

Transcoding Place

by

Victoria Ann Moulder
BFA, Emily Carr Institute of Art and Design 1999

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APPROVAL

Name: Victoria Ann Moulder

Degree: Masters of Arts

Title of Thesis: Transcoding Place

Examining Committee:

Chair:

Marek Hatala

Associate Professor, Graduate Chair, School of Interactive Arts and Technology, SFU

Ron Wakkary

Senior Supervisor, Associate Professor, TechOne Director, School of Interactive Arts and Technology, SFU

James Bizzocchi

Supervisor, Assistant Professor, Undergrad Chair, School of Interactive Arts and Technology, SFU

Dr. Elisa Giaccardi

External Examiner, Assistant Professor, Departamento de Informática and Instituto de Cultura y Tecnología Universidad Carlos III de Madrid, Spain

Date Defended/Approved: _December 21, 2009



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ABSTRACT

This thesis explores a cultural phenomenon called Crude Awakening, which brings to attention a global crisis - our dependence on oil. The case study analyzes a communicative ecology between a live performance and its video documentation. The research combines close reading and semantic differentials methods as a means of understanding the relationships between what people posted to YouTube, the system design and the live performance. The goal is to define the dynamics of this communicative ecology as a means of interpreting semantic space, sometimes defined as aesthetics, for understanding how people interpret - meaning. The findings are to provide a framework for designing software architecture that can contextualize information, and define a broader context for discussing the hybridization of technology and culture in today's digital world. I argue that digital social architecture, unlike traditional architecture, is a fluid system that evolves and changes along side social movements.

Keywords: Social Design; Social Design Research; System Design; Cultural Framework; Meaning; Communicative Ecology; Crude Awakening; *YouTube*.

I dedicate this thesis to my life-partner Todd Royall Caspell for his ongoing loyalty and support, Roberta Batchelor and Jay Bundy Johnson who have been co-conspirators since the early days of art school, along with my fearless mentors Lorna Boschman and Robin Oppenheimer - their collective love for creative practice and social change continues to inspire.

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GLOSSARY

This glossary is a clarification of terms as I have defined them in this thesis.

Social Design	Within the field of Human Computer Interaction (HCI), social design has been described as a value added to the design process. It is a philosophical decision that takes into account system sustainability and the social experience of use.
Social Design Research	Social design research is the practice of evaluating systems by examining the overall conceptual framework and architecture that drives the social experience of use and takes into account sustainability.
Agency	Agency refers to the functionality, the actual computation of a system on a computer. Agency within the context of the individual user refers to relationship between intent and the systems response. Social agency refers to the collective patterns of use by social groups.
Meaning	Meaning is the human signification of a person, place or thing. Most recently it is interpreted in the field of HCI as a computer-aided method of building relationships between data sets. This method is predominately used to retrieve data in a contextualized manner.
Media Ecology	A media ecology takes form through a collection of broadcasting modes such as television, radio, Internet, or print. It is the phenomena of exploiting the combinations of broadcasting modes to accelerate a communications message.
Communicative Ecology	A communicative ecology is a conceptual framework that is used to model one-to-many or many-to-many broadcast modes of communication. It is also a term used by designers to describe a tool for modelling the situation and context of a system.
Culture	Culture combines the spiritual, material, intellectual and emotional features of a social group, which includes the art, literature, lifestyles, ways of living together, value systems, traditions and beliefs.
API	An Application Program Interface (API) is a set of routines, protocols, and tools used by software developers to build an application.

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CHAPTER 1: INTRODUCTION

1.1 Transcoding Place

Historically, civilizations have recorded their collective experiences by first making decisions about what is important to communicate and then composing an audible or visual story of the event. Whether we are referring to Palaeolithic cave paintings or a photograph posted on Facebook - people have been sharing knowledge about the human experience since the beginning of time. Overtime the translation of experience into understandable symbols, icons, and characters has become a required skill by anyone who wants to participate in a social network. People are becoming expert designers, just like the Egyptian scribes, who sat every day at the market place to write hieroglyphic letters, reports, memos, and proposals for clients (Horn 2000).¹ Design has been around for as long as people have needed to communicate, and social design, is perhaps one of the most recent manifestations of this practice.

Social design is an evolving term that can be perceived through many different lenses. Within the design world, social design can be seen as value added to the design process and contributes to improving human well-being and livelihood (Holm 2006).

Design theorist Ivar Holm states:

The design value of social change can be described as a commitment to

¹ On page 15, Robert E. Horn writes an introduction to the history of information design and defines the role of the designer as being that of an age-old profession of communications assistance.

the change of society for the 'better' through architecture and industrial design. It can be seen as a pledge to achieve or contribute to a general and/or particular social change within a given local, national or global community (Holm 2006).²

Victor Papanek, has further inspired the concept of social design, by claiming that the responsibility to produce real options for change in the world, is what constitutes good design (Papanek 1984). Papanek encouraged responsible design as a means to create ecological products through a careful selection of materials used, as well as striving to design by catering to people's needs rather than their wants. Although Papanek was referring to product design, social design researchers have now focused their attention to the work of technologists and the systems they build. Technologists have adopted the concept of social design to include a number of initiatives. These initiatives tackle areas such as software production, the emergence of collaborative authoring tools and the architecture of the Internet - itself.

In the area of software production, people involved in the **Open Source Movement** have adopted an initiative towards community building, education, and public advocacy to promote the awareness and the importance of non-proprietary software. Practitioners of this movement have developed a set of rules that primarily support the free distribution of software with no restrictions to anyone.³

Collaborative authoring tools like Wikimedia are revolutionizing the way people create and share knowledge. People who use tools like wiki, citations, peer-to-peer networks, and virtual presence are not in a movement, per say, but are participants in a philosophical trend towards collaboration and co-authorship. The **Linked Open Data**

² On page 239, in the book *Ideas and Beliefs in Architecture and Industrial Design*, author Ivar Holm discusses the value of social design and the impacts of the social design movement over the last one hundred years as a practice starting with the Arts and Crafts movement.

