenguer 1997) characteristics detailed above. As hypertext narratives are used frequently in net art, this gives an excellent starting place for discussing interaction specific to the genre.

Another take on interaction comes from the author and lecturer Nathan Shedroff (Shedroff 1994). This paper introduces the concept of "continuums of interactivity". Shedroff notes that all experiences can reside within a

continuum of interactivity as opposed to applying a quantifiable level of interactivity. Essentially, there are six spectrums that make up interactivity:

Feedback – The amount of feedback given to the user from the experience.

Control – The amount of control the user has over the material.

Creativity – The ability for the user to be creative mainly on the level of entertainment.

Productivity – Related to creativity but implying that the interactivity allows the user to create something productive, achieving a goal (aside from “having fun”)

Communications – Experiences where contact with others is made.

Adaptivity – The ability for the system or experience to change its content based on the actions of the user.

(Shedroff 1994:10)

Each of these areas is a continuum ranging from Passive to Interactive, Shedroff proposes that each experience contains these elements and can therefore be placed at different points along each continuum.

Whilst some clearly envisage interactivity as occupying ‘levels’ there is not a standard or established idea on this concept. As Graham comments:

Given that there is not one smooth scale of ‘levels of interactivity’, it may be more productive to look at ‘kinds of interactivity’

(Graham 1997:38)

The Fundamental Components of Interaction are developed by Mongiat and Snook (Mongiat and Snook c2007) in a study into the interactive process from a design perspective. The paper highlights several key components of interactivity that can be addressed to enable participatory pieces to be created more effectively. Mongiat and Snook develop a framework to hold these components, indicating that they be referred to when creating a piece of participatory work. They are particularly interested in the relationship between the audience and the artist and establishing the importance of understanding this relationship.

The above discussion on interactivity can be included in the wider context of Human Computer Interaction (HCI). The following definition for HCI is given by the Association for Computing Machinery:

Human-computer interaction is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.

(Hewett et al 2008)

HCI is mainly concerned with usability and design issues, its primary aim to establish best practice for the design of user interfaces that aid the process of interaction between a human user and a computer.

One of the most pertinent aspects of HCI is that of web usability, Jakob Nielsen being considered a “guru” (see ComputerWeekly.com 2000) in this area. Many of these usability issues permeate the internet as a whole and are often related to areas such as interactivity and user experience. Although Nielsen has published books on this subject, “Designing Web Usability” (Nielsen 2000) and “Prioritizing web Usability” (Nielsen 2006b) for example, he continues to make results of his usability findings on his website useit.com.

A relatable example is Participation Inequality (PI) (Nielsen 2006a), the basic principal of which is that internet users are split into three types:

Lurkers - Those that simply view and do not participate

Intermittent Contributors - Those that participate to the minority of the material on the site

Heavy Contributors - Those that produce the majority of the material on the site

PI therefore implies that the more interactive a piece, the less likely the audience are to interact with it. This has direct relevance to issues of audience participation with net art and specifically with the pieces that I have generated myself.

All of the above texts on interaction establish some concept on the measurement of interaction. However, there is little information on the specific element of the interactive process that is the basis of this project. To re-iterate the unique perspective of my own taxonomy, the aim of my C.P.U. model of interactivity is to categorise the interaction itself. As can be seen from the established taxonomies mentioned above, none of them target this particular aspect of the art work. Chapter 6 explains this in more detail. It is also necessary to mention that whilst the taxonomy I am establishing is specifically aimed at net art, it doesn't exclude other art forms. Testing the suitability of the C.P.U. for other art forms has been highlighted as an area of further research.

Aesthetics

Due to the multi-media aspect of net art, aesthetic responses are often drawn from specific media relating to this. However, there are examples of attempts at generating specific aesthetic analyses of net art and interaction.

In "Aesthetic Conditions in art on the Network", Stalbaum (Stalbaum1998) argues that established notions of visual aesthetics are not the primary tools with which to analyse net art. Instead his theorised notions of "speed" are proposed as being a fundamental aspect of the aesthetics of art on the internet.

What matters is the notion that speed is a fundamental descriptive quality of net.art form with aesthetic implications, and that it serves to extend the generally supportive function of traditional visual aesthetics in network based art.

(Stalbaum 1998)

This hypothesis suggests that the conceptual depth of the artwork relative to the breadth of its implementation confers a “speed” to the piece. This is not to say that any speed is more aesthetically valuable than another, it functions as an analytical tool for aesthetic discussion.

The artist and author Julian Stallabrass (Stallabrass 2003) also discusses the aesthetics of net art, whilst observing that there is a wide range of art being produced online, there is much that attempts to be anti-aesthetic or tries to avoid aesthetic analysis in a similar way to the conceptual art of Duchamp. He further highlights the attempts of net art to negate aesthetic response through the use of appropriation. Citing Alexei Shulgin's piece “WWW Art Medal” (Shulgin 1995-8) which links together established non art web sites under the premise that they are awarded medals for artistic aspects. Stallabrass suggests that this piece attempts to free itself of aesthetic judgement through the use of ready-made material (Stallabrass 2003). He also considers the established fine art aesthetics to be grounded in the economy of art which is separate from the mass culture economy. Due to net art's ability to be reproduced it is not aestheticised in the same way as fine art (Stallabrass 2003).

Similarly, in her paper “Aesthetics and Interactive Art”, Karen Cham (Cham 2009) theorises that aesthetic value is traditionally attributed to the existence of a unique object (referencing Benjamin’s “aura”) and because there is no unique object in digital media, previous aesthetic paradigms do not apply. She then argues for a new theory of mediation that looks towards the medium as a basis for aesthetic consideration of interactive works. This includes the analysis of mass visual culture suggesting that social context has a bearing on the results of aesthetic analysis with interactive and digital media art.

David Heller (Heller 2005) discusses the aesthetics of Interaction Design³² stressing that this area has not received a great deal of aesthetic attention due its close relation with commerce. He draws parallels with the aesthetics of dance which has many elements that combine through choreography; visual, music, costume, synchronisation and lighting. Heller proposes that interaction design is similar in that it comprises of multiple components which evoke an internal reaction from the user which triggers an aesthetic response. Whilst the presentation side of interaction has a clear aesthetic quality, Heller argues that the interaction with these presentations also requires aesthetic analysis. In attempting to analyse this, Heller has identified three aspects of interaction; flow, context and responsiveness described as follows:

flow – what happens before and after a given moment; context – what other elements exist within the system and its environment (some of

³² Interaction Design is concerned with products and systems that allow interaction with a user. Typically this includes software (including internet based applications) and electronic devices

these do not drive the creative exercise directly, but how the creative system accommodates them will affect the aesthetics); responsiveness – when users act on the system, how it lets them know that something is happening, and whether it is what they wanted.

(Heller 2005:50)

He concludes by arguing that in order to better understand the process of interaction design and take the field further designers of interaction need to consider aesthetics as well as usability issues.

As much of the material outlined above comes from online resources, the possibility of erroneous information is one potential drawback resulting in the need to question its validity. However, an established community of artists and theorists has been created that act as a form of peer review. Quality papers and articles are often referenced and recommended between them ensuring that the vast majority of material is accurate and worthy. Also, the published material itself takes most of its referencing from online material and whilst there may be some inconsistencies, the majority of texts are of a high quality.

Conclusion

As discussed above, one of the main factors driving debates within net art is the consistent development of new technologies. However, there are some consistent themes that have engaged theorists and artists working within the

genre. Debates surrounding authorship (Stalbaum 1998; Miller 2005:20), galleries (see Bookchin and Shulgin 1999; Fourmentaux 2007) and economies (see Baumgärtel 1998; PLUG.IN 2007) are frequently debated within net art and are all discussed further in following chapters. The issue of interactivity is fundamental to this research and whilst it has been established there is little or no specific research into interaction with net art, many useful categorisations of interactivity have been highlighted (see Graham 1997; Klastrup 2003b; Shedroff 1994). Related to the previously established taxonomies of interaction is the concept of Participation Inequality (Nielsen 2006a) which is highlighted as a useful tool in examining audience interaction. Other issues that have been marked as relevant are hypertext theory (see Landow 2006) and the aesthetics of interaction (see Cham 2009). Whilst these areas are considered useful from a contextual viewpoint and are briefly referenced throughout this thesis, further analysis of these areas is beyond the scope of this research. The following chapter explores the genre of net art in more detail, investigating established definitions and common themes as well as detailing contextual connections with other art forms.

Chapter 3 - Introduction to net art

Definition of net art

There have been many attempts to define net art but at the time of writing there is no distinct, established definition that has been universally accepted. This suggests that the current attempts at definitions are either contested meanings with challenges being made in an effort to 'own' the term or they are representative of net art being a fragmented mediated form that is still not completely understood³³. Through exploring the definitions, characteristics and the relationship of net art to other art practices I am attempting to get closer to its meaning, ultimately establishing my own criteria for defining the genre.

One of the most comprehensive definitions of net art comes from the artist Andrej Tisma:

Web.art works are created exclusively for the Internet, for its language and technical capacities, and they address solely the users of this world wide computer network. Therefore, not only are they created in the language of the network, but are the most comprehensible and most effective in that environment and communicable by network

³³ It is understood that definitions within the creative arts are often contested, however, this cannot be assumed and it is therefore necessary to raise this question in response to a specific definition of net art.

distribution and presentation, i.e. through computer monitors and speakers. It is the configuration in which those works are at their most natural and in which they facilitate an active attitude of the viewers during reception.

(Tisma 2002)

The artists Joachim Blank and Robert Adrian both give a similar assessment of net art saying “Netart functions only on the net” (Blank 1996) and “this art is a part of - and entirely dependent on - the net” (Adrian 1997). Andreas Brøgger concurs with his ‘strict’ definition of net art, indicating that:

net art is art that cannot be experienced in any other medium or in any other way than by means of the network

(Brøgger 2000)

A further description of net art comes from the literary scholar and critic Marie-Laure Ryan who describes it as:

any artwork available on the World Wide Web that takes advantage of the computer, not only as a mean of production but also as a support necessary to the performance of the text

(Ryan 2012:132)

Whilst this avoids the explicitness of the definitions above, it nevertheless retains the essence of the necessity of the World Wide Web as an intrinsic component of net art.

Blank, Adrian, Brøgger and Ryan all echo Tisma's expression of exclusivity above, however, looking back at the Tisma definition we can see a contradiction. At first he states that net art is "created exclusively for the internet" but continues to apply a qualitative statement concerning how they are viewed, expressing that net art is "most effective" on the internet. This suggests that it could be effective in other environments and does not reflect the singular exclusivity presented in the opening sentence of his definition. This highlights the complexity of creating a holistic definition that covers all possible angles.

Suggesting that a definition of net art requires a distinct internet restriction can often cause pragmatic difficulties. Steve Dietz, curator of the exhibition "Beyond Interface", described the criteria for internet art submissions:

b e y o n d . i n t e r f a c e is an online exhibition of juried and curated net art projects for which the Net is both a sufficient and necessary condition of viewing/experiencing/participating

(Dietz 1998)

He continues, however, by highlighting the difficulties associated with using the word "necessary". Theoretically, many of the works submitted could be

run offline suggesting the net is not a “necessary condition” (Dietz 1998). Ultimately refined criteria had to be adopted which included the exclusion of pieces that required technology other than an internet connection. This also opens up the question of institutional acceptance and the inclusion of net art in the gallery. If it is accepted that net art may be theoretically run offline and that it is only “most effective” (Tisma 2002) on the internet, then it could be argued that there is potential for this art to be displayed in other contexts. Whether this is appropriate or desirable is an important issue within net art discourse and will be discussed later in this chapter.

The concept of artists ‘self validating’ their work was also highlighted by Dietz in the “beyond interface” (Dietz 1998) submission criteria. He expresses that within the selection process there was the acceptance of the idea that “it’s net art if the artist intends it to be” (Dietz 1998). This notion of the artist having an influence on the definition of net art can also be seen in the Tisma definition above when he explicitly states that net art is aimed at “solely the users of this world wide computer network” (Tisma 2002). In order for the artwork to be aimed at a specific group, in this case the users of the internet, the artist must maintain an awareness of that group. If an artist is specifically addressing and only addressing internet users then they are defining their work as net art.

This also implies, however, that the creator of the art work is cognisant of, or has bought into the idea of internet art.

There are probably many people working within this space who don't necessarily consider themselves artists because they don't want to limit themselves and their activity by a set of prejudices and pre-definitions of artistic practice.

(Ross 1999)

As Ross points out, there are those that would not wish to be labelled as artists, preferring other titles such as designer or developer. There are examples where material is aimed at the users of the web but the creator is not, or do not consider themselves, an artist. Ross continues however by saying that:

I do think that what they're doing is making art, even if I can't recognize it or if it takes me years to

(Ross 1999)

Establishing the nature of a distinct creative practice on the internet has its difficulties. The sheer volume of material available on the internet, which is all accessed in similar ways, can create difficulties in categorisation. Not only from the perspective of portals and directories categorising material but also from an audience and author perspective.

In terms of art and creativity, a transparency of the creative practice is often not apparent. As Bookchin and Shulgin propose, net art features the:

Disintegration and mutation of artist, curator, pen-pal, audience,
gallery, theorist, art collector, and museum

(Bookchin and Shulgin 1999)

Bookchin and Shulgin highlight how the distinction between these artistic areas can be removed through working on the net. Whilst Ross above suggests that many have no wish to “limit themselves and their activity by a set of prejudices and pre-definitions of artistic practice” (Ross 1999), there are others that are producing creatively without consideration of artistic practice. The interactive experiments on the site ‘play/create’³⁴ for example inhabit a space that whilst not labelled as art, can clearly be seen as creative endeavours. As the title of the website suggests, many of the pieces are creatively playful. “3D Pong” (Brown 2002-2007a), for example, sees the popular early computer game recreated in 3D where you play against yourself. Not all the pieces on this site are interactive however; “Modern Flowers” (Brown 2002-2007b) consists of computer generated three dimensional organic structures, endlessly growing upwards.

At this point, it may be useful to compare the notion of creative practice from both an audience and artist perspective. My previously theorised categories of creativity; Conscious, Semi-conscious and Unconscious creativity can also be used to categorise the notion of author creativity³⁵. Table 1 details how

³⁴ <http://www.play-create.com/>

³⁵ It must be made clear that the creation of the CSU model of creativity is a speculative epiphenomenon of the process of creating the C.P.U. model of interaction. It is not an attempt to open up a debate on the theories of creativity and in its current form it should not be considered a contribution to this field. As it stands, it is an attempt to show that not only has my previous research evolved into a more workable C.P.U. model of interaction but there is

audience interaction with a participative piece and author creativity can be assigned to a corresponding category. As Ross points out above, whatever category of creative practice an author or audience resides in, there is still potential for it to be labelled art.

A logical progression from notions of creative practice being conscious or otherwise is the debate on the validation of net art as art. As suggested above, validation could emanate from the artist, either the creator of the piece or the creator of other pieces. Critics and theorists often discuss the definitions and characteristics of net art which will inevitably be utilised in the classification of individual pieces. Curators and institutions also have their part to play. As the “beyond interface” (Dietz 1998) example above highlights curators apply their own criteria as to what constitutes net art. Some even go as far as to say that net art should not be considered art at all. In his rather derisory critique of the 1999 “net_condition” exhibition, Heidenreich suggests that “Any site that succeeds on the Net does not need to function as art” (Heidenreich 2000). This issue is an ongoing concern and will be discussed throughout this thesis.

also potential for further research in the field of creative thought through the CSU model of creativity. For an introduction on the theories of creativity please see Csikszentmihalyi 1996; Norman 2009; Sfard 1998; Sternberg 1999 and Stokes 2007.

Table 1 - Example of creativity from the perspective of both Audience and Author

	Audience	Author
Conscious	The user is aware of the purpose of their interaction and generates material knowing there is a purpose or resolution to this interaction.	The author is aware of what they are doing as being creative. They are creating it specifically for artistic or creative purposes.
Semi-conscious	The user is aware that they are generating material in an artistic fashion but it is only for them. They are interacting with the piece and generating their own ideas within the framework but they are unaware (either through lack of information or lack of concern) of the fact that this material could be used to perpetuate the piece as a whole (or seen as an element of the piece as a whole).	The author could be aware that they are creating artistic or creative material but it is of no concern.
Unconscious	The user interacts with the work without prior knowledge of artistic perpetuation. They play with the piece as a single, self contained idea and their interaction has no intention of continuing any artistic concepts (although this could be inadvertently achieved).	Creating without being aware of how it is considered. This could include creating a piece of art or design work that is simply a framework for a technology. In this way it is the process of creation not the output that is important. Therefore they are not conscious of how the output could be received, whether it is going to be viewed as a piece of art, design or creativity.

As already established in Chapter One, I prefer to discuss net art in terms of a genre as opposed to a medium. The internet itself is often termed a medium, however, it has the potential of utilising multiple media; text, images, video, sounds and so on. The use of the word medium in relation to the internet is specifically referring to the use of a network; it is the quality of the network being distributive that is a medium and not what is distributed. In terms of net art, the medium of dissemination is a defining characteristic, however, there is always at least one other medium involved. The idea that net art is capable of displaying multiple media rather than being a single medium contributes to the complexity of forming a definition. Fourmentraux highlights the multifaceted nature of the internet which has a direct bearing on net art.

In the art world, the originality of the Internet lies in the fact that it is simultaneously a medium, a tool and a creative environment
(Fourmentraux 2007)

He continues to extrapolate the meaning by suggesting that the “medium” relates to the internet being “a vector of transmission” (Fourmentraux 2007), echoing the notion above that it is the distributive quality of the internet that is a medium. I would therefore contest the use of the word medium and prefer to use the term genre, and would affirm that net art is specifically a genre of artistic practice.

Despite consisting of multiple media within its creative environment, the internet and therefore net art, can be seen to be a tool of creation in its own right. Ross also talks about the multiplicity of the internet and net art:

It is an integral set of production and distribution tools directed by aesthetic propositions, varying from hyper-hermetic, ontological concerns to the overtly political, to the broadly comic and self-referential.

(Ross 1999)

As Ross suggests above, “distribution tools” (Ross 1999) are a key constituent of net art. The internet itself is a medium of delivery and the reference to this medium is given in the term “net art”. The fact that the term itself describes the medium of delivery as opposed to the medium of expression, as in painting and video, contributes to the confusion about the form net art takes. Also a generalisation of the term “art” would infer the notion that, for the majority of people, it pertains to established practices such as painting or sculpture. Indeed, one of the most common misconceptions about net art is that it refers to images of artefact art displayed on the internet. The artist, curator and writer Jon Ippolito highlights this possible confusion:

For the typical artist, curator, or collector, “online art” means the scanned-in oil paintings hawked at NextMonet or Sothebys.com.

(Ippolito 2000)

As suggested by Ippolito above, this could include images of paintings being sold on an online shop, e.g. artgallery.co.uk. Websites of established art galleries such as the Tate that display pictures and information on present and past collections is another example that is often confused with net art. Fourmentraux makes this distinction in a more recent essay:

Today, the term net art refers to interactive works of art designed by, for and with the Internet, as distinct from more traditional forms of art which have simply been transferred onto the web sites of art galleries and other virtual museums
(Fourmentraux 2007)

As stated in the Tisma definition, net art is “created exclusively for the Internet” (Tisma 2002). In this instance, the viewing of artefact art on the internet is not net art. There is a further complexity with the issue of uploading offline art or creative material to the web. This has been exacerbated by the proliferation of user generated sites such as YouTube³⁶ and Flickr³⁷ and questions whether this material can be considered net art. However, in the case of uploading material, a video to YouTube for example, the work is not being created exclusively for the web. Despite the possibility of the work being created specifically for an individual internet site (or several internet sites), it is still not generated for the internet as a whole, “for its language and technical capacities” (Tisma 2002).

³⁶ YouTube is a video sharing community that allows users to upload videos and view videos uploaded by others. See <http://www.youtube.com>

³⁷ Flickr is a popular community for the publication and sharing of photographic material, see <http://www.flickr.com/>

There are other works that overlap or blur the boundaries of what one considers to be net art. For example, the 2001 Webby Award winner for art, Young-Hae Chang Heavy Industries³⁸ (figures 14-17), was a contentious choice. Each piece uses basic Flash animation that displays a linear, time based series of black text on a white background with a synchronised musical accompaniment. These pieces can be directly compared with a piece of standalone video work, both the visual display and the linearity of the piece being comparable to video; this piece would not be out of place as a projection in a gallery setting. The artist and curator Mark Tribe describes how the judges felt about the selection.

On the jury, some argued that selecting Young-Hae Chang Heavy Industries would send the wrong message to the art world, since their work does not exemplify such distinctive features of the net art medium as interactivity or algorithmic computation.

(Tribe 2006)

This piece can also be said to be outside the Tisma definition where he suggests that net art is created “exclusively for the internet, for its language and technical capacities” (Tisma 2002). The work of Young-Hae Chang Heavy Industries makes little use of the technologies available through the internet. There is no interactivity for example and the simple text animation does not explore the multi-media potential of the internet. However, it could also be argued that this piece does “address solely the users of this world wide

³⁸ A directory of Young-Hae Chang Heavy Industries work can be found here: <http://www.yhchang.com>

computer network” (Tisma 2002) purely through the intentions of the artists in producing for and distributing on the internet.



Figure 14-17: Young-Hae Chang Heavy Industries - Dakota

Heavy Industries themselves discuss their decision to work on the web:

We came upon moving text because we wanted a website, but quickly discovered we didn't know – or care to know – how web designers created online graphics, colors, photos, illustrations, and text. Frankly, we dislike graphic design, and we also dislike interactivity, which are

the two staples of web design, if not the web itself. Being artists, we like to do things wrong, or at least our own damn way. We ended up with a moving text synchronized to jazz, which was (and still is) all we could do

(Chang and Voge 2001)

Their desire to have a website was their only stipulation for working on the web. Eschewing popular reasons for choosing the net, such as interaction and graphical content, Heavy industries have established their own unique version of net art, subverting common conceptions (or at least the conceptions of some of the judges) of what net art is. Equally, Heavy Industries question what happens when the traditional notions of text, as they are dominantly used on the web, are used within an arts context. Through reducing the emphasis on design and by subverting the way in which text is viewed as a medium of expression on the computer screen, they are attempting to offer their own interpretation of text as art. As Greene comments:

YOUNG-HAE CHANG HEAVY INDUSTRIES' projects jar the normal optical field of a screen into an articulation of the vector that can connect artist and viewer.

(Greene 2004:105)

They remove the dominant connection to static keyboard orientated text and make an artistic standpoint by refusing most of the conventions of visualisation on the web. Whilst their work is clearly animated in a practical

sense, it engages with visual forms that precede the internet, Tribe compares it to concrete poetry and experimental cinema (Tribe 2006). Greene again comments, their work is “closer to television and animation in format” (Greene 2004:105) and a further mass cultural comparison conjures up images of subtitles and karaoke machines.

The subversive use of internet text feeds into my own work, particularly “Musical Forum”. By implanting a musicality that is ordinarily absent, I similarly attempt to force the user to reassess the role of text within an artistic context.

Often, non interactive visual works such as a video (see Hush City 2009) can be distinguished as net art through their framework. An artist creating work that utilises the specificity of the browser window to frame their work differs from an artist choosing to show internet video through YouTube. The latter is clearly only concerned with the content of the video, whereas an artist whose video work is being specifically aimed at the internet can be seen to make the whole viewing frame part of the piece. The YouTube piece could be taken out of this context and displayed on a TV or projection without interfering with conceptual or aesthetic concerns. Taking Hush City out of the internet context, however, would be to remove it from its intended conceptual framework.

Another example of the confusing form net art takes can be seen in the Heath Bunting piece, Kings X Phone In³⁹ from 1994 (Figure 18), which is often historically quoted as being a classic piece of net art (see Berry:110). However, the piece itself was a performance, based at Kings Cross Station in London, where people were encouraged to ring the public telephones at a given time. The use of the internet in this case being limited to the dissemination of instructions that enabled the performance to occur. At best this can be seen as a step towards a distinct net art genre, and although it does not fit Tisma's definition, it is historically important in recognising net art as an evolving art form.

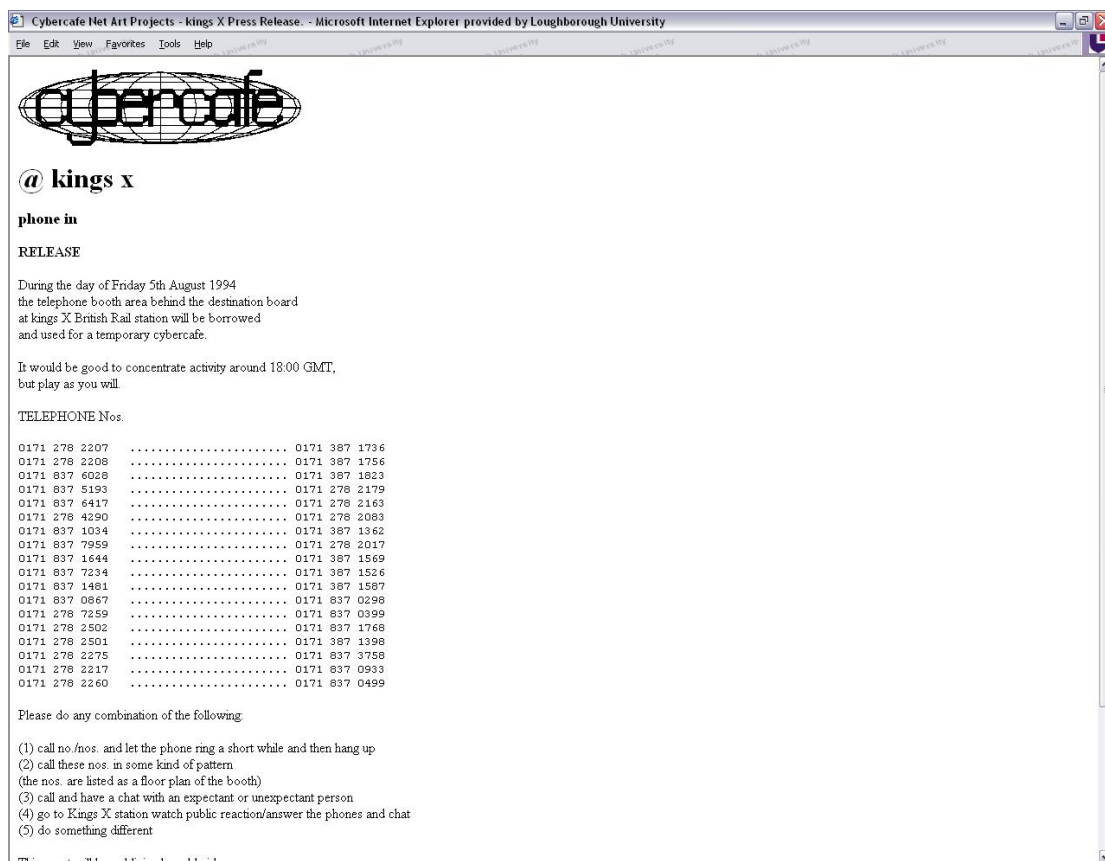


Figure 18: Kings X Phone In – Heath Bunting 1994

³⁹ The original information posted on the web can be found here: <http://www.irational.org/cybercafe/xrel.html>

As an extension of a concise definition, David Ross has highlighted “21 Distinctive Qualities of Net.Art” in “Net.art in the age of digital reproduction” (Ross 1999). This is a transcription of a lecture given at the San Jose State University and goes some way to describe the possible qualities of net art. Some of the most pertinent issues raised include:

- The notion of authority is removed or is continually changing between reader and writer.
 - The potential to dictate the size of the audience from complete freedom of access to limiting the audience, through passwords or subscriptions for example.
 - The discursive potential of net art, where the work can include its own critical response.
 - The ability to create false identities and preserve anonymity. Related to this is the equality of identity, individuals have equal potential for presence and the same tools available to them as large organisations.
- (Ross 1999)

In a more recent text, Fourmentaux believes he has identified “three principal forms of net art” (Fourmentaux 2007). He goes on to label these as “media

contamination”, “algorithmic generation”, and “interactive communication” (Fourmentraux 2007). He describes the three principle forms as follows:

The first kind is based principally on the (media-based) interface through which the work is conveyed: use and communication.

The second is focused on the (algorithmic) program of animation objects or environment objects which may or may not provide the web surfer with the possibility of interaction. The

third is centred on interactive content, from the arborescent object (taking a reticular path) to the object in the process of creation (granting an alterative path) to the relation object (which distributes an inter-communicational path).

(Fourmentraux 2007)

He continues to clarify these forms, highlighting that the subject of media contamination refers to the digital content, video, music, animation and so on. Algorithmic generation refers to the practice of using underlying code to manipulate or generate, or allow the user to manipulate or generate, the content. Interactive communication refers to the involvement of rhizomatic⁴⁰ communication, where the user can take various paths when exploring the piece. Undoubtedly pieces can contain all of these forms, and often do, however, analysis of this kind is useful in generating further understanding of what net art is.

⁴⁰ The use of the term "rhizome" in this context is generally attributed to the philosophy of Deleuze and Guittari who outline a concept of theory and research that allows for non-hierarchical data structures (See Smith. and Protevi 2011).

It would seem that despite there not being a standard definition, there is a general consistency in thought with almost all the definitions agreeing on the absolute dependence on the net:

“entirely dependent on” (Adrian 1997)

“cannot be experienced in any other medium” (Brøgger 2000)

“functions only on the net” (Blank 1996)

“exclusively for the net” (Tisma 2002)

There appears to be little argument for ownership of the term “net art” but the fact that there continues to be attempts to establish a definition suggests that net art exists in a slightly nebulous form. This anxiety of ownership could reflect the idea that arts culture does not want to necessarily embrace net art and equally that net art has not permeated academic culture to the extent that it is relatively unknown. My research is attempting to evidence its validity both through arts and academic culture and therefore formulating my own definition for net art constitutes an integral component of this concern.

Whilst it is clear that if a piece is completely dependent and exclusive to the net then it can be considered net art, this still doesn't account for the large

amount of work that is not dependent or exclusive. This leaves an area for the expansion of the definition of net art⁴¹.

In order for a specific piece to be net art it has to be on the net, however, by adjusting the wording of these definitions slightly it can be extended to cover works that exist in this grey area, or at the very least succeed in reducing the grey area. By implying that the piece can only be net art if it is dependent on the net can be altered to say that it becomes net art when it is on the internet and *uses* the internet in the process of it becoming art. In this sense a piece that can be taken offline and displayed as a standalone video projection, for example, is now video art.

Simply suggesting that net art *uses* the internet is problematic due to the internet being a medium of dissemination, all online art could be said to be using the internet in its delivery. A refined definition therefore should suggest that net art is art that uses the internet as a tool in the artistic process. The web page *is* the work rather than simply displaying the work; it is art that uses the internet in the process of it becoming art. This in itself could include conceptual dissemination tactics. It is possible that a piece could be referencing the ability of the internet to deliver material to a broad cross

⁴¹ It must be noted that whilst attempting to establish a definition for net art, I do not wish to make this genre seem isolated from other art forms. My own definition is an attempt to open up the classification of these works from the very strict definitions that already exist. There are many artists practising within contemporary arts that utilise internet related technologies within their work and whilst these artists and pieces may not fit within the current definitions of net art, it is important to recognise the use of these technologies within contemporary art culture. Some notable examples include the work of Baily, Corby and Mackenzie (see <http://reconnoitre.net>) and Marisa Olson (see <http://www.marisaolson.com>). The rest of this chapter explores related concepts and areas in an attempt to show how net art was a logical progression in the tradition of experimental artistic practises that utilise technology and collaborative techniques.

section of people. In this sense the delivery of the piece is an intrinsic part of the artistic process, unlike the delivery of YouTube videos or Flickr photos where the art is in the form and content of the imagery.

My own definition of net art becomes:

net art is art that uses the tools of the internet in the artistic process.

These tools *are* the work; it is art that “uses” the internet in the process of it becoming art

The tools discussed here cover the entire hierarchy of internet technologies from the protocols that govern the internet, HTTP, FTP, SMTP etc; the tools created to utilise these protocols; Browsers, Email etc; to the applications, code and scripts that run within these; HTML, ASP, CGI, JavaScript, Flash and so on. Whilst the idea of these tools is similar to Tisma’s “technical capacities” (Tisma 2002) the key difference is rather than net art being defined through it being created exclusively *for* these tools, it is defined through it being created *using* these tools.

This definition also covers the grey areas mentioned above in pieces such as Dakota (Young-Hae Chang Heavy Industries c2001), Hush City (Hush City 2009), and Kings X Phone In (Bunting 1994), by removing the notion that net art is absolutely dependent on the internet as suggested by Adrian (Adrian 1997), Brøgger (Brøgger 2000), Blank (Blank 1996) and Tisma (Tisma 2002). The work still needs to be on the internet to be net art however, as my

definition clarifies, the internet tools that are being used to create the work are themselves part of the work.

Establishing a concise definition is helpful in the interrogation of net art, however, one must not forget the rapidity and diversity of current technological developments in relation to the internet. Also the proliferation of alternative and overlapping terms does not help to form a definitive response. However, to question what net art is, does provide the framework within which to question and interrogate current notions of the genre. Allowing for a greater depth of understanding of not only what net art is but what it can be and how it can be used by the artist to satisfy their individual needs. In order to further enhance the understanding of the genre it is useful to explore common net art terms, historically determined tendencies, and artistic practices that are related to net art.

Common Terms

There are several terms in common usage that can describe artistic practice on the internet. Net art itself is a branch of digital art that involves the internet in the creation of art work. It can also be included under the banner of new media art, or more recently, media art. There are other frequently used terms including net.art (with a full stop between the “net” and “art”), netart, web art, internet art and browser art. As previously highlighted in Chapter 1, these terms originate from a variety of sources and whilst they are often used interchangeably, there are some differences between them.

Firstly, the term “net.art” was used to describe all net art but has more commonly become used to describe a particular time, 1994 – 1999, and is associated more with specific artists. Vuk Ćosić, Jodi.org, Alexei Shulgin, Olia Lialina, Natalie Bookchin and Heath Bunting, to name some of the more prominent practitioners at the time. The term “net.art” was purported by Alexei Shulgin to be an accident. He claimed that Vuk Ćosić coined the term after he received an anonymous email which had been corrupted, leaving only a mass of undecipherable characters with the only readable term being “net.art”. This story has been quoted many times in various formats over the years (see Greene 2004:55) but has recently been denied by Ćosić himself. In an interview with Régine Debatty on the site, *We Make Money Not Art*⁴², he states that it was Pit Shultz who coined the term in 1995 and that “Alexei Shulgin told that silly story about me for fun” (Debatty 2006). He goes on to say “...that e-mail is still the most frequently referenced work of net.art” (Debatty 2006).

The group of net.artists did not consciously band together as a group, it was more that a sense of propinquity developed through their mutual working environment, as Greene remarks:

Vuk Ćosić knew critic Josephine Bosma; Bosma knew Olia Lialina:
Lialina knew and had collaborated with Heath Bunting. Colleagues,

⁴² *We Make Money Not Art* is a popular arts blog that focuses on the intersection between art, science and social issues. The site can be accessed here <http://www.we-make-money-not-art.com/>

regardless of their opinions or behaviour, were just an email away, and likely to be seen at a festival in the near future.

(Greene 2004:129)

The term net.art is now almost exclusively used to describe this early period in net art history.

The actual demarcation of the term “net.art” as a historical notion did not occur overnight, taking several years and prominent theorists, critics, artists and curators to inform us of its diachronic status. Tilman Baumgärtel suggested the era was at an end as early as 1998, he remarks that “The first formative period of net culture seems to be over” (1998a). Ironically, despite the reluctance of galleries and institutions to include net art, institutional acceptance is cited as one of the reasons why many began to consider net.art redundant. Around the turn of the century some institutions began to incorporate net art into collections and exhibitions. Amongst others, ZKM⁴³ hosted “net_condition” an exhibition of net art in 1999, Tate Britain and Tate Modern began commissioning net art, Whitney Museum included net art in their 2000 Biennial, and the Guggenheim commissioned net art pieces. Patrick Litchy states whilst performing a Q&A session in 2002 that net.art was “dead” (Litchy 2004:1), however, he later clarifies this by suggesting that due to institutional acceptance the genre “has been chiseled into art history and so has been drained of its dynamism (*sic*)” (Litchy 2004:1). Huber also implies the historical relegation of the term “net.art”:

⁴³ The Zentrum für Kunst und Medientechnologie (Center for Art and Media Technology) in Karlsruhe, Germany is a New Media interdisciplinary research institution. See here for more information: <http://on1.zkm.de/zkm/e/>

We can already regard net.art as a very special, extremely limited, historical artistic movement that took place during the second half of the 1990s.

(Huber 2002)

The artist Cory Arcangel concurs with the above by commenting in the New York Times that “Internet art’s golden age pretty much seems to be dead” (Sisario 2004). The language used to describe net.art often lionises this period, “golden age” (Sisario 2004) and “very special” (Huber 2002). However, not everyone looks upon this time as the apotheosis of net art. The artist Rafaël Rozendaal says of net.art:

its all very boring stuff, that somehow defined art online. to me its very flat and obvious work, making your browser crash, converting movies into ascii files, not exciting at all (*sic*).

(R. Rozendaal. Email. 27 July 2007 17:34)

To suggest there is no longer any excitement or dynamism with internet art is to belie the framework it exists on. The internet itself is expanding; the possibilities and technologies are becoming increasingly broad, as are the possibilities for producing art. The author and programmer Alex Galloway brings the whole issue of the end of the net.art period into perspective:

As computers and bandwidth improve, the primary physical reality that governed the aesthetic space of net.art begins to fall away
(Galloway 1999)

Galloway clearly highlights the idea that it is not internet art itself which is moribund, but the art form that was previously known as net.art. Ultimately, he suggests here that there was a definite look and feel to this early work, which by the very nature of the technological advances occurring, is no longer, or becoming increasingly less observed. Due to “net.art’s” historical connotations, the term “net art” has become dominant throughout the community. “Internet art” and “netart” are also used as variations of “net art” and can be seen as direct synonyms.

“Browser Art” is another term with a distinct meaning which the Tate Online Glossary defines as art that transforms “the structure of the websites and the links between servers into visual material”⁴⁴. This essentially refers to the practice of rendering the HTML of web pages in a particular non standard way through the creation of a bespoke browser. “WebStalker” (I/O/D 1997) is a classic example of the manifestation of “browser art” which saw the creation of a custom built web browser that creates an unusual map like interface of the links found on a page. The Tate Online glossary also suggests that “browser art” is a “sub-genre of Net art”⁴⁵. It is also possible to use the term “browser art” to be suggestive of works that appear *within* the browser frame, in this sense the term is applicable to the vast majority of net art.

⁴⁴ See <http://www.tate.org.uk/collections/glossary/definition.jsp?entryId=577> for the Tate Online definition of Browser Art

⁴⁵ *Ibid.*

Technically, using the term “web art” (see Tisma 2002) has its own distinct meaning. It is common practice to use the terms “world wide web” (or WWW) and the “internet” interchangeably, however, there is a difference between these two terms. Essentially, the “internet” refers to the physical structure of the connected hardware, including computers, wires, servers and so on. It is the physical network of computers. The WWW on the other hand, refers to a method of accessing the data kept on these computers or devices, which it does via the HTTP protocol⁴⁶. Prior to the WWW there were other protocols that facilitated this, Telnet, for example. Email protocols (SMTP⁴⁷) are also not part of the WWW (which gives us another form or sub-genre of net art, “email art”). Therefore, “web art” strictly refers to art works that make use of the WWW and would not include email (SMTP), FTP⁴⁸, Instant Messengers and other methods of accessing information over the internet that are not part of the World Wide Web.

Despite there being several terms with their own distinct meanings, these are all used interchangeably to describe net art. Unless clearly stated to be referring to the idiosyncratic version of the term, they can be used to describe net art as a whole.

⁴⁶ A protocol is a format or set of instructions that determine how data is to be transmitted between connected devices.

⁴⁷ SMTP or Simple Mail Transfer Protocol is used for sending emails between servers

⁴⁸ FTP or File Transfer Protocol is used to exchange files over the internet, often used to upload web pages to a server.

Core Tendencies

Net art is open to a broad spectrum of theoretical and aesthetic qualities, however, there are some core tendencies that are common in much of the work that has been produced. Low-tech production, subversive qualities, institutional avoidance, appropriation of material, and participation are some of the constituent themes regularly contained in net art. A brief summation of these core issues follow.

Low tech production

Low-tech production values began as a necessary condition of using the internet, the first browsers being text only. The first popular graphical browser, Mosaic 2.0, was released in January 1994⁴⁹ giving web pages the ability to show images and thus opening up the internet as a viable medium for artistic expression.

An attraction of utilising the internet for artistic purposes is the ability to quickly and easily create work without needing a large amount of prior knowledge. Despite the fundamentals of website creation being easy to learn a paucity of knowledge would inevitably affect production quality. In comparison with early “professional” web design, early practitioners did not have the skills or knowledge to use the medium to its full potential. As a consequence there

⁴⁹ This page details the history of the Mosaic browser
<ftp://ftp.ncsa.uiuc.edu/Mosaic/Windows/Archive/MosaicHistory.html>

was not a great deal of quality referential material. Coupled with this lack of visible potential, many artists throughout the history of net art have been primarily concerned with concept over design. As Ryan notes “the vast majority of the works of net.art give little pleasure to the eye” (Ryan 2012:132), the visual aesthetic having little or no influence on the way the project is conceived. Essentially, low-tech production was through necessity (the browsers couldn’t cope with more), lack of knowledge (it was a new medium), conceptually led (design was not an issue), and a continuing aesthetic based on the previous reasons. Heath Bunting is renowned for producing “low-fi” works, as Greene observes:

[Heath] Bunting's modus operandi since 1994 has been to create works/events that are as facile, low-tech, and straightforward as graffiti (Greene 2000:2)

“Project X” (Bunting 1996) is an ongoing project and another of Buntings online / offline crossover pieces in a similar vein to “Kings X Phone In” (Bunting 1994). This project sees Bunting using chalk to write a URL (<http://www.irational.org/x/>), firstly around London and then gradually further afield whilst on his travels. If the URL is then entered into a browser the user is confronted with three questions “Where did you see this chalked?”, “Why do you think it was done?” and “Who do you think did it?”. Clicking the “go to next page button” then takes the user to a screen of responses posted by others. The writer and critic Josephine Bosma describes Bunting’s work whilst discussing Project X:

Bunting's work is very much about surprising the audience by making subtle interventions that are often not immediately recognized as art.

(Bosma 2004)

This subtlety is evidently manifested in the simple and low tech interface of many of his projects. Another example of Bunting's low-tech output is “_readme.html” (Bunting 1998), which sees an article on Bunting altered to include hyperlinks for each word to a website of the same name. Again, a very simplistic and subtle intervention that questions the commercialisation of the web through domain names in a technologically straightforward way.

One of the earliest forms of art on the internet featured experiments with the narrative structure through the use of hyperlinks. “My boyfriend came back from the war” (Lialina 1996) by the Russian artist Olia Lialina is an example of experimental narrative structure on the web. Utilising text, low resolution images and HTML frames⁵⁰, the user gradually causes the browser to form into smaller windows as the “story” unfolds and becomes increasingly fractured.

Fantastic Prayers (DeJong et al 1995), the ‘Dia Center for the Arts’⁵¹ first site specific web project sees a collaboration between writer Constance DeJong, artist Tony Oursler, and musician Stephen Vitiello. The piece itself uses text,

⁵⁰ HTML Frames allow more than one web page to be displayed in the same browser window.

⁵¹ <http://www.diacenter.org/>

video, and sound to form a non-linear narrative structure. Whilst “My Boyfriend” maintains a consistent look, “Fantastic Prayers” utilises low resolution images and videos alongside text to connect fragments of material to form its narrative.

Vivian Selbo’s “vertical blanking interval” (Selbo 1996), is a prime example of the seemingly random application of linked content. The viewer is confronted with images, text, form fields and dialogue boxes that are again low resolution and often visually challenging (see Figure 19). This piece questions your perception of what a website should be and of what art can be. As one person comments on the introduction page for this piece: “it makes my eyes and brain go wonky” (Adaweb.com 1999).

Not all work produced can be considered low tech, many pieces use advanced scripting and programming models whilst others utilise Flash to facilitate complex animation and rich visuals. The previously mentioned 1997 piece “Webstalker” (figure 20) by the art collective I/O/D for example, used sophisticated code to render the map like structure of links it found on a web page. Despite there being examples of more technologically advanced pieces, low-tech production was historically common.

As can be seen in pieces like “vertical blanking interval” (Selbo 1996) this low-tech visual aesthetic was often based on a subversion of the high end web design ethic; artists would create pieces in reaction to popular web design practices. Subversion in general has been an ongoing quality since the early

years of net art with many using the medium to challenge the values and concepts of art. Suliman aptly sums up the potential subversive quality of internet art:

It resonates with ideas associated with radical art practice and is, at some level, expected to subvert or challenge popular expectations or values of art, internet protocols or electronic communications, to extend beyond the level of the visually and aesthetically pleasing.

(Suliman 2005:13)

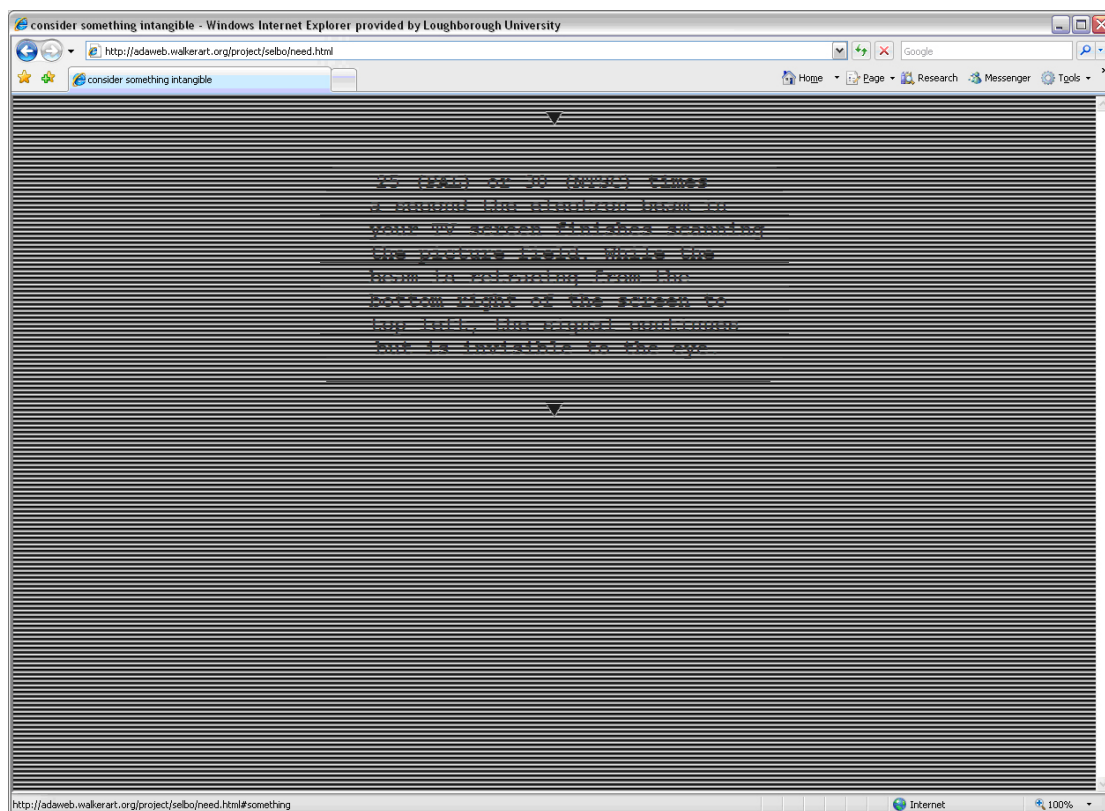


Figure 19: Vertical Blanking Interface - Vivian Selbo 1996

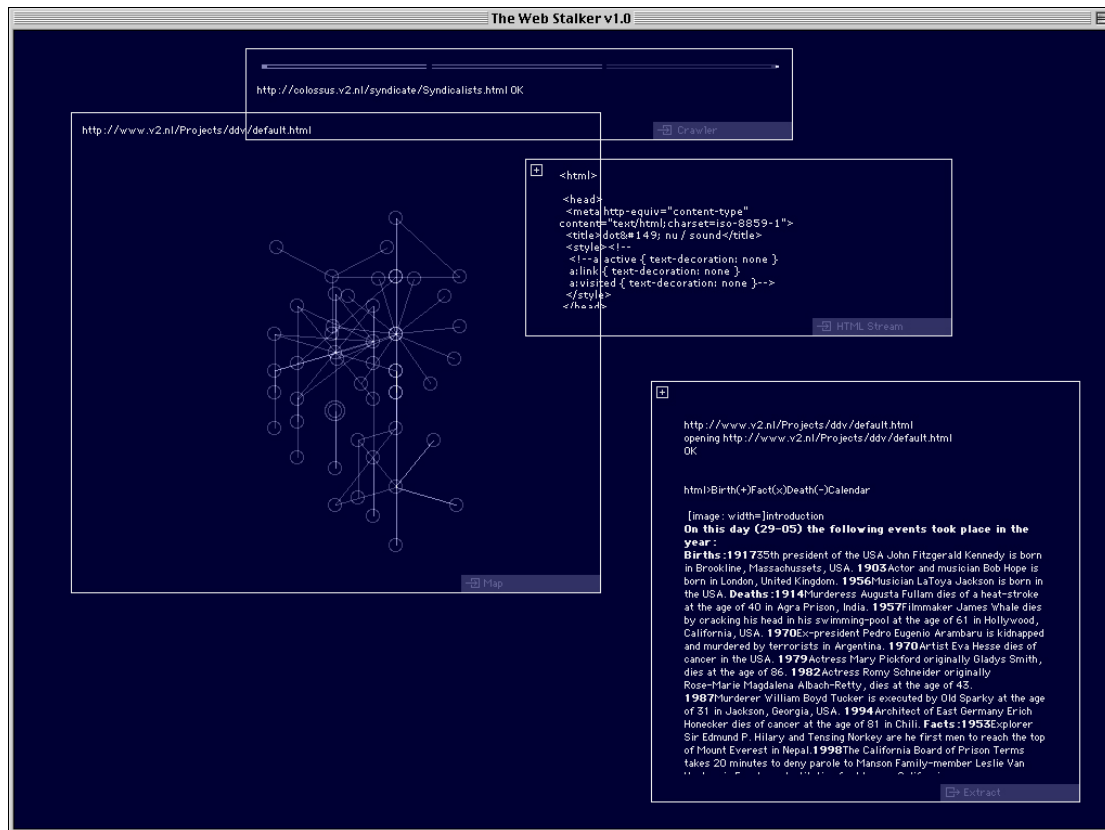


Figure 20: Webstalker - I/O/D 1997

Subversion is also directed, in a more practical sense, to internet conventions, tools, and protocols. "Form" by Alexei Shulgin from 1997 (see figures 4 & 5), is an example of using established internet conventions within a piece of work. This piece uses elements from forms which whilst not internet specific are a very common occurrence on web pages. The work is entirely composed of form fields including, buttons, text boxes, drop-down lists, radio buttons, and check boxes, the user being encouraged to click or interact with these components in a playful way. The art group Jodi.org used subversion of the internet technologies to extremes. Much of their work consisted of displaying the HTML code that would lie underneath the page. They often subvert the use of the browser, in the piece www.jodi.org (Jodi.org 1995), you are confronted with a jumbled display of ASCII characters. When you view the

source code, however, there are some coherent patterns similar to ASCII art. Whilst this piece subverts the nature of the dominant browser software from within, “Webstalker” (I/O/D 1997) challenges the accepted notion of the browser itself by creating its own unique interface.

Developed from using new technologies, new techniques and new artistic outlooks, the tendencies of low tech production and subversion of the technologies have become fundamental within the short history of net art. One issue surrounding these ideals is the possibility that they will become compromised by institutional models.

Galleries and Institutions

There is a rich debate concerning the role of galleries and institutions within net art culture. In this context ‘institutions’ refer to any organisation or body involved in the arts that are significant in their visibility within contemporary arts. In particular this involves the dominance of western arts culture including galleries, museums, arts organisations and corporate funding⁵².

There is some discussion on the role of the gallery in the milieu of net art.

Many arguments exist on both sides as to whether the gallery will be a relevant and positive inclusion in the net art experience. Currently, the vast

⁵² There are many other areas related to net art besides contemporary arts culture, including design and publishing, the music industry and the television industry. However, the focus of this section and the thesis in general is on contemporary art and analysis of these other areas is beyond the scope of this research.

majority of net art is only available on the net. Online galleries are fairly commonplace on the internet, resources and lists of links to pieces of net art are reasonably easy to find.

Considering the nature of the web, it is important to emphasise that when a piece is considered to exist in an online gallery this could simply mean that there is a link to it. Sometimes a resource may actually host the piece on their server, or they may link to a piece that is located elsewhere. Unless specifically mentioned, any reference to a piece being located in a particular resource or gallery listing suggests that there is a link to it, and is not necessarily an implication that it exists on the gallery's server.

There are a fair amount of online resources or galleries that are currently listing works of net art. Many of these are independent resources that have no affiliation with established institutions. Rhizome.org, for example, has over 2000 pieces in their artBase, many of which are net art. Many other excellent independent resources exist including Natalie Bookchin's, NetArtHistory⁵³, which records works from 1994 upwards, the JavaMuseum⁵⁴ and the Low-fi net art locator⁵⁵. The institutions are also beginning to include net art within their own collections; most noticeably the Tate gallery has its own net art section on its Tate Online website⁵⁶ (figure 21). The Guggenheim museum⁵⁷

⁵³ Natalie Bookchin's NetArtHistory is an editable Wiki of net art history and whilst it is certainly not complete it does contain some useful links for those that are interested in this genre: <http://www.ttestechart.fr/NetArtHistory/>

⁵⁴ The Java Museum currently displays information and links in a blog: <http://www.javamuseum.org/blog/>

⁵⁵ <http://www.low-fi.org.uk/>

⁵⁶ The Tate Online collection can be viewed here: http://www.tate.org.uk/intermediaart/archive/net_art_date.shtml

also has a small net art collection, their “networked art” section includes two works from 2002 (figure 22), however there have been no further additions since that time. This is indicative of the seemingly general reluctance of the major galleries and institutions to incorporate net art into their collections. The reason for this unwillingness is situated in one of several places. It could be that the institutions do not accept net art as significant. They could, as many net artists do, consider net art as being out of context in a gallery or museum. Curatorial difficulties are also a factor, specialist equipment and staff would have to be employed in order to fulfil the requirements of staging a net art exhibition. Anti hegemonic principles are also an attractive lure for many. The ability for net art, particularly at its inception, to be published without the involvement of the institution allows for a degree of artistic freedom. Wolfgang Staehle described the discussions he had with other artists through early mailing lists, indicating the feeling of freedom that the internet offered them: “The thrill was that you could feel like a gang of conspirators” (Baumgärtel 1998b). This highlights the sense of separation from the art institutions of the time.

⁵⁷ The Guggenheim’s online collection can be viewed here: <http://www.guggenheim.org/new-york/collections/collection-online/show-list/artwork-type/?search=Internet%20Art>

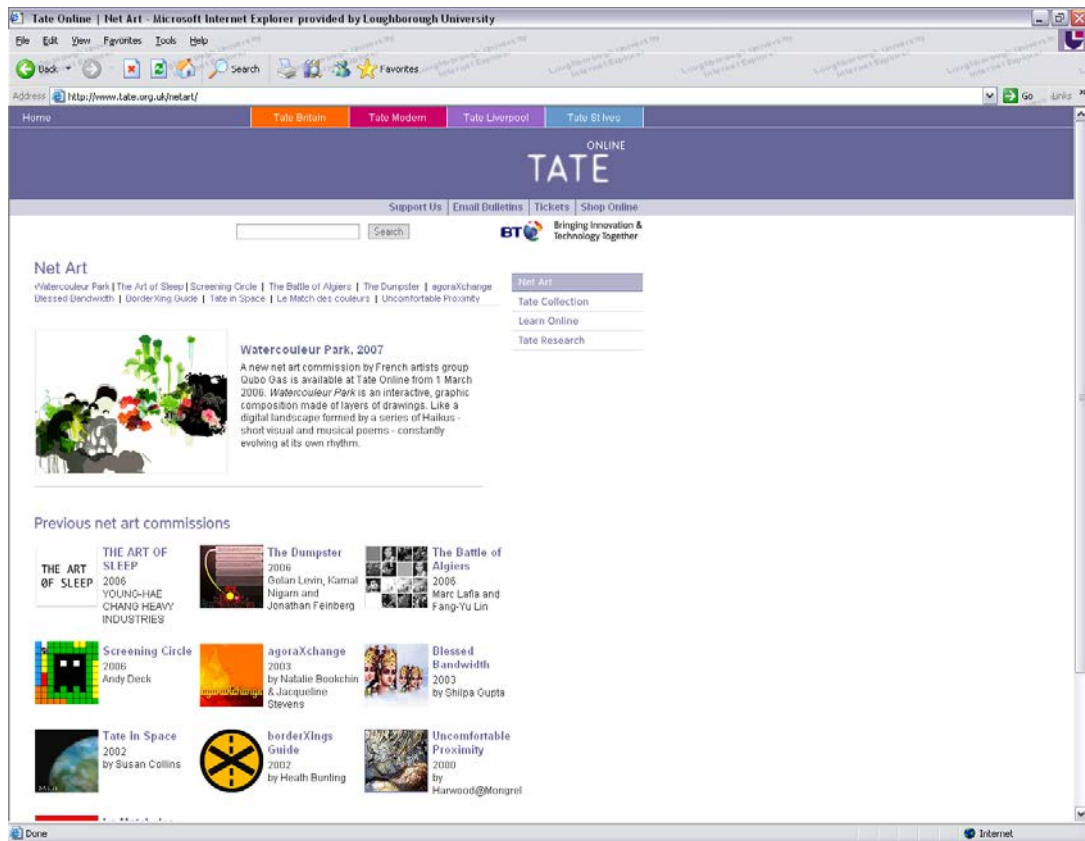


Figure 21: Tate Online Homepage

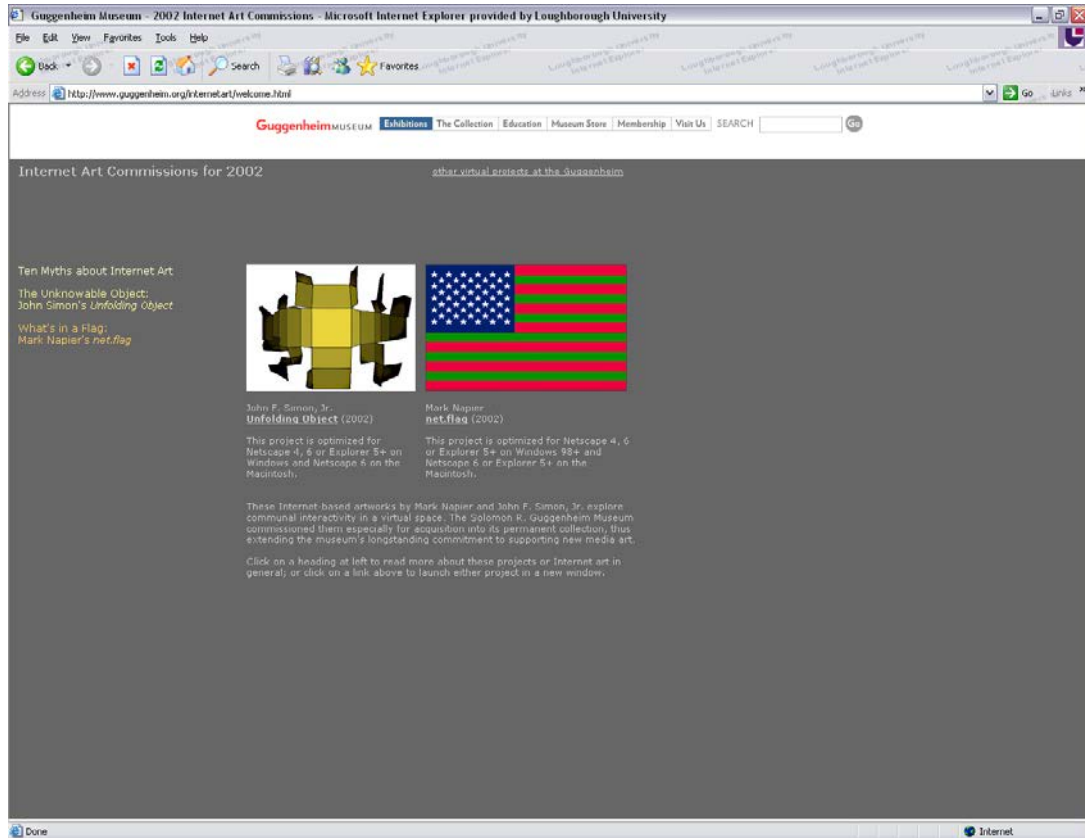


Figure 22: Guggenheim Internet Art Commissions 2002

Despite some involvement from galleries and museums, the Guggenheim Museum and the Tate mentioned above for example, this ability to create and publish freely is extant. Again this is comparable to the internet itself, the proliferation of blogs and other user generated material emphasise the attraction of being able to publish without censorship or selection.

the Internet allowed net.artists to work and talk independently of any bureaucracy or art-world institution without being marginalized or deprived of community
(Greene 2000:1)

As Greene suggests above, the internet gave artists a framework within which to work that not only liberated them from censorship and institutional interference but also allowed for the generation of a community.

A caveat of this experience is the possibility that a proliferation of poor material will infiltrate the internet creating a repository for the banal. As Alexei Shulgin comments in an interview:

imagine if everybody is online, if anybody makes web pages, it will become overwhelming. Who would search for grains of gold in all this shit?
(Baumgärtel 1997b)

Quality control could be cited as a positive argument for institution intrusion. Work that has been selected to be listed within a gallery or that has been commissioned by an organisation has had to go through a filtering process and be deemed of a high enough quality to show. This is of course, in opposition to some of the reasons why artist initially began to use the internet. Bypassing the institution is a key theme amongst the early adopters of the internet as an artistic tool. Institutional avoidance gives the artist a freedom to produce without prescribed constraints and effectively allows anyone to be creative within the medium. In a short piece about the work of Andrej Tisma, Stringer states:

Internet Art, and Mail Art before it, seeks in the tradition of the avant-garde to operate independently of such institutions by producing a direct and immediate art form experienced between the creator and viewer without mediation or censorship.

(Stringer 2001)

The notion of community incorporates one way to combat poor quality whilst still maintaining independence from the institution. Establishing an essence of 'quality' within net art can be achieved by forming a type of peer review process. This can be seen with community sites like YouTube where the most popular videos are chosen by the public who are acting as a filter for the site's content. In a similar way, pieces of net art acclaimed by their peers are more likely to be considered works of quality within the genre than those that receive little or no attention.

The most visible argument to the debate as to whether there is a place for net art in the white cube gallery is the issue of context, questioning whether a gallery is an acceptable environment to view net art. The context of net art is multifarious, the reasons for its creation being manifold. Some of the main areas that contribute to the idea of net art being out of context include subversion, politics, intended audience and access. When talking about the images in an article, Greene says of net art projects:

seen out of their native HTML, out of their networked, social habitats, they are the net.art equivalents of animals in zoos.

(Greene 2000:1)

This comment highlights the thoughts of many with regards to showing net art in environments other than the net. Cornelia Sollfrank was explicit on her views of net art in the gallery, in an interview with Baumgärtel she states:

Net art has nothing to do with museums and galleries and their operations, their juries and prizes, because it goes against the nature of Net art. Net art is simply on the Net; so there's no reason for a museum or for a jury that decides what the best Net art is...

(Baumgärtel 1998b)

Sollfrank has clearly expressed her feelings that net art is incongruous in a gallery setting, however, she does concede that institutional interference is likely to happen and “cannot be stopped” (Baumgärtel 1998b). Dietz talks about how net art should not be put into a museum context by suggesting that the understanding of such a piece would be lost. He references the connection it would inevitably have with installation art if it were to be installed in a gallery.

Just as easel painting--or the movie screen--are not the proper contexts in which to understand Renaissance "installation art," contemporary installation art, is not necessarily the right context in which to understand net art. It is the net itself. The system.

(Dietz 2000)

An often quoted reason for a piece of net art to be considered out of context in the gallery is in relation to the ideologies of the early net.artists, in particular the act of bypassing the institution as mentioned above. In their manifesto cum net art piece “Introduction to net.art” (Bookchin and Shulgin 1999), Bookchin and Shulgin highlight this as one of the criteria of net art:

The bypassing of art institutions and the direct targeting of corporate products, mainstream media, creative sensibilities and hegemonic ideologies

(Bookchin and Shulgin 1999)

Subversive and antiestablishment ideologies were taken up with vigour by the early net.artists. They saw these ideas as liberating, allowing them to explore the genre without any pressure or constraining criteria (aside from intrinsic technical constraints). It also provides a conduit with which to challenge existing notions of art, as Suliman suggests above net art is “associated with radical art practice” and is “expected to subvert or challenge popular expectations or values of art” (Suliman 2005:13).

To counter the concept of institutional avoidance, the suggestion could be made that it is more challenging or subversive to display this work in just such an environment. Questioning the effect of displaying works in a gallery that “extend beyond the level of the visually and aesthetically pleasing” (Suliman 2005:13). This would be a most challenging environment for net art, to be in direct confrontation with an audience that is likely to be more familiar with the established art forms.

Access to net art is a key issue, from its location to the very reason it was created. Many artists view net art as public art, accessible by everyone, something that you can visit from the comfort of your own home (or other standard access point). It is this accessibility that has attracted many to the genre. Many pieces of net art are also created for multiple users, for example, “Screening Circle” by Andy Deck (Deck 2006) is a form of virtual quilting circle where users can create their own or edit other peoples segments. Creating stand alone versions of these pieces and transferring such works to the

gallery could be problematic. Creating a Local Area Network (LAN)⁵⁸ within the gallery is a realistic an option, this would allow the simultaneous interaction that is required with a multi-user piece. Transferring a piece to this location would not be without its problems, particularly the fact that it would require a large enough audience to participate. Of course, these problems could be overcome if the pieces being shown were accessed via the internet. Whilst there would still be the need for network technology to access the internet, this in itself is easier to accommodate than a network of computers within the gallery. As has already been established, many net art works require an internet connection to be fully functional. “The Wreckers” (figure 23) by Dave Miller (Miller 2007) uses material taken from a BBC RSS feed along with material entered by the user to create a visual response based on the Branscombe Beach shipwreck of 2007.

Others require that users interact with the piece at regular intervals; the Impermanence Agent⁵⁹ for example, required that the piece be used over a week to obtain its full effect. It would be unreasonable to expect a gallery goer to make regular return visits to the exhibition, in order to continue their interaction with a piece as the artist intended.

Despite the prevailing issues surrounding the notion of contextual displacement by situating net art within the gallery, positives to this dislocation of place can be found. From an artist’s perspective, having your work

⁵⁸ A LAN is a computer network covering a small geographical location, such as a home or office.

⁵⁹ The impermanence Agent is no longer active, see here for more information <http://www.noahwf.com/agent/index.html>

displayed in the gallery is a boon. The adage “all publicity is good publicity” may be sufficient to invalidate claims that viewing the work out of context could obscure the understanding of the piece. Golonu talks of a balance or compromise that needs to be taken into account when considering net art in the gallery:

The compromise that Net artists--or anyone else creating work that is bleeding-edge radical--must make when agreeing to exhibit this work within the museum context is to take the chance of having the work lose its subversive potential in exchange for the prestige of being included in a museum show.

(Golonu 2001:3)

Losing some of its subversive quality may be a fair price to pay considering the benefits of promotion through a gallery exhibition. In a personal communication with the artist Rafaël Rozendaal, he confirms this idea of promotion, suggesting “a famous gallery is a label to increase the price of your work” (R. Rozendaal. Email. 27 July 2007 20:13). The notion of net art economies is discussed later in this chapter.

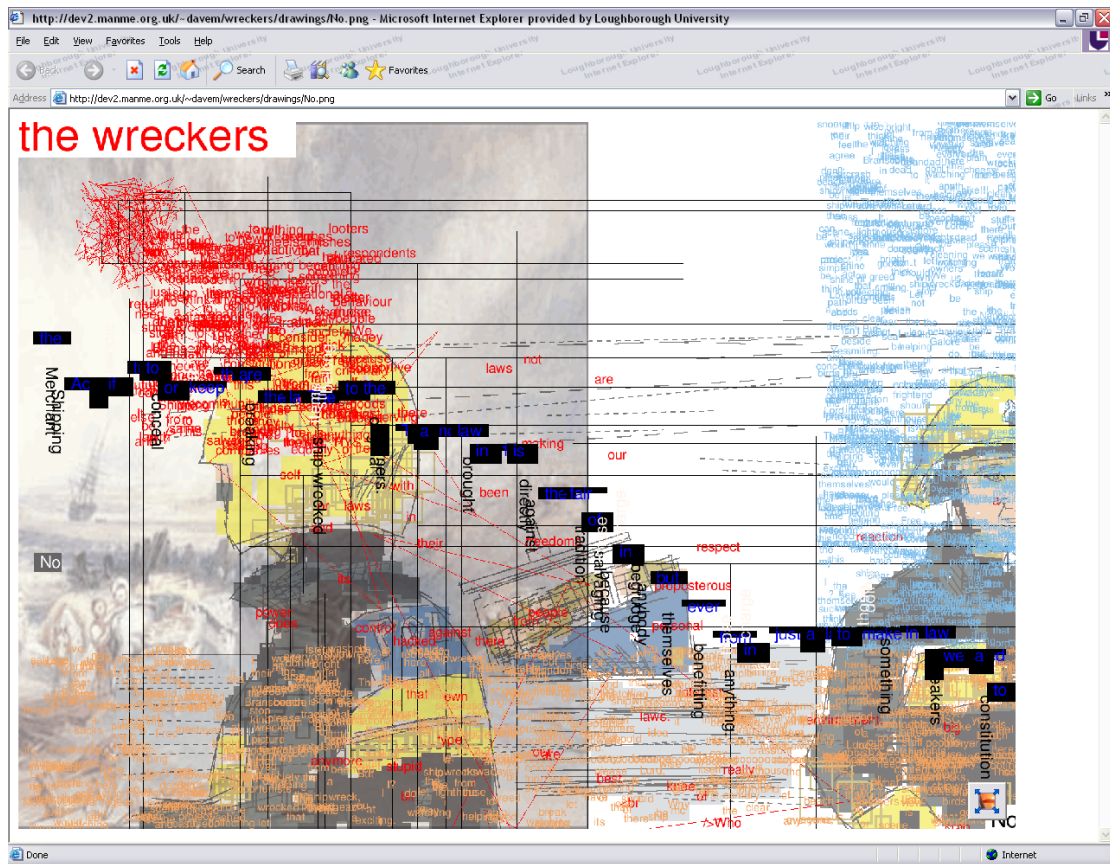


Figure 23: The Wreckers – Dave Miller 2007

When taking a piece of art out of context, such as placing net art within a gallery space, the understanding of the piece may be distorted or changed. The artist Auriea Harvey declined to have her piece “Skinionskinonskin” (Harvey 1999) shown at the Whitney biennial in 2000 on hearing that they planned on projecting the work. Mirapaul quotes her as saying:

I wanted to be part of the show, but not at the expense of having our work misrepresented.
(Mirapaul 2000)

This may well be the case, however, the very idea of challenging contexts is present within net art itself. Many pieces are based on taking a particular convention and presenting it in a different or unusual way, using it out of context. It would seem like a small step for a net artist to re-contextualise their work in another environment.

Another possible argument in favour of removing net art from its intended context would be to prevent the genre becoming stale. Persistent resistance to institutional acceptance or outside influence may prevent the genre from evolving. Dogmatic adherence to certain conceptual issues has the danger of stifling creativity only allowing the artist to create within a specific framework. Accepting net art as a non-hermetic, evolving art form will increase its profile and acceptance by the public, attracting more people to the genre.

It is this very acceptance, however, that could lead to net art losing the edge it has developed precisely through avoiding the institution. There is a concern that galleries and institutions will attempt to control what is displayed through censorship, diluting potentially subversive material to make it more accessible to a viewing public (see Stringer 2001). Works that exhibit a particularly subversive aesthetic, Selbo (Selbo 1996) and Jodi.org (Jodi.org 1995), for example, could be overlooked in favour of more aesthetically acceptable work⁶⁰. Any radical potential that net art has could be lost if popularised through the institution, possibly causing net art to become an extension of

⁶⁰ This of course is a purely speculative argument as to why net art has not seen more exposure in galleries and museums. As mentioned in this chapter, there are many notable festivals and exhibitions that deal with digital art that naturally include net art and the work of Jodi.org has been a popular inclusion in many of these exhibitions (see V2_ no date).

web design. There is a dichotomy at play here with some wishing to keep the current aesthetics, ideals, and sites of net art whilst others are prepared to push the genre in other directions. Even if net art is holistically adopted by the institutions, this is no reason to dismiss the possibility of radical practice. With a medium as disparate and eclectic as the internet, the art within it has similar scope to produce work that is diverse in its content and concept.

There are ways of displaying net art in the gallery that can be said to both highlight its contextual removal and liberate it from the established convention of its physical bonds. The standard method of viewing net art is through a monitor, which can vary in size but are rarely above 30 inches in screen size. This viewing space is a core issue for net art which is generally produced for relatively small screens. This can be seen as an intrinsic element of the net art experience; however, unless specifically referenced through the piece, this screen size is an accepted and unquestioned quality. The gallery allows for a different viewing perspective through the use of projections and physical decorations. Transposing a piece that was originally conceived for viewing on a monitor screen into an installation environment is clearly taking it out of its original context. A more positive outlook would be to suggest that it is removing net art from the rigidity of its conventional viewing environment. The Rozendaal piece "Why was he sad" (Rozendaal 2002) (see Figure 9) was successfully transposed to a gallery setting which utilised installation style surroundings to frame the piece (figure 24). Rozendaal highlights the positive aspects of displaying in the gallery, in particular the idea of extending the viewing environment:

you can show different works next to each other which is something [!]
cannot do online

(R. Rozendaal. Email. 27 July 2007 20:13)

The physical surroundings are something usually ignored by net artists. Having to consider where a piece is to be displayed may add another level of understanding, and include other possibilities for experimentation and the exploration of new perspectives. Professor Vanouse from Buffalo University gave this comment on the idea of showing net art in the gallery:

There is of course a strange incongruity in that most internet works are designed to be seen at personal terminals, not projected or viewed installation scale. There isn't anything wrong with net.art works not being displayed like other art--if anything perhaps the longer viewing requirements of net art might inspire exhibitions that suggest different types of audience engagement.

(P. Vanouse. Email. April 30, 2007)



Figure 24: Why was he sad (Gallery Installation) - Rafaël Rozendaal

As Vanouse suggests, the inclusion of net art in the gallery, in particular with expanded or altered viewing methods, may give the net artist a different perspective on how the user engages with the piece.

Thought must also be given to the physical aspect of access. The Whitney Biennial in 2000 suffered due to the lack of consideration of where to place the terminals used to display net art.

As the Whitney show demonstrates, even the layout of a gallery can have an impact on how the art is viewed. Because the computer is tucked in the room's back corner, people waiting for a chance to surf block the entrance and stop others from sitting on the benches inside.

(Mirapaul 2000)

Curators need to consider the physical aspects of net art exhibitions to ensure the audience can participate with comfort and ease. Failure to do so could result in a negative opinion of the works being shown. There are of course examples of work that have been designed specifically for the gallery which also utilise an internet connection. "Listening Post" by Ben Rubin and Mark Hansen (Rubin and Hansen 2003) shows a bank of small screens that display fragments of text taken directly from chat rooms on the internet. This piece, despite its dependence on the internet, can and should be seen as an installation rather than a piece of net art in its own right.

The piece 1:1 (Jevbratt 2001) by lisa Jevbratt is an example of how some net art works produce output that can then be independently displayed in a gallery setting (figure 25). This piece uses web crawlers⁶¹ to make a visualisation of the web based on IP addresses. Jevbratt created five different visualisation methods and some of these have been blown up as prints for inclusion in gallery exhibitions. It is in fact, fairly common for pieces of net art to produce physical artefacts. Some pieces allow you to print material to acknowledge your collaboration or involvement with a piece. 'Blessed Bandwidth' (Gupta 2003) for example offers users a chance to be 'virtually blessed' and to print out a certificate to mark the occasion (figure 26). Monsterland (Norcott 2007) has the option to get your creation printed on to a greeting card (figure 27)

⁶¹ Webcrawlers are simple computer programs that methodically scan an index of web pages to gather data. They are most commonly used by search engines to provide users with up to date lists of relevant websites but they can be used for a variety of other activities (Najork2009)

and 'The Original' (Katastrofsky 2005) by Carlos Katastrofsky, making a wry comment on the subject of originality in digital art, allows the user to print out their own unique work of art (figure 28).