³ Information about the Open Source Movement was found at www.opensource.org

Movement is a call to action by Internet founder Tim Berners-Lee to change the way we make sense of the Internet. He claims that the Internet has not met its potential as a universal medium for data, information, or knowledge exchange.⁴ Berners-Lee suggests that by augmenting web pages with data targeted at computers, and by adding documents solely for computers, we will transform the web into the Semantic Web. In brief, it is an undertaking that would require technologists to build frameworks in which people would have the opportunity to view data in a much more contextualized manner.

Social design researchers that work within the realm of technology are focusing on the design of sustainable systems and their use, primarily because both involve a shift in the way we think of knowledge sharing. System sustainability, as discussed by Wakkary and Tanenbaum has taken on at least two meanings in the evolution of Human Computer Interaction (HCI) and design: socio-technical and cooperative design methods that aim to establish ethically sustainable technical systems through the participatory involvement of end-users, and the more current environmental sustainability (Wakkary & Tanenbaum 2009).⁵

It is from this perspective that I began the inquiry into the cultural phenomena of *Crude Awakening* and its media ecology of live performance, film, internet activities and printed articles that bring to attention a global crisis – our dependence on oil.

Specifically, this case study analyzes a subsection of this ecology the live performance and it's video documentation on *YouTube*. I've adopted a mixed methods approach that combines close reading and semantic differentials as a means of understanding the

⁴ Ivan Herman introduces the *Semantic Web Activity Statement* and talks about Tim Berners-Lee influence on the re-envisioning of the Internet.

⁵ In this paper Wakkary and Tanenbaum building upon the work of Eli Blevis's Sustainable Interaction Design Principles and present examples from an ethnographic study that extend the design-in-use concept to include: the creative and sustainable ways people appropriate and adapt designed families in their homes.

relationships between what people post to *YouTube*, the system design and the live performance. The method of analysing semantic differentials was first developed by Charles E. Osgood as a means of interpreting semantic space, sometimes understood as aesthetics, that could bring insight to a very important variable in human behaviour - meaning (Osgood 1957). The goal of this research is to define the social dynamics of the communicative ecology a means of modelling a framework that could be applied to software architecture.

With the advent of tangible and social computing design, theorists like Paul Dourish envisioned social computing as the future matrixes full of exchanges separate from current social structures (Dourish 2001). Dourish claims that each element in a software system has a dual nature, on the one hand, it is an abstraction created out of the electronic phenomena from which computers are built, and on the other it represents some entry, be it physical, social, or conceptual in the world in which it models.⁶ The implications of these technological developments from a social design perspective are profound, but are only beginning to be charted. For example communities of people are posting information to the Internet, and are destabilizing the historical one-way modes of mass-communication in favour of what might be described as a paradigm of ‘many-to-many’ (Russegger 2006).

In an ever-growing manner, more individuals are posting data to communicate their stories about being in the world. This phenomenon has captured the attention of social design researchers like myself, who are beginning to chart the dynamics of this new era. In managing the complexity of such a task the World Wide Web Consortium (W3C) has

⁶ On page 137 in the book *Where The Action Is* author Paul Dourish reflects on Dennett’s position that intentionality as not solely the achievement of an individual, but rather that it is a mutual achievement involving both observer and observed.

developed the Semantic Web Activity group, which maintains that a conceptual reframing of the Internet is required to shift perceptions of information gathering from individual to those of social models and shared data, so software applications can manipulate data – meaningfully. The potential of linked open data lies in the development of what Berners-Lee has deemed the Semantic Web and the unfolding universal vision of the capacity of the World Wide Web. In tandem with these ambitions, researchers are questioning a number of aspects of this computer-mediated agency, such as:

- Can we produce truly meaningful relationships, not only between people but ideas?
- Can social agency be used in a much more comprehensive way to contextualize knowledge?
- Can developers of these new technologies incorporate frameworks that contextualize culture and to other fields such as art, music, and history?

Researcher Rogerio DePaula defines these new theoretical discoveries as the emergence of HCI trends in the study of human interactions mediated by technology in the context of culture. These discoveries are invaluable because they recognize new frameworks for understanding the dynamics of communicative ecologies, including not only the people involved, but also the technologies as used in everyday activities.

DePaula points out this evolution of design by stating:

Interaction design integrates insights from field-studies (ethnographic studies of practices and social environments in which the technology is used) and usability-studies (study of the interaction between a user and the technology). Where as social design attempts to extend the traditional user-centred design approaches from a focus on productivity, efficiency and usability, towards empathy, fun, motivation aesthetics, helpfulness and support (DePaula 2003).

With this in mind, I began to observe *Crude Awakening* as a cultural phenomenon and it's communicative ecology as an emergent cluster of data on the Internet bringing to

attention a global crisis – our dependence on oil. People straddling both sides of the physical and virtual world were motivated by their experience to document and post images, text and video to social networks. I became increasingly curious about how the nature social agency could be the Internet's own matrix of change. This case study applies close reading and semantic differentials research methods to the relationships between the *Crude Awakening* live performance and its documentation on *YouTube*. By understanding this communicative ecology, I hope to model a framework that could be applied to software architecture. And by doing so would create an API that could filter and retrieve data in a much more meaningful and contextualize manner. Typically, technologists try to visualize the way people interact in the world, then model those interactions in system architecture. These strategies may work for automated banking systems with A-to-B deliverables, but when it comes to interpreting meaning, maybe our approach needs to harness the very flexibility of social behaviour - itself.

The more we understand these new multi-scaled social environments, the better technologists and cultural theorists can collaboratively work together to build semantic technologies. In the process, this study will define a broader context for discussing the hybridization of technology and cultural production through the dynamics of a communicative ecology. I argue that digital social architecture, unlike traditional architecture, is a fluid system that evolves and changes along side social movements.

1.2 Thesis Structure

In this chapter, the larger thesis question and empirical context have been introduced. Emphasis was placed on exploring the notion of social design practices as a multi-scaled research space that includes the social, cultural and technological aspects of design. I introduce the *Crude Awakening* case study as a means to identify the larger media ecology including, film, live performance, Internet activities and printed articles. Then I address the motivations for analysing the communicative ecology, which I base on the relationships between the live performance and its video documentation on *YouTube*, as a means of modelling a framework that could be applied to software architecture.