Figure 25: 1:1 (Gallery Print) - Lisa Jevbratt

There is also the question of institutional acceptance through online galleries. If there is a fear that offline galleries will smother the ideologies, aesthetics, and concepts of net art, then online galleries have even greater potential to do this. Considering the fact that a minority of websites have the majority of the visits, it would not be surprising that a large institution with large financial backing would be able to secure high visibility on the internet, effectively blocking out access to other, smaller sites. It is entirely possible that these galleries could dominate the search results in Google and other search

engines, relegating smaller resources and works to later pages in the search results. According to statistics (iProspect 2006) only 38% of searchers try the second page of results, this goes down to 19% for 3 or more pages. This would possibly have the effect of forcing the institutions filtering processes and criteria upon the majority of the viewing public.



Figure 26: Blessed Bandwidth Certificate – Shilpa Gupta



Figure 27: Monsterland Greeting Card - Dan Norcott

i am file number 1400
i a am a unique piece of art.
i was just created and will be gone if you close this window.
you can keep a copy of me if you print this window. otherwise i'll be lost.

if you want you can register as the owner of me and your name will show up
at the list of the "**owners of original artworks by carlos katastrofsky**".

type your name here:

David Herbert

show owners list

http://home.subnet.at/carlos/projekte/netart/original/index_old.php

09/10/2007

Figure 28: The Original 'unique' artwork example - Carlos Katastrofsky

It must be noted that contextual issues, whilst often negative in delivery, are rarely substantiated. As I have attempted to explain above, there are reasons

why taking net art out of context could be construed as detrimental to it. On the other hand, there are many positive aspects to displaying net art in the gallery. Confusion and misunderstanding are always possible problems involved in repositioning the context. However, there are also many positive angles to this new environment, Kudos, promotion, experimentation, and new viewing perspectives can all be seen as valid reasons for accepting the collaboration of the institution.

Despite the possible positives of institutional attention, the reasons still remain as to why most begin to work in this environment. As outlined above, many artists revelled in the open creative environment that was devoid of bureaucracy. My own personal experience was the freedom of production that was available to me. Work could be produced and disseminated in a very short space of time without the need to go through a judgement process. Ultimately institutional attention through funding or gallery display can be seen as a possible eventuality but is not considered a reason to begin creating work on the net.

Economies

The dichotomy of the economic structure of the internet as a whole can be applied to the microcosm of net art. The internet itself has a history of being free, from information to media downloads, a vast amount of the content of

the World Wide Web costs nothing⁶². On the other hand it is huge business. Online retailers continue to make record profits and then there are the advertisers and pornographers who have successfully monetised the web. Like the web, net art contains these opposed fundamentals. Many artists embrace the free culture of the web and see no way, or desire no way, to monetise it whilst others seek to earn their living from such an endeavour.

Golonu reflects the opinions of some of the early net.artists in relation to a net art economy:

It was believed that Net-based projects living on the Web could not be valued, displayed or sold by the creators or disseminators of "good taste" (gallerists and curators) as they saw fit.

(Golonu 2001:1)

The Multimedia artist, Robert Adrian X, comments on the economy of net art saying "There was no way to make money out of it, and there still isn't."

(Baumgärtel 1998b)

Whilst there are many who are opposed to the concept of the commoditisation of net art, there are others who support an artist's attempts to profit from working in this genre. As mentioned above, Raphael Rozendaal is not opposed to the transposition of net art into the gallery and cites this as a way

⁶² This is specifically relating to financial concerns and must not read in any other way. There are always the possibilities of political, cultural and social costs related to free web content. However, this section on the economies of net art should be regarded purely from a financial perspective.

of increasing the value of his work (R. Rozendaal. Email. 27 July 2007 20:13). Rozendaal has successfully sold pieces of his net art, usually by signing over the domain name that the piece is attached to⁶³. Another example of an artist profiting from net art is Mark Napier who was commissioned for the piece 'Net Flag' (Napier 2002) by the Guggenheim Museum. The artist Olia Lialina has also expressed her support for the commercialisation of her own work.

Article after article, conference after conference they want to convince me that what I'm doing costs nothing. Why should I agree?
(Baumgärtel 1998b)

Here, she clearly disagrees with the view that net art, or the act of producing net art, is financially worthless. As yet though, very few artists seem to have made any significant gains from net art. As Greene states:

Those who view commerce as irredeemable corruption will be pleased to know that, as yet, there exists no viable or stable market for net art.
(Greene 2004:31)

Despite some interest from the institutions, there is still relatively little funding available for net art. As the artist Andy Deck comments in a personal communication to me when referring to the lack of fiscal support for net art: "The predictable result is a lack of work that is truly ambitious in scope." (A.

⁶³ Rozendaal has created a n 'Art Website Sales Contract' that any purchaser of his work has to sign. This is available through his website <http://www.artwebsitesalescontract.com/>

Deck. 2007. Email. August 8, 2007 11:58). He is referring here to the idea that artists working in the genre are not able to attempt highly complex or involved pieces due to the lack of money being offered. The possible irony is, of course, that the money is not available precisely because artists are not producing works of a saleable quality. With this in mind, economic viability for the net artist may require heroic efforts by individuals willing to sacrifice their time in order to achieve a new level of production that has the potential to mirror other saleable digital media, such as computer games, software, or film.

Stewart makes an interesting observation concerning the lack of funds for net art, relating it to the relatively small audience that net art attracts:

within a capitalist economy this lack of audience is equated with a lack of a market, which in turn means that there are limited economic opportunities to develop and distribute these kinds of works.

(Stewart 2006:193)

Making money is not the only issue involved in the economies of net art, the economy of production is also a factor. As mentioned above, the concept of the free web is often cited as being one the most accessible aspects of net art. The ability for the artist to be able to quickly create and upload a piece with tools they probably already own, or could easily procure for a minimum of financial outlay, is an attractive proposition. From a personal perspective, creating net art was a necessarily cheap endeavour, financial costs being

considered a prohibitive factor in my desire to create artistic material⁶⁴. Many artists working on the net today have embraced the free web culture and make use of the proliferation of freeware and open source material.

This area is open to a much greater depth of analysis than that which is presented here. Possible and appropriate economic models for the sale of net art have yet to be thoroughly explored and remain an interesting avenue of further research.

Appropriation and Borrowing

Within net art culture there are many pieces that make use of data and material generated by others. This appropriation of material can be achieved in various different ways outlined below.

As mentioned in Chapter 2, there is a large movement on the internet that call for the free interchange of material and information. Artists have manipulated this concept from the beginning using material from other websites to further their own work. Often this commandeering of other's material serves to make a statement. The work of 0100101110101101.org, for example, included

⁶⁴ It also must be re-iterated here that I am talking about free or cheap web content, in other words, web pages and digital downloads. To some extent there is also free or cheap access to the technical equipment required to produce net art, for example, if there was any cost in accessing the computer equipment that I personally needed then I would not have been able to begin to create net art in the first place. Whilst it was a free method of generating art for me, there is of course the possibility that the equipment and software required to create net art will cost money. Depending on the culture and environment of the potential net artists there could potentially be high costs involved.

copies of other net art related sites⁶⁵. These copies were in protest to the commercialisation of net art and also made comments on authorship. One of these works, a complete copy of the site hell.com which charged a subscription fee, incurred legal proceedings by the site's owner (0100101110101101.ORG 1999)⁶⁶.

With the development of Web 2.0 technologies, appropriation of material in net art is becoming even more commonplace. It is now very easy to include content from sites such as Flickr and YouTube into other works, and there are many other sites that allow this form of content inclusion. Flickeur (Klingemann 2006) by Mario Klingemann (figures 25-28), for example, borrows images from the community photograph site, Flickr, and creates random streams of images that can be quite cinematic in appearance. The artists Thomson and Craighead are exponents of the concept of appropriation:

A lot of our on-line work looks at appropriating material that exists on-line and then reconfiguring it, manipulating it, and looking for resonance and meaning through these reconfigurations because we think that is very much about what the network is about
(Frost 2003)

⁶⁵ A list of their 'Copied' sites can be found here:
<http://www.0100101110101101.org/home/copies/index.html>

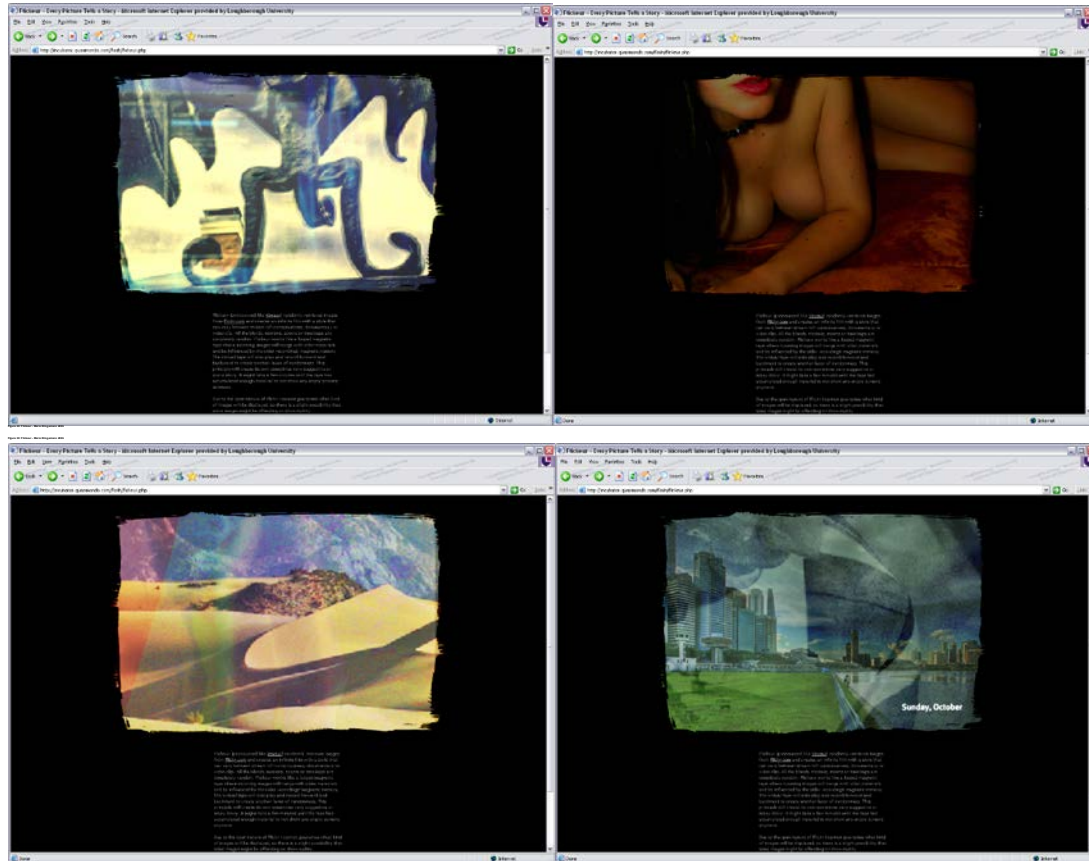
⁶⁶ The notion of appropriating material from other sources is not limited to net art or computer based works. A pertinent example is that of 'Plunderphonics' (Oswald 2007), a term coined by John Oswald that describes a variation of musical collage that uses existing audio recordings to create a new recording. This is similar to the 'Sampling' techniques of some modern compositions but differs in that 'Plunderphonic' compositions usually consist purely of appropriated material. Similar to the work of 0100101110101101.org, 'Plunderphonics' also has legal implications with using copyrighted material (see Plunderphonics.com no date).

Here, Thomson highlights the idea of appropriation as being one of the main attractions of working with the internet. Another example of this form of appropriation is “The Wreckers” by Dave Miller (Miller 2007). As mentioned above in the “Galleries and Institutions” section, this piece appropriates some of its material from a BBC RSS feed.

Second Life and other virtual worlds have also been utilised for artistic purposes. The net artists Eva and Franco Mattes, also known as 0100101110101101.org, have been using the Second Life environment to produce some of their recent works. Their first work using Second Life was “13 Most Beautiful Avatars” (0100101110101101.org 2006), which consisted of a virtual exhibition in the Second Life environment and a real life gallery exhibition at the Italian Academy at Columbia University in New York fifteen days later. The digital portraits of the avatars that were displayed in the virtual exhibition were printed onto canvas for the physical showing. This piece continues some of the duo’s themes that have been running through their work for years, such as identity and authorship.

There is also the concept of user appropriation, where the audience generate or upload information that is then utilised by the piece. For example, “In Search of Oldton” (Wight c2004) by Tim Wright (figure 29), utilises material generated by the audience to create a map for a fictional town. Contributions to the piece include text, images, video and sound. All of the material for this

piece is uploaded by the audience rather than being borrowed from another site on the internet as with “Flickeur” (Klingemann 2006) mentioned above.



Figures 25-32: Flickeur - Mario Klingemann 2006

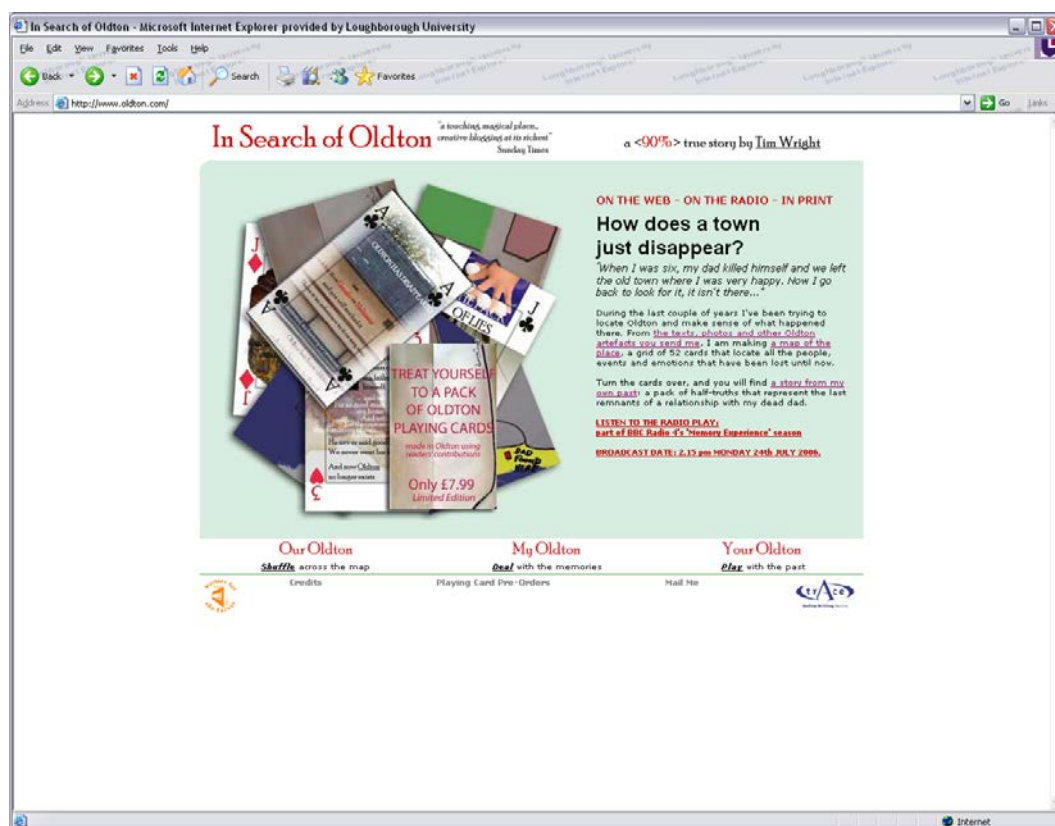


Figure 33: In Search of Oldton – Tim Wright c2004

Participation

Connected to appropriation through the user, is participation. One of the most desirable and easily accessible elements of working on a network is the ability for an audience to participate with a piece. From basic interaction such as clicking a link, to generating multimedia material, the internet allows the artist to establish immersive frameworks within which the audience can themselves be creative. A simple example of participation within an internet art project comes from one of the earliest pieces. The file room (Muntadas 1994) is a depository for censorship and lists details of acts of censorship from around

the world with the aim of stimulating a dialogue surrounding censorship issues. The File Room is still available to use and encourages users to contribute material to the archive. Another good example of appropriation and participation is “circ_lular” (Beiguelman 2004) by Giselle Beiguelman (figure 30). This piece allows users to generate their own musical or visual material based upon a library of components which have either been uploaded by other users or created using the piece itself.

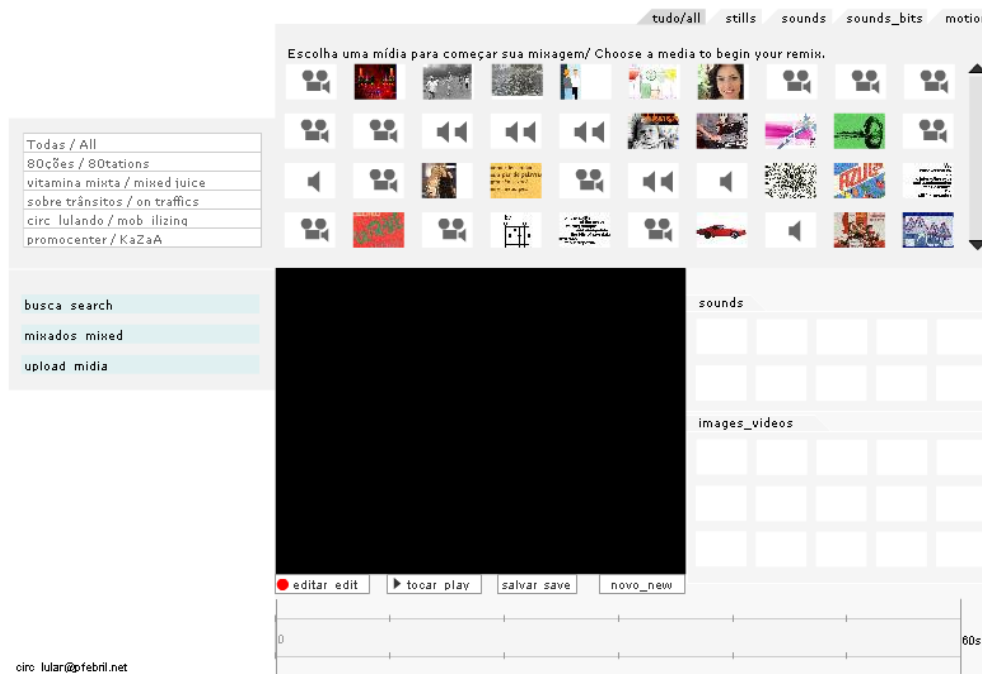


Figure 34: circ_lular - Giselle Beiguelman 2004

As the internet has developed, so too has the potential for audience participation. The philosophies behind many Web 2.0 applications, and indeed virtual worlds, are based around the idea of community and participation, as O'Reilly suggests in his definition, Web 2.0 is an “architecture of participation” (O'Reilly 2005a). Not that this is a new concept within net art, from the very

beginning artists saw the internet and WWW as an opportunity to create community and to elevate the user to a participant and collaborator. The latest technologies extend the possibilities of these concepts to another level.

The participatory potential of net art is a key theme in this project and addresses the specific attributes that are being examined within the generation of a taxonomy of interaction. The notion of participation in connection with net art and the internet will be explored further in the next chapter.

Net art and other art practices

In terms of establishing a context for net art it is useful to explore its position within arts culture by highlighting related art practices from both a historical and contemporary viewpoint. This is not intended as a comprehensive analysis of these arts forms but more an overview of where net art lies within a general artistic context⁶⁷.

New Media Art

Net art is a derivative of New Media Art which can be described as:

⁶⁷ It is worth mentioning here that net art is an anecdotally unknown art form. The vast majority of people I have personally conversed with are unaware of this genre and many still form the opinion that net art must just be a digital representation of artefact art (see Ippolito 2000). These conversations have been with people from a variety of different backgrounds, including artists, academics and other professionals. It is also important to mention that when I refer to 'net art' I am talking about the practice of creating art works using the internet and am not referring to the necessity of knowing the term 'net art'.

A term used to describe the sophisticated technologies that have become available to artists since the late 1980s. New media defines the mass influx of media, from the CD-Rom to the mobile phone and the world wide web, that can enable the production and distribution of art digitally.⁶⁸

This definition clearly identifies the use of the World Wide Web as a technology for artistic appropriation.

Computer Art

Another art form that has links with net art is Computer Art which can be seen as an umbrella term covering computer related and computer generated art.

This can be defined as:

Art produced with the aid of a computer or more specifically art in which the role of the computer is emphasized.

(Chilvers 1999)

Net art can be seen as a subset of computer art primarily because of the use of the computer. However, as more devices begin to be able to access the internet, there will inevitably become a distinction between the personal computer and the internet (It is important to make the distinction between

⁶⁸ Definition supplied by the Tate Online Glossary - <http://www.tate.org.uk/collections/glossary/definition.jsp?entryId=620>

Personal Computer and other devices, as most other devices that can access the internet are technically computers⁶⁹).

Firstly, the concept that net art is art using the internet still stands. In this case, even though we are using a computer, it is considered net art if it uses the internet. There is a need here to establish some general specificities that allow us to differentiate net art from computer art (and maybe other art forms). Some of the key differences between computer art and net art are⁷⁰:

- The ability to communicate and interact with many people concurrently.
- Use of the established internet conventions and tools (forums, search engines, email)
- The accessibility of the creative process itself, very little technical knowledge is required in order to begin to harness the creative potential of the net.
- Computer art uses the computer for its processing power, or its ability to process information and data. Net art is more about using internet conventions to create pieces of work, due to the lack of access to large processing power most net art is fairly low tech and processor un-intensive. There are exceptions and possible computer power through the net is increasing.

⁶⁹ The definition of computer is broad and certainly covers the majority of devices that access the internet. This includes mobile phones, tablet computers and e-readers. If the device is programmable and process data then it is generally considered a computer (see The Free Dictionary 2009).

⁷⁰ These differences are a purely personal response to apparent differences between these two art forms and should not be taken as definitive. Their inclusion here is necessary in the process of formulating a personal definition of net art.

- The internet has its own conventions and idiosyncrasies that are different to stand alone computers. Essentially, a standalone computer can use any of these conventions but they are not relevant to the stand alone process. For example, a standalone computer can happily run forum software but without the concurrent connections that the internet allows, this feature becomes redundant.

These differences can all be used to further categorise the qualities of net art and help to form a distinct definition.

Interactive Art

The interactive potential of net art has a similitude with “interactive art”. As detailed in the introduction, interactive art can be defined as “a genre of art in which the viewers participate in some way.” (Paul 2003:67). Clearly this applies to a large selection of net art works (see Deck 2006 and Norcott 2007), however, as previously stated, net art “addresses solely the users of this world wide computer network” (Tisma 2002).

Interactive art is often defined by it being through the form of an installation, where users are able to walk into and interact with the work. Dietz’s suggestion that net art should not require any technology other than an internet connection (Dietz 1998) is relevant here to suggest a distinction between installation based interactive art and interactive net art.

Participatory Art

As mentioned above, the idea of 'participation' is rife within the net art community and has direct relevance to my specific requirements in the creation of a taxonomy of interaction within net art. Participatory art, by definition interactive, has its own set of characteristics that set it apart from other art forms whilst also having comparisons with some net art pieces. Unlike most interactive art that is installation based, participatory art projects cover many differing art forms including dance, music, theatre and the visual arts, usually including an attempt to engage with a community (see Milevska 2006). One particular distinction about the community developed with participatory art "is that it mostly exists only for the duration of a particular event" (Milevska 2006). The audience essentially create their own community through being part of the participatory project. This is paralleled in participatory net art pieces where the audience not only interact with the individual piece but can also interact and communicate with other participants. Naturally, any attempt to engage an audience in the creative process will open up the debate on authorship. As Moriarty indicates, the blurring of the relationship between the artist and audience is one the main features of participatory art:

The line between audience and artistic actors is blurred, overlapping, and permeable; this is typical in participatory arts.

(Moriarty 2008:3)

As previously mentioned, this is also a major debate within net art (see Ross 1999; Suliman 2005:61; Stalbaum 1998; Polaine 2005:2).

Another comparable aspect of participatory art is the idea of operating independently of the institutions, particularly with regard to commercial ventures:

it stands in sharp contrast to the commercial/consumer model that dominates arts organizations

(Moriarty 2008:2)

Moriarty highlights here how many participatory arts activities are removed from the idea of a commercial art market. This has a direct correlation with how many view net art. Golonu for example, highlights how most net art projects are valueless and are unable to be sold by the artists or via the gallery (Golonu 2001:1).

Mail Art

The ideas around communication and collaboration that are prevalent in net art can be seen in earlier, pre-internet art forms. In particular 'mail art' or 'correspondence art'. The term mail art can cover a wide range of objects such as letters, postcards, rubber stamps, books and 3D objects. These objects are often mailed to other artists who contribute or add to them before posting them back to the original mailer or to other artists. This is directly related to the collaborative concepts delivered by many net art projects. Like participatory art, another corresponding factor with net art is the idea that the

artists are operating without the influence of institutions. As previously quoted, Stringer makes reference to this comparison with net art, suggesting that both net art and mail art are art forms that strive to provide an experience “between the creator and viewer without mediation or censorship” (Stringer 2001). Stringer highlights how the decommodifying and democratising of the art and the artistic process through institutional avoidance is present in both mail art and net art.

Video Art

One of the most widely used comparisons to net art is that of video art and several aspects of each art form are comparable. The first is more of a comparison between video artists and net artists, many people suggesting that the ideologies of both these groups had a similar grounding. In an interview, the artist Vuk Ćosić talks about this connection of net art and video:

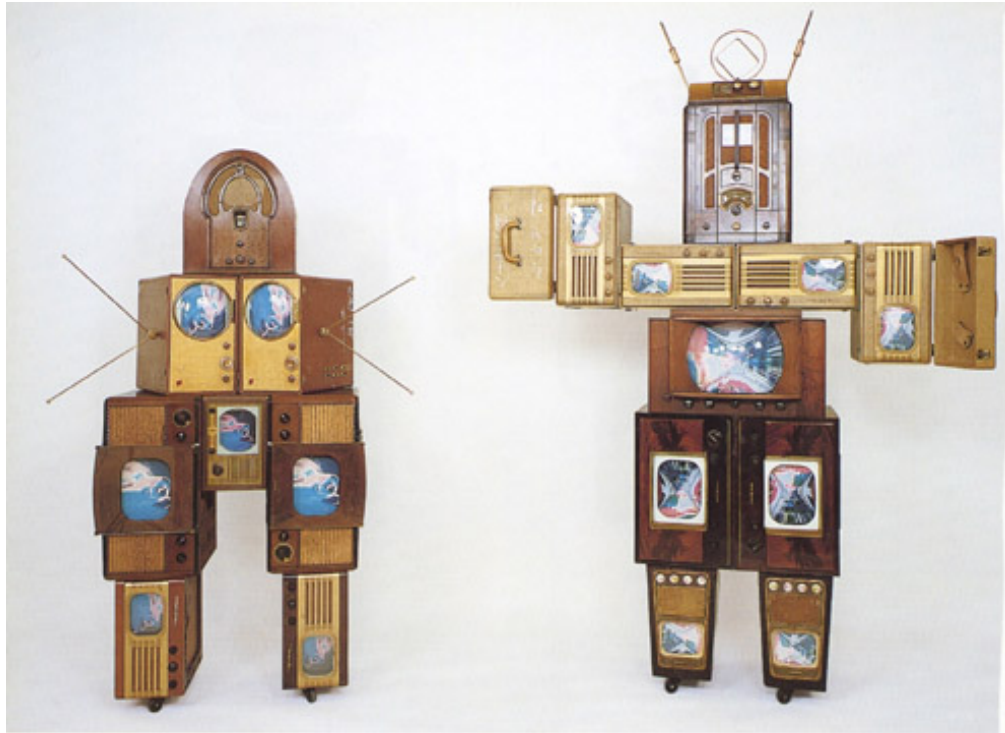
The usual analogy is video art, which was also very self-referential in the sixties when it started.

(Baumgärtel 1997a)

Ross indicates how net art is “reminiscent of the filmmaking community” (Ross 1999), detailing how ideas such as the bypassing of the institution, subversion and the low-tech production qualities were seen as attractive propositions for video artists.

Another reason is the content of the art form; video art is art using video as net art is art using the internet. There is also a common factor in the interface or framespace that is used, the computer monitor being comparable to the video monitor or TV. A limitation with this association is the fact that the monitor interface, within the context of net art, is not easily changeable. The standard access point to the internet is currently the screen (whether that is a monitor, tablet computer, or mobile device) and whilst there is potential to change the way the internet is made and used through things such as 'the internet of things'⁷¹ for the general public interacting with digital information online will be through the screen and it is unlikely to change in the near future. The conduit for video art is intrinsically more mutable. The TV sculptures of Nam June Paik (figure 31) and Tony Oursler's video projections (figure 32) are prime examples of this. Both of these also highlight how video art can be seen as containing more media than merely film. In a physical sense, video art can certainly involve other media and often does.

⁷¹ The concept of "The Internet of Things" is a development to the internet that could lead to alternate methods of interacting with data other than the screen. This idea was coined by Kevin Ashton in 1999 (Ashton 2009) and suggests a network of "things" that can be tracked by computers through the inclusion of identifying tags. How this would change the way we interact with data is uncertain but it is clear that it has the potential to change the way we interact with the internet (see Moskvitch 2011).



1986 Family of Robots: Grandmother (left) and Family of Robots

**Figure 35: Family Robot: Grandmother (left) and Grandfather (right) - Nam June Paik
1986**



Figure 36: We Have No Free Will – Tony Oursler 1995

To take this comparison further, there also seems to be an evolutionary link between the two genres. Several of the early video artists, for example, were producing pieces that attempted to deal with themes that many net art pieces do. The Douglas Davis piece, "Talk out" (Davis 1973), consisted of a live phone-in and broadcast where the artist typed the responses from the audience phone-in, which were then displayed on screen. This has a clear comparison with some net art pieces that involve user input (this collaborative aspect of net art will be discussed in Chapter Four). Davis himself was later inspired to create the piece of net art, "The world's first collaborative sentence" (Davis 1994), which allowed the audience to submit content in the formation of this potentially never ending sentence.

In terms of video artists, Nam June Paik was probably the most noticeable user of telecommunicative media. Paik's 1974 "Global Groove" is one example of his TV broadcasts that included material from many different artists. Paik's contribution to the video / net art analogy is not limited to the inclusion of telecommunications. It is also interesting to note that Paik coined the term "Electronic Superhighway" in 1974, which is a clear precursor to the term "Information Superhighway" a common phrase in the 90's used to describe global digital communications or the internet. Another prescient contribution from Paik is noticeable in the content of a video collage piece from 1974 which also seems to pre-empt the existence of the internet. In this piece, Paik reproduced a 1944 Life Magazine advertisement which had the statement "How long will it be before all American homes have their own television sets?" and changed it to "How long will it be before all American

artists have their own television channel?”. It is not a great leap to update this statement to “How long will it be before all artists have their own website?”.

The comparison of net art to video art seems to be a valid one then. The ideologies, content, form and the fact there is an evolutionary link between the two all corroborate this.

Conclusion

Whilst this is not an exhaustive list of the thematics of net art, it does give an idea of some of the main components that can be found in much of the work produced within the genre, consequently aiding the development of a definition for net art, or at the very least, in developing an understanding of what net art can be.

Having established a definition and defining characteristics of net art there is an issue of whether technological advancements and theoretical considerations affect the definition. If it is defined through the technology of the internet, then the definition will naturally evolve as the technology does. However, the basic concept of the internet has not changed since its inception therefore any definition should be relevant for all net art, both historically and in the future. Only a significant development in the notion of what the internet is will lead to an evolving definition for net art. The characteristics of net art on the other hand, will always be prone to change. Historical reference may enable some characteristics such as low tech production to continue in future

work, however, as new technologies are introduced so too will characteristics of net art.

This feeds into the idea of historical definitions. As has already been established, the term “net.art” has a specific historical significance. How future periods of net art production will be termed and defined remains to be seen but as a precedent has already been set in determining a historical period, it would seem likely that the current era of net art practice will be termed and defined individually (net.art 2.0⁷² perhaps?). The most prominent characteristics of this period would include notions on audience collaboration and participation that have been exemplified through the advent of web 2.0 technologies.

It also is worth reiterating here the specific type of net art that is the focus of this project. As has already been established, the forms of net art are manifold, from static text based hypertexts to rich multimedia applications. Also, as briefly mentioned above, a large portion of net art has a collaborative and participative aspect. It is works that allow audience contribution that are the focus of this research project.

By its very nature, this form of collaborative net art work is also highly interactive. The next chapter will explore in detail the issues and nature of interactivity and participation with internet works.

⁷² This suggestion should not be viewed as a serious pre-emptive definition of the next period of net art history, nor is it reference to the book of the same name by Tilman Baumgärtel (Baumgärtel 2005). Even if there ever will be a named era for the current canon of net art production, net.art 2.0 is mildly facetious suggestion based on the previously mentioned term Web 2.0.

Chapter 4 - Interaction, Participation, Audience

Introduction

This chapter addresses the three main areas of this research project; interaction, participation and audience. There is an intrinsic connection between these areas; interaction is a requisite of participation and participation requires an audience, this chapter explores the nature and definitions of these connected issues in relation to the arts and the internet.

The section on interaction utilises definitions from various fields including interactive and computer art to give a general overview of interaction within the arts.

Participation within the arts is explored with particular emphasis on computer related media. I further suggest the term “unconscious collaboration” which describes the process of participation where the audience contribute artistic material to the piece but have no input into the initial concept. Issues regarding the blurring of the author and audience relationship as a result of participation are also explored and a theoretical model of author and sub-author in relation to participative work is examined.

The section on audience considers the potential audience for net art and discusses issues of promotion within an internet context.

Interaction

Before discussing the various attempts at categorising interactivity delivered in the next chapter, it is useful to form an overview of the term and how it relates to the arts in general. Understanding what interactivity is and how it relates to art is fundamental to my research in establishing a taxonomy of interaction specific to net art. As previously established there is no extensive research into interaction with net art specifically, therefore research into interaction has been taken from various related fields including computer art, interactive art, participatory art and interaction with computers in general.

Definitions

It is useful here to reiterate an established definition of interactivity:

1 influencing each other.

2 (of a computer or other electronic device) allowing a two-way flow of information between it and a user, responding to the user's input.

(Oxford Dictionary of English 2005:901)

Despite a clear dictionary definition, there is still a wide and continuing debate on the role of interactivity within the arts. Most of the debate focuses on attempts to specify the detail and characteristics of interactivity and is therefore not in dispute with the definition above.

The artist and theorist Simon Penny extrapolates slightly on this definition stating that:

An interactive system is a machine system which reacts in the moment, by virtue of automated reasoning based on data from its sensory apparatus.

(Penny 1996)

Neither the dictionary definition or the Penny description above make reference to the degrees of interaction and imply that, in relation to art, a piece is either interactive or not. This is one issue that has prompted attempts at further clarification as to what interactivity is. The academic Lisbeth Klastrup provides us with another definition of interaction:

the measure of a medium's potential ability to let the user exert an influence on the content/or form of the mediated communication in real time.

(Klastrup 2003b)

The use of the word “measure” is significant in this quote. Rather than implying a binary state of being interactive or not, Klastrup suggests that interaction is open to quantification. In short, *how* interactive is a given piece. This discussion will be expanded in the next chapter on the characteristics of interaction.

Interactivity in the Arts

Interactivity in the arts is a relatively new phenomenon with participatory art forms such as Dada, Happenings and Fluxus often cited as being a precursor to contemporary interactive art (see Berenguer 1997; Candy & Edmonds 2002; Dinkla 1994; Graham 1996:161; Huhtamo 1995; Milevska 2006; Wilson 1993). An example of such a work is the interactive environment “Eat” (Kaprow 1964) by Allen Kaprow (figure 33) which involved the audience entering a cave space where various foodstuffs and drink were available. The audience were able to interact with this environment, taking apples and bananas that were suspended from the ceiling or asking volunteers for boiled potatoes or a drink of wine. Whilst eat is an example of an interactive performance where the audience are part of the environment, Participation TV by Nam June Paik (Paik 1963) sees the focus of the interaction aimed at a specific object. This piece consisted of a TV with specially adapted microphones attached that could alter the patterns appearing on screen when used by the audience.

Interactive art

Developing out of early participatory arts, and with the development of computer technology, ‘interactive art’ is an established and separate category of artistic practice. Roy Ascott indicates that the term ‘interactive art’ was first publically used in 1989, attributing it to the journal “Kunstforum” and the “Festival Ars Electronica” (Ascott 2002), however, informal discussions with

others suggest this term may have been used prior to this date. To reiterate the definition of interactive art mentioned in chapter 1:

Interactive art is a genre of art in which the viewers participate in some way. Unlike traditional art forms wherein the interaction of the spectator is merely a mental event, interactivity allows for various types of navigation, assembly, and/or contribution to an artwork, which goes far beyond purely psychological activity.

(Paul 2003:67)

This definition can of course cover the participatory Happenings piece “eat” (Kaprow 1964) mentioned above and in no way presupposes the use of technology. However, the advent of computer technology potentiates the notion of interactivity in the arts, contributing further tools and methods of interaction that were previously unobtainable.

Much interactive art is realised through computer technology and is often in the form of an installation where the audience can walk within and interact physically with the environment. The piece “Glowflow” from 1969 is an early example of interactive art that used computer technology in the creation of an environment. Created by Myron Krueger in collaboration with Dan Sandlin, Jerry Erdman, and Richard Venezsky, it consisted of a dark room with an arrangement of lit tubes that were controlled by a computer and responded to the presence of the audience.



Figure 37: Eat - Allan Kaprow, 1964

As alluded to above, interactive art can be both environmental and objective. In other words it can consist of a physical environment that the audience can become part of, as in “eat” (Kaprow 1963) and “Glowflow” (Krueger 1969), or

it can involve the manipulation of an object, as in “Participation TV” (Paik 1964). The categories of computer art, software art and net art all have the potential to overlap the genre of interactive art through the objective use of interactivities.

Computer art

As mentioned above, computer art often overlaps with interactive art although it can be seen as a separate genre and is defined as follows:

Art produced with the aid of a computer or more specifically art in which the role of the computer is emphasized.

(Chilvers 1999)

This definition differentiates computer art from interactive art in that it highlights the emphasis of the computer. Many interactive installations use covert computer technology where the actual computer terminal is hidden. “Glowflow” (Krueger 1969) for example, does not have the computing technology visible and can be seen as an example of art that uses the computer as a tool rather than as a defining and visible characteristic of the piece. If following the Chilvers definition above, the computer would need to be emphasized as a defining characteristic of the work for this piece to be considered Computer Art

With the rise of affordable home computer technology in the late eighties and early nineties, interactive computer art became more prolific. The piece “Think about the people now (Think about the media now)” by Paul Sermon (figure 34), for example, was produced in 1991 on a popular home computer of the time, the Commodore Amiga (see Leonardo 1993). This piece highlights the ability for the computer to include aspects of a virtual environment within a specific object. The interactive object of the computer is able to metaphorically represent a navigable environment.

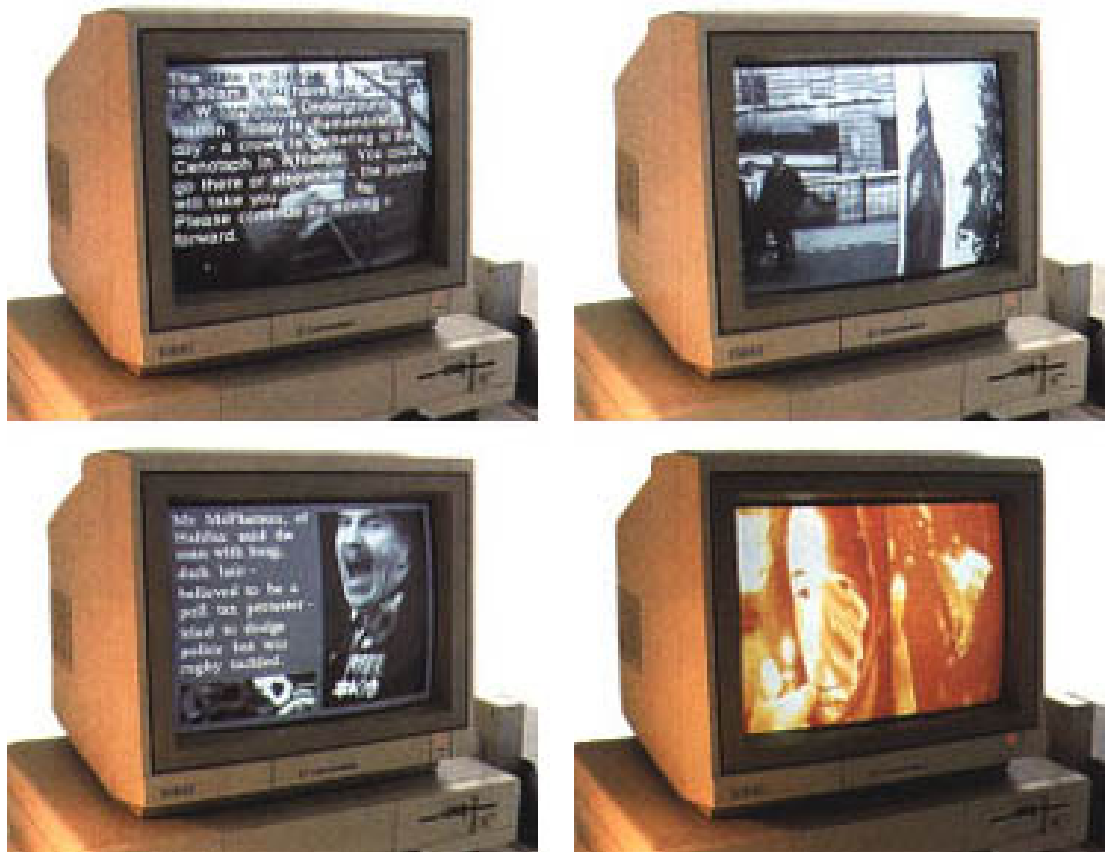


Figure 38: Think about the people now (Think about the media now) – Paul Sermon, 1991

Not all computer art is interactive; 'generative art' for example, often uses computer algorithms to create an autonomous art work that does not require the interaction of an audience.

net art

Whilst net art can be seen as a sub set of computer and new media art, it has its own set of idiosyncrasies and characteristics that define it as a separate genre as discussed in Chapter 3.

From the perspective of interaction, two important characteristics of the internet are the potential for multiple audience participation and the ability to reach a wider audience. Both of these issues identify a difference between stand alone computer interaction and internet interaction, and are discussed later in this chapter.

Whilst it can be seen that the internet offers huge potential to explore notions of interactivity within the arts, there are those that believe it has yet to achieve this potential. Stallabrass comments that interactivity "holds out great cultural and social benefits" (Stallabrass 2004:61), suggesting that the internet has the potential to be an inclusive and democratic art form. Again, the public and democratic nature of net art is discussed later in this chapter.

The interface is also an important characteristic of net art over other forms of interactive art. Whilst interactive computer art can and does make use of the

standard computer interface of mouse, keyboard and monitor, it also frequently uses other forms of interface with the audience. Sensors, pressure pads, trackballs and joysticks are all common input devices whilst output can vary from standard monitors to giant projections and can also include other devices and robotics.

Physical and Psychological Interaction

An antithesis to defining a distinct notion of interactivity within the arts can be seen in the work of Lev Manovich who argues that “interactivity” itself is an overused word as it essentially describes all art.

All classical, and even more so modern art, was already "interactive" in a number of ways. Ellipses in literary narration, missing details of objects in visual art and other representational "shortcuts" required the user to fill-in the missing information.

(Manovich 2001:71)

Roy Ascott concurs with this vision, albeit within a conciliatory tone, observing that:

In one sense we recognize that all art is interactive now, whether the work consists in the static field of a painting or a dynamic system in cyberspace. In every case artistic experience and meaning are the product of a negotiation between the viewer and the viewed, rather

than the one-way transmission of content.

(Ascott 2002:2)

Whilst it is certainly true that 'static' art has the potential to influence the audience, the audience does not influence or change the work being viewed. An audience member may 'interact' with an artwork in that they "fill-in the missing information" (Manovich 2001:71) but the artwork itself is unchanged physically. As the artist and designer Julie Gendron states:

The key difference between looking at art and interacting with art is the act of affecting the art forms structure.

(Gendron 2006:3)

The audience may perceive a representational change as a consequence of their perception but this does not render the artwork interactive. The painting does not respond to the viewer, the viewer may respond to it and form a subjective change in their perception of the painting which in turn formulates a further response from the viewer. Developer of interactive architecture, Usman Haque, remarks that the term 'interactive', as suggested by Manovich and Ascott in the quotes above, is mistakenly used for 'responsive', Citing the works of artist Jim Campbell who refers to his works as reactive (Haque 2007:26).

The artist David Rokeby, however, suggests that there may be an element of pre-emptive influence in art:

A book or a painting appears capable only of passive response under the subjective gaze of the spectator. The artist may, however, have acted in anticipation of the spectator's interpretations by combining elements into the work so that their significance is transformed by the shifting perceptions of the viewer

(Rokeby 1996:3)

This suggestion is tenuous in its relation to the idea of interactivity referring to mutual influence. Furthermore, it refers to the artist being influenced by the possible reaction of the audience and not the interactive potential of the art work itself. This is equivalent to the audience interacting with the artist to alter the creative process that develops the piece, which does not make the piece itself interactive. Manovich's argument falls down when you consider the computer based definition for interactivity: "allowing a two way flow of information" (Oxford English Dictionary 2005:901). This is very specific and makes the labelling of interactive new media works fairly straight forward. Whilst Manovich has contributed many valuable insights into the theory of new media, this particular aspect of his views on interaction are often viewed as unhelpful in the theorization of interactivity (see Cham 2009:19; Polaine 2005). Despite the obvious flaws in the suggestion that all art is interactive, Manovich uses this argument of psychological interaction to further argue that the term 'interactivity' in new media is taken too literally to mean the physical interactions of the user and disregards psychological interaction.

When we use the concept of “interactive media” exclusively in relation to computer-based media, there is [a] danger that we interpret “interaction” literally, equating it with physical interaction between a user and a media object (pressing a button, choosing a link, moving the body), at the sake of psychological interaction.

(Manovich 2001:71)

The notion of psychological interaction is certainly more tenable than suggesting that all art is interactive. Polaine agrees to some extent that psychological interaction exists but disagrees that interaction can be purely psychological (Polaine 2005). He maintains that interaction itself contains both physical and psychological aspects arguing that:

physical interaction gives rise to a psychological and phenomenological experience.... rather than interaction being a purely psychological affair (Polaine 2005:1).

The suggestion here is that the psychological aspect of interaction requires a physical interaction and that “the mingling of meanings in a viewer’s mind” (Polaine 2005:1) does not constitute interaction. Christiane Paul also makes reference to this notion of psychological interaction in her definition of interactive art above, suggesting that the interaction of the audience with traditional art is “merely a mental event” (Paul 2003:67). She uses this to differentiate interactive and non interactive art and further confirms this distinction by stating that interactive art “goes far beyond purely psychological

activity” (Paul 2003:67). Simanowski agrees that it is important to recognise the physical aspect of interaction when he states:

New media theory is right to stress the central role of the users’ physical engagement in interactive art, in contrast to the mere cognitive engagement in perceiving a painting, sculpture, or text.

(Simanowski 2011)

However, he further makes the point that:

.. the physical interaction should not overwrite the cognitive interaction with the work but rather become part of it.

(Simanowski 2011)

In this sense Simanowski is agreeing with Polaine (Polaine 2005) that interactivity itself must consist of both psychological and physical aspects to the extent that they work together as a whole. Likewise, whilst discussing electronic literature and the potential for the computer to create environments for user interaction, the literary theorist N. Katherine Hayles suggests that when interacting with a user interface “The MINDBODY is engaged, not merely mind or body alone” (Hayles 2002). This idea of the “MINDBODY” (Hayles 2002:48) clearly expresses the notion that physical input and cognitive function are not mutually exclusive when interaction takes place.

Interactivity and interaction are useful words in describing media that allow an audience to use it. The dictionary definition is clear, especially in relation to computer related media, and the word is embedded in our common vernacular. It may be true that certain experiences or art works are interactive according to the definition but are not labelled as such. Rather than suggesting a misuse of the word, it implies an intrinsic knowledge of the measurement of interactivity whereby experiences that aren't *very* interactive have the interactive label omitted. This again highlights the notion of degrees of interactivity which will be discussed in the next chapter concentrating on the characteristics of interactivity.

Participation

As with Interaction, the concept of participation in the arts is clearly connected to the generation of a taxonomy of interaction based around art works that require audience participation. There is clearly a link between Interactivity and Participation and at times it seems hard to distinguish one from the other. In his Thesis "Participatory Art and Computers", Stephen Bell suggests "all interaction is participatory but not all participation is interactive" (Bell 1991:16) and he further maintains that interactive art is positioned within the wider context of participatory art. Christiane Paul echoes this conclusion in her definition of interactive art when she states that "Interactive art is a genre of art in which the viewers participate in some way" (Paul 2003:67), suggesting that interactive art is always participatory. The definition of "participate" is:

be involved; take part

(Oxford Dictionary of English 2005:1283)

Looking at this broad dictionary definition we can see how Bell arrived at this conclusion and continues to make the logical progression that all art forms are participative to some extent (Bell 1991: 19). In a similar but more compelling argument to the one posited by Manovich above, it is possible to say that all art has an aspect of involvement. It is fairly straightforward to conceive of a painting in public display as being shared with an audience and therefore the audience could be seen as being involved in or having a part in experiencing the art work.

Confirming his previous affirmation that all art is participatory, Bell says:

A distinction could be drawn between works in which the participation is explicit and those in which it is implicit; physically active participation is more explicit than physically passive mental contemplation

(Bell 1991: 19)

This is comparable to the Manovich argument above, suggesting that participation can be on the psychological level of “mental contemplation” (Bell 1991:19). However, by positioning interactive art within participatory art, Bell is disagreeing with the concept that all art is interactive. Furthermore, Bell

contradicts his initial conclusion that all art is participative by suggesting that there are works of non-participatory art:

In non participatory work the observer is relied on to mentally “fill the gaps” or construct interpretations of works. In participatory works the participant is further relied on to physically realise interpretations.

(Bell 1991:208)

Again this is very similar to the arguments on interactivity, differentiating between the psychological and the physical. There is also a similarity in the contextual use of participation. As mentioned above, interaction within an artistic context has a specific meaning; this is also true of participation. From an artistic context there is a more specific understanding of what participation means and of what ‘participatory art’ entails.

Judith Rodenbeck refers to a hierarchy of three definitions of participation within art. The first is actually provided by the philosopher, David Novitz who supplies us with the following definition for participatory art:

those largely neglected art forms that cannot adequately be appreciated, and cannot function properly, unless the viewer is physically present in the artwork itself or a performance of it, and, while there, participates in certain activities that arise out of and are required by these works.

(Novitz 2001:153)

Rodenbeck labels this a “weak definition” (Rodenbeck 2005) comparing his definition to ‘engagement’ rather than ‘participation’. She further comments that “its broad generality makes it relatively useless for describing the properties of specific projects” (Rodenbeck 2005). Whilst this definition is fairly broad, Novitz does specify a physical presence with the work which precludes literature, painting and cinema from being participative:

The viewer has to be physically present in the work or a performance of it, and has to behave in a prescribed manner while there, so as to enhance his or her appreciation of it.

(Novitz 2001:154).

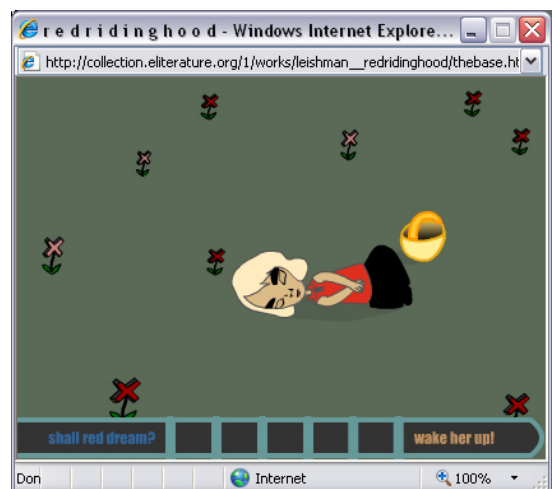
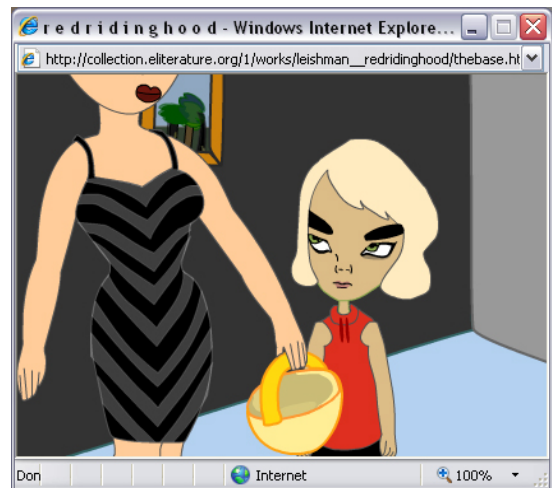
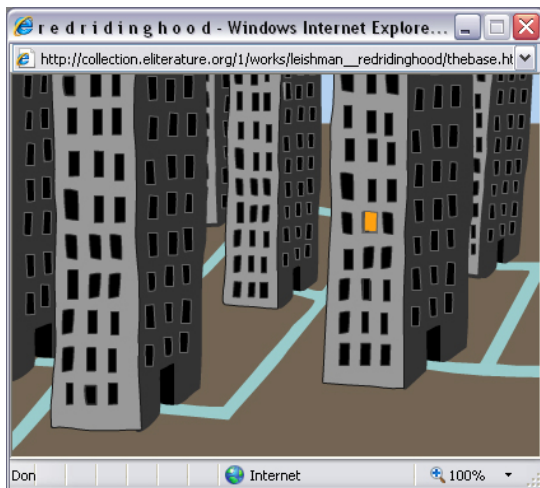
The second “stronger” (Rodenbeck 2005) definition posited by Rodenbeck involves a more active response from an audience.

Into this category, for example, I'd put much new media art, in which the viewer is presented with the possibility of navigating through a limited range of options, each with a determinate outcome. That navigation doesn't change the form of the artwork.

(Rodenbeck 2005)

This definition interestingly specifies new media work which covers net art and includes a broad section of interactive online pieces. For example, the piece “Red Riding Hood” (Leishman 2000) by Donna Leishman (figures 35-38), is a

retelling of 'Little Red Riding Hood' described as an interactive comic book. The user can navigate through the narrative by discovering links and rollovers on the page that uncover further sections. The interaction with this piece allows the user to explore ostensibly non-linear paths through the narrative. However, there is a "determinate outcome" (Rodenbeck 2005) to any chosen route. The form and structure of the piece remain intact for the subsequent interactions, and as Rodenbeck highlights "the role of the artist in shaping both form and content of the work is foregrounded" (Rodenbeck 2005). Within this definition the user has no creative input within the framework of the piece.



Figures 35-38: Red Riding Hood- Donna Leishman 2000

The third definition, and the strongest according to Rodenbeck, infers an even greater level of involvement from the audience:

Under this rubric participation involves a conscious decision-making, action-taking on the part of the participant in such a way that the structure of the work itself is shaped by that activity.

(Rodenbeck 2005)

This definition of participatory art attributes an active participation in a creative process in connection with the work of art, referring to the ability of the audience member to actively change the content of the work.

Participatory Art where the audience is directly involved in the creative process suggests the inverse of the assertion made by Bell that all 'Interactive Art' is participatory but not all 'Participatory Art' is interactive (Bell 1991:16). If an audience member is directly involved in the creative process then that implies interaction. From this it can be concluded that all participative art is interactive and not all interactive art is participative. An example of this is seen in certain interactive net pieces, "Paper Toilet" (Rozendaal 2006) (figure 39) allows the audience to interact with a piece, allowing them to unravel an animated toilet roll; however, they do not participate in the creative process. This piece is therefore interactive without being participative in the strong sense of the definition. At the very least, this "strong" definition should hold the most importance when discussing notions of participation in the arts. Whilst the dictionary definition of "participate" can be used to suggest a

broader notion of participation, within the context of artistic practice, there needs to be a specific and understandable meaning delivered from the term in order for there to be any worth in using it in the first place. It is this “strong” definition of participatory art that is most closely related to the type of participatory net art that this project is engaged with.

Concomitant with this idea of the work being shaped by the participant is the notion of sharing. Within computer art and net art in particular, the participation of others is defined by the fact that this participation is then shared with other users. Using the “Paper Toilet” (Rozendaal 2006) example again, regardless of how the user interacts with the piece, there is no creative material generated that is shared with others. An example of a piece that has this participatory notion of sharing is “Four Million Pieces” (figure 40) by the artist Tom Colvin (Colvin 2006). This piece allows users to fill in one of four million squares in a single colour, these squares being similar to a single pixel in an image. The results of this interaction are saved and updated allowing further users to view previous contributions in the context of a continual process in the development of the work.

The idea of sharing also brings up the notion of collaboration between audience members, not just with the piece. Monsterland (Norcott 2007) for example allows users to work within a framework but also requires that users collaborate with each other on the creation of the monsters. On a large scale the audience are interacting with the piece, but within the piece the audience are also interacting and collaborating with each other.

It is important to establish this definition of participative net art as it is specifically this form of art that is the focus of this project. Whilst there are definitions for interaction and participation, and further clarifications of how these are viewed within the arts, some confusion still remains. This is in part due to the existence of overlapping and conflicting terms.

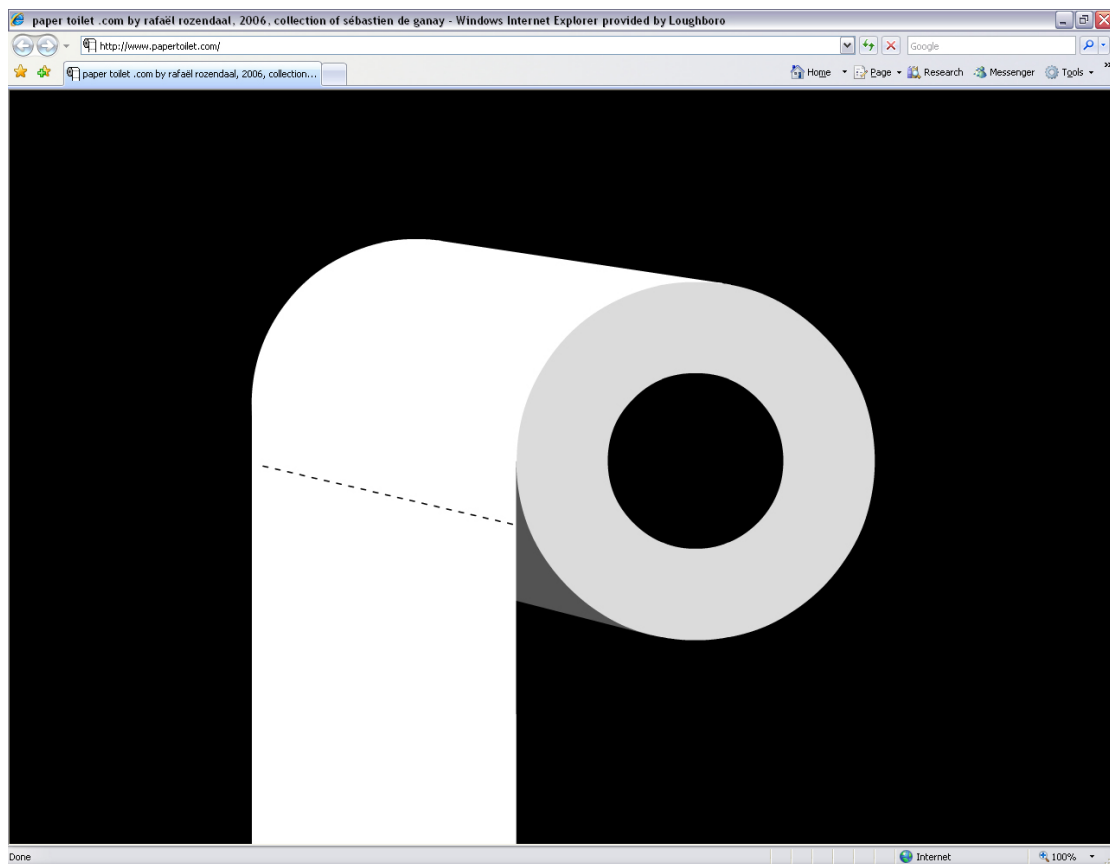


Figure 43: Paper Toilet - Raphael Rozendaal 2006

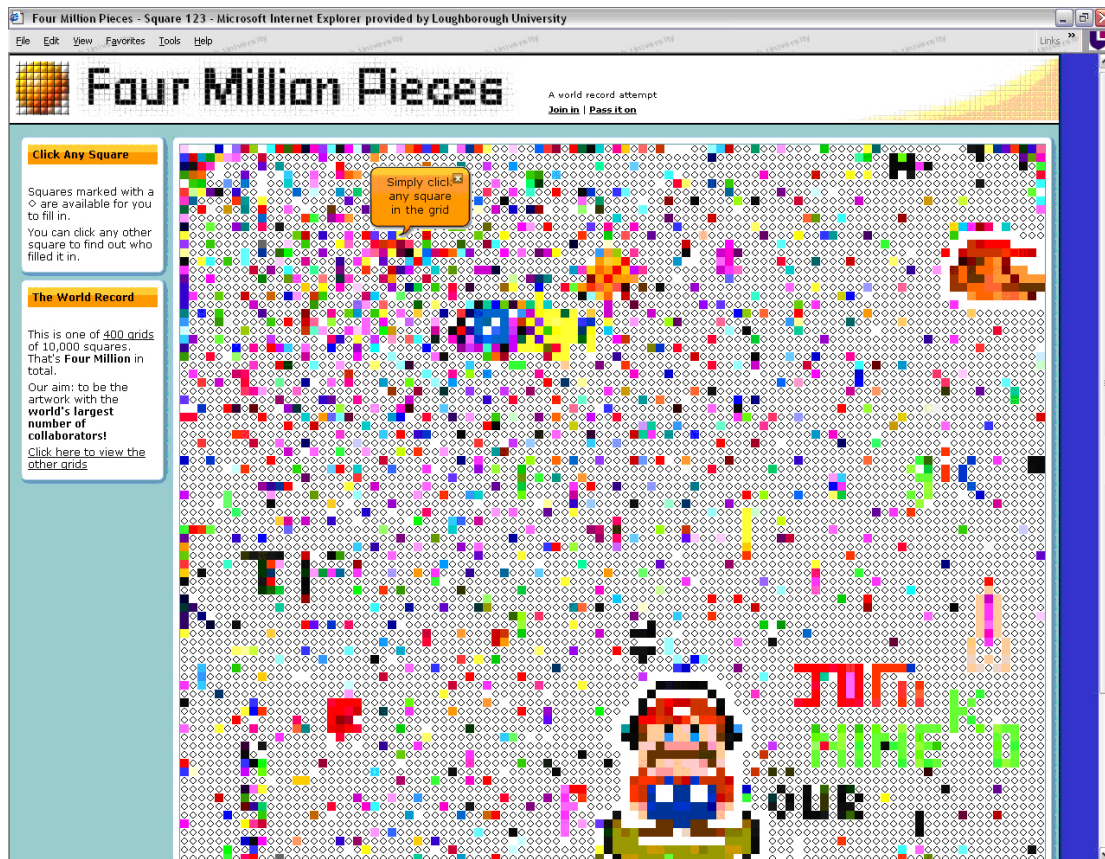


Figure 44: Four Million Pieces (Inner Page) - Tom Colvin 2006

To emphasise the creative sharing nature of the participation, the word collaboration is often used to describe pieces of a participative nature (see Blank 1996; Stalbaum 1998). The definition of Collaborate is:

work jointly on an activity or project
(Oxford English Dictionary 2005:338)

This removes the confusion surrounding the broad interpretation that can be applied to 'participate' but includes the further issue of who is involved and at what stage of the creative process are they working. Participation suggests the inclusion of an audience whereas collaboration includes the possibility that the piece is being created by a collection of artists. Within an internet art

context it is the notion of audience participation that needs to be addressed and in particular, participation in a creative process. However, this creative process is not the process of developing the idea or framework for the piece. It needs to be made clear that any audience collaboration within an internet art piece is only involved in creating material within the original idea or framework created by the artist. This can be seen in the “Four Million Pieces” (Colvin 2006) example above. The artist has created an environment or framework within which an audience can participate in, or collaborate on, the creation of further artistic material.

The word ‘participate’ is relevant in that the audience are taking part and have a share in the art work, however, this can be taken to mean a very broad interpretation covering most if not all art (see Bell 1991:19). Only the strong definition by Rodenbeck suggests the “structure of the work itself is shaped” (Rodenbeck 2005) and therefore the audience will be involved in creating or changing artistic material. However, Rodenbeck identifies other definitions that whilst labelled weaker are still recognised as defining characteristics of participatory art. The term ‘collaborate’ does extend an idea of importance onto the participating audience members, however, it goes too far in suggesting the piece is being developed from the ground up by a group of people, therefore obfuscating the specificity of the audience contributing to the creative process.

Unconscious Collaboration

In order to differentiate between the collaboration of a group of people on a particular piece, where all parties are involved in contributing to a common goal, I have coined the term “Unconscious Collaboration”. This refers to the notion of audience members participating in the creation of artistic material for a piece where they are unconscious of the initial concept.

Their interaction helps to perpetuate or add to the piece but the audience have no involvement in the creation of the initial concept or framework behind the piece. This concept is highlighted as a specific feature of net art by Bookchin and Shulgin: “Collaboration without consideration of the appropriation of ideas” (Bookchin and Shulgin 1999). Bookchin and Shulgin suggest here that net art can be collaborative but does not necessarily require conceptual input from the participants. Malina further specifies the importance of user interaction that contributes to the piece when discussing computer art.

The most sophisticated interactive computer artworks are open-ended in the sense that the final outcome cannot be completely predicted by the initial artwork created by the artist – the artwork does not exist until the interactions take place.

(Malina 1990:160)

This is equally common amongst interactive net art that requires the audience to contribute artistic content.

There are other terms to describe the process of audience participation and collaboration with a piece of art. Aside from 'collaborative' and 'participative' other terms in common use are "user completed works" and "collective authorship" (see Berry 2001:114; Novakovic 2004; Miller 2005:7). The term 'collective authorship' does not highlight the two main issues, that of collaboration and the fact that they are not conscious of the initial concept. Also, to use the phrase 'user completed' implies that works can be finished, which is often not the case.

In an early contemplation of the characteristics of net art, Joachim Blank considers this distinct category of net art production important in defining the genre of networked art.

It often deals with structural concepts: A group or an individual designs a system that can be expanded by other people. Along with that is the idea that the collaboration of a number of people will become the condition for the development of an overall system.

(Blank 1996)

A sense of dissatisfaction with the terms currently used to describe art works of a participative and collaborative nature led to the generation of this term. This has been highlighted as a minor achievement and is directly related to the thesis question through the art works developed for this research. Whilst it is important to emphasise the specific characteristics of the pieces that are

the main subject of this thesis, it is important to clarify that this in no way suggests a qualitative assessment. No judgements are being made as to the quality of net art works depending on whether they allow for unconscious collaboration or not.

Authorship

As already outlined in Chapter 2, the blurring of the boundaries between artist and audience are an ongoing topic of debate within net art rhetoric. Here the term authorship should be regarded in the very general sense as the act of creating a piece of art. It is not limited to the traditional writing of a book or other text rather it is the act of creating any piece of art work. The traditional concept of authorship in the arts is to attribute this title to the creator of the piece. As will be discussed in this chapter, especially with the advent of interactive and participative art, the notion of the author, and therefore the nature of authorship, is debatable. My own argument here is that rather than removing the notion of authorship, works that allow participation or unconscious collaboration facilitate a model of audience reception that involves varying levels or degrees of authorship.

Participatory works naturally open up the question of whether an audience becomes an author when they participate in a piece. Furthermore, the word 'collaborative' and terms such as 'collective authorship', when used to describe audience involvement, heighten the notion that there is no longer a

clear distinction between author and audience. When referring to community participatory arts, Moriarty suggests that:

The line between audience and artistic actors is blurred, overlapping, and permeable;
(Moriarty 2008:3)

Here, the artistic actors will be 'conscious' of the artistic premise or concept. Despite the apparent blurring of roles, the very fact that there are separate terms for artistic actor and audience suggest a distinction can still be made.

As discussed above, the notion of participation in the arts is on one level suggestive of creative involvement within the work itself. Rokeby similarly highlights this indistinctness between artist and audience within interactive art:

It is often said that interactive artworks blur the line between the artist and the audience. The audience becomes creator in a medium invented by the artist. The artist enables the interactor to express themselves creatively.
(Rokeby 1996:9)

Malina further states that interactive art alters the very nature of the art work, the position of the artist, and the role of the audience (Malina 1990:160).

There is also a general agreement of the shifting roles of author and audience within hypertext narratives as noted by Kolb "The roles of author and reader

begin to shift as the being of the text changes.” (Kolb 1994:323). The hypertext theorist George P. Landow further elaborates on this by suggesting that:

the active reader necessarily collaborates with the author in producing the particular version of the text she or he reads by the choices she or he makes

(Landow 2006:136)

Despite the general agreement that the roles of audience and author have changed, the degree of importance or authority that is bestowed upon the audience through participation is still in question. From a personal perspective, when creating works that allow for unconscious collaboration, the audience is unquestionably essential to the process. However, it is also essential that my authority as the primary author of the piece is maintained.

Brett Stalbaum identifies that it is the specific characteristic of unconscious collaboration within net art that facilitates “the often speculated implosion of distinction between the artist and the audience” (Stalbaum 1998). He further states that “the boundaries between participant and creator can be viewed as blurred” (Stalbaum 1998). Not only can this refer to the boundaries of the author of the framework and the audience or participant within that framework but it also can suggest the idea that the participant is now also becoming a creator in their own right.

Similarly, in his paper that outlines 21 distinctive qualities of net art, David Ross talks of “collapsing the notions of reader and writer” (Ross 1999), citing the ability of net art to incorporate its own critical response within the work itself as a causative factor in this collapse. My own pieces were purposefully set up to incorporate the notion of including direct commentary and criticism of the piece within the material that is being created by the audience or participant. This ability to directly comment on the work within the framework changes the role of the audience. Again, the idea that the reader is now becoming a writer themselves within participatory works is apparent.

Furthermore, in relation to hypertext, Slatin suggests that:

hypertext’s capacity for literally interactive reading and co-authorship represents a radical departure from traditional relationships between readers and texts
(Slatin 1990:876)

This again suggests that not only is there a change in the relationship between the artist and the audience but also that the audience themselves becoming “co-authors” of the work. In some way this can be seen to occur within my own pieces, particularly Collaborative Book where the audience is literally a “co-author” of the story or narrative material that is being created.

Whilst Stalbaum, Ross and Slatin may talk of the “implosion” (Stalbaum 1998), “collapse” (Ross 1999) and “radical departure” (1990:876) of the

distinct roles of author and audience, others are less dramatic in their interpretation of this concept.

Artists and designers working with interactive media might be creators of objects, media or even environments that audiences view, but ultimately the interactive elements changes the traditional relationship of author and audience.

(Polaine 2005:2).

Polaine recognises here that there is an altered perception of the roles of the author and audience but stops short of suggesting there is no longer a distinction between the two. In relation to my own pieces this is evident in the clear creation of the framework within which the audience generated material is created. There is a clear distinction between the piece as a concept and the material that is created within the piece.

Naturally, if there is more than one author then the idea of a definitive author becomes less clear, as Suliman suggests "Authorship and authority on the web are constantly indeterminate" (Suliman 2005:61). Shulgin disagrees with this remark, however, arguing that the author is always present:

if an artist proposes an interactive piece of art, they always declare:
"Oh, it's very democratic! Participate! Create your own world! Click this button, and you are as much the author of the piece as I am." But it is

never true. There is always the author with his name and his career behind it, and he just seduces people to click buttons in his own name (Baumgärtel 1997)

Again, Shulgin highlights how there are clear distinctions to be made between concept and substance. The artist and writer Joachim Blank agrees with this to some extent commenting that net art always has “a retraceable starting point, an author, so to speak” (Blank 1996). My own work shows a clear framework and initial concept, that whilst might be incomplete without audience participation, is still able to distinguish the concept from the content or author from the audience. As can be seen, allowing the audience to occupy the role of creative agent within a specific framework does question the established position of audience and author. Whilst not disagreeing that a change in this relationship has occurred, Miller does highlight that:

There is a difference between playing a creative role within an authored environment and having authorship of the environment itself (Miller 2005:20)

Miller suggests here that the author clearly exists within works that allow unconscious collaboration. Whilst the audience are indeed being creative within the artist’s framework, they are not necessarily an author themselves. David Rokeby acknowledges this notion of audience creativity:

It is often said that interactive artworks blur the line between the artist and the audience. The audience becomes creator in a medium invented by the artist. The artist enables the interactor to express themselves creatively.

(Rokeby 1996:9)

However, he qualifies the position of the primary author by suggesting that creative material developed by the audience within any given framework cannot be seen as art:

The interactor becomes a creator. But, as the conceivers of the media, interactive artists reserve a privileged position for themselves. The product of the spectator's creative interaction is often 'pleasing', but would rarely qualify as 'serious' art.

(Rokeby 1996:9)

Of course there is a privileged position for the initiator of the artwork, however, it may be presumptuous to suggest that serious art cannot be created within a particular framework. To some extent there is room to create serious art within my own pieces. Musical Forum for example could be utilised to create compositions in their own right, likewise Collaborative Book allows users to create images using the drawing tool. It must be noted however, that these works are technically and conceptually simple making the production of serious art within these frameworks unlikely. This relates to my concept of 'inter creation' which is discussed later in this chapter.

In his discussion on the openness in art, Umberto Eco suggests that despite works being open for completion by the audience, a distinct author is still present in the process:

The invitation offers the performer the opportunity for an oriented insertion into something which always remains the world intended by the author
(Eco 1989:19)

In this sense Eco is suggesting that the author creates the framework within which further material is created which is highly relevant to the specific type of net art that this thesis examines.

The author is the one who proposed a number of possibilities which had already been rationally organised, oriented, and endowed with specifications for proper development.
(Eco 1989:19)

However, the material itself could be a psychological construction of meaning (Eco 1989:4) as well as a practical creation of artistic substance. Ultimately, the author may not be aware of how his framework will be utilised but they are “aware that once completed the work in question will still be his own” (Eco 1989:19).

So far this discussion on the relationship between audience and author fits in with the view I have of my own pieces where I believe they show a clear conceptual framework within which an audience member is able to create their own material.

Whilst some may discuss this issue in terms of there being a reduced 'authority' of the author, it may be more helpful to suggest that the role of the audience has been augmented. As previously mentioned, Landow describes the audience of a hypertext work as an "active reader" (Landow 2006:136), suggesting the reader of a hypertext work is something more than a mere static reader. Furthermore, when discussing interactive art, Rokeby states that:

Rather than lessening the authority of the creator, these works represent a shift in the nature of that authority.

(Rokeby 1996:16)

Rokeby comments here that there may be a shift in the balance of authority without diminishing the role of the author. One way to consider this notion is to view it in terms of 'levels of authorship'. The idea will be discussed further below.

This section on authorship is a brief overview of an established net art argument and should not be viewed as a definitive analysis of this phenomenon. The issue of authorship runs much deeper than delivered here

and can be seen as a prominent issue in many other art forms including music (Eco 1989; Oswald 2007), literature (Barthes 1993, Liestøl 1994), theatre (Paterson 1999) and more. It is also important to mention that whilst this is an important discussion within net art and other areas, the overall effect this has is undetermined. A number of further questions are apparent within this discussion. For example, does this have an effect on how an audience member interacts? This is related to my CSU model of creativity in the understanding of how an audience member views their own interaction and creative endeavours.

Levels of authorship

There is a degree of hyperbole surrounding the notion of the “practical death of the author” (Bookchin and Shulgin 1999). A canon of net art (or other art) has yet to be produced that fulfils this prophecy. Instead we have a whole series of works that, whilst they can be seen to challenge the roles of artist and audience, consist of a primary author and contributors to the primary author’s framework.

Interacting and collaborating with a piece is not to become a joint author of the piece but rather the author of material that has been enabled by the creation of the piece or framework itself (see Eco 1989:19; Rokeby 1996:9; Miller 2005:20). The artist is the author of the piece and the participant is the author of the material within it. The collaborator has less emphasis as an author as they would usually be one of many contributors. Also, their contribution is only

made possible through the initial creation of the piece by the original author or artist. This facilitates the theorisation of a hierarchical model showing how individual pieces can contain ‘levels of authorship’⁷³ (see Figure 41). The author creates the concept and application of that concept at the top level of the hierarchical model. Contributions are then added by sub-authors underneath this forming the material within the framework. A similar concept can be seen when a reader of a hypertext creates their own path through a narrative.

the basic operations of authorship, are transferred from author to reader, from primary to secondary author
(Liestøl 1994:98)

In this model however, the amount of sub-author levels is dependent on the piece. For example, the piece “Four Million Pieces” (Colvin 2006) consists of two levels; the framework created by the artist on level 1 and the material created by participants, a square of colour, on level 2. Other pieces can be seen to have multiple sub-author levels; my own “Musical Forum” for example has the framework on level 1 then the ability to create new threads on level 2 and the further option to respond to these threads on level 3.