Chapter 2: CONCEPTUAL THEMES is divided by two sections social design and research implications as they refer to transcoding culture, system design, and social agency. I start by introducing social design research as an investigation into the way we can incorporate agency, responsibility, and bottom-up initiatives that serve to influence the design of sustainable systems. I discuss that within the field of technology, social design, applies to the study of creating open systems with multiple, self-adjusting and complementary features that seek to define a sustainable set of goals. I explain that since the release of the first web browser in 1991, researchers have been studying the cultural and architectural components of the web and that social design proposes yet another component of a social nature. In the second section, I reveal the implications of this research on the various aspects of the design process. I reflect on the socio-technical analysis of Foth, Gonzalez, and Kraemer who claim that system designers must consider the communicative ecology that define the conceptual framework for the system itself.

And through this process, I briefly review the potential of maximizing social agency as a dynamic force in software application design.

Chapter 3: RESEARCH METHODS is composed of three sections Methods Overview, Understanding *Crude Awakening*, and Test Case Study. Each outlines in further detail the procedures used to govern this case study.

In the first section, *Methods Overview*, I discuss how the field of literary and visual arts have shaped the interpretation of close reading methods within the scope of this research. I list the procedures for conducting this research, which ultimately builds a conceptual scale for outlining the live performance. In the second section, I introduce the *Crude Awakening* media ecology and connections to the larger social movement and discuss the *Burning Man Arts Festival* as the backdrop to this cultural phenomenon describing the 10-day event. In combination with these insights I discuss the rationale for choosing *YouTube* as the primary source of video content, along with the procedures for how I collected and stored the video documentation. In the final section, I report on the early test plan and results under the supervision of professors Ron Wakkary, James Bizzocchi and John Bowes, which give insight into the cultural analyses of the event and identified social agency as a component of the overall design. These findings were presented at Internet Research 9.0: *Rethinking Community, Rethinking Place, 2008*, at the IT University of Copenhagen, Denmark.

Chapter 4: ANALYSIS AND RESULTS is organized in four sections that introduce the analysis and results of this research. I discuss the inferences and assumptions made by the data collected, the implications, and areas the results could be applied. I start by introducing the concept of transcoding culture and explain how I

conducted a close reading of the *Crude Awakening* performance to produce a semantic scale. This scale was an important part of this research as it provided a semantic benchmark to measure the video documentation against. I then introduce the concept of system design and explain how I used a close reading method to evaluate the interactions of the *YouTube* interface for uploading videos during the time of this research on November 23, 2007. Through this process, I analyze the composition and parameters of the interface and discuss how these features have shaped the dynamics of the communicative ecology. Following these insights, I introduce the findings of the semantic differentials. I review 87 videos collected from *YouTube* and analyse the status features that help identify the date the video was uploaded, it's length and the keywords use to describe each person's entry. I then close the chapter with a section summarizing the findings of the semantic differentials and the further exploration of how these results could be used in the design of software architecture.

In Chapter 5: DISCUSSION is divided into two sections that examine the limitations and future applications of this research. I start by outlining the limitations of methods used in evaluating the data collected from this case study. As mentioned in *Chapter 3: Research Methods* procedures for conducting a close reading are defined. I introduce the concept of 'framing' and how it has been applied to this case study as a means to identify acts that mark dramatic shifts in the theatrical production of the *Crude Awakening* live performance from beginning to end. I then report that the results of this close reading was successful, because I was able to produce a scale that could be used to benchmark the performance and compare the video documentation, in a systematic process. Rather than use one single method of analysis, I use a mixed-method approach

to accurately access the scope of which *YouTube* participants' transcoded their experience to the Internet.

I address the implications of future work and the ways in which these research findings can be applied to semantic web technologies. I start by reviewing the overarching concept of the semantic web as a design environment whereby tasks perform ways to build meta-frameworks to view data. I then discuss in more detail that by analysing social systems as multi-scaled research spaces - meta-frameworks would be designed to contextualize breadth and hopefully represent diverse cultural perceptions.

Chapter 5: CONCLUDING STATEMENT presents a summary of my arguments and reflections on this study from a cultural perspective. I discuss the broader context for discussing the hybridization of technology and cultural production determining that digital social architecture, unlike traditional architecture, is a fluid system that evolves and changes along side social movements, and this dynamic results in the creation of shared meaning.

CHAPTER 2: CONCEPTUAL THEMES

2.1 Social Design Research

Social design research investigates ways to incorporate agency, responsibility, and bottom-up initiatives that serve to influence the design of sustainable systems of all kinds. Within the field of technology, social design research, applies to the study of creating systems with multiple, self-adjusting and complementary features that seek to define a sustainable set of goals (Hjorth & Bagheri 2005).⁷ Since the release of the first web browser in 1991, researchers have studied the cultural and architectural components of the Internet. In this thesis, I examine the Internet from a social perception.

Social computing is a new research area that focuses on a sociological understanding of interactive technologies. It is basically concerned with the way in which technology affects socio-technical interactions (DePaula 2003).⁸ Researcher Paul Dourish claims that one of the most important aspects of social computing is the fact that technology is not simply the outcome of a design process, but it is also the common language that emerges and enables the communication and collaboration between designers and people using the system (Dourish 2001). Researcher Rogerio DePaula, in a discussion about recent trends in HCI, states that in the past, methods for evaluating

⁷ On page 84 in the paper *Navigating Towards Sustainable Development* authors Peder Hjorth and Ali Bagheri highlight particular aspects of human behavior, which are non-linear, complex, dynamical, or dissipative. They claim that sustainable systems would be — dynamic order is an order where the components are organized by system-wide correlation that replaces randomness with a stable and dependable pattern.

⁸ On page 220 of the *Proceedings of the Latin American conference on Human-computer interaction*, 2003 Rogerio DePaula discusses the emergence of new HCI trends in the study the human interactions mediated by technology in the context of their social practices, as a prominent framework.

system design included the idea of a single unit of analysis of an isolated cognizant individual; and now our means for evaluating social systems have evolved to include the conceptual framework of distributed cognition that takes into account the nature of human agency (DePaula 2003). He claims that agency, the things we do, is what establishes social practice and states:

An important contribution of this framework is to bring culture, context, and history back into the study of HCI. From this perspective, all human activities are embedded in socio-cultural contexts, that are not solely created by local cultural and historical practices, but also co-created by each participants' history and life experience in the use of technology (DePaula 2003).