⁷³ It may also be possible to view this model in non-hierarchical ways such as Actor-Network Theory whereby the artwork ‘network’ is created through the relationship of numerous ‘actors’. These can be human or non-human and the case of a piece of online art could include the author and participant as well as a number of other elements such as the browser, the computer, the screen etc. Analysis using this approach is beyond the scope of this thesis (see Learning-Theories.com 2012; Latour 1998a, 1998b).

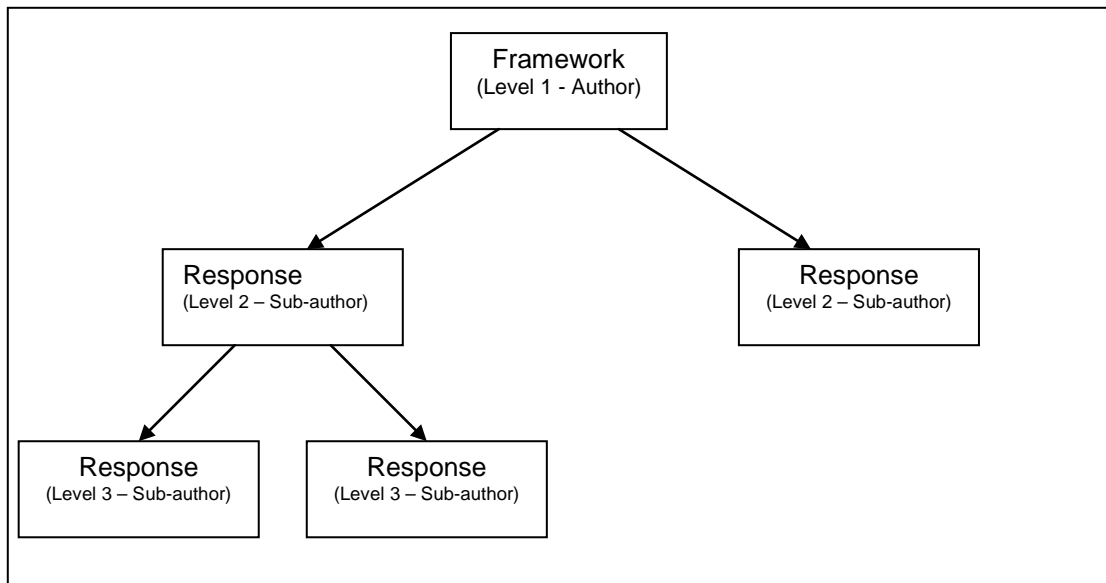


Figure 45: Example Structure of the Author / Sub-author Model

Inter Creation

It is useful to theorise further terms to incorporate within this model of author and sub-author. The output of artworks that exhibit the potential for unconscious collaboration can be seen as a form of ‘inter creation’⁷⁴. In other words the act of unconscious collaboration produces a form of ‘inter creation’. An example of ‘inter creation’ can be seen in the work of artist Andy Deck, “Open Studio” (Deck 2001) for example allows users to create images using a basic drawing tool which can be saved and altered by further participants. Artistic material is purposefully allowed to be created within the predetermined framework in order to perpetuate the piece. Any material created by a sub author in these environments is created within the context of that environment

⁷⁴ Again, this term and the concept it encapsulates could be related to the existing idea of co-creation. As with the issue of relating co-creation to my CSU model of creativity, the concept of inter creation presupposes a creative framework. Whilst co-creation covers the act of collaboratively creating work it is defined as being different from collaboration in that the outcome is unknown (Sanders and Simons 2009)

and can be considered the creation of a sub-author whilst it remains in that context. If the material is removed from that context then it no longer remains within the author / sub-author model. For example, if I were to take a composition from “Musical Forum” and distribute it as a standalone musical composition, then this would remove the creation from the author / sub-author model within the musical forum context and it would now exist in the traditional author / audience format.

Outer Creation

Applying this model of authorship to all creative and artistic practices could be problematic. For example, if you were to apply the author / sub author model to Photoshop this would suggest that the creators of the application would be the authors and anyone using the tool would be a sub-author. The artist Adrian Ward who created the computer art piece “auto-illustrator”⁷⁵ makes a case for this:

I definitely treat auto-illustrator as though it were me. Designers who are using my code are collaborating with me in the construction of vector designs.

(Levin et al 2001 cited Magnusson 2002:70)

⁷⁵ Auto-illustrator is a generative art tool based on Adobe Illustrator. More information can be found here: <http://swai.signwave.co.uk/>

Ward is saying here that as he is the author of the framework he also becomes joint author of the creations made within this framework. Magnusson comments that by saying this Ward is questioning the authorship of creative material produced in his own work and software in general (Magnusson 2002:70). Magnusson is not entirely convinced of this argument however:

I believe Ward is right in stressing the limits of what can be counted a personal aspect of his work, but he seems to be stretching the limits of what can be counted a personal expression, when he states that *he* is always involved in the creations of people using his software.

(Magnusson 2002:74)

Whilst software tools may allow creations which have evidence of a certain authored style, this does not necessarily amount to a claim of joint authorship with an audience. It is therefore necessary to incorporate another term into this model to differentiate between the 'inter creation' of artistic frameworks through unconscious collaboration and the 'outer creation' of software tools.

The fundamental difference between the examples of artistic 'inter creation' and the 'outer creation' of software like Photoshop is context. As mentioned above, if an example of 'inter creation' is taken out of context then it no longer exists in the author / sub-author model. In a similar way 'outer creations', work that is created using a software tool, is purposefully created to be removed from its context of creation and is therefore not part of the author / sub-author model. In the example of a creative tool like Photoshop the material was

always intended to be used outside of Photoshop in a standard author / audience format.

Aside from software art tools like auto-illustrator 'outer creation' can also be evidenced in net art. The piece "myData=myMondrian" (Yeh 2004) for example is a tool that allows the participant to create a Mondrian style image from their own personal data (see Figure 42). However, the material output does not become part of the piece, it is an outcome of interacting with it. This is a form of artistic 'outer creation' because the outcome was never intended to be contained within the piece.

Artistic Appropriation

The question of authorship is also apparent in works that involve appropriation of other material without the interaction of the audience.

0100101110101101.org are a group that have made direct comments on the concept of authorship through their own work. Notable examples involved duplicating other sites and placing them elsewhere. One such copy was of Hell.com, which at the time attempted to operate a pay-per-view system to view part of its site. Berry extrapolates their intentions further:

"0100101110101101.ORG's work.....seeks not to exactly copy the 'original' but rather to detourne it, and to loosen it from the ties of individual control and open it up to the unknowable horizon of multiple authorship"

(Berry 2001:225)

Whilst an interesting comment on originality, copyright, and authorship, the very fact that they are publicly doing this intrinsically attributes them with the title of author. They are the authors of the concept of copying someone else's site, or more specifically, the authors of their actual appropriation of this other site. As Julian Stallabrass comments:

Works may draw upon and cite others but generally remain the product of a named site or named artist

(Stallabrass 2004:110)

It would be unfair to concentrate on the authorship aspect of their work when it also suggests so much more, however, it does highlight the importance or prominence of the role of the author as opposed to the definition of the author. As suggested by Shulgin above (Baumgärtel 1997b), the artist has a career, authorship is integral to success or otherwise of this career. Notions of fame, recognition, kudos, and reputation are all linked to authorship. The notion of the author is also an apparent issue in the tension that existed between my roles as artist and researcher. The resolution of this tension caused a shift in my own perceptions of authorship and how I responded to artistic creation. I had to comprehend my authorship from a different perspective which is integral to the way in which I understand my own role within the practice.

The “practical death of the author” (Bookchin and Shulgin 1999) has yet to be realised, however, participatory and interactive artworks do enable these distinctions to be challenged and with the continual development of internet technologies it may not be long before it does happen in a significant way. Furthermore, to question authorship is to argue for the importance of the audience. Establishing a hierarchy of authors and sub authors in pieces that allow unconscious collaboration allow the notion of the author to remain intact whilst also suggesting the elevated role of audience as a creative force within that context.

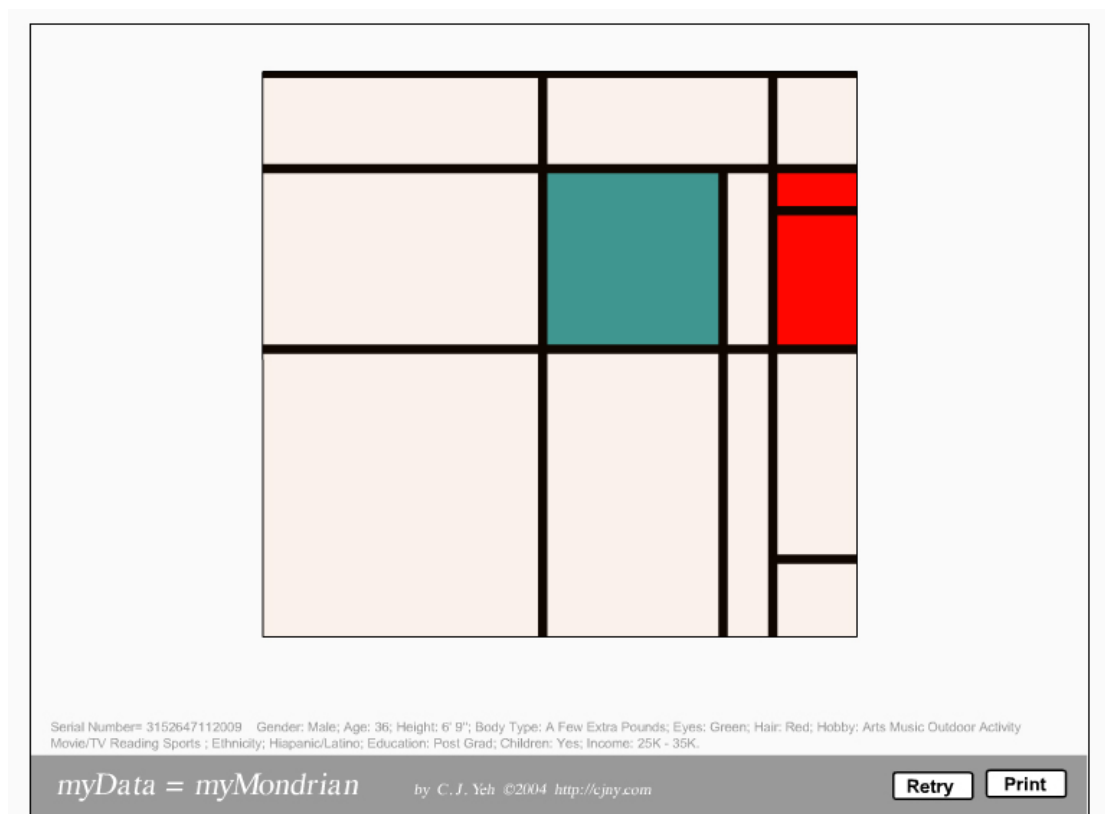


Figure 46: myData = myMondrian – C.J. Yeh 2004

Audience

Potential Audience

Due to requirements of obtaining an audience⁷⁶ for statistical data for analysis, research into potential audience and methods of audience generation became an important aspect for consideration within the context of this research. On the surface net art has a potential audience equal to the amount of people who have access to the internet. The latest statistics suggest that there are 1,733,993,741 internet users worldwide⁷⁷.

There are numerous factors that inhibit this potential. Clearly the largest element that prevents more users is lack of interest. The actual amount of people who would be interested in this type of work is likely to be a very small percentage of the actual net using public. Factors such as “Participation Inequality” (Nielsen 2006a), which is discussed below, are also potentially detrimental to the active audience size.

Internet technologies themselves can often dictate who can access net art, with many net art pieces requiring browser plug-ins like Flash, VRML⁷⁸, Quicktime and Java to work. All of this technological choice, whilst enabling

⁷⁶ The use of the word ‘audience’ relates here to those that actually interact with the work as well as those that merely view or browse the contents.

⁷⁷ As of September 30th 2009. Stats obtained from <http://www.internetworldstats.com/stats.htm>

⁷⁸ VRML stands for Virtual Reality Modelling Language and was an attempt to establish a method of producing 3D web pages using a HTML style language.

for the artist to achieve their desired results, can be problematic for the user that doesn't have the technology and is unwilling to install it.

However, despite the realisation that the audience for net art is very small relative to the potential audience that the internet affords, the ease with which you can reach this small audience is greatly increased through the network.

As Shiva comments:

Through the internet, any artist can reach a viewing audience that, up to this point, could be only reached by showing at big-city galleries, performing at major concerts, advertising in expensive magazines and newspapers or having articles

(Shiva 1996:27)

Shiva's prescient observations are confirmed by the artist and theorist Garrett Lynch:

The rapid adoption and integration of the web into all aspects of society allows artists to disseminate art as never before making it free and globally accessible within a public domain.

(Lynch 2008:1)

Artists working on the net are able to easily and relatively inexpensively promote their work through the same network that their work is being

delivered on. This gives the internet an advantage over offline art in getting actual viewers for the work.

Obtaining an Audience

Whilst it is relatively easy and potentially inexpensive to promote on the internet there are still problems associated with reaching an audience.

Advertising is possible but is a relatively unexplored area in promoting net art. For example, if you type 'net art' into a search engine then it is unlikely that any of the sponsored advertising results contain 'net art'. More often than not they will be websites selling offline artefact based art. The piece "The Google Adwords Happening" (Bruno 2002) did, however, use Google Adwords as part of the actual piece rather than as a deliberate advertising strategy. This piece was a direct response to discussions on the Rhizome mailing list concerning the potential commerce of net art. Rather than make money with net art, Bruno attempted to see how he could spend money with net art. Similarly, Viral ads⁷⁹ have had some artistic consideration (see Khan 2006) but are rarely used to promote actual net art.

Mailing lists are a good source promotion, Spectre⁸⁰ and New-Media-Curating⁸¹ are examples of two lists that are frequently used by artists working

⁷⁹ Viral advertising usually involves images or short video clips that are passed from person to person in a way that involves an exponential increase in audience views in a relatively short space of time (see The Times Online 2007).

⁸⁰ The Spectre mailing list deals with media art and culture in Europe - <http://coredump.buug.de/cgi-bin/mailman/listinfo/spectre>

with the internet, both lists deal with a wide range of subjects relating to new media and the internet⁸². Other possible resources are submitting your work to repositories or databases such as Rhizomes “ArtBase”⁸³ or the “Java Museum”⁸⁴. This generally targets those that are already interested or involved in net art and new media.

Financial considerations are one aspect that affects the promotion of net art through traditional online advertising. Stewart highlights the economic situation with net art as being connected to the inability to reach a wider audience:

... within a capitalist economy this lack of audience is equated with a lack of a market, which in turn means that there are limited economic opportunities to develop and distribute these kinds of works.

(Stewart 2006:193)

It follows from this that due to the lack of financial return involved in producing net art, there is an unwillingness to spend money on the promotion of net art through established internet marketing techniques.

To date there has been very little research on these issues of generating audiences for net art projects and it remains an avenue for possible future

⁸¹ Information on the new-media-curating mailing list is available here <https://www.jiscmail.ac.uk/cgi-bin/webadmin?A0=new-media-curating>

⁸² These are just two examples of mailing lists that deal specifically with new media, there are of course many more art based mailing lists that discuss new media work within a more general context, e-artnow for example which is available here <http://e-artnow.org/>

⁸³ The Rhizome ArtBase was founded in 1999 to serve as an archive for new media art including net art. Members of Rhizome can submit works which will then be stored in the ArtBase for public viewing. ArtBase can be accessed here: <http://rhizome.org/artbase/>

⁸⁴ The JavaMuseum was founded in 2001 and exhibits a wide variety of net art works. <http://www.javamuseum.org/blog/>

exploration. As too does establishing audience demographics for net art, which again has been found to have no attention from previous research.

Participation Inequality

As outlined above in the authorship section, the audience can now play a more active role by participating directly with works of art online. However, a piece that is capable of unconscious collaboration does not necessarily require participation from the viewer.

“Participation inequality” (Nielsen 2006a) is an idea put forward by Jakob Nielsen concerning web usability and has been discussed briefly in Chapter 2. To reiterate the basic principal, internet users are split into three types;

Lurkers - Those that simply view and do not participate

Intermittent Contributors - Those that participate to the minority of the material on the site

Heavy Contributors - Those that produce the majority of the material on the site

Participation Inequality suggests that the more interactive a piece, in other words, the more options for creativity and openness you give a user, the less

likely the audience are to interact with it. As interactivity increases, Participation Inequality becomes more evident until a very high lurker rate with a small level of minor participation and a very small level of major participation is reached.

Being able to manipulate and create your own content indicates that Participation Inequality is greatly increased. For example, the PI figures for the website wikipedia.com are as follows:

99.8% (Lurkers)

0.2% (Intermittent Contributors)

0.003% (Heavy Contributors)

(Nielsen 2006a)

This is due to Wikipedia having the potential to be a very interactive website which allows users to contribute almost anything to their database in order to generate the content for the site. However, it is not as straightforward as saying that the higher the potential for interaction, the greater the Participation Inequality ratio. As the article on PI suggests, there are ways to overcome this potential problem. These are some suggested methods of attempting to “equalise” Participation Inequality:

Make it easier to contribute

Make participation a side effect

Edit, don't create

Reward — but don't over-reward — participants

Promote quality contributors.

(Nielsen 2006a)

It is entirely possible therefore, that two websites or artworks of equal interactive potential have radically different PI scores. It again must be stressed that PI is relevant only to sites that allow participation or contribution⁸⁵. In this sense it is a particularly pertinent aspect of website usability when applied to the concept of collaborative internet art. The concept of Participation Equality gives some insights into the behaviour of an audience for interactive works such as those developed for this research. It has therefore been adopted as a model of analysis for the data gained from these pieces.

Conclusion

It can be seen here that the terms interaction and participation, whilst having specific contextual definitions, still have their problems. They often overlap and are frequently used in a very general and broad sense which can cause

⁸⁵ It may be possible to have art works that are impossible not to interact with thus generating a 0 'lurker' percentage. It should be noted however, that PI is a tool specifically designed for sites that require the audience or user to contribute material. Any sites that generate material without the knowledge of user, therefore effectively allowing contribution of material without the option of 'Lurking', cannot be considered for this model. In other words the contribution has to be given with consent, the user must be aware that they can contribute or not. I am not currently aware of any online artworks where user generated material is obtained without the option for not participating. If one were to exist however, an option could be to choose a specific point as a relevant position for the act of consciously contributing or interacting with the piece. Any actions prior to this specified point could be considered 'lurking' especially if the user of the piece was unaware that they were actually participating with the piece prior to this point.

some confusion. It is hoped that generating a term such as 'unconscious collaboration' will aid in avoiding this confusion and is able to be used to quickly identify a particular style and type of net art piece.

Similarly the author / sub-author model outlined above generates a firm position for the role of the audience in being a creative force whilst simultaneously allowing the notion of primary authorship to remain. Although the notion of authorship is brought into question there are many that agree with the notion that authorship does retain some authority (see Polaine 2005; Baumgärtel 1997; Blank 1996; Rokeby 1996:9). As has been discussed, authorship is a significant debate within net art and has a direct relevance to the works I have created and therefore the thesis question. Deliberating the notions of the artist / audience relationship also has the benefit of a heightened awareness of the importance of an audience and has undoubtedly assisted in my own consideration of audience interaction with my own work. Furthermore, examination of the theorised author/sub-author model is relevant to the pieces used in this research and is highlighted as an area of further research.

Whilst it has been established that the audience for net art is very small, the unprecedented freedom of access to this form of artwork is a boon for the artist (see Shiva 1996:27; Lynch 2008:1). Net art audience demographics and suitable methodologies for promotional activities remain an as yet unexplored area and may be significant in augmenting its reach.

Participation Inequality is significant in determining audience responses to participative internet art. The suggestion that the gap between participants and lurkers increases with the degree of interaction highlights the need for determining levels and characteristics of interactivity. The next chapter examines previous attempts at interactive taxonomies and details my own analysis of the 'loop of interaction'.

Chapter 5 - Characteristics of Interactivity

Introduction

Despite the relative newness of the interactive arts there have been many previous attempts at generating interactive taxonomies. Cornock and Edmonds (Cornock and Edmonds 1973), Laurel (Laurel 1991/1993), Rokeby (Rokeby 1996), Graham (Graham 1997), Ylitalo (Ylitalo 2000), Klastrop (Klastrop 2003b) and Mongiat and Snook (Mongiat and Snook c2007) have all attempted to develop taxonomies of interactivity relating to the arts. Other useful non-art related material on interactive characteristics is provided by Shedroff (Shedroff 1994) and Berenguer (Berenguer 1997). These are all discussed in this chapter as is their relevance to net art and developing a specific net art taxonomy.

The concept of 'Interactive Reward' is also discussed as a fundamental factor in the interactive experience. This generally involves positive reactions to user interaction in order to perpetuate usage or to engender a positive user experience.

Finally the concept of a 'Loop of Interaction' is discussed which breaks down the individual aspects of the interactive process and highlights the specific area of interaction that is the focus of this project.

Cornock and Edmonds

Cornock and Edmonds were among the first to attempt to categorise interaction within the arts by identifying three separate art situations; Static, Dynamic Passive and Dynamic Interactive (Cornock and Edmonds 1973:13)

This model was later updated by Cornock and Edmonds with the addition of a further category 'Dynamic Interactive (Varying)', the updated descriptions of these art systems are described as follows:

Static

The art object does not change and is viewed by a person. There is no interaction between the two that can be observed by someone else, although the viewer may be experiencing personal psychological or emotional reactions. The artwork itself does not respond to its context.

This is familiar ground in art galleries and museums where art consumers look at a painting or print, listen to tape recordings and talk to one another about the art on the walls and, generally speaking, obey the command not to touch.

Dynamic-Passive

The art object has an internal mechanism that enables it to change or it may be modified by an environmental factor such as temperature, sound or light. The internal mechanism is specified by the artist and any changes that take place are entirely predictable. Sculptures, such

as George Rickey's kinetic pieces that move according to internal mechanisms and also in response to atmospheric changes in the environment fall into this category. The viewer is a passive observer of this activity performed by the artwork in response to the physical environment.

Dynamic-Interactive

All of the conditions of the dynamic passive category apply with the added factor that the human 'viewer' has an active role in influencing the changes in the art object. For example, by walking over a mat that contains sensors attached to lights operating in variable sequences, the viewer becomes a participant that influences the process of the work. Motion and sound capture techniques can be used to incorporate human activity into the way visual images and sounds are presented. The work 'performs' differently according to what the person does or says. There may be more than one participant and more than one art object...

Dynamic Interactive (Varying)

The conditions for both 2 and 3 above apply, with the addition of a modifying agent that changes the original specification of the art object. The agent could be a human or it could be a software program. Because of this, the process that takes place, or rather, the performance of the art system cannot be predictable. It will depend on the history of interactions with the work. In this case, either the artist

from time to time updates the specification of the art object or a software agent that is learning from the experiences of interaction automatically modifies the specification. In this case, the performance of the art object varies, in addition to case 3, according to the history of its experiences.

(Candy and Edmonds 2002)

Whilst the examples given for each of these categories is not directly specific to net art, it is fairly straightforward to conceive of examples of net art that would fit within each category.

Another model developed by Cornock (Cornock 1977 cited in Graham 1997:39) looks at artworks and splits them into Static and Dynamic art systems. The notion of the 'art system' refers to the artwork and all participating entities. This includes the audience and other environmental elements that have the potential to affect the work. The Dynamic art systems are considered interactive and termed as "a conversation between artist and audience" (Cornock 1977 cited in Graham 1997:39). The area of Dynamic art systems is then split into four sub categories; Dynamic, Reciprocal, Participatory, and Interactive. With the final sub category being split further into Individual, small group, a culture, and cross culture. These categories are described as follows:

Dynamic – organisational dependence on environmental variables

Reciprocal – treats spectators as environment, with responses through time

Participatory – the inter-personal reactions of a group of participants to a situation specified as a matrix

Interactive – mutual exchange between man and machine, elaborately related on either side of an interface

- Individual
- Small Group
- A culture
- Cross Cultural

(Cornock 1977 cited in Graham 1997:40)

Whilst the models outlined above usefully describe categories of interactive art they make no further attempt at classifying the interaction itself.

Graham

In her doctoral thesis, Beryl Graham (Graham 1997) develops two ways of measuring and characterising interactivity with gallery based interactive art work. In the first Graham uses a metaphor of conversation to re-interpret the Cornock model above (see figure 43). In this model, Graham's "Uninterrupted

Monologues” equate to the “Static” art system whilst the “Verbal Exchanges” section is a direct interpretation of Cornock’s Dynamic art system.

<p>Uninterrupted Monologues</p> <p>Although may use rhetorical questions/structures</p>	<p>Verbal Exchanges</p> <p>not monologues</p>			
	<p>'Talking'</p> <p>Car</p> <p>changes (e.g. ignition on/seatbelt undone) trigger monologues (red light, voice)</p>	<p>Voicemail</p> <p>user navigates through branching recorded information by touch tone phone.</p>	<p>Hosted Chatline</p> <p>users interact with a prerecorded structure but can also interact with each other.</p>	<p>Real Conversation</p> <p>users and artwork mutually exchange ideas, elaborately related on either side of an interface.</p>
	<p>Individual</p>	<p>Small Group</p>	<p>A Culture</p>	<p>Cross Cultural</p>
	<p>can this exist within computer-based art?</p>			

Figure 47: Graham's interpretation of Cornock's taxonomy (Graham 1997:44)

Although Graham talks of not having a hierarchy of interactivity, suggesting instead that it is more useful to talk about ‘kinds’ of interactivity (Graham 1997:38), the fact that the Cornock model above supposes that each subsequent category incorporates the previous suggests that they view these

categories of the Dynamic art system as hierarchical or at least measurable in terms of a level of interactivity. Indeed, her interpretation of the Cornock model quite clearly gives examples that incorporate *more* interactivity as they are read from left to right as opposed to defining non-hierarchical *types* of interactive art. Levels of interactivity will be discussed later in this chapter.

A further development from Graham comes in the form of a graphical representation of the character of interaction for any given piece (Graham 1997:112-114). For this she draws on some of the ideas posited by Stephen Bell (Bell 1991), particularly the idea that interaction happens over time. Bell developed a series of 40 characteristics that can be mapped like a musical score. Graham takes this idea to some extent and suggests the variables of 'Artist Control', 'User Control', and 'Between User Control' be plotted on a graph over time. The results are a visual representation of the interactive character of any given piece; she also suggests adding notes on the means and media of interaction to give a more complete picture of the piece.

Unfortunately, this concept is not fully explored by Graham and as such many details are incomplete, for example the issue of time scale. Graham does not mention whether 'Time' is over the length of the piece as a whole or the length of an individual's interaction. This may be a case of interpretation and would be different depending on the nature of the piece. If each audience interaction with the piece involved a new 'beginning' and 'end' then it would be relevant to view the time scale as the length of the individual interaction. Conversely, if the piece involved a more open structure where users could drop in at any

point then a time scale related to the entire duration of the piece would be more suitable.

Graham highlights how this graphical representation of the interactive character of individual works can be useful to the curator in choosing suitable works for inclusion in an exhibition (Graham 1997: 114). For example, if after choosing several pieces and applying this graphical analysis, it may be apparent that there are too many or not enough of a certain interactive 'shape'.

Laurel and Berenguer

As previously discussed in Chapter 2, both Brenda Laurel (Laurel 1991/1993) and Xavier Berenguer (Berenguer 1997) individually dissected interactivity into three characteristics. Table 2 below highlights the similarities between their individual concepts and how they describe them:

Both of these models can easily be applied to net art, Berenguer even highlights how his characteristics can cover "artistic expression" (Berenguer 1997). Each of these characteristics of interactivity is again suggestive of a range or level of interactivity and is open to further classification of each element. Also, and as can be seen in some of the further attempts at classifying interaction below, the Range / Interaction characteristic can be viewed as the most important characteristic in determining any interactive quality.

Table 2 - Comparing the Characteristics of Interactivity developed by Laurel (Laurel 1991/1993:20) and Berenguer (Berenguer 1997)

Laurel	Berenguer
<p>Frequency How often a user can interact</p>	<p>Autonomy The extent to which the user can decide what to do</p>
<p>Range The amount of interaction there is</p>	<p>Interaction The amount of interaction between the user and the system</p>
<p>Significance Depth of interaction</p>	<p>Presence The degree of immersion in the interactive system</p>

Klastrup

Whilst the models of Cornock, Edmonds and Graham can be seen to incorporate the three characteristics of Laurel and Berenguer, the work of the researcher Lisbeth Klastrup can be interpreted as an attempt to define the levels of interactivity within Laurel’s “Range” (Laurel 1991/1993) or Berenguer’s “Interactivity” (Berenguer, 1997) characteristic mentioned above.

Klastrup (Klastrup 2003b) attempts to define the types of text that appear in computer games, hypertext and digital narratives. These are described as Static, Pseudo-dynamic and Dynamic (see Table 3) and can be described as follows⁸⁶:

Static texts offer the user a simple choice of interaction, a basic choice between clicking links.

Pseudo-dynamic delivers responses that appear as though they have had an effect on the content, although Klastrup is explicitly referring to hypertext artworks, a related example of this type of text is present on the site amazon.co.uk. When you login you are greeted with a personal message, "Hello David" for example.

Dynamic texts produce content programmatically based on choices made by the user.

A further classification from the perspective of nonlinear texts comes from Espen Aarseth who provides the following hierarchy:

forking, found in the spatially nonlinear text; linking/jumping, belonging to the stratum of hypertext; permutation, computation, and polygenesis,

⁸⁶ Despite these descriptions already being outlined in chapter 2, it is important to publish them again here to support the content of this chapter

all found in both determinate and indeterminate cybertext.”

(Aarseth 1994:80)

The ideas that both Aarseth and Kjastrup refer to are specific to hypertext media, however, this can cover a broad scope of computer and online art and Kjastrup also references online games such as Everquest⁸⁷ in her definition of texts. This would suggest that the use of the word “text” could be applied to any medium that involves a narrative of sorts, including net art.

Table 3 - From "Paradigms of Interaction" by Lisbeth Kjastrup (Kjastrup 2003b)

Type of text	Interaction
<i>static-interactive texts</i> - content fully programmed, manipulable sequences	on level of presentation or surface
<i>pseudo-dynamic interactive texts</i> - mainly programmed content, but with certain gaps to be filled by data such as individual user information, so as to maintain the illusion of adjustability	mainly on the level of presentation or surface
<i>dynamic interactive texts</i> - content emergent, mainly programmed to adjust the actual rendering of text and content according to the choices and movements of the users	on the level of story content or fabric

A comparative model by John Slatin comes from the perspective of audience response to a hypertext. He describes how hypertext enables three types of user: “the reader as browser, as user, or as co-author” (Slatin 1990:875). The

⁸⁷ Everquest is a popular Massively Multiplayer Online Role Playing Game (MMORPG) first released in 1999 and is still active today (see <http://everquest.station.sony.com/>).

browser is described as someone who “reads for pleasure” (Slatin 1990:875), their purpose being something to engage with something interesting. The user is described as someone with a “clear – and often clearly limited – purpose” (Slatin 1990:875). In other words their interaction with the text is based on a particular reason but it still does not wholly engage with the potential of the hypertext work. This leads on to the co-authors who “become actively involved in the creation of an evolving hyperdocument” (Slatin 1990:875).

There is a danger here of suggesting a hierarchy in that each type is successively more important. Slatin stresses how within his description of users “what looks like a hierarchy of readers collapses” (1990:875) due to the possibility of a reader moving between these different types.

Shedroff

Another attempt to define the characteristics of interactivity is delivered by Nathan Shedroff (Shedroff 1994) where he suggests that all experiences and products can be placed, or can inhabit, a continuum of interactivity ranging from passive to interactive. Shedroff further attributes these characteristics to the continuum of interactivity:

Feedback – The amount of feedback given to the user from the experience.

Control – The amount of control the user has over the material.

Creativity – The ability for the user to be creative mainly on the level of entertainment.

Productivity – Related to creativity but implying that the interactivity allows the user to create something productive, achieving a goal (aside from “having fun”)

Communications – Experiences where contact with others is made.

Adaptivity – The ability for the system or experience to change its content based on the actions of the user.

Shedroff refers to these characteristics as “spectrums” (Shedroff 1994:10) of the continuum of interactivity and despite the lack of numerical mensuration they are based on a hierarchical form. This does not imply, however, that there is a value judgement to be made of the interaction in terms of ‘better’ or ‘worse’. Shedroff clarifies this by stating that:

The only judgment should be if the level of interactivity or place along the continuum is appropriate to the goals of the experience or the messages to be communicated.

(Shedroff 1994:10)

Shedroff further suggests that it is useful to plot these six characteristics on a diagram in order to highlight possible relationships between products and experiences. As a six sided diagram is problematic to produce, a three dimensional "Experience Cube" (Shedroff 1994:11) is proposed. This involves grouping some of the similar characteristics together into three groups; Feedback and Control in the first group; Creativity, Communication and Productivity in the second; and Adaptivity into the third.

Shedroff's continuums are actually a breakdown of the range / interaction characteristic. Rather than specifying levels of interaction within this characteristic as Klastrop has done with her "static, pseudo dynamic and dynamic" (Klastrop 2003b), Shedroff has further broken down the range / interaction into separate characteristics with each having its own measurement of significance.

As this model is in response to all experiences and products, individual works of net art can comfortably fit within this structure. In a similar way to the Graham graphical representations of interactive character (Graham 1997:112-114), the experience cube could also be a useful tool in viewing the relationship between artworks.

Mongiati and Snook

A more specific arts based reaction to interactivity comes from a study by Mongiati and Snook (c2007) which discusses understanding the relationship

between the creator and participant with the aim of being able to create and use participatory art pieces more effectively. Their paper outlines a “framework map” (Mongiati and Snook c2007:1) that highlights key elements of interaction so that they may be referenced when planning a piece of work that involves participation. The paper describes the key elements as Fundamental Components of Interaction (FCoI) which can be understood as follows:

Invitation – The instructions given to users, giving them information so they know how to interact, or the fact that they can interact

Incentive - The reward or incentive a user receives for interacting

Sense of impact – How the piece and interaction with it affects others including the ability of the piece to make a user aware of their own engagement with it.

Contact - The physical point of contact, which for net art would be the computer.

Openness – How open the piece is to interaction and change, the “depth” of interaction.

Rules - Relates to the actual framework, what you can do with the piece.

Authorship – Directly related to collaboration, the audience become co-authors.

Timing – When is the interaction delivered? When is the response or reward gained from interacting?

Interactive technologies – The technology used in the piece.

(Mongiati and Snook c2007:6)

I would question the inclusion of Sense of impact as a component of interactivity which suggests that users need to be made aware that their interaction serves a purpose. As Mongiat and Snook say:

Players need to know they are active to the act of participation and this response must be understood as such

(Mongiat and Snook c2007:6)

'Sense of Impact' as defined by Mongiat and Snook is an issue for the artist and is not an intrinsic characteristic of interactivity. It could be argued that if the artist wants the user to engage with the piece and realise exactly what their interaction will achieve then 'Sense of impact' must be considered. Again though, this would suggest that it is a component of the artistic requirements as opposed to a component of interactivity.

All of these components, with the exception of 'Sense of Impact', can be placed within one of the characteristic variables outlined above by Laurel (Laurel 1991/1993:20) and Berenguer (Berenguer 1997). For example:

Frequency / Autonomy

Incentive

Timing

Range / Interaction

Invitation

Rules

Authorship

Openness

Significance / Presence

Interactive technologies

Contact

This extends the ideas posited by Shedroff (Shedroff 1994) and Kjastrup (Kjastrup 2003b) as it includes characteristics that can be included within all three of the main characteristics developed by Laurel (Laurel 1991/1993:20) and Berenguer (Berenguer 1997).

There is not necessarily a structure to these FCol, they have simply been highlighted as the most significant factors to take into account when creating participatory design work. When applying these components to net art, some appear to be more relevant than others. Contact for example refers to the physical point of contact between the user and the piece. For net art, this would almost certainly be a standard computer, however, you could differentiate between the mouse and keyboard as this would make a difference. There is also the possibility of being able to access the internet through other means, television and games consoles for example. So rather than these components being seen as characteristics of interactivity, they are more considerations of interactive work. To highlight how these components have been utilised in my own work I have included here a breakdown of the piece "Monstertext" (excluding 'Sense of Impact'):

Invitation – Users are informed how to use the piece and what it is based on

Incentive – This depends on when you interact with the piece:

Beginning:

Seeing your post, the initial idea

Others contributing

Seeing completed text

Middle:

Seeing your post

Others contributing

Seeing completed text

End:

Act of completing a text

Seeing completed text

Contact – Computer; including, mouse, keyboard, and monitor

Openness – Can only contribute text

Rules – You can enter text in a textbox or view completed texts by browsing or searching.

Authorship – Each participant is the author (or sub-author) of an element of the work as a whole

Timing – You can see your interaction immediately

Interactive technologies – HTML, JavaScript, ASP

Some of these components are open to further investigation, 'Incentive' in particular can be aligned to my concept of 'Interactive Reward' and will be explored later in this chapter.

Rokeby

David Rokeby sets out four interactive models that “represent the interaction between artwork and interactor” (Rokeby 1996:5); 'Navigable Structures', 'The Invention of Media', 'Transforming Mirrors' and 'Automata'.

'Navigable Structures' are interactions that take place through navigation. The structures of these works can be a singular path or a complex network of positions. A defining characteristic of navigable structures is that they present the audience with a series of options or decisions and then display the consequences of these decisions. Within this model itself there are further models that outline “how these paths diverge and recombine” (Rokeby 1996:5) including Hypermedia which has a direct correlation to internet based works.

'The Invention of Media' refers to how the media is used by the artist.

Specifically the positivity of creating limitations within the media that is used.

In this sense the scope for creativity being limited to a defined framework or boundary.

'Transforming Mirrors' are an element of interactive works that explicitly reflect the interactor back as part of the interaction, often in a distorted way. Rokeby gives examples of video pieces that reflect back a computer altered picture of the interactor. He likens the idea of distorted reflections to that of seeing with both eyes. Each eye sees a slightly different image and the brain resolves these viewpoints "into the revelation of depth" (Rokeby 1996:11). Rokeby suggests that these "reflections" of our interaction are combined with our own view, which leads to a similar revelation.

'Automata' are not extensions of the interactor and should be viewed as pieces that work on their own. The interactor is often just another aspect of the environment for the interactive piece. Rokeby mainly gives robotic examples where the robots often try to learn from their environment and are self sustaining. With the Automata model, the interactions are contained within the environment and are not a reflection of the interactor. The piece and the interactor compliment each other often reflecting issues of human behaviour rather than reflecting the identity of the interactor.

Some net art examples of these interactive models are listed below:

Navigable Structures – Any interactive non linear text: “My Boyfriend came back from the war” (Lialina 2006). These pieces create a metaphor or representation of a “space”

The Invention of Media – Anything that allows for creativity within the framework: “Musical Forum” (Herbert 2008), “Monster Land” (Norcott 2007)

Transforming Mirrors - “MyData=MyMondrian” (Yeh 2004)

Automata – “Quark” (Napier 2003), “Piano Migration V” (Hinde and Franco 2008), “Clouds of Clouds” (Leal and Sarmento 2008)

Rokeby’s models are an example of defining characteristics of interactive works that avoid measurement. However, as all the other taxonomies mentioned do imply a dependence on measurement it is useful to further discuss interactive levels.

Levels of Interactivity

Much of what has been discussed so far, with the exception of the Rokeby models (Rokeby 1996), appears to lend itself well to quantification or the application of levels of interactivity. Cornock and Edmonds categorisation of “Dynamic” art systems directly mention that each characteristic incorporates the possibility of the preceding one, thus producing a hierarchy of interactivity from “Dynamic” through “Dynamic Interactive” to “Dynamic Interactive (Varying)” (Candy and Edmonds 2002).

Both Berenguer and Laurel use quantifying language to describe their three characteristics of interaction including “how often a user can interact” (Laurel 1991/1993:20) and “the amount of interaction between the user and the system” (Berenguer 1997).

Whilst not referring to them as levels, it is clear that Klasturp’s breakdown of interactive narratives form a hierarchical structure. Klasturp begins with static text, which are on the lowest interactive level and ends with dynamic texts which are from the highest interactive level.

As mentioned above, Klasturp uses interactive narratives as the basis of her categorisation. The following is a more specific web based interpretation of the interactive levels possible within the Range / Interactivity characteristic of Laurel (Laurel 1991/1993) and Berenguer (Berenguer 1997):

Point and Click – Linear progression through hyperlinks, Random or non linear links – progression through hyperlinks in an unknown sequence

Conversation – Active dialogue with other users, Forums (Synchronous Communication), Chat Rooms (Asynchronous Communication), Blogs

Dynamic Content Change – Page content changes according to clicks, Games Involving clicking and moving.

Content Creation – Content created by user interaction, YouTube,
Wikipedia

There is also a possibility of adding another two levels here, a *Non Interactive* level that could go before Point and Click and a final level *Complete Content Creation*:

Non interactive – It is possible for a site or page to offer no interaction at all. A page that only displays text with no hyperlinks is an example. It could be argued that even this is interactive to some degree, if there are scroll bars for example, or even the backwards and forwards buttons on the browser. However, in this case it is the browser that is interactive and not the piece, only if it was a desire of the piece for you to use the scroll bars or back buttons could you then suggest it is interactive.

Complete Content Creation – This is not necessarily connected to the above as it is not based on individual websites but on interacting with the internet in general. This could include creating and uploading an entire site.

The ‘non interactive’ level mentioned above may not be necessary if the basis of this application is within a model such as the Cornock example. Here, the art systems themselves are split into “static” and “dynamic” (Cornock cited in Graham 1997:39) which implies that the ‘non interactive’ level exists within the

“static” range and all other levels exist within the “dynamic” range. However, if the system contains the possibility of no interaction, such as Shedroff’s “continuum of interactivity” (Shedroff 1994), then it is a relevant inclusion.

Sticking with the Laurel (Laurel 1991/1993) and Berenguer (Berenguer 1997) model, it is useful to consider how their other elements of ‘Frequency / Autonomy’ and ‘Significance / Presence’ may be completed.

Starting with the ‘Frequency / Autonomy’ characteristic, there are several ways to apply a measurement. Firstly an indication of whether the amount of interaction is finite or infinite can be applied. This however, would only give two levels within this characteristic and does not give a good indication of the actual amount of interaction that can take place. Not being able to discriminate against small amounts of finite interaction and very large amounts of finite interaction is of little use. Another possibility is to provide actual numbers for the amount of interaction that can take place. This would involve levels which indicate a number range:

Level 1: 1-5 times

Level 2: 5 -10

Level 3: 11-20

Level 4: 20+

This is also problematic as an exact figure for the number of separate interactions that can take place may not be practicable. Finally, another

possibility is to apply a qualitative assessment on the amount of interaction possible:

Level 1: Low

Level 2: Medium

Level 3: High

This application would rely on a subjective decision to be made as to what constitutes a low, medium or high amount of interaction.

The significance attribute is relatively simple to apply if it refers to how many different media types are present within a piece. For example:

Level 1: 1 type

Level 2: 2 types

Level 3: 3 types

Level 4: 4+ types

In this way there is no bias toward the type of media being used so the significance of a piece that contained only text would be equivalent to a piece that consisted only of video.

A possible amended breakdown of interactive characteristics results in the following:

Frequency / Autonomy (How often the user can interact)

Level 1: 1-5 times

Level 2: 5 -10

Level 3: 11-20

Level 4: 20+

Range / Interaction

Level 1: Point and Click

Level 2: Conversation

Level 3: Dynamic Content Change

Level 4: Content Creation

Significance / Presence (types of media used: text, images, sound or video)

Level 1: 1 type

Level 2: 2 types

Level 3: 3 types

Level 4: 4+ types

A non numerical continuum system, similar to that applied by Shedroff (Shedroff 1994) could also be applied here although ultimately this would amount to a similar result. A decision would still have to be made as to where on the continuum to place a particular piece in the same way that a decision on the appropriate level would have to be made.

Combining all of these levels can give a piece an overall interactive score. All level 1's would mean it is not very interactive at all, and so on. If I plot my own pieces using this scoring system I generate the results seen in table 4.

Table 4 - Interactive Scores for my own practical pieces based on their degree of Frequency, Range and Significance.

	Frequency	Range	Significance	TOTAL
Fun Mining	4	4	2	10
Monstertext	4	4	1	9
Musical Forum	4	4	2	10
Collaborative Book	4	4	2	10

As the table shows, the pieces I have created all achieve high interactive scores, generally due to the 'Frequency' and 'Range' characteristics being of the highest level. The nature of my research implies an obligatory 'Range' score of Level 4, as the main stipulation of the work I am looking at requires users to create their own material.

This highlights potential areas of further research, creating and examining pieces with different levels of Frequency and Significance. Also breaking down the Frequency and Significance attributes into further characteristics has been marked as an area for further exploration.

Ylitalo

As a final thought on the categorisation of interactivity, Jukka Ylitalo (Ylitalo 2000) looks at Human Computer Interaction (HCI) and suggests an alternate analysis of how interaction should be viewed. He identifies interactivity as being made up of the following processes:

Input - Sensing

Processing

Output - Response

(Ylitalo 2000:1)

From this Ylitalo concludes that the term HCI is problematic because it suggests that the computer is the important partner in the interactive relationship. He suggests that the relationship between human and the world of signs is more important, with the computer acting as the interface between human and sign.

This leads to the alternative term Human – Sign Interface (HSI) which he further expands on by saying that:

HSI = Sensing – Processing – Response

Furthermore, sensing can be split into three sub categories:

A – the physical and symbolic *action* of the user

Sc – the *sculptural* aspect of the interface

V – *virtual* metaphor of the action (GUI)

So $S(A+Sc+V)+P+R = HSI$ which “define the meaning of the action that [the] participant executes.” (Ylitalo 2000:2)

This is very much related to the effect stage of the loop of interaction outlined below. Just as the effect stage is concerned with how the interaction of the participant looks to others, Ylitalo expresses the importance of the *meaning* that is evidenced through user interaction.

He further talks about how using a mouse and keyboard render the first two subcategories irrelevant, suggesting that only the V is of importance. So whilst this model may be useful to describe different interactive frameworks, for net art which almost exclusively uses the keyboard and mouse, the sub categories are not relevant.

Ylitalo also cites Rokeby's four models of interactivity (Rokeby 1996) and suggests a fifth, “Storing” (Ylitalo 2000:5). This refers to a work storing information in a database to represent some kind of intellect or learning. It suggests the work has a form of memory that it utilises in the production of material that is used as a response.

Despite talking about the computer being secondary in the interactive process, this model is lacking any reference to the psychological process of the human interactor. It only highlights three physical areas, Sensing, Processing and Response. There is no reference to Cognition or how the user thinks or is influenced by the elements of SPR. However, Ylitalo has provided an alternative view and this is highlighted as a possible avenue of further research into a semiotic⁸⁸ reading of the interactive process.

Interactive Reward

Generally speaking this concept regards interactive reward as a positive outcome to a user's interaction; purchasing a product, finding information or being entertained are all examples of possible positive interactions. The concept of interactive reward is also referred to as "incentive" by Mongiat and Snook in their "Fundamental Components of Interaction" (Mongiat and Snook c2007:2). Berenguer notes that an interactive programme must be interesting; "if it doesn't promote interactivity, there is no programme" (Berenguer 1997). Likewise, Polaine comments that "If they go unrewarded in the first instance, many people walk away" (Polaine 2005:6). The benefits of such a positive interaction contribute to user retention for the website and in the case of net art, could contribute to a user either returning to the piece or viewing other work by the same artist. Robert Coover highlights the positive experience of an internet work when he says of the Shelley Jackson hypertext narrative

⁸⁸ The semiotics of computer interaction is an area of study beyond the scope of this thesis. Some notable publications on this subject are Savaes (Savaes 2000) and Andersen (Andersen 1990)

Patchwork Girl (Jackson 1995) “one never fails to be rewarded” (Coover 1999) and even suggests it is “more compelling” (Coover 1999) than the act of reading a book. Polaine further discusses the idea that if a user “has an unintended unpleasant experience” (Polaine 2005:3) then the piece has failed to engage the user. For net art the emphasis of Polaine on an “unintended unpleasant experience” (Polaine 2005:3) is particular pertinent. As Stallabrass states, a great deal of net art is purposefully created to subvert interactive conventions, “frustrating the expectations of users” (Stallabrass 2004:73) who have become familiar with a particular style of internet interaction. Much of this work is more of a response to convention than a deliberate attempt to generate a negative user experience. However, some net art maintains a purposefully negative stance as part of the aesthetic experience. The net art duo Thomson and Craighead produced such a work in “e-poltergeist” (Thomson and Craighead 2001) which automatically initiates searches and bombards the viewer with popups. The artist Donna Leishman also deliberately tries to subvert the standard interactive interface. She avers that traditional interface design attempts to deliver a rewarding experience for the user and proposes to subvert this common practice (Leishman 2004:1.1). The act of subversion itself, however, should be viewed more as a facet of entertainment within net art. In this sense it becomes part of the interactive experience and could be considered rewarding. According to the magazine .net, 40% of users do not return to a website where they have had a negative experience and 68% of users leave a website if they are unable to locate what they want quickly (.net 2006:125). These statistics suggest that there is some

worth in considering interactive reward when designing any website including a piece of net art.

Interaction Specific to this Project

Through the process of generating data from the practical projects it became clear that there was a specific area of interaction that was being analysed. As outlined in Chapter 1 and Chapter 3, I had developed a simple categorisation of interactivity under the headings 'conscious, semi-conscious and unconscious'. These terms were developed in an attempt to understand how an audience member might perceive and interact with a participative and collaborative artwork; to what extent did the audience appreciate the artistic nature of the piece and how did they understand their own position within that.

Whilst these terms are still adequate in describing how the audience engage with the creative process and have been repositioned as the 'C.S.U. model of Creativity', they suggest a reliance on knowing how the user responds to an artwork.

...whilst the physical action of the viewer upon the artwork may be observed, the mental affect of the artwork upon the viewer may not be observed, and may have to be assumed.

Graham (1997:32)

As Graham suggests, assumptions have to be made about the affect a piece has on audience interactions. When the user interacts with a piece such as “Collaborative Book”, for example, they may understand and be completely aware of the intentions of the piece, the principals of the concept, and the mechanical workings of the programmatic framework; however, this understanding is not necessarily manifested in the outcome of their response to it. When a user enters a word into “Collaborative Book”, only assumptions can be made about their apparent consciousness of the nature of the project. Manovich makes a similar point and suggests that user experience of interactive structures is “one of the most difficult theoretical questions raised by new media” (Manovich 2001:71).

With this in mind it seemed appropriate to focus on how the interaction of an audience member could be viewed in relation to the project, or how an interaction might be seen by future participants. Taking the outcome of the interaction on its own, more informed judgements can be made on how that interaction fits within the framework of the project. For “Collaborative Book” the outcome of an interaction is the word that has been entered and how that relates to the previous entries. An example would be if a user enters the word “once” and then another user writes “upon” next to it, the outcome of the interaction of the second person can be seen to be connected to the state of the piece prior to this (the words entered by previous users). Whether a response is consciously connected to this state is unobtainable (although it may be desirable to know, just not possible in the context of this research). What is obtainable is how this interaction appears in relation to the piece in its

current manifestation (its state as of the time the second person wrote their word). An awareness of the state prior to the participation of the second person enables conclusions to be drawn as to the appearance of that interaction.

As it is not possible to determine the thoughts of the user from the data that has been gathered the above terms are rendered inappropriate. Below is a refinement of these terms in line with the nature of the data generated by this project:

Conscious → **Connected**

Semi-Conscious → **Partially Connected**

Unconscious → **Unconnected**

Specifically focusing on “Collaborative Book” an example of interaction that fits into each of these categories is as follows:

Connected – The word is clearly connected to a previous interaction, for example “upon” being entered after “Once”.

Partially Connected – A word is entered that has some relevance to a previous entry. For example, the word “window” being entered with a one word gap before the words “bright light”. Or a word that has been entered next to another that is unusual but not necessarily nonsensical.

Unconnected – The user enters a word that is not related to any other (this will often occur when entering the first word on a page as there are no other words to connect to)

As stated in Chapter One, this is referred to as the C.P.U. Model of Interaction.

The Loop Interaction

An epiphenomenon that became apparent through the process of analysing these terms was that the interactive process could be broken down into several phases. Taking Collaborative Book as a specific example, a breakdown of the phases within the interactive process would resemble the following:

User types a word which is:

Relative to other responses

Influenced by their thought processes

Word is displayed on screen (Irrespective of the factors above the word has the appearance of being)

Connected

Partially connected

Unconnected

This is made up of actions, 'user types a word' and reactions 'word is displayed on the screen' which relates to the physical aspect of interaction. The remaining parts of the interactive process can be seen as the psychological aspects. The whole interactive loop encompasses physical actions and psychological processes. This is in line with the argument delivered in the previous chapter concerning the psychological aspect of interaction, particularly the notion expressed by Polaine that suggests interaction requires both physical and psychological elements (Polaine 2005).

A more structured sense of this interactive process is given below:

Perception – the physical act of viewing or perceiving the piece

Cognition – processing the information received in the 'perception' stage

Action – the physical action of interacting (typing, mouse moving)

Outcome – the physical outcome of the interaction (display changes, sounds)

Effect – how the outcome is interpreted (in relation to other outcomes / the piece / the framework, or the previous state of the piece)

It can be taken from this that the main area of analytical response to the data collected is placed within the 'Effect' phase of interaction.

Swink presents a similar model to this when analysing the interactive process of playing computer games:

The user has some intent which is expressed to the computer in the form of the user's input. The computer reconciles this input with its own internal model and outputs the results. The user then perceives the changes, thinks about how they compare to the original intent, and formulates a new action, which is expressed to the computer through another input.

(Swink 2009:2)

One marked difference about this model is that it is applicable to every input that triggers a programmatic response (in the case of holding down a key to move an object on screen this could occur many times per second). The time frame for my model of the interactive process is specific to a longer, more determined interactive act. For "Collaborative Book" that would be typing a word and clicking the submit button.

To complete this model of interaction it is useful to develop a phase that leads into the start of the loop. This can be identified as the goals and conditions set up by the environment or framework. For example, in Collaborative Book the conditions and goals are delivered to the user by way of an explanation of what to do. This complete process will be referred to as the 'loop of interaction' (see Figure 44). Specific analysis of the data gained in relation to the 'effect' stage of this model is given in chapter 8.

Identifying the Loop of Interaction is a fundamental aspect of the interactive process and was developed from analysing and creating the taxonomy. It highlights how my taxonomy is housed within what I term the “effect” stage of the loop of interaction and has been noted as a major achievement of this research. Further analysis of this ‘loop of interaction’ is highlighted as an area of additional study and is discussed further in chapter 10.

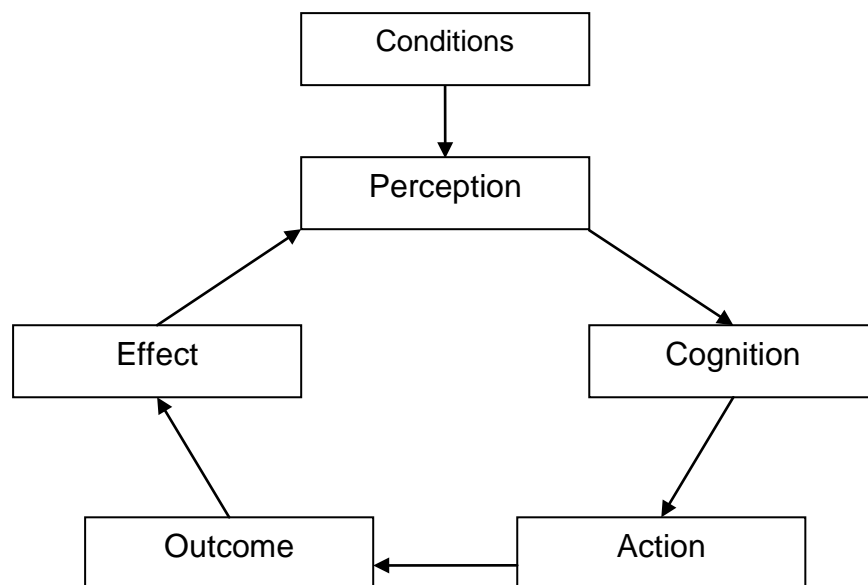


Figure 48: My Own Visualisation of The Loop of Interaction

Conclusion

As can be seen from the above, several different approaches to characterising interactivity and art have been developed.

Some models allow work to be placed within them, characterising or defining specific types of interactive works. Cornock and Edmonds (Cornock and Edmonds 1973), Candy and Edmonds (Candy and Edmonds 2002), Klastrop (Klastrop 2003 b) and Graham's "Conversation Metaphor" (Graham 1997:42-48) all fit into this category and are generally based on a hierarchy of interactivity. Rokeby (Rokeby 1996) also falls into this category although his interactive models are not based on levels of interactivity and are focused on non-hierarchical types of interaction.

Others allow the characteristics of the interactive work itself to be defined, detailing the specific characteristics that an interactive work might have. Laurel (Laurel 1991/1993), Berenguer (Berenguer 1997), Mongiat and Snook (Mongiat and Snook c2007), Graham's graphical representation (Graham 1997:112-114) and Shedroff (Shedroff 1994) all concentrate on this form of analysis.

Whilst there has not been a consensus to how interactivity should be viewed within the arts, similarities between previous taxonomies can be drawn. Particularly concerning the importance of Laurel's "Range" (Laurel 1991/1993:20) and Berenguer's "Interaction" (Berenguer 1997) characteristic. Both Shedroff (Shedroff 1994) and Klastrop (Klastrop 2003b) detail features that can be seen as sub characteristics within the Range / Interaction characteristic. Also, four out of the eight Mongiat and Snook "Fundamental Components of Interaction" (Mongiat and Snook c2007) can be placed within Range / Interaction.

My own attempts at classifying interactivity within art again come from a different perspective. Rather than defining the characteristics of the art itself, I have tried to characterise the *interaction* with the art; how do users interact with net art. This has resulted in the development of the terms Connected Interaction, Partially Connected Interaction and Unconnected Interaction which were a refinement of my previous Conscious, Semi-Conscious and Unconscious terms. These previous terms are still useful in describing how the audience might engage with a creative process but are not so useful in describing how the interaction appears in relation to the art work. Whilst it is currently not practicable to obtain information on psychological reactions that result in interaction, there are certain technologies being developed that may make this a future possibility. For example Gilroy et al (Gilroy et al 2008) have created interactive computer art that attempts to analyse user experience in real time, using video and speech capturing technology, they attempt to analyse the users emotional response and map these onto established psychological models such as Mehrabian's "Pleasure-Arousal-Dominance (PAD) model" (Gilroy et al 2008). This has been highlighted as a potential area of further research.

Through the process of developing the C.P.U. model of interactive categories, it became clear the interactive process could be divided into various stages which led to the development of my 'Loop of Interaction'. It also defined the 'Effect' stage as the specific area within the 'Loop of Interaction' that is being

analysed. Analysis of the remaining stages in the 'Loop of Interaction' has also been marked as a subject of future research.

Chapter 9 will see further examination of these taxonomies by establishing the difference between them and my own C.P.U. model of interaction. My own piece "Collaborative Book" will be mapped onto these categorisation attempts in order to ascertain their usefulness in determining net art specific information.

Chapter 6 - Research Methodology

Introduction

This chapter examines the methodological processes used to realise the main aim of generating a taxonomy of interaction specific to net art. Both quantitative and qualitative data is collected and analysed from the interaction with pieces created by myself in the formulation of a taxonomy based on the previously established notions of Connected, Partially Connected and Unconnected interaction. The shift from a practice led to a practice based approach is discussed, which resulted in a change of methodological viewpoint; in particular issues, surrounding personal artistic practice and how that had to be modified to accommodate a theoretical position in order to be productive.

Objective

To reiterate, the main question of this thesis is how might a taxonomy of interaction be developed that tested the participatory and collaborative nature of net art. Additionally, this would emphasise the process required to produce net art or show how analytical tools may be developed that could test the form and function of net art.

Case studies were considered throughout the early phase of the process, however, time constraints became a major factor in the reasons why they were not included within this research. In particular the practicalities of engaging with third parties in order to facilitate data gathering were considered an inhibiting factor in the process and case studies were dismissed in favour of creating my own practical pieces. This would allow the pieces to be developed with the ability to collect statistical data built into their programmatic structure. The ability to use the piece itself as a method for data collection was fundamental in the process and was always a primary objective of the practical pieces. As an example, the text directly typed by a user for “Collaborative Book” is a primary source of information used in the analysis. This was established as the most important area to test the application of my C.P.U. model of interaction, however, other statistical data would also be collected that could be used to analyse other models such as Nielsen’s “Participation Inequality” (Nielsen 2006a).

Establishing the C.P.U. model of interaction also gave rise to questions surrounding the process of interaction and how it can be split into physical and psychological processes. It was observed that the potential to gauge the psychological response was unobtainable within the structure of this project. As Manovich responds to the question of analysing user experience:

This remains to be one of the most difficult theoretical questions raised
by new media
(Manovich 2001:71)

Whilst it was deemed impossible to make a qualitative judgement on how an audience member may think when interacting, a subjective assessment on the connection between the interaction of the user and the previous interactions in relation to the piece as a whole became the primary objective.

Further questions emerged throughout the research process and practical application of my own pieces. As highlighted in the introduction, assumptions about the nature of net art and the audience of net art had been established. It had been assumed that net art was democratic and had a disparate and active audience that were involved in the artistic process of participatory and collaborative net art. Using the data to test these assumptions, questioning the notion of what net art is and how it is viewed by the public, became a research goal.

This questioning of the initial suppositions coupled with the condition of having to incorporate theory into my artistic practice led to a shift in methodology which is discussed further below.

Due to the small amount of interaction with the pieces themselves, the quantity of data obtained was far smaller than had been expected. Only the “Collaborative Book” piece generated a reasonable amount of data and is therefore the main referent in this chapter.

Methods

Data Collection

There were several options open to me with regard to obtaining the information required to analyse how users interact with net art. My initial intention was to use case studies of already established art works. In order to facilitate this method there would have needed to be a great deal of communication and cooperation from the artists involved in the pieces. Code would have to be written and implemented within possible case studies in order to retrieve the required data. It was decided that, as the focus of this research did not require a specific piece, it would be easier to create my own work that allowed me to incorporate the required code needed to collect data. Using this case study method has been highlighted as a viable option for accompanying future research. In choosing the option of creating my own practical pieces I would have more control over the process, it was therefore concluded that this was the more appropriate direction.

The pieces went online on 01/07/08 and where available for four months before the recording of data stopped on 1/11/08.

Qualitative data

By its very nature, a piece of interactive, participative net art requires the user to enter information, be that text, images, sound and so on. In the case of my

“Collaborative Book” piece, data consists of words inputted by the user, the actual words themselves being regarded as qualitative.

Further qualitative data is obtained through a comments section which facilitates the collection of extra information submitted by the user. The user is free to enter any information they desire but are encouraged to include thoughts on the piece itself and details on how they interacted. This has had little use, however, and is therefore of limited influence in the final analysis.

Quantitative data

From a practical perspective, the easiest method of gathering information involves invisible statistics on the user of the website. A simple method of counting how many users have accessed the piece was developed, including counting the number of times each separate page was viewed. The pieces would intrinsically contain the number of separate interactions that took place.

It is also possible to obtain users IP (Internet Protocol) addresses which would allow me to not only ascertain their geographical location but to also establish user activity. For example, a user could interact with a particular piece giving a different name each time. By analysing the IP addresses of the users I could establish how many times a specific person has interacted with any given piece.

Databases

Two databases were employed to collect data. The first collected information from every visit to the piece and is referred to as the ‘tracking’ database (see Table 5)

Table 5 – Fields used in the ‘tracking’ Database

Tracking Database	
Page	The specific page that was visited.
Referring page	The URL of the previous page (where possible)
IP	The IP address of the user
Date	The date of the visit

The second database contains information specific to the creation and display of the contents of the book. This is updated whenever a user enters a new word or a comment (see Table 6).

Table 6 – Fields for the book database

Book Database	
Word	The word or text submitted
Line position	The position of the word on a line
Line number	The line number of the word on a page
Page number	The page number of the word within the book
Username	An identifying name given by the user
Word Date	The date and time the word was submitted
Book id	The id of the book being used
IP	The IP address of the user
Comment	The text submitted in the comments box
Comment Date	The date of the comment

Data Analysis

The analysis of data is again split into Qualitative and Quantitative forms.

Qualitative Analysis

Qualitative analysis of the data consists of interpretation of the words entered into “Collaborative Book” and the information from the comments box.

The pieces themselves can and do contain their own critical response.

The content of the “Collaborative Book” piece gives us a primary source of analytical data on the interaction of an audience member. Ross notes how this is an intrinsic attribute of net art:

Never before has the ability of the work's critical apparatus been included in the actual work itself...

(Ross 1999)

As mentioned above, this primary source of data is fundamental to the process of developing a taxonomy of interaction, the words being interpreted in order to map their place within my own attempt at categorising interactivity using the C.P.U. model. To aid in this process an extension to the piece was developed that allows the book to be visually played back so that the order and placement of words could be easily observed. This feature is only available to the administrator of the piece and is inaccessible to the viewing public.

The comments box was used infrequently and therefore is only of minor significance in the analytical process, however, it does give some indication of how the piece was received by the audience.

Quantitative Analysis

Analysis of the data itself consists of comparing statistical information generated through viewing and interacting with the piece. An overview of the analysis carried out through the statistical information is summarised below:

- Individual analysis by username. How many words were entered, how many page hits.
- Average amount of words entered per user.
- Single and Multiple word entry.
- Percentages by word. The percentage of the participants that contributed a specific number of words.
- Participation Inequality results

The use of the databases described above allows the data to be cross referenced. For example, collecting the IP address of an individual when they enter a word and also collecting the IP addresses from all page hits allows me to establish how many pages a user visited in relation to the amount of words they entered.

Certain information was not obtained such as age, sex and background.

These may have been useful in determining an overview of who is likely to access net art but was impracticable within the context of this research due to the remote nature of the participants. Establishing net art audience demographics has been highlighted as an area of future research.

Selection of Participants

Several methods were utilised as sources for groups of potential participants, these included:

Friends

A few personal acquaintances and friends were approached as the first phase of participants. This was considered a test phase in order to establish problems and areas that needed to be improved prior to opening the pieces out to a larger audience.

Forums

Forums are web based discussion groups where users can post comments and questions usually on specific topics. The next phase of reaching participants involved using the Loughborough University Post Grad Forum. A message was posted on the forum requesting that other post graduate students aid my research by interacting with the pieces that I had developed.

Mailing Lists

A 'mailing list' is a discussion group where messages can be sent to the entire list of subscribers through email. This method has the advantage of being able to contact a large number of people with one message. Furthermore, it allows me to target individuals who are interested in specific subjects. In this case the lists 'New Media Curating' and 'Spectre' were both utilised to promote my pieces.

Arts websites

This includes sites that promote art and that allow individuals to promote their own work. My pieces were promoted on Rhizome.org which has an 'artbase' feature that allows users to post information and links to their own works. This method is similar to mailing lists in that they usually have a core group of members who view the site regularly.

Social Media

Social media sites such as Facebook.com facilitate an easy and effective way of contacting wider groups of friends and acquaintances that may exist outside of those normally available. This method was indeed the most effective in generating the latest set of data for this research. Whilst reaction to my solicitation did not go 'viral', it was noted the request was passed on to others outside my own circle of facebook friends, therefore rendering social media as the most effective method of communication for me personally.

Other methods of promoting the pieces to potential participants are outlined below:

Direct Contact

This would involve contacting a person directly to ask about the project or to ask them to interact with it. Approaching a specific net artist, for example; requesting that they contribute to my work by participating with a piece and complete a questionnaire about the process.

Search Engines

Appearing in the organic results⁸⁹ within a search engine is one of the main methods of internet promotion. However, to obtain a presence within a search engine is dependent on many factors. The main factor requires that you have many other sites linking to yours which could take a long time to achieve even if other sites were willing to link to yours. Other factors include having the right text on your pages, for example, if the search term “net art” was used and this phrase was absent from the text of your web page then it is unlikely that you will be positioned very high on the search engines for that search term. Ultimately, search engine inclusion is a long term prospect and was not a consideration for this project.

Internet Advertising

This could include banner advertising, Google Ads and email advertising. This idea was dismissed mainly due to the cost of such an endeavour. There is also the potential incongruity of advertising art, whilst some pieces have specifically targeted advertising as a concept (see Bruno 2002), there is no established construct of advertising within net art.

Timeline for Promotion

⁸⁹ Organic search results are the listings on a search engine that are the result of finding sites that are relevant to the search term. These are distinguished from advertising that may also be present on the results page of a search engine. See here for more information on this subject <http://www.techinfoblog.net/what-are-natural-or-organic-search-results-and-paid-search-results/>

An overview of the time line for the deployment of the various tactics employed in the selection of possible participants is outlined below:

01/06/08	Friends
01/07/08	Loughborough University Post Grad forum
29/08/08	New Media Curating mailing list
29/09/08	Spectre mailing list
07/10/08	Rhizome's artbase

Methodology

Methodological Shift

As previously stated this shift is fundamental to the process of how I approached the PhD. It was hugely significant from a personal and practical perspective and is essential to explore further. The initial concept of this project, which comes under the heading of Practice Led, was based on the production of several net art works. These works would be created to specifically analyse the interaction from a participating audience using these works. A continual process would be developed which would consist of disseminating the works for interaction and analysing the interaction to inform further developments for dissemination. In this way, the audience interaction would determine how the project would develop, utilising several pre-defined points where analysis would be undertaken. This cyclical method of

production and feedback would enable the production of a taxonomy of interaction which would also be continually tested through further development of the practical pieces. It was also intended that any practical pieces that were created would be a visualisation or practical manifestation of the development of a taxonomy of interaction, the outcomes of the research being an intrinsic quality of the pieces. Whilst this notion of the content of the pieces being fundamental in the construction of a taxonomy remained, the taxonomy itself is constructed through previous research and evaluated using the practical pieces. Initially, the production of practical pieces was intended to evaluate art on the internet, establishing connections between the public and participatory nature of the interaction with it. Although the artworks were developed, due to the unexpected response that the works received, my own understanding of the methodology necessarily had to change. This also had the effect of changing the perspective of my own practice in relation to the project.

Previous research into the subject had led me to develop a set of assumptions concerning the role of net art within contemporary arts culture. It was assumed that net art was a democratic force with a disparate potential audience and whilst it was not embedded within contemporary arts as a whole, there were a core set of practitioners and theorists that would be part of this audience. Although these assumptions on the audience of net art, the democratic nature of net art, and the position of net art within contemporary arts culture were thought to be true, my own position as a researcher suggested that these notions required testing.

One of the most fundamental issues concerned my position as an artist. The assumption was made that the artistic process for this project would be no different from that of producing art outside of a framework that intended to interrogate a research question. Tensions between my own identity as an artist and the adoption of the new identity of researcher resulted in the questions being asked of my artistic practice. Previously, this had involved the arbitrary creation of subjectively realised works. However, the principle of producing work around a specific and objective research question generated a rift between artist and researcher. Specifically, questions surrounding the artistic integrity and the quality of the pieces being produced were raised. This led to a shift in the development of my own practice which I necessarily had to modify in order to accommodate the additional role of researcher.

Many of the above assumptions that constituted the beginning of the research process were challenged requiring a modification in the approach taken to address these questions. All the above questions concerning my role as a practitioner, the response to the art that was developed, whether what I was producing was art, and the assumed audience, all contributed to a change in methodology from a Practice Led to a Practise Based project. The project was now concerned with the analysis of data from one piece which was tested through a process of production with feedback occurring through the work. It did not involve an analysis of the reception of the work, nor was there a continual feedback and development cycle. The work was continually refined but it was not developed in relation to the content that was being produced.

This can be attributed in part to the lack of audience participation that occurred which resulted in very little immediate feedback. Testing my previously developed notions on interaction became the primary focus, developing them further through the outcomes of the interaction and through other established taxonomies of interaction. The project became a model of pure research through its intent to gain further knowledge of the interaction with net art. Interrogating the question of how a taxonomy might be developed through the results of the practical pieces and questioning previous interactive categorisation became the main component of the project. Whilst it is recognised that using one piece is a relatively small platform for acquiring data, it still performed that operation and conclusions were able to be drawn from the data that was obtained. A project of applied research that uses my developed model against a larger set of data has been highlighted as an area of further study.

Practical Piece Interaction

As mentioned above, one reason that necessitated a shift in methodological approach was the lack of interaction with the pieces that were developed. Only the “Collaborative Book” piece received any significant interaction, “Monstertext” received a handful of contributions whereas “Fun Mining” and “Musical Forum” received none. These results were surprising considering that when “Musical Forum” was first produced it received a large amount of attention from a relatively small group of potential participants.

The reason why someone is compelled to interact is not the subject of my research and therefore I will not give it any in-depth analysis. It does, however, need some consideration. This is particularly true when being faced with a paucity of interaction as was the case from the pieces I have developed. Below are some of the potential reasons that I have suggested are a cause of why the audience would choose not to interact with a piece:

- The look – They simply do not like the way it looks.
- Too complex to interact with – No instructions or the instructions are too complex.
- Too many technical requirements – They may have to install additional components or a new browser to obtain the full impact from the piece
- Artistic quality – The audience consider the work to be of poor quality or just not good enough as a piece of art.
- No other contributions made - Users may not like to be the first to contribute to a work.

Some of these issues are easier to address than others. It is difficult to establish what a 'good' look might be for a specific piece, and it is true that my initial remit for the design of these works was to make them as simple as possible. My intention was to ensure that graphical quality or design did not interfere with the concept and interactive potential of the piece. There is also the problem with getting too involved in the creation of these pieces to the detriment of the research. A great deal of time could be spent on the design

aspect of the work but this would take time away from other research with no assurance that there would be any related increase in interaction.

The complexity issue can depend on your audience to some extent. A novice internet user for example, may consider one piece to be too complex to interact with, whereas an experienced user would consider this a simple task. From my perspective, the pieces were developed to be as simple as possible, only requiring a small amount of interaction. I did receive a comment, however, where one user felt a little confused with the “Collaborative Book” piece due to there not being any published rules. This user was uncertain whether they were doing the ‘correct’ thing when interacting. This comment highlights how some users require, or prefer at least, to be given explicit instructions before interacting. This issue could be resolved easily by introducing an instructions area, even if that area simply said, “Feel free to enter anything you like”.

Depending on the pieces, technical requirements can be a problem. For example, my “Collaborative Book” piece does not fully function on all browsers. Only Firefox and Opera allow users to use the drawing tool. This issue is solvable but it would require time or specialist knowledge to fix. Despite this apparent drawback, there has still been a good amount of interaction with the drawing tool. This either suggests that many of the target audience so far have the correct browser or that they are prepared to install a new browser to use this feature. “Musical Forum” requires Quicktime to function at optimum performance though this is still useable without this extra

plug-in. The lack of interaction with this piece would suggest another reason than technological requirements.

The quality of the piece is subjective and therefore impossible to ascertain with any accuracy. I personally regard all of the pieces except “Musical Forum” as fairly low quality examples of online art. However, “Collaborative Book” has received a fair amount of participation. This could be viewed as a form of peer review, where the quality of the piece is suggested by the amount of interaction or interest in it. However, I would argue that due to the fact that specific audiences were targeted and asked to participate, they are looking for a quick solution to the request. “Collaborative Book” offers a very simple form of interaction compared to the other pieces which are a little more involved. If an audience reached these pieces through different means then the results could be quite different.

Another issue worth mentioning is the problem with an audience member not wanting to be first to participate. I have highlighted this reason mainly due to the fact that this is how I personally would react in a similar situation. If confronted with a choice of pieces to contribute to, then I would be unlikely to choose those with little or no previous participation. I had made an attempt to avoid this problem by adding initial contributions in the hope that this would encourage other users.

Ultimately, in a resource as large as the World Wide Web currently is, generating a model of penetration would always be problematic. Whilst

establishing an audience was always anticipated as a contributing factor in the creation of an interactive and participative online work, the supposition that there was a ready and willing constituency of users resulted in it being considered an issue of minor importance.

The assumptions around audience availability were mostly acquired through the previous success of my “Musical Forum” piece, reasons why it then received zero contributions this time around can only be speculated upon, however, it would seem likely that some or all of the above issues were factors in the final outcome. Likewise, the degree of interaction that occurred with the other individual pieces may also be linked to the list of possible issues raised above. However, to ascertain a resolute position for why a piece remains ignored, particularly when delivered in the same context as other pieces that were not, would require a separate research project.

Literature

Another methodological issue is the convergence of disparate literature that was necessary in order to realise this project. As mentioned in Chapter Two there is little literature pertaining to my specific area of research, it has therefore been necessary to explore a diverse range of topics in order to bring together pertinent literary material.