Social design research moves away from traditional usability-lab studies towards the study of community activities and questions the usefulness, sustainability of a system. Researchers Marcus Foth, Victor Gonzalez and Kenneth Kraemer when discussing the challenge of designing for variability and diversity in social systems, have introduced the communicative ecology model as a conceptual tool to help grasp the situational context and purpose of systems (Foth, Gonzalez, Kraemer 2008). They imply that collective interaction is the primary vehicle for expressing social design concerns, and state:

Collective interaction promotes a one-to-many or many-to-many broadcast mode of communication. This complements collective community activities and could extend to place-based community activism around issues such as neighbourhood watches, traffic reporting, rent increases, body corporate affairs and street rejuvenation indicatives (Foth, Gonzalez, Kraemer 2008).

By applying communicative ecology models to technological innovations, we can learn about the socio-technical and cultural aspects of a system. Some of the advantages of modelling communicative ecologies are that we learn about community activities through systems over time. Designer, Jon Kolko, calls this form of managing complexity

"the fourth dimension", referring to how time plays a role in the patterns of use with any product (Kolko 2007).⁹ Social systems are usually modelled on some variation of bottom-up community development, in which membership is voluntary and reputations are earned. When observing social systems researchers are focusing on the inherent network-to-network communications, addressable micro-content and embedded services to access scalability and adaptation. Social systems evolve overtime and patterns of use are perhaps one of the only ways to detect features that could be automated components. Researchers look for patterns that expose the uniqueness of the social system, revealing conversation discovery, group-formation, personal and social decoration, as well as collaborative folk art (Crumlish & Malone 2009). In this thesis I discuss aspects of this multi-scaled research space in three sections:

- **Transcoding Culture** - the act of people transcoding experience into a digital form.
- **System Design** - the application architecture that transfers information to and from the Web.
- **Social Agency** - the human behaviour and machine execution of a task.

2.1.1 Transcoding Culture

The concept of transcoding culture as suggested by Lev Manovich, relates back to the history of cinematography and the way it has shaped our ability to capture, frame and compose our experiences (Manovich 2001).¹⁰ Some researchers have determined that one of the most important ways people use new media is in the way they document personal experience. From a cultural point of view, the ways in which people are documenting personal experiences can be regarded as a distinct media, despite their semiotic or technological identity (Ryan 2006). For example, people who regularly write

⁹ Jon Kolko talks about managing complexity and points out the patterns of use over time as forth dimension as it relates to interface and interaction design.

¹⁰ In Lev Manovich's book *The Language of New Media* on pages 63-64 he refers to the culture of transcoding as a concept in new media.

and contribute to social systems are called bloggers. Other theorists have explained that within the study of culture, consideration must be given to the network of relations amongst media communities like bloggers and the uber-network commonly described through the metaphor of media ecology (Heise 2002). Communication theorist Marshall McLuhan states that the media ecology is a:

...means of arranging various media to help each other so they won't cancel each other out, to buttress one medium with another. You might say, for example, that radio is a bigger help to literacy than television, but television might be a very wonderful aid to teaching languages. And so you can do some things on some media that you cannot do on others. And, therefore, if you watch the whole field, you can prevent this waste that comes by one cancelling the other out (McLuhan 1977).¹¹

Since the beginning of time, people have been telling stories about their experiences in the world. Some cognitive scientists have suggested that the role of storytelling for human beings helps to contextualize information for the purpose of storing memory – and perhaps this is how we learn. They also maintain that when it comes to linguistic notation, all of our knowledge is contained as stories, along with the mechanisms to construct them and retrieve them (Wyer, Schank, & Abelson 1995). According to Robert S. Wyer, Roger C. Schank, and Robert P. Abelson, most of our memories are stored in the form of stories, and therefore outlines a position about the importance of storytelling to knowledge acquisition and the construction of identity, to which, they further argue that:

- (a) Virtually all-human knowledge is based on stories constructed around past experiences.
- (b) New experiences are interpreted in terms of old stories.

¹¹ On page 271 in the book *Understanding Me: Lectures and Interviews* author Marshall McLuhan talks about the value of media ecologies as an emergent phenomena in contemporary culture.

- (c) The content of story memories depends on whether and how they are told to others, and these reconstituted memories form the basis of the individual's "remembered" self. Further, shared story memories within social groups define particular social selves, which may bolster or compete with individual remembered selves (Wyer, Schank, & Abelson 1995).

When we tell stories, we aid in the understanding of transformative knowledge, a person confirms to the listener that they started at one place and then through a series of events ended up at another. In this context, a social system is the descriptive framework, which informs the underlying architecture of both the metaphysical meaning to a story, and the dynamic system components (Ryan 2006).

2.1.2 System Design

Over the years architects have built structures for people to assemble and have played a key role in the way cultures are organized and perceived. On the Internet researchers have drawn attention to the role of virtual architects as providing the public face for various occupations, organizations, and social groups (Mitchell 2000). Virtual architects use mental models to understand aspects of the occasion; therefore, the model for the architect is the conceptual understanding of that occasion.

For example, social software architects may observe the way people interact with one another to get a specific task done, and then try to mimic that process through the system design. In this context, the A-to-B deliverable can be very straightforward on the other hand, because of the dynamic nature of social software design, virtual architects focus their attention on the functionality of the communication tool. These tools usually embody characteristics that allow people to enact community through the preset array of interactions and interfaces. These types of interactions are the inner workings of how

communities learn, change and grow (Dourish 2001). Social theorists Jean Lave and Etienne Wenger states:

In becoming a member of a community, one learns not only to exercise the skills of that community, but also to exercise them as a member of that community – with the same set of understandings, expectations, significances, and meanings that are characteristic of that community and how it sees itself (Lave & Wenger).¹²

In the book *City of Bits: Space Place and the Infobahn*, William J. Mitchell explains that buildings were distinguished from one another by their differing uses, and that the inventory of those uses manifest in the social division and political structures in real life (Mitchell 2000).¹³ On a related train of thought, since the advent of the Internet, virtual architects have been building web sites for people to assemble online, and which are designed for various uses and these have mimicked the prevailing social and political structures of real life, with some exceptions.