From an Arts perspective, the small amount of literature on net art has been supplemented by further reading in areas such as computer art (see Chilvers

1999; Malina 1990), digital art (see Paul 2003; Wands 2006; Ward and Cox 1999), and new media art (see Manovich 2001). Interactive and Participatory arts have also been included as has wider theoretical literature from the likes of Benjamin (Benjamin 2005), Barthes (Barthes 1993) and Eco (1989). The subjects of hypertext theory and literature have been broached including texts from Landow (Landow 1994, 1996, 2006), Patterson (2004), Laurel (1991 / 1993) and Slatin (1990). Specific reference to interactivity has come from the broad field of HCI, Shedroff (Shedroff 1994) and Polaine (Polaine 2005) for example.

Further material has come from the area of general internet usage, examples being the “Participation Inequality” theory of Jakob Nielsen (Nielsen 2006a) and web usage statistics. Other sources of reference include the areas of computer game design, computer magazines, websites and art works themselves.

There were two main methods of literature search, direct searching and literature references. Direct searching involved actively seeking material on a specific subject, for example library or internet searches on ‘interactive art’. This would often lead to the next method where references within the literature would be pursued. Coupled with following up on direct references within the text, bibliographies were often consulted in order to locate further related literature.

To locate the relevant threads of information within this broad range of material has been a challenging segment of this project and whilst there is no formal structure or strategy for the collection of literature, the process itself formulates a part of my overall methodology.

Conclusion

The methodology for this project is based around the collection of qualitative data, a fundamental aspect of this process being the intrinsic quality of net art to be able to incorporate its own qualitative data collection. Mapping the collected data onto my C.P.U. model of interaction has been applied, alongside further examination of previous taxonomies through establishing where my own work fits within them. Quantitative data is collected for supporting analysis, establishing statistical information for the practical pieces. The fundamental shift of methodological perspective that occurred due to the testing of initial assumptions has been emphasised. Questions about the genre of net art and my own artistic practice were a defining factor in the necessary shift from a Practice Led to Practice Based project. How the amalgamation of literary sources contributes to an overall methodological process has also been highlighted. The next chapter will detail the developmental process of creating and distributing the practical pieces.

Chapter 7 - Practical Pieces Development

Introduction

As discussed in the previous chapter the development of the practical pieces was not without issues. Having to adjust my own practice to include the objective research question was a challenge and required certain artistic sensibilities to be overcome. Despite the issues, the emphasis in the creation of these pieces was simplicity and ease of use. It was deemed fundamental to the process to have pieces that required little expertise in using computers and would be accessible to as many people as possible. The pieces needed to be easy to understand and interact with.

The ideas for the pieces came from different areas. “Monstertext” was a re-interpretation of “Monsterland” (Norcott 2005), “Musical Forum” was an already established piece created during my MA degree in 2004, “Fun Mining” was based on a common internet gaming practice, and “Collaborative Book” was developed in response to considering a very simple form of interaction (entering a single word).

All of the pieces make use of Microsoft’s ASP technology with data being stored in a Microsoft Access database.

Monstertext

The original “Monsterland” (Norcott 2005), which “Monstertext” is based on, is itself a version of the parlour game ‘Consequences’ where individuals take turns in drawing a section of a ‘Monster’ without seeing the previous parts.

“Monstertext” is also inspired by ‘Micro Fiction’, a form of fiction using very few words⁹⁰.

The piece takes a similar form to “Monsterland” (Norcott 2005) in that to construct a whole piece three individual sections have to be created. First a user would create the beginning, which includes a title for the text and the first section of writing. The website would be updated to indicate that a new text has been started and the next section requires completing. When a user starts the middle section they are given the last ten characters of the first section as a guide. Again, the website is then updated to indicate that the final section requires completion. The last ten characters of the middle section are then displayed to the user who completes the end section and thus the complete text. Each section is limited to 100 characters making the total possible size of the text 300 characters long. The result is a collaborative micro fiction which is now available for anyone to read in its entirety.

⁹⁰ Micro Fiction has no established definition other than a small work of fiction with very few words. The actual amount of words differs and can vary between 50 and 500 depending on the source. See Renshaw (1998) for a good introduction to Micro Fiction.

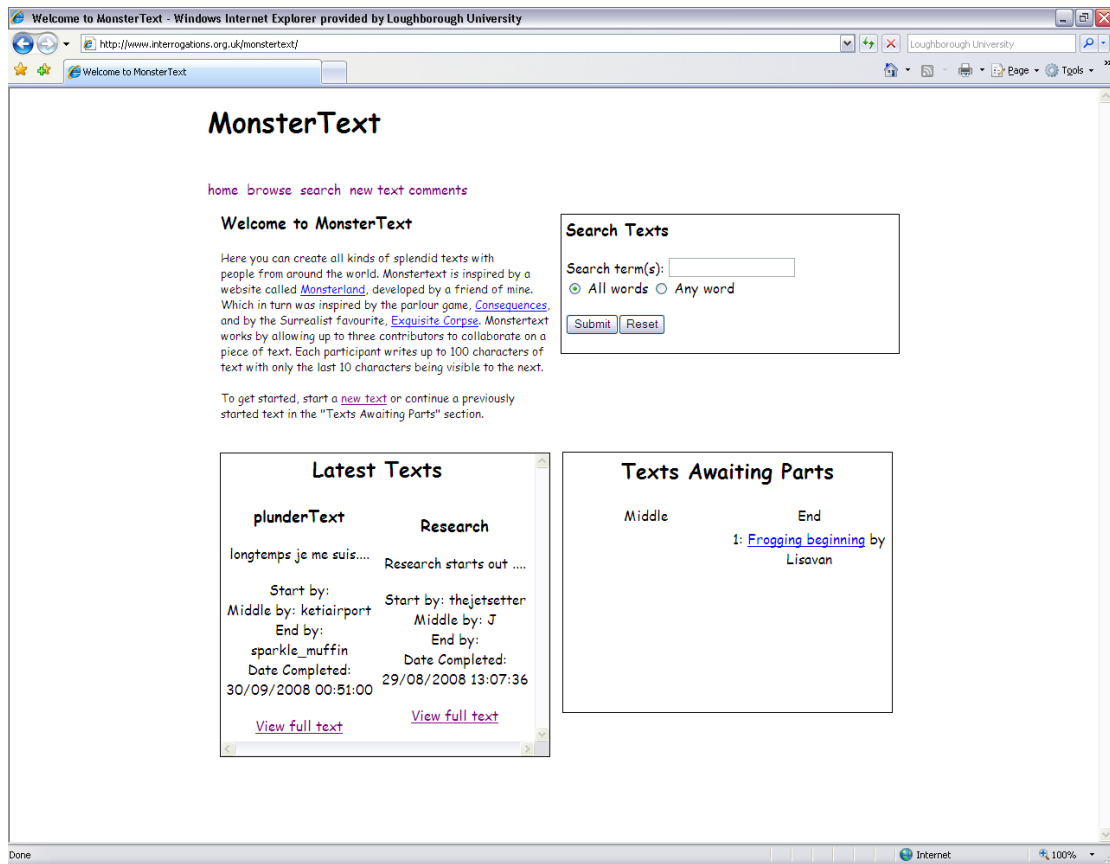


Figure 49: Monstertext Front Page

The piece is set out in the same way as “Monsterland” (Norcott 2005) and has the following links and options:

- Home** A link to the front page of the piece
- Browse** Browse the completed texts alphabetically
- Search** Search the completed texts for a specific word or phrase
- New Text** Start a new Monster Text
- Comments** Allows the user to send a comment on the piece

The front page also displays the latest complete texts and any texts that require additional parts to be completed.

As mentioned above this piece was developed using ASP pages connecting to an Access database. There is also a small amount of JavaScript used to control the amount of characters that can be entered by the user when contributing to a text.

This simple piece was fairly straightforward to develop and only two problems of note affected its progress. Firstly, the common problem of allowing certain characters to be entered in a text box was an issue. This problem consists of issues concerning the use of single or double quotes within the text itself.

Unless some special code is included, when the script tries to write the submitted text to the database it causes an error. This occurs due to the fact that when text is entered into a database it is enclosed in quotes within the code. If the text entered by the user contains quotes the code will read this as the end of the text and will try to execute the rest of the text as if it were code. In order to use quotes within text, the built in functionality is to use two quotes together. Therefore, within my own code I had to include a function that searched the text inputted by the user to replace a single quote with two quotes together.

Another common problem is date formatting. In order for the computer to show the correct date, the date itself has to be formatted and stored in the correct way. For an Access database a date needs to be entered using a Year-Month-Day (yyyy-mm-dd) format, it then displays the date in the correct format depending on the computer settings of the user. Whilst it is possible to

enter dates into the database in other formats, doing this can cause the dates to be displayed on the website in the US format of Month-Day-Year, which can be a source of confusion.

Fun Mining

This piece is based on the idea of 'Gold Mining', a common internet gaming practice where people pay others to build and progress their characters in MMORPGs. It plays on the idea that despite the premise of computer gaming being a leisure time activity and that advancing a character is a by-product of the interactive fun, there are those that consider this to be a chore and would rather pay someone else to do it. Fun Mining removes this concept from the computer game and applies it to everyday life, suggesting that people are too busy to have fun and therefore need others to have that fun for them.

The form of Fun Mining is based on a very simple principal of 'requests' and 'responses'. It allows users to post a request for others to respond to and allows users to respond to these requests. When entering a request the user can input the nature of the request, the reward offered for completing a response to the request, and the name of the person making the request. To respond to a request for fun the user enters a name and has a choice of submitting some text and uploading an image to support their response.

The layout of Fun Mining consists of a menu on the left of the page with the content of each page on the right. The left menu consists of the following options:

- Home** A link that returns the user to the home page
- Submit Request** Allows the user to submit a request
- View Requests** Lists the current fun requests
- View Responses** Lists the number of responses for each request
- Add Response** Allows a user to respond to a request
- Comments** Allows the user to send a comment on the piece

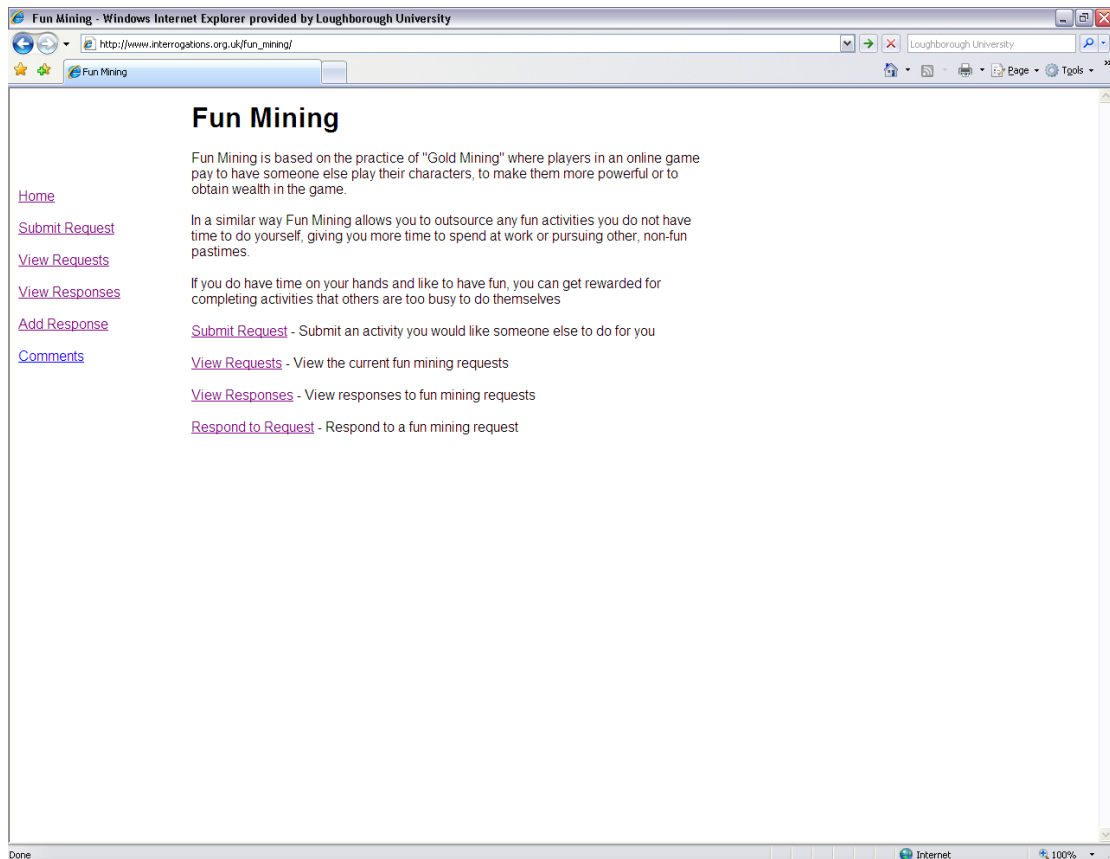


Figure 50: Fun Mining Front Page

This piece is slightly more complex than “Monstertext” due to the inclusion of the ability to upload images. For this functionality I used a pre-written file upload script posted on the web⁹¹.

The above mentioned problems with the date format and quotes used within user submitted text where both issues with this piece and were resolved simultaneously with other pieces.

Musical Forum

Musical Forum was created in 2004 as part of my MA degree and contributed to my previously mentioned assumptions on the audience for net art due to the large amount of interaction that it received. The premise of this piece was to take an internet convention and subvert its use, in this case creating music from an ordinarily text only medium. Due to the many favourable responses I decided to re-use the piece for this project. This piece also contributed to my original research into interactivity, being the subject of my original Unconscious, Semi-Conscious, and Conscious interactive categories. These

⁹¹ The script used for the file upload functionality can be found here

<http://www.asp101.com/articles/jacob/scriptupload.asp>

It is also interesting to note here my own appropriation of other material which has connections with the concept of appropriation and borrowing (see Chapter 3) that is a notable theme within some net art works. Unlike the appropriation of material to make an artistic statement (see 0100101110101101.ORG 1999, Shulgin 1995-1998) however, my own use of this material is purely practical. This also feeds into the authorship debate from the perspective of the author, in this case me, using material already authored by someone else to create a piece that allows others to create their own material. In this sense it could be argued that there is another level of authorship involved here. However, rather than a contained hierarchy of authors as suggested in Chapter 4, there is a chain or network of creation which may lend itself well to analysis within the concept of Actor-Network theory (see Learning-Theories.com 2012, Latour 1998a and Latour 1998b).

categories in turn led to the development of my C.P.U. model of interactive categories which are a major component of this research.

Musical Forum functions in a similar way to a normal online forum where users can post text based responses to certain topics or discussions.

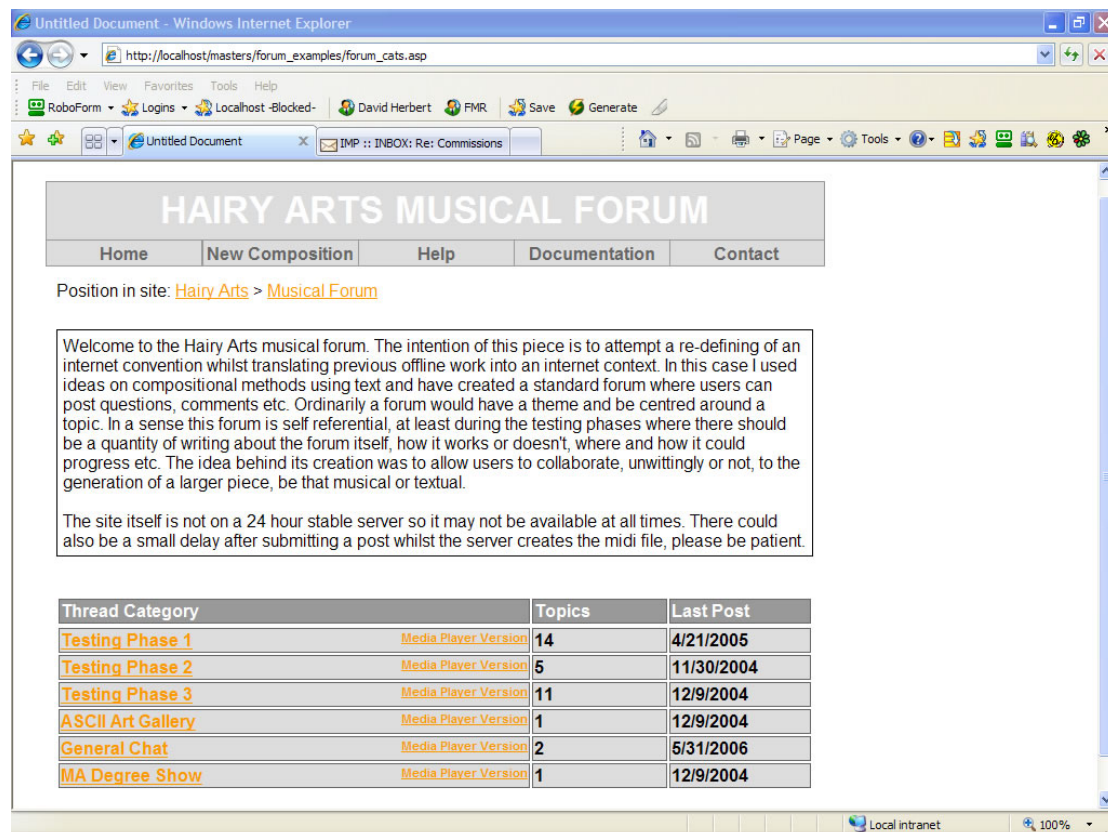


Figure 51: Musical Forum Front Page

However, these text based postings are also translated into music so that users can also 'hear' the posts. The Forum itself is based on a simple forum structure of Categories, Topics, and Replies. Categories are created by the administrator of the Forum which in this case is me. As an example, the version that went out live for this project included the following categories:

- Bugs
- General Chat
- Samples

Within each of these categories users could begin their own 'Topics' which in turn could be replied to, each reply being displayed under the last. Certain other common forum attributes are also present, such as the ability for the administrator to 'lock' categories and topics to prevent further topics and replies being created.

Starting a topic and creating a reply give the user a variety of options as to how this will be interpreted musically. The user can choose a Key, a scale type, an instrument sound, how many octaves and a rhythm. The rhythm can either be a flat Beats per Minute (BPM) resulting in all the notes being the same length, or there is the option of selecting 'Rhythm by Typing'. If 'Rhythm by Typing' is selected a timer is engaged recording the length of time between key presses which is then mapped onto the created notes forming a user generated rhythm.

When viewing the topics and replies the user also has several options available to them to control the playback of the music. The basic controls consist of the following:

Play Concurrently

Play all the selected replies together

Play Sequentially	Play selected replies in order
Stop All	Stop all replies
Rewind All	Rewind all replies to the start
Select All	Add all replies to the Playlist
Deselect All	Remove all replies from the Playlist

By default, the music for each topic is set to play back in order, so that the replies are played from earliest to latest. Each reply can be added to a 'Playlist' giving the user the option to listen only to selected replies. If the 'Play Concurrently' button is used a further option to loop the replies also becomes available, thus the user is able to select which replies continuously play over.

"Musical Forum" has a constant top menu below which the page content is displayed. This menu consists of the following options:

Home	A link to the home page of the piece
New Composition	Allows the user to start a new topic
Help	Displays information on how to use the piece
Contact	Allows the user to contact me

Musical Forum is technically far more complex than any of the other pieces. Developed in ASP with an Access database it also required additional components to be installed on the server. In order to preserve the musical

feedback for future playing, MIDI⁹² music files had to be created that corresponded to each posting on the forum. These files are created using a custom Visual Basic⁹³ component that needs to be installed on the server, therefore, in order to accommodate this technology I had to use my home computer as a server. A large amount of JavaScript was also required in the actual pages to control the playback of the music files when viewing a topic.

Although there were no major problems in getting this piece to function again there were a few small JavaScript errors when using the play controls. The only technical issue that was of concern was the fact that this piece was not constantly available due to being run from my home computer. Whether this contributed to the lack of interaction with “Musical Forum” is uncertain.

Collaborative Book

The premise of “Collaborative Book” was to create the simplest collaborative piece that I could think of. Entering a single word in the generation of a larger work was the result of this. Inspired by Douglas Davis’s “The World’s first Collaborative Sentence” (Davis 1994), where users can enter text into a never ending sentence, “Collaborative Book” allows the user to participate in the creation of a larger work. The drawing tool was included to add a further

⁹² MIDI stands for Musical Instrument Digital Interface and is an industry standard protocol for storing musical information. Rather than storing actual audio signal data, a MIDI file contains information on how to play the music, such as note pitch, note length, tempo and volume. See here for more information on MIDI

[http://www.pcmag.com/encyclopedia_term/0%2C2542%2Ct%3DMIDI&i%3D47014%2C00.as](http://www.pcmag.com/encyclopedia_term/0%2C2542%2Ct%3DMIDI&i%3D47014%2C00.asp)

⁹³ Microsoft’s Visual Basic is a common programming language. More information can be found here: <http://msdn.microsoft.com/en-us/vstudio/hh388568.aspx>

degree of interest in the piece and because of the possibility of later analysing graphical elements of interaction.

The form of “Collaborative Book” was also influenced by the online piece “Four Million Pieces” (Colvin 2006) which involves the collaboration of audience members in creating a larger piece by filling in one of four million squares in a particular colour. Similarly, “Collaborative Book” allows a user to fill in a blank space in a book with a single word. This version of the piece has ten double pages with one hundred spaces on each left hand page giving a possible one thousand words to a book. The right hand page has a drawing tool attached allowing users to contribute to an image on each of the ten double pages. The first page of the piece lists the books available for contribution. For the purposes of this project only one book was made available. A future possibility would be to allow users to create a new book, possibly of varying size. To enter a word into the book, a user must click on a blank space. They will then be presented with a form where they can enter their chosen word and a name if they wish. Hovering over an already submitted word will show the name of the contributor and the date it was submitted. The page can be selected by clicking on the corresponding page number within the ‘select page’ menu. The only other options within this piece are to return to the book list or to leave a comment on the piece.

Again, this piece is developed in ASP with an Access database storing the information for the book. The drawing tool is a fairly complex piece of JavaScript which was obtained from a JavaScript program “CanvasPaint”

(Clay 2006) which I modified to fit within the framework of “Collaborative Book”. This utilises an HTML ‘canvas’ tag⁹⁴ which allows images to be drawn and saved onto the server as PNG⁹⁵ images, these PNG files can also be loaded into a canvas tag and altered.

The issues with inserting quotes within the text and the date format were addressed for this piece concurrently with the other pieces. There is also the potential for problems to occur when using the drawing tool. It is possible that two or more users may be trying to update or create an image at the same time. If this occurs then only the last version will be saved resulting in possible confusion from other users when their contribution has not been saved. A warning to this effect has been included on the page, however, a more elegant solution may be to ‘lock’ the image whilst someone else is drawing so that others are unable use the drawing tool until it becomes available again.

⁹⁴ More information on the canvas tag can be found here: <http://www.w3.org/TR/html5/the-canvas-element.html>

⁹⁵ For more information on the PNG file format see here: http://www.iso.org/iso/catalogue_detail.htm?csnumber=29581

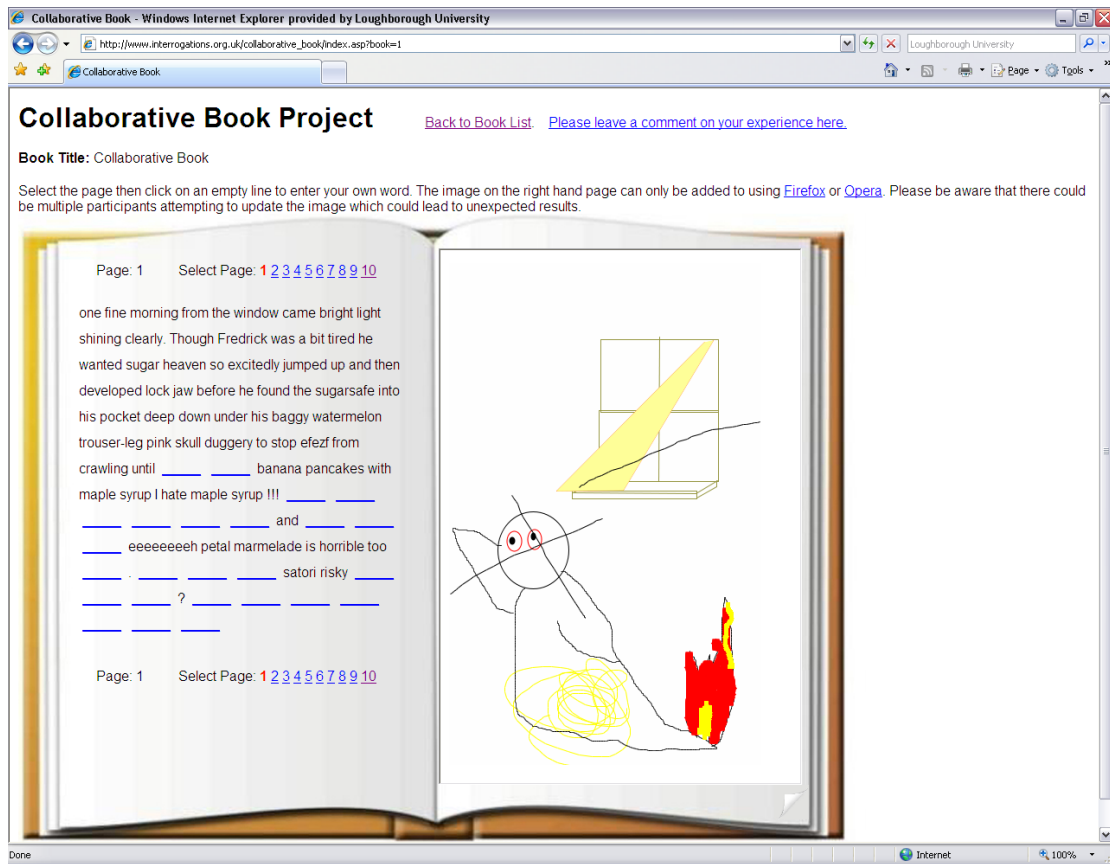


Figure 52: Collaborative Book Page One

Conclusion

To reiterate, the pieces were created with simplicity of use in mind. They were designed to be easy to use and interact with as this was deemed more likely to result in a greater degree of interaction from an audience. Whilst the pieces themselves were successful in their functionality and worked to a satisfactory level, the lack of any substantial interaction with them all but the “Collaborative Book” piece was a surprising outcome. The next chapter analyses the data that was collected from the interaction of users, concentrating mainly on the information gained from the “Collaborative Book” piece.

Chapter 8 - Data Analysis

Introduction

As mentioned in previous chapters an unexpectedly small amount of interaction occurred with the four pieces that were created for this project. The analysis of data has duly been proportionally biased in favour of “Collaborative Book”, which received the greatest response.

The data analysis itself consists of quantitative analysis of the figures obtained through recording user data and qualitative analysis of the outcome of user interaction. Whilst the statistical information provided does not directly affect the research question on the development of a taxonomy of interaction, it does provide some useful information on the degree to which people interact.

It should be noted that due to a malfunction in the process of collecting data through server logs⁹⁶, certain information was not collected until some way into the project. The data analysis that follows has therefore been marked as either ‘B.T.’ (before tracking) or ‘A.T.’ (after tracking) where relevant. [Details on the ethical procedure undertaken in relation to the data collected for this project can be found in Appendix C.](#)

⁹⁶ A Server Log is a text file that is created by the server and updated whenever a request is made to the server, such as viewing a web page. It contains information on the user such as IP address, browser type, time and date of access, URL requested and more.

Collaborative Book – Quantitative Analysis

Collaborative Book went live around 20/07/08 and the tracking mentioned above began on 19/09/08. The B.T. period is therefore between 20/07/08 and 18/09/08, whereas A.T. corresponds to the time period of 19/09/08 to 01/11/08. A further period of data collection occurred between 01/06/12 to 31/10/12 which has been added to the A.T. statistics.

Participants and Contributions

For “Collaborative Book” a ‘contribution’ is defined as a single word entered by a user and a ‘participant’ refers to an individual user who has made a contribution. In total, there were 351 contributions from an estimated 149 separate participants. The number of participants can only be estimated as it is taken directly from the number of unique IP addresses obtained when a user enters a word. This does not necessarily indicate 149 separate users as it is unknown whether multiple participants shared a computer or whether a different computer was utilised by the same person to enter multiple words. Despite the above possibilities, the chance of this occurring is deemed sufficiently small to propose the above approximation of 149 individual users. The total contribution figure can be further split into 73 contributions before tracking and 278 after tracking (see Table 7). Likewise, the participants can be divided into two groups, 34 before tracking and 115 after tracking (see

Table 8).

Table 7 – Number of Contributions for “Collaborative Book”

Overall	B.T.	A.T.
351	73	278

Table 8 - Number of Participants for “Collaborative Book”

Overall	B.T.	A.T.
149	34	115

Viewers and Lurkers

Viewers can be defined as audience members who have accessed the piece, whether ‘Participants’ or ‘Lurkers’, the term ‘Lurkers’ being common internet terminology for internet users that view a website but do not actively participate. After tracking it has been possible to identify 437 unique audience members using the IP address method mentioned above. 115 of these have been identified as participants who have submitted content to the piece leaving 322 individuals who viewed the piece but did not contribute (see Table 9).

Table 9 - Number of Viewers A.T. for “Collaborative Book”

Total	Participants	Lurkers
437	115	322

Page Views

'Page Views' is another accepted internet term used to describe how often a page is viewed within in a website. In this case the number of separate pages accessed by the audience was tracked although this process was not functioning correctly until some way through the project. As a result 73 contributions had already been made before a reliable tracking utility was in place.

After tracking was in place the piece received 3387 page views, this is inclusive of a reduction due to my own viewing and experimentations.

Averages

Averages are calculated based on the statistical information gained through the piece. Table 10 below shows how many users submitted a specific number of words:

Table 10 - No. of Participants compared to Words Submitted for "Collaborative Book"

No. of Participants	No. of Words Entered
75	1
37	2
19	3
5	4
2	5
2	6

1	7
1	8
2	9
1	10
1	11
1	15
1	16
1	18

Average Number of Contributions per Participant

Using the figures from table 10 above, the average number of contributions can be calculated (see Table 11).

Table 11 - Average Number of Contributions per Participant for “Collaborative Book”

Average Form	Contributions
Median	1
Mode	1
Mean	2.4

The Median average is not relevant to this analysis, however, the mode and mean averages are significant.

Mode

The Mode allows us to see that it is most probable that a user will enter 1 word. However, as the figures in table 10 show there is a fairly even split between single word entries (75) and multiple word entries (74)

Mean

Whilst the Mode gives us a probability of whether a participant will enter a single word or make multiple contributions, the Mean average is more useful in determining actual figures (see Table 12).

Table 12 – Average Words per Participant for “Collaborative Book”

	Words	Participants	Mean
Overall	351	149	2.4
B.T.	73	34	2.1
A.T.	278	115	2.4

Table 12 indicates that more words were added by fewer people after hit tracking was started. This is due in part to one contributor submitting 18 words after tracking. To refine these figures the technique of “Mean Trimming” (see Walfish 2006) could be applied, this is where a certain percentage of the highest and lowest results are omitted. Table 13 gives the results when removing the highest and lowest results from the figures.

Table 13 – Average Words per Participant with Mean Trimming for “Collaborative Book”

	Words	Participants	Mean
Overall	332	147	2.2
B.T.	72	33	2.2
A.T.	260	113	2.3

As can be seen by the results shown in table 13, the gap between before and after tracking is considerably smaller after Mean Trimming is taken into consideration.

Average Page Views per Visitor

An average number of page views can be calculated for the period after page view tracking was implemented by dividing the number of page views by the number of viewers. This is presented in table 14.

Table 14 - Average Page Views per Visitor A.T. for “Collaborative Book”

Page Views	Visitors	Mean Average
3387	437	7.7

This can be further split into averages for Participants, those audience members that contributed content, and Lurkers, those that accessed the piece but didn't contribute (see Table 15 and Table 16).

Table 15 – Average Page Views per Participant A.T. for “Collaborative Book”

Page Views	Participants	Mean Average
2361	115	20.5

Table 16 – Average Page Views per Lurker A.T. for “Collaborative Book”

Page Views	Lurkers	Mean Average
1026	322	3.1

As can be seen from these figures, those that did not contribute, probably unsurprisingly, viewed a significantly less number of pages than those that did.

Average Page Views per Contribution

Table 17 details the average page views per contribution after tracking.

Table 17 - Average Page Views per Contribution A.T. for “Collaborative Book”

Page Views	Contributions	Mean Average
3387	278	12.2

It is possible to extrapolate an estimated figure for page views before tracking by using this average and multiplying it by the number of contributions before tracking started. This can then be combined with the number of page views after tracking to give an estimated page view total.

$$12.2 * 73 = 890 \text{ approximate number of page views B.T.}$$

$$3387 + 890 = 4277 \text{ approximate total page views}$$

Participation Inequality

In his article on “Participation Inequality” (Nielsen 2006a), Jakob Nielsen identifies how audience participation with large online communities and websites that require audience contribution often conforms to a ratio of Lurkers, Intermittent Contributors and Heavy Contributors. He gives general

figures of 90%, 9% and 1% respectively. Other sites have an even greater discrepancy between Lurkers and Contributors with Wikipedia having estimated PI figures of 99.8%, 0.2% and 0.003%.

PI results for Collaborative Book

Again, due to tracking issues it is only possible to calculate PI figures using partial figures. Table 18 outlines the split between Participants and Lurkers after tracking.

Table 18 – Percentage of Lurkers and Participants A.T. for “Collaborative Book”

	No. of Viewers	Percentage
Lurkers	322	74
Participants	115	26

Another issue with calculating the PI figures is that there is no specific formula for differentiating between Intermittent and Heavy Contributors. Table 19 shows the percentage of the overall audience that contributed each number of words for “Collaborative Book”.

The Nielsen article does mention that the Wikipedia figure for ‘Heavy Contributors’ was based on the fact that it’s most active members produced over two thirds of the sites content (Nielsen 2006a). If we apply the same logic here and establish a figure based on the Heavy Contributors having

contributed around two thirds of the material for “Collaborative Book” the following figures are obtained:

6.75% of all viewers contributed **59%** of the material (165 out of 278 words)

Table 19 – Percentage of viewers that contributed each number of words A.T. for “Collaborative Book”

No. of Participants	No. of Words	Percentage
57	1	13
28	2	6.4
15	3	3.4
5	4	1.14
2	5	0.45
1	6	0.22
1	7	0.22
1	8	0.22
1	9	0.22
1	11	0.22
1	15	0.22
1	16	0.22
1	18	0.22

The complete PI rule for “Collaborative Book” is therefore 74 – 19 – 7 as shown in table 20 below:

Table 20 – Participation Inequality Results for “Collaborative Book”

Lurkers	74%
Intermittent Contributors	19% (113 out of 278 words = 41%)
Heavy Contributors	7% (165 out of 278 words = 59%)

As can be seen from the PI figures for “Collaborative Book” they do maintain a recognisable ratio similar to the 90 – 9 – 1 rule posited by Nielsen (Nielsen 2006a). These figures are considered to be more positive than the Nielsen

rule with a greater percentage of the audience being active in the process of contributing material to the site. However, the fact that the audience were explicitly invited to contribute would certainly have affected these results.

Further analysis is required to determine more accurate PI figures for a piece like “Collaborative Book” and other pieces of net art. It would be interesting to establish a general PI ratio for collaborative and participative pieces of net art in order to compare this to other forms of participative websites.

Collaborative Book – Qualitative Analysis

This section analyses the content of the piece, taking the words that were submitted by the audience and establishing how these relate to my own categorisation of interactivity. To reiterate, I have developed the following categories of interaction based on how the interaction of an audience member appears to relate to the piece or artistic framework:

Connected - The interaction is directly connected to an element of the piece

Partially Connected – The interaction has some connection with an element of the piece

Unconnected – The interaction has no connection with any previous elements contained within the piece.

Ways people have interacted with Collaborative Book

Taking the above categories, some general observations on how the words appeared to be connected to the piece were made. Each separate interaction would be of one the types listed below:

- word directly connected to a previous / following word to continue a meaningful sentence
- word connected to another word but more than one space apart (within a feasible distance to be in the same sentence)
- word connected to a previous / following word to continue a sentence (not nonsense but not entirely correct)
- word connected to another word but more than one space apart (far enough apart to not be in the same sentence)
- non connected word separate from others

- word not connected to a previous / following word to continue a sentence (the words do not connect in any way)

Once these connection types were established they could then be placed within one of the categories, in this case, each pair of observations fits into a specific category. The first two are Connected the next Partially Connected and the last two observations are placed within the Unconnected category.

A specific response to the C.P.U. model in relation to “Collaborative Book” can be seen below:

Connected – The word is clearly connected to a previous interaction, for example, the word “window” being entered with a one word gap before “bright light”. Another example would be if it is clearly connected to the piece or framework, for example, entering the word “end” as the last word.

Partially Connected – A word is entered that has some relevance to a previous entry such as “lemon” entered when the only other word on the page is “refreshing” or a word that has been entered next to another that is unusual but not necessarily nonsensical.

Unconnected – The user enters a word that is not related to any other, either next to another word or separate from other words

Joined, Near, Far

As a consequence of establishing examples for each of the categories, it also appears that it is possible to separate them further by differentiating between

words that are near to others and those that are not. Each category has examples that can occupy different 'placement' states. This reveals three types of placement within each category; Joined, Near and Far. The complete model now resembling the following:

Unconnected

Joined

Near

Far

Partially Connected

Joined

Near

Far

Connected

Joined

Near

Far

A summary of how many words fall into each category is presented in table 21.

Table 21 - Distribution of Words within Categories and Placements for "Collaborative Book"

	Joined	Near	Far	Total
Unconnected	6	17	110	133
Partially Connected	34	9	5	48
Connected	168	3	2	173
Total	208	29	117	354

It is possible that some words may have multiple placements within this model, hence the total of 354 when there are only 351 words. For example, when the word “porthole” was submitted, it was not near any other words on the page but the word “window” was on the page. This results in there being two possible outcomes, an Unconnected Far if it is deemed that the word “window” is not connected or a Partially Connected Far if the word “window” is considered a reasonable influence. This highlights how an element of subjectivity is almost certain to occur if applying this model. Whilst most words will conform to a clear category and placement, some will be prone to less obvious placing.

Analysis of this sort does reveal that there are a greater proportion of Joined word placements which means there is a propensity to interact with the piece in a way that appears to be in keeping with the premise.

How useful this examination would be when applied to other works of net art is subject to conjecture and is therefore highlighted as an area of further research.