In this thesis, I focus on new developments in system design and the ways in which social and machine agency is driving a wide variety of possibilities, modalities and interactions that, with in themselves, could form unique architectures.

2.1.3 Social Agency

Agency within the context of the Internet is perhaps one of the most provocative concepts as it refers to both human behaviour and machine execution. Socio-cultural anthropologist, Laura Ahearn defines ‘agency’ as a concept that relates to and is affected by socio-cultural conditions along with the capacity to take action and claims:

¹² On page 186 in the book *Where the Action Is*, author Paul Dourish reflects on the work of social theorists Jean Lave and Etienne Wenger, specifically their community of practice concept.

¹³ On page 43 in the book *City of Bits* author William J. Mitchell explores the notion of millennia architects, who have concerned themselves with the skin – bounded body and its immediate sensory environment by providing shelter, warmth, and safety.

...that while scholars associated with action theory tend to treat agency synonymously with free will, this understanding does not take into account the social nature of agency nor the impact culture it has in forming active relationships (Ahearn 2001).

Anthropologist Bruno Latour, one of the founding members of the Actor-Network-Theory (ANT), looks at the alternative ways computer-mediated and sociology can practice agency in a virtual environment (Latour 2005).¹⁴ Latour acknowledges that perhaps a reformulation of what is meant by “science” and “society” requires further investigation and argues:

...that within the field of sociology, action is driven by other agencies, such as the ethical, political, and empirical discovery, that exist within the hierarchies, asymmetries, and inequalities already established in the social structure, and thus, that there is never any static meaning conveyed by/captured in a social phenomena (Latour 2005).

In the context of technology ‘agency’ refers to the hybridization of technology and sociology, in other words, the asynchronous relationship between machine and social agency. While social agency refers to what matters of the individual in the context of social groups, machine agency refers the system’s functionality. From this perspective, Latour discusses how both machine and social agency have the ability to be decisive and articulate in fomenting action and states:

- (a) Machine agency refers to action that is driven by algorithms and which computer scientists sometimes call artificial intelligence. Such mechanistic action is dependent on human agency, and performs autonomous human-like decisions, submitting to and responding to data;
- (b) Social agency describes what happens within the ecology of networked publics that breaks down into external phenomenon. An external phenomenon is human behaviour that matters and affects the

¹⁴ Bruno Latour is one of the primary developers of action-network theory (ANT), a constructionist approach influenced by the ethnomethodology of Harold Garfinkel, the generative semiotics of Greimas, and the maverick sociology of Durkheim's rival Gabriel Tarde.

course of social debate to bring a broader context to a local and/or global situation (Latour 2005).

In the virtual world, when people act, the consequences of their actions are delivered with semantic weight (Becker 2006). For example, when people upload pictures to the Internet to share with friends, each action to upload is confirmed by a graphical cue that confirms our process. This gives meaning to the abstraction that there are bytes from my computer moving to the server and in the process the pictures are being uploaded.

2.2 Research Implications

This section discusses the implications of social design research as it is applied in this thesis to culture, system design, and agency. I first introduce the concept of transcoding culture and the broader context for why we should care about this subject, the long-term ramifications, and how the act of transcoding has changed the way we see ourselves and the world in general. Secondly, I explore the notion of studying communicative ecologies as a means of understanding the dynamics of social design practice. I discuss how these research findings could change the way designers work with cognitive scientists, system architects, library scientists, and cultural theorists to collaboratively build meta-frameworks for APIs. And finally, I discuss the implications of adopting social design practice as a means of ensuring diversity within the virtual world, referring to the nature of human growth and how diversity leads to knowledge building.

2.2.1 Transcoding Culture

The implications of this research will bring to attention the ways in which people

transcode their life-experiences to the Internet. In this thesis I describe the transcoding of the *Crude Awakening* performance as a social paradigm of viewing ourselves as ‘global contributors’. In a recent **Wired** article called, *The New Socialism: Global Collectivist Society Is Coming Online*, author Kevin Kelly talks about the new communal aspects of digital culture as running deep and wide. He uses *Wikipedia* as an example of this emerging collectivism and points to Ward Cunningham’s first collaborative webpage, in 1994, which now tracks nearly 150 Wiki engines, each powering a myriad of sites.¹⁵ He claims that the Internet launched a new brand of socialism, which operates within the realm of culture and economics, rather than government (Kelly 2009).

Some cultural theorists believe that the Internet as an ideological premise has come to symbolize cultural collectivism, where by social groups extend culture from the physical to the virtual world. Whether this is a new kind of socialism, collectivism, conscious or not, people are using the Internet as a conduit to share and learn about global culture. Culture has been described as one of the two or three most complex words in the English language. Culture can be as widely defined as a set of distinctive spiritual, material, intellectual and emotional features of a society or social group, that encompasses, not only art and literature, but lifestyles, ways of living together, value systems, traditions and beliefs (UNESCO 2002).¹⁶ In the field of computer science, culture can be as narrowly defined as the appearance of an interface – sometimes referred to as the “skin” or “look and feel”. In universities, culture has increasingly become a field of study and, perhaps unsurprisingly, it is a tangled, multi-perspective, and

¹⁵ When Kevin Kelly discusses collectivism of the web, he states that Bill Gates once commented on the open source advocates as a "new modern-day sort of communists," a malevolent force bent on destroying the monopolistic incentive that helps support the American dream.

¹⁶ This statement is a summary of UNESCO 2002 Universal Declaration on Cultural Diversity and documents key characteristics of a person’s culture.

contentious subject. In the book, *Language of New Media*, Lev Manovich describes the ways in which computers model the world through representations of data and the way we use them and he states:

That the computer's ontology, epistemology, and pragmatics - influence the cultural layer of new media, in ways that organize the content we retrieve, the emerging genres, and in the composition of content (Manovich 2001).

In more detail, Manovich explains that even in the way we write taxonomies and build databases is in fact a reflection of a cultural form. He implies that even in the way we conceptualize a particular model of the world and of human experience is shaped by our own cultural bias. In this thesis, I refer to the relationships between people publishing images, text, sound, and video to the Internet as transcoding. Although aspects of the real world are characterized, shaped and modelled in the virtual, I point out that the act of transcoding life-experiences into a collection of bits is an extension of culture. We are now living in an era, where people, whether they are conscious or not, can choose the degree to which they physically engage with the world. Using *Crude Awakening* as an example, a person could, attend the performance, record their experience, and publish their digital documentation to the Internet for immediate global access. This new paradigm has dramatically changed the way we see others and ourselves in the world. For example, before 1990, people would, attend an event, take pictures, print the pictures, then show and store their pictures. Ownership remained the responsibility of the photographer viewing was through personal invitation.

When we publish to systems like *Flickr* or *YouTube*, ownership of the digital content is shared and we implicitly give permission to data mining entities to glean information on the sum of the content stored. This realization is significant when we take

into account that there are more than 35 million folks who have posted and tagged more than 3 billion photos and videos on Flickr. Although *YouTube* does not make their stats public, they claim that every minute 20-hours of video is uploaded. People are watching hundreds of millions of videos a day and uploading hundreds of thousands of videos daily. In one of the most comprehensive studies of the Internet the University of California published in 2000, it is stated that the world produces between 1 and 2 Exabyte of unique information per year, which is roughly 250 megabytes for every man, woman, and child on earth. An Exabyte is a billion gigabytes, or 10^{18} bytes.¹⁷

In a nutshell, terabytes of images, sound, text and video are being uploaded to the Internet by people globally, and continued research into the social aspects of computing, including the ways in which we store and retrieve this data will ensure that the wealth of knowledge that exists on the Internet is recognized as cultural assets, remain public and is maintained sustainably over time.

2.2.2 System Design

In this thesis, the goal of this research is to define the dynamics of the Crude Awakening communicative ecology as a means of modelling a framework that could be used in the design of an API. This section introduces a broader understanding of APIs, and the ways in which this research can be applied. Traditionally, technologists visualize the way people interact in the world, and then try to model those interactions into the architecture of a system. As discussed on *Wikimedia*, the practice of publishing APIs has

¹⁷ In 2000, the University of California published a web site documenting a study to answer this question; how much information is there to store? If we wanted to store everything, how much storage would it take? In particular, they estimated yearly US and world production of originals and copies for the most common forms of information media. They also describe the magnitudes of some communication flows that are currently not stored but may well be in the future.

allowed Internet developers to create an open architecture for the sharing of content and data between applications.

In order to understand how online technologies can be built to support social agency, design teams must invariably incorporate bottom-up processes of self-organization, analogous to the emergence evident in nature that gives rise to complex structures (Alstyle & Logan 2007). While technologists know that the meta-frameworks involved in online search engines need to be designed in consultation with other experts, the implications of new collaborative working groups will bring people from like fields of library science, to social/cultural theory to build the meta-frameworks that will retrieve information in a much more contextualized form.

On one side, technologists criticize social/cultural theorists for not being able to translate the dynamic complexity of their fields into programmable functions. On the other side, social/cultural theorists argue that meaning is in itself contextual and not conducive to top-down frameworks that can be actualized by a static set of functions. Yet, somewhere in the middle, library scientists, technologists, and social/cultural theorists all tend to agree that existing taxonomy and classification like chronological, alphabetical and numerical are at best the most familiar way to assist people with navigation; but by no means provides meaning to the subject. It is my hope that this research will, at the very least, pave the way for further discussion for collaborative design teams building technologies that tackle some of these issues.

2.2.3 Social Agency

In this section I explore agency as a dynamic agent in system design. I define the concept of communicative ecologies as a means of understanding the broader context of

how culture is a determinate of action. In a recent paper called, *Design Considerations for Community Portals in Master-Planned Developments in Australia and Mexico*, authors Foth, Gonzalez, and Kraemer claim when conducting socio-technical analysis one must consider the communicative ecology that defines the conceptual framework for the system itself. They define a communicative ecology as a milieu of agents who are connected in various ways by various media making exchanges, in various ways. And build upon the research of Tacchi, Slater and Hearn arguing that communicative ecologies are a process that involves a mix of media, organized in specific ways, through which people connect with their social networks (Tacchi, Slater, Hearn 2003). Through the course of this thesis I've discussed the motivations for harnessing social agency as a determinate of action. When we think of social agency in terms of a communicative ecology, we begin to see agency as a series of actions or a movement tied to a place with objectives and motives.

From a cultural perspective, APIs give theorists an opportunity to build systems that incorporate known idioms. Brian Fraser defines an idiom as a constituent or series of constituents for which the semantic interpretation is not a compositional function of the formatives of which it is composed (Fraser 1970).¹⁸ Within the field of Computer Science, semantics has been described as actionable information — information derived from data through a semantic theory for interpreting symbols (Shadbolt, Hall, Berners-Lee, 2006). In other words, the act of computing has become a way to provide an account of meaning within theological connection of terms and the interoperability between systems. People are using computing as a means to extend individual and

¹⁸ In 1970 Brian Fraser defines the concept of idioms within a transformational grammar.

collective agency.

Social design researchers are analysing the functionality of systems as a means of validating assumptions of agency and the semantic characteristics of this digital world culture. For cultural theorists, how people are represented, and by whom, has been a very contentious issue. In fact, some theorists believe that we can never really move beyond our on basis, unless some transformative experience takes place. Cultural theorist Jeffrey Deitch claims that by 1968, along with the collapse of modernism, came a new sensibility and understanding that there are numerous ways to look at the world and just as many equally valid standards of behaviour. While strides have been made within the domain of culture to manage the complexity of such a world, within the world of computer science the priorities are focused as a kind of technological pragmatism, modalities are understood as wireless or cellular. Moreover, it is now, more than ever, that technologists need to help form other disciplines to manage the complexity of how systems can store and retrieve information on the Internet.

CHAPTER 3: RESEARCH METHODS

3.1 Methods Overview

This chapter is composed of three sections Methods Overview, Understanding *Crude Awakening*, and Test Case Study each outlines in further detail the procedures used to govern this case study. *Crude Awakening* is a media ecology composed of a live performance, film, Internet activities and printed articles that bring to attention a global crisis – our dependence on oil. This case study focuses on the live performance and its video documentation on *YouTube*. I've adopted a mixed methods approach that combines close reading and semantic differentials as a means of understanding the relationships between what people posted to *YouTube*, the system design and the live performance. The goal is to define the dynamics of this communicative ecology as a means of modelling a meta-framework that could be applied to APIs.