User Comments

There were 11 user comments in total which are published in Appendix B. Several comments were made regarding the usability of the piece, either regarding suggestions on how to improve the entry method for the words or relating to the drawing tool. As highlighted earlier in Chapter 6 one comment

was made regarding the 'rules' to the piece, the user "wasn't sure what was expected/if there were 'rules'". Whilst the comments were not directly useful in the analysis of this work, they do point to possible improvements that may have an effect on the amount of contributions.

Other Pieces

Whilst there has not been enough data or interactive outcome gained from the other pieces to create a substantial analytical reaction, a summation of the data that has been gathered is given below along with a hypothesised reaction to my Connected, Partially Connected and Unconnected model.

Musical Forum

Statistics

Musical Forum received no contributions and only 9 page views from 7 separate viewers (see Table 22).

Table 22 - Musical Forum Statistics

Page Views	9
Participants	0
Contributions	0
Viewers	7

C.P.U. Interactive Model Examples

Connected

- A participant replies textually to a thread as a direct continuation of the conversation.
- The reply is in a genuine attempt to make collaborative music.

Partially Connected

- A participant creates a thread for themselves. They reply in a coherent way to their own threads but do not join in with others.

Unconnected

- A participant replies in an unconnected way to a previous message.
- The reply makes no attempt to contribute musically to the thread.

Monstertext

Statistics

Monstertext was the second most participated with piece receiving 8 separate contributions recorded between 20/07/08 and 01/11/08. Although it is not verifiable, each contribution appears to be from a separate user. 4 of these

contributions were made before tracking and 4 after tracking. After tracking was implemented, 90 page views and 37 separate users were recorded between 19/09/08 and 01/11/08. This gives a total of 33 Lurkers and 4 contributors. These figures are displayed in table 23.

Table 23 - Monstertext Statistics

Participants Overall	8
Contributions Overall	8
Page Views A.T.	90
Users A.T.	37
Lurkers A.T.	33
Participants A.T.	4
Contributions A.T.	4

C.P.U. Interactive Model Examples

Connected

- A participant replies textually to a contribution in a way that tries to continue the theme either through following the previous characters or relating to the title of the text.

Partially Connected

- A text is created and completed fully by a participant so they complete the text properly in a connected way but do not connect with the theme of creating a collaborative text.

- A contribution may be made that has some relevance to the previous text or title but is not immediately obvious as being directly connected.

Unconnected

- A response is made to a text that is completely unrelated to the characters they see or the title of the text.
- A text is created from random characters or words that are essentially nonsensical.

Fun Mining

Statistics

Statistics for Fun Mining were recorded between 17/09/2008 and 01/02/2009. During this time the piece received 299 page views in total, 20 of which came from the only participant. There were 98 separate users based on individual IP addresses which can be split into 97 Lurkers and 1 Participant. The sole participant contributed 2 elements of material, 1 response and 1 request. This information is compiled in table 24.

Table 24 - Fun Mining Statistics

Page Views	299
Users	98

Participants	1
Lurkers	97
Contributions	2
Participant's Page Views	20

C.P.U. Interactive Model Examples

Connected

- A response is given to a request that is directly related to the request. For example, the “find me a Wii” request is responded to by uploading an image and link.
- An obvious and achievable request is made that fits in with the theme of the piece, for example “play with the collaborative book piece”.

Partially Connected

- A response may be given but it is not entirely related or exactly what the request asked for.
- A request is made that doesn't make too much sense such as “take off your pie”. It is a request but not fully comprehensible.
- The user may make and complete a request and response entirely by themselves thus avoiding the collaborative theme.

Unconnected

- A response is made that is unrelated to the request. For example, uploading a picture of a Wii for the request “play with collaborative book”.
- A request is submitted but it is not actually a request, for example, submitting “hello” as a request.

Conclusion

The Quantitative analysis provided here is useful in providing facts and figures for my pieces. It can be important to know how many people have accessed a piece and what percentage of the audience are active members. This can highlight areas that require attention or suggest the degree to which a piece is accessible or inaccessible. Whilst tracking statistics in this way may seem a little ‘commercial’ it is relatively easy to analyse server logs with software specifically built to provide statistical information. However, analysing server logs in this way is not entirely accurate and cannot provide more detailed information on how the user interacted (see Groves 2007).

The Qualitative analysis here is important in establishing how the interaction with my pieces fits into the established C.P.U. interactive model. It remains to be observed whether this model is relevant to other net art works but it has identified certain patterns of user interaction. The development of this model has also been crucial in the creation of the previously mentioned ‘loop of interaction’ and is a fundamental component of this loop.

Chapter 9 – Outcomes

Introduction

Whilst the small amount of data collected was problematic in developing a complete and accurate overview of the interactive process, this chapter highlights how this data was sufficient and useful in developing a taxonomy that can be seen as a starting point for future research into this area.

Identifying the position of the analysis within previously established categories and characterisations of interactivity is essential in understanding how the outcomes of this project can be further utilised. The PI (Nielsen 2006a) results and other interesting findings are also discussed along with the possible expansion of the taxonomy based on the joined, near and far placements within each of the categories in the C.P.U. model.

Finally, the question of how people view or are using net art is discussed, focusing on how the analysis of the data can suggest a difference in use despite not being able to specify the nature of this usage.

How does my taxonomy compare to other theories and methods of categorisation?

As discussed briefly in the Characteristics of Interactivity Chapter (Chapter 5), attempts to categorise interaction are either suggestive of a type or level of interactivity that a work can be placed within, or they dissect the characteristics of interactivity or interactive works, often suggesting that individual works are a combination of a series of measurable characteristics. This forms two distinct groups of theorists, those that have developed 'Interactive Categories' and those that have defined 'Interactive Characteristics'. To establish the difference between my own analyses of interaction, a brief overview of how "Collaborative Book" is positioned within these groups follows.

Interactive Categories

Cornock and Edmonds (Cornock and Edmonds 1973), Klastrop (Klastrop 2003b), Graham's conversation metaphor (Graham 1997:42-48) and Rokeby (Rokeby 1996) all fall within the former group, developing a series of categories or types of interactive experience that a piece of art can be defined as. Table 25 shows how "Collaborative Book" fits within these categorisations of interactive experiences.

Table 25 - How Collaborative Book fits within established interactive categories

Author	Category
Cornock and Edmonds	Dynamic Interactive
Klastrop	Dynamic texts
Rokeby	The Invention of Media
Graham	Hosted Chatline

With the cases outlined above it is simply a matter of deciding in which category to place a particular piece based on the descriptions given of each category.

Interactive Characteristics

The latter group of theorists who attempt to divide interactivity into various characteristics include Laurel (Laurel 1991/1993), Berenguer (Berenguer 1997), Mongiat and Snook (Mongiat and Snook c2007), Graham's graphical representation (Graham 1997:112-114) and Shedroff (Shedroff 1994). Each of these require that an individual piece be broken down into several quantifiable characteristics, an attempt to do this with "Collaborative Book" follows.

Laurel and Berenguer

Neither Laurel (Laurel 1991/1993) nor Berenguer (Berenguer 1997) actually give a breakdown of how their characteristics might be constructed. In Chapter five I had outlined a possible level structure for these characteristics which enabled a score to given for individual pieces. This is reproduced here for "Collaborative Book" in table 26.

Table 26 - How Collaborative Book rates within the characteristics of Laurel and Berenguer

Characteristic	Degree
Frequency / Autonomy	4 (High)
Range / Interaction	4 (High)
Significance / Presence	2 (Medium)

Shedroff

Shedroff details what he calls the “continuum of interactivity” (Shedroff 1994) which can be divided into several “spectrums”. I have outlined my own interpretation of where “Collaborative Book” fits along each of the spectrums within Shedroff’s continuum of interactivity in table 27. Again this requires a subjective decision as Shedroff gives no examples of what could be considered a large or small degree within each spectrum.

Table 27 - How Collaborative Book measures within Shedroff's continuum of interactivity

Characteristic	Degree
Feedback	Medium
Control	Medium
Creativity	High
Productivity	Medium
Communications	High
Adaptivity	Low

Graham (Graphical Representation)

Graham’s graphical representation of an interactive work takes three variables, ‘artist control’, ‘user control’ and ‘between user control’ which are

mapped on a graph over time. A visualisation of the characteristics of a specific piece of interactive work can then be produced (see Figure 49). As Graham says of this method “The lines of the graph are very rough subjective ‘rules of thumb’” (Graham 1997:112), there are therefore no specific rules as to what constitutes a high level of control.

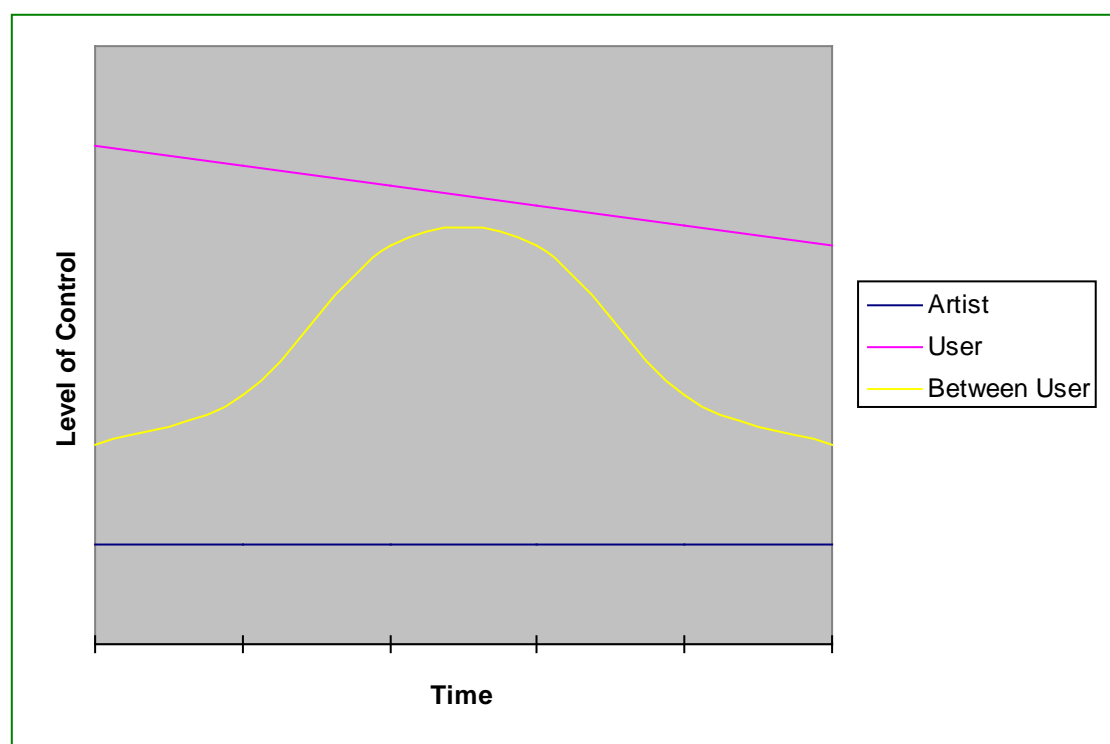


Figure 53: Graphical Representation of Collaborative Book

Mongiati and Snook

The Fundamental Components of Interaction by Mongiati and Snook (Mongiati and Snook c2007) define some considerations that could be taken into account when creating participatory art works. Table 28 outlines the FCol for

“Collaborative Book”.

Table 28 - How Collaborative Book fits within the FCol of Mongiat and Snook

Component	Description
Invitation	Users are instructed on what to do
Incentive	Seeing your word / image in relation to the framework Others contributing Seeing completed book
Contact	Computer; including mouse, keyboard, and monitor
Openness	Can contribute text and draw an image
Rules	Users can enter text in a textbox or add to an image using a drawing tool. It is also possible to view other pages
Authorship	Each participant is the author of an element of the work as a whole
Timing	Results of any interaction can be seen immediately
Interactive technologies	HTML, JavaScript, ASP

As previously mentioned, these appear to be considerations rather than characteristics or components of interactive works.

My Taxonomy

As can be seen from the interpretations of how “Collaborative Book” fits within previous attempts at categorising interactivity, none of them require an interpretation of the actual interaction that occurs. By highlighting how

“Collaborative Book” relates to these previous attempts, it is possible to identify the differing perspective employed in the development of my own taxonomy.

I am not defining a category of art or the characteristics of the art but rather the characteristics of the interaction with the art. The focus of my taxonomy through the C.P.U. model is on how the interaction itself relates to the piece. It describes where the interaction fits within the framework of the piece and emphasises the effect of the interaction on the state of the art work.

The nature of interactive art seems to be well covered by these previous taxonomies. It is possible to position most works of art somewhere within the ‘Interactive Categories’ and to establish the extent to which a piece exhibits any of the ‘Interactive Characteristics’ delivered above. It is intended, therefore, that the formulation of my taxonomy will provide a platform from which to develop further investigation into the categorisation of interaction, specifically with net art.

Strengths and Weaknesses of the data collected

As briefly mentioned in the previous chapter (Chapter 8), collecting data can reveal some statistical information which is of limited use. Furthermore, analysing qualitative data is time consuming and often subjective. The actual data itself has an element of weakness due to the small amount that was

gathered which is therefore not adequately representative of net art in general.

However, considering the exploratory nature of this project, the data gathered has been sufficient in generating a representation of the kinds of interaction that can occur within a work of net art. As stated above, this proposes a reasonable starting position to enable further enquiry into this subject.

Analysis also revealed issues on “Participation Inequality” (see Nielsen 2006a), possible expansion of my C.P.U. model of interaction, and how net art is used, all of which are discussed below.

Participation Inequality

The analysis of the data did reveal that the PI figures of 74 – 19 – 7 for “Collaborative Book” were somewhat higher than those reported by Nielsen where figures of 90 – 9 – 1 are deemed average (Nielsen 2006a). The reason for this, however, could be due to the direct nature of the request. There was a deliberate attempt by myself to target specific groups of users with the aim of soliciting help for my research. On the other hand, it could be argued that a greater response would have been expected from such a direct appeal. Consequently, the results are inconclusive and certainly require further investigation to ascertain whether net art PI figures are distinct from other commercial websites. Establishing more accurate PI results for works of interactive net art are considered an area for future research.

Expansion of the C.P.U. model

Including the 'placement' entities as an expansion of the C.P.U. model was primarily specific to "Collaborative Book". Whilst this may not directly apply to other pieces in its current state it is possible to observe similarities in other pieces. This may be better interpreted as degrees within the individual categories of the C.P.U. model. Rather than attributing a Near, Joined or Far label to an interaction, an identifier that establishes the *degree* of Connected, Partially Connected or Unconnected may be more appropriate.

Again the interpretation of the extent to which an interaction belongs to any of these categories is subjective; however, as was the case with establishing the placement of the interactions with "Collaborative Book", this seldom posed a problem. Despite there being no established criteria for determining the degree to which an interaction fits within a category, additions of this sort could lead to the formulation of a tighter more accurate categorisation of interaction.

How are people using net art?

The way in which an audience viewed net art was always a consideration with this project. One of the initial assumptions was that there was a large potential audience whose constituency would be varied. This variation posed the question as to whether audiences from a non arts background viewed and

interacted with net art as a piece of art. The potential of an audience to view net art as a game, a puzzle, a creative act or simply an interactive distraction was an area of consideration. Whilst the analysis of the data gathered may not produce a definitive answer to this question, it perhaps does corroborate the speculation that users view net art in different ways.

Looking at the outcomes of the data for “Collaborative Book” it can be seen, for example, that the interaction is fairly evenly split between ‘connected interaction’ and ‘unconnected interaction’. There is also a marked difference between the amount of words being entered. Whilst most entered one word others engaged with the piece at another level entering multiple words with one participant submitting eighteen separate interactions. This of course does not differentiate between using the piece as either a toy or game compared to interacting with it as a serious piece of art, however, it does imply a difference. Regardless of the inability to specify exactly how the audience are engaging with the piece, analysis does show that people are engaging with the piece in different ways.

Despite not knowing exactly how the audience were *using* “Collaborative Book” the analysis of data shows that the piece was indeed being used as intended. The amount of ‘Connected’ words and the lack of ‘Unconnected Joined’ words indicate that many contributions made sense in an attempt to build a collaborative text. There were very few interactions that could be viewed as not working with the state of the piece prior to interacting.

Whilst I can see from the data that many users are attempting to use “Collaborative Book” in the way that it would appear it should be used, it is not possible to tell how people view the work itself. The question still remains as to whether an audience see their interaction as a serious attempt at creating collaborative literature or whether it is simply an interactive distraction. This can be seen as an area of future research which is connected to the C.S.U. model of creativity discussed previously.

Conclusion

As can be seen from the above, there are many examples of interactive classification, with categorisation of art works and characterisation of interactivity both being well represented. My own taxonomic attempt aims to categorise the interaction itself, detailing how a user may interact with a piece of participatory and collaborative online art. The development of the C.P.U. model of interaction is intended to form a starting point for research into this matter.

The data itself was scarce, however, analysis has identified several areas of potential research. Further investigation of Participation Inequality (Nielsen 2006a) to ascertain the level of participation within the audience of net art is one area to explore further. Analysis has also highlighted a starting point for the development of my own C.P.U. model of interaction with the potential to include a measurement of the degrees of each category. Determining a clearer idea of how net art is viewed by its audience is also a possible

direction. This is connected to and could possibly incorporate my C.S.U. model of creativity.

It is important to reiterate that whilst the data set for this project was not what was expected, this shouldn't belittle the work undertaken. Ultimately, the amount of interaction that occurred with the pieces developed was an idiosyncrasy of the project and should not be viewed in terms of success or failure. There is a danger that the small amount of interaction be viewed as detrimental in terms of generating enough data to support a taxonomy. Whilst much effort was made to inform people of the project and to get them to interact, the possibility would exist that the project would become too focused on internet marketing. Therefore a balance between promoting the practical pieces and allowing a natural flow of interaction from the users needed to be maintained. It is understood that a larger amount of data would be beneficial to the testing of the hypothesis and resulting outcomes and this has been highlighted as an area of further investigation.

Chapter 10 - Conclusions

Hypothesis

The initial hypothesis of this thesis was to argue that there is a specific set of interactive responses to participatory and collaborative net art. Through the act of testing this hypothesis several distinct but connected threads of research became apparent. These included the re-examination of my previously established C.S.U. model of interactivity, which in turn led to the development of the C.P.U. model of interaction and the repositioned C.S.U. model of creativity. The examination of these models also led to the construction of the 'loop of interaction' and led to the emphasis of analysis being targeted to the 'Effect' stage of this loop.

Several practical net art pieces were created to test this hypothesis with the main test case being "Collaborative Book", due to this receiving the greatest quantity of feedback from the audience. The process of creating these practical pieces constituted one of the biggest challenges to this project by contesting previous notions of artistic practice through the inclusion of a theoretical and academic element. This coupled with further assumptions that were made regarding the position of net art and its audience caused a necessary shift in the methodological structure of the project. Whilst this shift was problematic from the perspective of being unexpected, it was ultimately overcome and became a component of the research itself.

Thesis overview

A degree of contextual research began this project starting with a review of the literature and debates surrounding net art detailed in Chapter 2 and a discussion of net art definitions and relationships to other art forms outlined in Chapter 3. Further definitions and clarifications on interactivity, participation and the net art audience were given in chapter 4, establishing the importance of these areas as fundamental constituents of this project. The discussion on interactivity was developed in chapter 5, detailing previous attempts at the categorisation of interactivity, especially within the arts. Chapter 6 outlined my research methodology detailing the shift between a practice based and practice led structure. The process of developing the practical pieces used for this project is delivered in chapter 7, how they were developed and the reasoning behind their conception is discussed along with explanations of the technical framework within which they were created. The data gained through the practical pieces is analysed in chapter 8 using both quantitative and qualitative methods. Quantitative analysis sees general usage statistics and averages being calculated whilst the qualitative data is interpreted in relation to the hypothesised C.P.U. model of interaction. The research outcomes are discussed in Chapter 9 where the C.P.U. model of interactivity is compared to some of the previous interactive taxonomies. Further discussion also includes the possibility of expanding my C.P.U. model and contemplating the relationship between net art and audience.

Major Achievements

Two fundamental and connected achievements have been observed through this research. Formulation of the C.P.U. model of interaction that establishes how interactivity with net art may be categorised in relation to the art work itself is considered the primary achievement. This in turn led to the development of my 'Loop of Interaction' that highlights the specific area of the interactive process that the C.P.U. taxonomy is concerned with.

C.P.U. Model of Interaction

The C.P.U. model of interaction refers to how the interaction appears in relation to the piece or framework. I have suggested that an element of interaction is connected, partially connected or unconnected to previous elements or to the premise or theme of the piece itself. Data analysis of my "Collaborative Book" piece has shown that user interaction does fit into these categories specified in the C.P.U. model.

The Loop of Interaction

Through the process of analysing my previously established C.S.U. model, it became apparent that the methods employed to collect data from the practical pieces rendered this model inappropriate in describing the process of interaction. Rather than establishing the thought processes of the user as they

interacted, the data could only ascertain how this interaction looked in relation to the artistic framework. Realising that there were therefore at least two elements to interaction led to the construction of the 'Loop of Interaction' which highlighted five separate stages to the interactive process. Developing this loop enabled the specific area of the C.P.U. model to be identified and is essential in understanding how the C.P.U. model occupies the 'Effect' stage of the loop.

Minor Achievements

Whilst the C.P.U. model of interactivity and the connected 'Loop of Interaction' are considered the main achievements of this research, several other minor achievements have been highlighted as important developments.

C.S.U. model of creativity

As mentioned above my initial C.S.U. model of interaction has been transposed to refer to the creativity of the user. This model now refers to the creative involvement of an audience member with a participatory artwork, categorising the level of consciousness the audience member has of the artistic or creative premise. It is therefore now labelled the 'C.S.U. Model of Creativity'.

Unconscious Collaboration

'Unconscious Collaboration' is my term for the act of contributing material to an online work. This term was developed to differentiate the act from simply participating by elevating the contributor to a collaborator of sorts. Although the audience contribute ideas and material to the framework they are unconscious of the original concept. An individual audience member does not have the same creative involvement expected through the use of the word 'collaborator'.

Levels of Authorship

Levels of authorship or the 'sub-author' model is where authorship status is granted to participants within a collaborative piece. The author of the concept or framework is considered the 'primary author' whilst contributors to the piece have the title of 'sub-author'. Depending on the piece it is possible to have various levels of 'sub-author', each creative step away from the initial concept seeing a reduction in the emphasis as author.

Inter and Outer Creation

'Inter creation' is a term coined to refer to material created by a 'sub-author' through the act of 'Unconscious Collaboration'. It describes creative content made possible through an artistic framework or work of art that is dependent

on the material that is created. The material generated through a piece is considered 'inter creation' and is fundamental to the perpetuation of the piece as a whole (see Deck 2001; Norcott 2007).

'Outer creation' was necessarily coined as an antithesis to 'inter creation' and refers to material created within a software tool or work of art where the material is intended to be removed from that tool and can be done so easily without changing the context of the created material. Likewise, material produced with a piece of art that does not require the results to form part of the piece is also considered 'outer creation' (see Yeh 2004).

Significance of these Achievements

Minor Achievements

The minor achievements are mainly terms that have been coined to help define and shape the major achievements. However, they all have the potential of being removed from this specific context to be utilised elsewhere.

The C.S.U. model of creativity has implications for categorising how a user behaves when interacting with a collaborative or participatory work. This forms part of the bigger picture of interaction and may facilitate further understanding of why an audience member interacts in a certain way.

The term 'Unconscious Collaboration' is useful in describing this relatively new phenomenon allowing users to create artistic material within a framework created by an artist. There are examples of interactive and participatory artworks that predate the internet, as discussed in Chapter 4 movements such as Dada, Happenings and Mail Art all exhibit pieces that incorporate interaction and participation. However, the internet consists of a relatively simple framework within which to create pieces that allow the user to contribute artistic material. As a result pieces that integrate this method of creation are now ubiquitous within net art.

The concept of the 'sub-author' model enters the general authorship debate in a somewhat consolatory position. Rather than suggesting a "collapsing" (Ross 1999) or "implosion" (Stalbaum 1998) of the roles of author and audience, this model takes up a middle ground that recognises the position of a user as an author but attributes them with the title of 'sub-author' maintaining the traditional 'primary author' structure. This is more in line with the views of Rokeby and Polaine who recognise that interactivity causes a "shift in that authority" (Rokeby 1996) which "changes the traditional relationship of author and audience" (Polaine 2005:2). However, the notion of an author is always maintained as Rokeby further states "interactive artists reserve a privileged position for themselves" (Rokeby 1996).

'Inter Creation' and 'Outer Creation' are useful terms that allow creative material to be classified and defined so as to be able to ascertain the context

they were created in. This has implications for net art as well as other forms of digital creative practice.

Major Achievements

The significance of the two major areas of research is more influential. The development of a 'Loop of Interaction', whilst similar to the interactive process of playing computer games discussed by Swink (Swink 2009:2), does differ in its specific relation to interactive art works. There is also a lack of analysis of what I have termed the 'Effect' phase of the loop of interaction, identifying the loop will open up the potential for further analysis of this aspect of interaction.

Currently the focus of internet specific HCI is on how to make interaction easier from a design perspective and is consequently mainly concerned with the usability of websites. Most analysis is around the 'Action' phase with many tools being available that track mouse movement and actions on a web page (see Ernesto et al 2006; Mueller and Lockerd 2001). Studies into eye tracking⁹⁷ are linked to recording the actions of the mouse and do attempt to analyse the 'Perception' and 'Cognition' areas to some extent (see Poole and Ball 2006). HCI concentrates on the effective design of interactive interfaces and consequently any studies into interaction are based around this. This opens up a debate on the position and importance of usability within the arts, as previously established in chapter 5 in the 'Interactive Reward' section, arts

⁹⁷ Eye tracking is a method of recording the gaze or eye movement of a subject, in an internet context this relates where on the screen a user is looking. See here for more information: http://eyetracking.me/?page_id=9

websites do not necessarily aim for the same usability responses from their users. Whilst it is important for even net art to be usable it is often incongruous to the artistic premise for the user to quickly and effectively 'use' a piece. At the very least, issues on usability with net art are not always concomitant with the usability of commercial websites with net art often being created to be confusing, difficult and aesthetically subversive with no easily determined goal.

My attempt at a taxonomy that targets this 'Effect' component of the process of interaction provides a reasonable starting point with which to broaden the understanding of the interactive process. It is envisaged that despite the rapid acceleration of technological development, the characteristics of interaction outlined in this thesis will remain valid for some time. Whilst other aspects such as the 'Action' stage of the 'Loop of Interaction' might change with the development of new input devices, the 'Effect' stage is unlikely to be affected.

Who does it concern

As touched upon in the previous chapter, much of this research provides a starting platform with which to interrogate the notion of interaction with net art. This research has highlighted a possible taxonomy for the interaction that occurs with an unconsciously collaborative piece rather than describing the interactive character of the piece itself (see Chapter 5 for a discussion on previous attempts at categorising interactive character).

Primarily, the outcomes of the research will be useful in establishing a theoretical position for the creation of a strand of HCI and usability related research that is specific to net art or computer interactions with an indeterminate goal. This project is therefore aimed at theorists and researchers working in these areas.

Naturally, artists themselves can also benefit from this research as it delivers a semantic framework that enables interaction to be discussed within the context of art works. Establishing how their work and interaction with it fits into the C.P.U. model would be beneficial in developing a deeper understanding of their work and its relationship to an audience. Whilst data collection and analysis might reveal specificities of audience interaction, knowledge of the model and how interaction might fit within it would be sufficient in establishing an augmented awareness of their own work. This in turn provides a further opportunity for the progression of their practice.

It should also be noted that my own practical pieces that have been developed for this research were founded on the view that though the work itself might be viewed as an evolving 'art', its status was always open to interpretation depending on how a participant decided to interact with it. This might not necessarily be 'creative' at all, but could be, for example, the action of a game-player being involved in a puzzle, challenge or participatory directive. This is an important reason why my own taxonomy might be useful.

Further Research

Naturally a continuation of research into the application of the theorised model is an obvious development. Testing larger sets of data against my C.P.U. model would generate a more robust position for the model and establish the potential for this model to be utilised in broader range of pieces. As the progenitor of this research involved a specific response to a piece of net art, it was a logical progression to test the hypothesis of an interactive taxonomy against net art. Testing this hypothesis against other art forms has been beyond the scope of this work. However, considering the lack of current categorisation of interactivity within other related art forms (see Chapter 5) there would appear to be scope to test the C.P.U. model of interactivity against other art forms that require interaction from the user. Further clarification of the 'Loop of Interaction' has also been established as a primary source of further investigation. However, due to the exploratory nature of this project, several other specific areas have been identified through the process as being significant in their potential for further research.

Characteristics of Interactivity

As outlined in Chapter 5 Laurel (Laurel 1991/1993:20) and Berenguer (Berenguer 1997) identified three characteristics that make up an interactive work. It has been identified that the pieces I have created all have similar

degrees of these characteristics (see Table 3), therefore an examination of artworks exhibiting differing degrees may reveal some interesting data.

It is also suggested that whilst the 'Range' characteristic has been adequately examined by me and others (see Klastrop 2003b), the 'Frequency' and 'Significance' characteristics have only been superficially examined.

Additional examination of these interactive characteristics would be valuable in developing a more rounded and complete picture of the interactive characteristics posited by Laurel (see Laurel 1991/1993:20) and Berenguer (see Berenguer 1997).

Author / Sub-Author Model

There has been a great deal of attention paid to authorship in general (see Barthes 1993; Eco 1989), and especially within the contextually relevant areas such as participatory arts (see Moriarty 2008), interactive arts (see Rokeby 1996; Polaine 2005), net art (see Stalbaum 1998; Miller 2005) and hypertext narratives (see Kolb 1994). The Author / Sub-Author model suggests it is useful to look at levels of authorship which has the benefit of recognising both the position of the primary author and the contributions made by others in the creation of a piece as a whole. This model is based on a primary author creating a framework within which further work can be created by users. The corresponding 'levels' are piece specific but would always contain at least one level of user contribution. It is not new to think of authorship in terms of levels, Liestøl for example talks of primary and secondary authors within hypertext (Liestøl 1994:98). Further research into

this specific model could however clarify the position of the audience within works that exhibit the potential for 'unconscious collaboration'.

Semiotics of Interactivity

Ylitalo (Ylitalo 2000) raises an interesting argument for a re-interpretation of HCI (Human Computer Interaction). Rather than focusing on the computer in the interactive process, Ylitalo suggests that the relationship between the human and the world of signs is more important. The computer here is merely a tool in the process, acting as the interface between human and sign. Similar to my focus on the 'Effect' stage of the loop of interaction, Ylitalo discusses the importance of the meaning of interaction. This also relates to the 'Perception' and 'Cognition' elements of the loop of interaction. Whilst the 'Effect' looks at the meaning from the perspective of others, the meaning of interaction from the perspective of the user is also a consideration. This focus on the signs of interaction can provide a basis for a Semiotic reading. Ascott recognises the semiotic potential of interactivity when he suggests that the language of interactive art "will include a range of semiotic structures" (Ascott 2002:4). There is also a small sample of the semiotic study of HCI (see De Souza et al 2001; De Souza 2005), however, this again is based on the premise of facilitating design goals. It would therefore seem appropriate that an arts centred approach to the understanding of the semiotics of interaction be developed.

Participation Inequality

My own figures for Participation Inequality are inconclusive despite exhibiting a similar pattern of lurkers, intermittent contributors and heavy contributors given by Nielsen (see Nielsen 2006a). They do demonstrate a greater degree of participation than the average 90 – 9 - 1 (Nielsen 2006a), however, the conditions set up by the project would have been a contributing factor. More studies with a variety of net art pieces are required to obtain accurate figures for this. Establishing whether net art encourages a greater than average level of participation from its users could be significant especially when coupled with the unusual usability issues present within much online art.

The C.S.U. Model of Creativity

The C.S.U. model of creativity theorises ways in which an audience member appears to be creating material (see Table 1). Further examination of the C.S.U. model of creativity will help to establish the relevance of this model to the creative process made available through participative and collaborative net art. This is also related to how net art is viewed, whether an audience view a piece of net art as a game or serious art, as Stalbaum argues “Something is not art just because creative participation is allowed” (Stalbaum 1998).

Further research would be required to establish the extent to which an audience concur with this statement.

The previous chapter highlights how the outcomes of data analysis indicate that the audience for “Collaborative Book” did appear to use the piece in different ways. However, more in depth research is required to ascertain audience consciousness of their artistic and creative endeavours in relation to net art.

Affective Interaction

The C.P.U. model was generated specifically to refer to how interaction is viewed relative to the piece of art or framework within which the interaction occurred. This was necessarily positioned due to the inability to ascertain the thought processes of the user with regards to their own specific interaction and indeed how previous interactions by others affect the users own interactions. Gauging psychological response to interaction however, is beginning to be a realistic proposition. For example, art that uses technology to gauge emotional responses is being created (see Gilroy et al 2008) although there is still little on categorising the thought processes of an audience member. Using similar technology to that of Gilroy could enhance the understanding of how and why a user interacts in a particular way.

As previously specified, this project delivers a point with which to consider the expansion of the hypothesis that there is a specific and distinct interactive process connected to art on the net. This thesis has targeted a very specific area of interaction with a very specific art form which is open to a greater degree of scrutiny and analysis. It has also established how the current field

of HCI has so far not identified the unique usability issues of interactive online art. It is hoped therefore, that this thesis will provide a useful position with which to further interrogate these issues.

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Appendix A

Appendix A details definitions of the Practice Based and Practice Led PhD models. These definitions are taken from a scanned image of the Loughborough University School of Art and Design Handbook for Postgraduate Research Students, 2006-2007.

These aspects must underpin one of a set of suggested practice related models, defined below, with the overall proviso that written components must constitute a minimum of 40,000 words, and a maximum of 50,000 words, dependent upon the particular weightings of text / portfolio in each of the respective models. Artefacts should be represented by a portfolio of preparatory materials, photographic evidence of the development process, and clear annotated notation of the creative decisions underpinning the progress of the work. An 'artefact' as well as being one or a set of specific objects, items or physical practice outcomes, may also be understood as an exhibition or audio-visual presentation. Though these models are not wholly prescriptive, the weightings suggested should be adhered to, and each element clearly defined in negotiation with the Director of Studies and the Supervisory team..

The Models

Practice Based

Key Points

- A balanced critical interrogation / historical contextualisation of a developing artwork-in-progress
- 60% Text based (50,000 words) / 40% Artefact based
- Testing against known models / assumptions
- A mode of Pure Research
- A new theoretical / critical paradigm

This model is perhaps the most traditional approach, and the most easily recognised as research within the Arts and Humanities. The emphasis is upon the ways in which a particular conceptual, or critical, or historically determined position, is re-interrogated theoretically and practically through the development of a piece of creative work, in the desire to evidence a new theoretical / critical paradigm. The work itself should be an exemplar of the process towards, and outcome in relation to, this paradigm.

Practice Led

Key Points

- A practically driven project involving a developing artwork-in-progress underpinned by a critically proven hypothesis by which the outcome might be evaluated
- 60% Artefact based / 40% Text based (40,000 words)
- Testing the formation of meaning / creation of new meaning
- A Model of Applied Research
- A realisation of a creative 'solution'

This particular model creates and contests a particular 'hypothesis' related to the construction and conceptual parameters of established and evolving artworks. The 'test' here, is effectively about how the formations of meaning and outcome may be de-constructed, re-worked, and new resolutions found. At its simplest level this relates to the idea of realising a creative solution to a new 'brief', but one constructed not in a spirit of creating an original artefact for the market place (though this could be an outcome), but to properly interrogate the creative and intellectual process towards a completed work.

Appendix B – User Comments

Collaborative Book

The following table lists the comments that were made about the collaborative book piece.

Comment	Date
I found it interesting. It would be interesting to come back and see how it goes on. The only issue is when I drew the image and clicked save, there weren't any feedback, so I didn't know whether it's saved or not.	16/07/2008 09:48:55
An interesting concept. I know previously at school a group of friends had a 'never ending' book idea along the same lines, only each person took it in turns to write a paragraph or two as opposed to a single word. With more participation this could turn out quite nicely. Regards, David.	23/07/2008 10:09:49
This seems like an interesting idea. I'm not sure how the random word allocation works because it may become very difficult to complete a coherent statement dependant on what words people use and where. Restricting it to one word and then the next may allow for a better result, however I have no experience in this area. Also perhaps only one word should be allowed per person, and then the fields are locked, to stop someone dictating the flow of the story. I spent around 3 minutes with the piece, entering a word and drawing something I thought relevant in the available space.	22/08/2008 10:45:48
Interesting!! Not all the features were working though although I use FireFox! Best of luck with your research.	26/08/2008 09:49:25
Interesting and frustrating as some of the drawings I did, did not save and were lost, and I was using up to date firefox. I spent about 20min. Good luck with the project.	29/08/2008 13:02:45
good fun, though i couldnt use the fill option in the drawing, it said that was due to my browser but i was using firefox be good to see what other people do, very easy to take over the 'drawing bit'	29/08/2008 15:01:57
fun playing with words	03/09/2008 13:14:40
Quite fun - a few minutes only but wasn't sure what was expected/if there were 'rules'	04/09/2008 16:22:14
Assuming people take the time to fill in the missing pieces with some reasonable grammar it should be pretty cool when it's done. Nice one!	22/09/2008 16:18:47

<p>Hi I am very interested in this piece and I am eager to read the finished 'Collaborative Book'. I certainly had fun participating. My current art practice and research involves collaboration and exchange between people in the production of artwork, exploring themes of appropriation, authorship and control. I have just completed a project entitled 'Defamiliarization' which involved artists' responses from the local to the global and the translation between the visual and the verbal through electronic communication. The project can be viewed on www.http://dianaalidefamiliarization.blogspot.com/ Let me know how the research develops and if you have any other interesting activities, I'd be happy to help. Good luck! Cheers Diana alidiana@gmail.com</p>	<p>29/09/2008 11:21:45</p>
<p>this is a nice idea but the usability could be developed further - typing one word at a time and being navigated away from the original text you are adding to is frustrating. Also adding your name every single word is too repetitive. good luck with your researches julie</p>	<p>08/10/2008 22:33:16</p>

Appendix C – Data Collection Ethical Disclaimer

All data has been approved through Loughborough University via the use of their ethical clearance checklist. This confirmed that all data collection conforms to the ethical principles upheld by the university. Furthermore, all data has been collected and stored within the Loughborough University data collection and storage guidelines. A link has been included on the front page of the practical pieces to these guidelines. An option has also been included to allow users to remove their data by contacting me with the appropriate details. The image below shows the inclusion of these details.