The method overview section introduces how the field of literary and visual arts have shaped the interpretation of close reading methods within the scope of this research. I list the procedures for conducting this research, which ultimately builds a conceptual scale detailing the live performance. In the second section, I introduce the *Crude Awakening* media ecology and connections to the larger social movement. I discuss the Burning Man Arts Festival as the backdrop to this cultural phenomenon and describe the experience of this 10-day event. In combination with these insights I discuss the rationale for choosing *YouTube* as the primary source of video content, along with the procedures for how I collected the video documentation. In the final section, I report on

the early test planning and results under the supervision of professors Ron Wakkary, James Bizzocchi and John Bowes and give insight to some of the cultural analyses on social agency. In conclusion, I present the peer-reviewed paper that documented the test findings, presented at Internet Research 9.0: *Rethinking Community, Rethinking Place, 2008*, at the IT University of Copenhagen, Denmark. It was important to introduce our findings at this conference, as feedback on the methodologies used to research social media is relatively new and widely debated.

3.1.1 Close Reading

Without doubt, the field of literary and visual arts has shaped the interpretation of close reading methods within the scope of new media. In this section I discuss how researchers have claimed close reading as a technique that has evolved over the years from literary theory since its early formulations by John Crowe Ransom and the other “New Critics” in the late 1930s and early 1940s (Tanenbaum & Bizzocchi 2009). Close readings are traditionally used for the explication of literary text. Its application to an interactive multimedia work requires that the same attention to detail, context and meaning be extended to include the various component media (sound, graphic, moving images) and the interactive process itself (Bizzocchi 2001).

In the practice of visual arts, close readings are interpreted as a way of seeing through the perspective of one’s aesthetic judgement. Years ago, I studied at Emily Carr College of Art and Design, Vancouver, BC, CA. As part of our foundational training we drew still-life arrangements. The content of these arrangements changed, but our drawings brought forth our own unique perspectives and ways of seeing the world. One of John Berger’s most significant contributions to art theory was his book *Ways of*

Seeing.¹⁹ In this book he states:

It is seeing which establishes our place in the surrounding world; we explain that world with words, but words can never undo the fact that we are surrounded by it (Berger 1976).

It is through this classic art textbook that the idea of ‘seeing’ was introduced as a modality for interrupting semantics. Perhaps seeing is an inherent characteristic of being a designer, so it is no surprise that semantics would be used as a means of decoding or encoding meaning. To conduct this close reading I followed a set of procedures as outlined by James Bizzocchi’s thesis, *Ceremony of Innocence* (Real World Multimedia, 1997), a CD-ROM adaptation of Nick Bantock’s *Griffin & Sabine Trilogy* and he states:

Close reading helps ensure that this conceptual map is firmly grounded in current practice, and that it will inform future practice. The journey includes several variations on close reading methodology. Some are close readings in the classic sense, and concentrate on an exhaustive look at an individual puzzle card. Other readings are not quite so close, but examine the flow of detail across several adjacent puzzle cards. Finally, some of the readings combine breadth of scope with fine detail, looking for individual reflections of broad themes that cut across the entire work. Despite these differences, all of the close reading paths share a similar approach. Each looks for the trace of narrative concerns (plot, story, character, emotion, theme) as instantiated in the work. Each concentrates on the nature of the instantiation: what is actually happening, what does it feel like, what is its role in the work. Finally, each looks for the relationship between interactive craft and narrative. These close readings become data, which forms the background and provides the raw material for the theoretical work of the thesis (Bizzocchi, 2001).

Bizzocchi’s approach to the close reading of digital media is valuable because it identifies the characteristics of a process for interpreting aesthetics. And within this process, he identifies four key procedures to conducting this type of research:

- (a) Build a conceptual map that can be used as a framework.

¹⁹ In 1972 John Berger’s book *Ways of Seeing*, introduced readers to the realm of interrupting artwork through ‘seeing’ as the key underpinning to interpreting aesthetics.

- (b) Base the analysis on breadth of scope and fine detail.
- (c) Look for unifying themes and trace of narrative concerns (plot, story, character, emotion, and theme).
- (d) Analyze the design and identify the underlying poetics.

In conducting a close reading of *Crude Awakening*, I applied Bizzocchi's set of procedures and built a conceptual framework of the live performance. This process is further documented in the section *Understanding Crude Awakening*.

3.1.2 Semantic Differentials

In this section I discuss the influence of Charles E. Osgood's research methods as they were applied to analyzing the video documentation in this case study (Osgood 1957). I examine how this method combined with the close reading of the *Crude Awakening* performance resulted with a clear understanding of what people thought was significant to document about the experience. Semantic differentials as a research method was developed for the purpose of arriving at a set of results, base a persons' response to a communications strategy, be it, political or corporate. A researcher would create a list of questions that would rate the viewers response on a bipolar scale. For example lets say you were trying to rate peoples response to a television program. Researchers using the semantic differentials method would survey a group of people asking them to rate the program on a bipolar scale. After asking many similar questions researchers would then have a collection of check marks corresponding to concept-points in the semantic space of what the television show meant to each person. When asked about his research Osgood states:

We are validly measuring at least certain aspects of a very important

variable in human behaviour, *meaning*, and that therefore our type of instrument has many valuable applications. But it has also become increasingly clear that our original conceptions were significant, that human semantic processes are very complex, and that problems of meaning are inextricably confounded with more general problems of human thinking or cognition (Osgood 1957).

Osgood's research was applied to many types of communication strategies and measured the impacts of government policies, perceptions on television programmes and reactions to product design. Over the last 50-years, many design researchers have adopted or co-opted his semantic differential methodology(ies) as a foundation for understanding the human emotional response and social attitudes towards a subject. When explaining how semantic differentials are applied to research, Rachel Sytsma states:

Typically, a single word (or short phrase) is the construct of interest, and individuals help the researcher differentiate the meaning of that construct by responding to several pairs of bipolar adjectives which are scored on a continuum running from +X to -X or from X to X + Y (like style). In theory, each bipolar pair ("scale") can be represented by a straight-line ("semantic space"); several such pairs or scales form a multidimensional geometric space (Gable, 1993). Thus, when individuals respond to a set of pairs or scales as they rate a concept, those individuals are, in effect, differentiating the meaning of that concept in intensity (degree from the origin along each semantic space) and direction (positive or negative along each semantic space) (Sytsma 2009).

In the 1950's as Osgood's research methods was developing, he was working with a one-to-many communications paradigm. Now design researchers are facing an ever increasingly complex many-to-many communications paradigm(s) which involves media environments that span, social networks, websites, magazines, books, films and television, to niche audiences. Where visual communication was once informed by a designer's creative intuition, the proliferation of specialized audiences now calls for more

research-based design processes (Bennett 2006).²⁰

In this thesis, I adapt Osgood's experimental approach to aesthetics judgement, to inform the procedures for measuring the semantic differentials between the performance *Crude Awakening* and its video content. Osgood determined very early on in his research that there was a difference between linguistic messages and aesthetics forms, he states:

Like ordinary linguistic messages, the aesthetic product is a Janus-faced affair; it has the dual character of being at once the result of responses encoded by one participant in a communicative act (the creator) and the stimulus to be decoded by the other participant (the appreciators). The factors operating in aesthetic judgements may be the same as those that appear in ordinary semantic judgements of linguistic signs, or they may be quite different; the factors operating for visual arts objectives may differ from those for musical or poetic objectives, although it would be hoped that this is not the case (Osgood 1957).

Osgood further explains, that in the case of an artwork, there are individual variations in both the encoding (the creators intent) and the de-coding (the appreciators feelings of significance). More can be said about the quantitative applications of semantic differential to aesthetics – especially in the area of visual arts; therefore, I'll restrict my discussion to this case study. The design of this research was modelled on Osgood's experiments for measuring the aesthetic judgements of paintings.²¹ Just as his experiments lead to responses on aesthetic judgements (how people felt about the artwork); I wanted to investigate if how people felt about the performance transferred into their aesthetic judgements of the video documentation. In section, *Procedures for Collecting Video Content*, I discuss how all-87 videos were collected, and in *Chapter 4 I*

²⁰ On pages 14 – 23, in the book *Design Studies: Theory and Research in Graphic Design*, Audrey Bennett discusses how the practice of graphic design has changed from intuitive mark-making to designing culture.

²¹ On page 290, in the book *Measurement of Meaning*, Charles E. Osgood introduces the work of his college W.T. Tucker and illustrates his experimental methods on the application of experimental aesthetics and related problems.

discuss the findings of this analysis.

3.2 Understanding *Crude Awakening*, 2007

In this section, I introduce the *Crude Awakening* media ecology and connections to the larger social movement. Every year, my partner and I go off the grid for at least 2-weeks— meaning no telephone, Internet, or TV. We do this to reset our thinking, to disengage from mass-everything. We pack up our desert gear and drive for 835-miles to join thousands of other people doing the same thing on the playa at Black Rock City, Nevada, USA. The Burning Man Arts Festival means many things to different people. For us it is a chance to reconnect with old friends, dance until we drop, and hone our skills in nomadic living. We marvel over the engineering and the evolution of the community over the 10-day event. Many scholarly papers have been written about Burning Man, including Jill Coffin’s paper called *An Analysis of Open Source Principles in Diverse Collaborative Communities*. In this paper she applies traits common to the successful free software and the open source hacker communities as a framework to analyze non-hacker collaborative communities such as Burning Man. From the perspective of this case study, Burning Man is the backdrop to the *Crude Awakening* performance. In a discussion about technology, Burning Man’s founder, Larry Harvey, at the 9th Annual Be-In in San Francisco, USA states:

Everyone has agreed that the growth of cyber technology is destined to transform the world. It will profoundly affect the distribution of economic and political power in our coming century and, with equal certainty, it will transform the manners and mores of everyday life. Most of these effects are incalculable, but it does seem clear that this revolution will liberate us, like other technologies before it, from the constraints of time and space. Whether it is good, in a given instance, to be liberated from time and space, is, of course, another question. As Americans, we tend to believe that any advance in individual liberty or convenience is an advance upon

the road to freedom. Yet I believe many of the problems, which beset our modern convenience culture, result from having been "liberated" all too well—displaced from the necessary axis that we as human beings require in time and space. If the "information superhighway" functions in any way like an actual superhighway, we are in serious trouble (Harvey 1997).

With this statement in mind, ten years later, on Sunday, September 2, 2007 at 1:24am, in Nevada desert, 45,000 people from the US, Canada and around the world travelled to watch *Crude Awakening*, a 45-minute choreographed theatrical spectacle produced by American artists Dan Das Mann and Karen Cusolito. The artists state that the work was meant to dramatize the worshipful relationship and dependence modern man has toward oil. At its climax, four different containers at each corner of an oil derrick shot a total of 900 gallons of jet fuel to engulf the top of the structure in a huge fireball creating 1,000-foot-high column of flame (HartIII, 2007). On Monday, September 3, 2007 the first *YouTube* video was posted less than twenty-three hours after the event had happened. The remarkable point, really is that people watching this event were in the middle of the desert, off the grid, yet had the means to post their video documentation to *YouTube*. As of today, I have collected 87 videos that either documented the face-to-face experience or are remixes of previously posted content.

In the context of Harvey's predictions, technology has liberated us from time and space. People viewing the *Crude Awakening* performance were able to respond by posting their documentation of the experience to the Internet. The information superhighway for some subcultures is perhaps, the only way, the message, if it is contrary to mass culture, can thrive within a local-to-global paradigm. In the following sections information about the *Procedures for Conducting the Close Reading and Understanding the Larger Media Ecology of Crude Awakening* is further explored.

Figure 3.1 Crude Awakening Mushroom Cloud Explosion



© 2007 Photographer Michele Ravera, by permission.

3.2.1 Procedures for conducting close reading

In this section I review the process for conducting the close reading on *Crude Awakening*. What I enjoyed most about conducting this case study was being able to attend the performance. As a researcher at the event, I was able to focus my attention on the visceral aspects of the performance such as the sounds, visual compositions, and motion. In preparation for the study, I read papers illuminating performance as a means of understanding the social aspects of computing. Computer scientists Dix et al were some of the few to incorporate such experimentation into their research. They claim that the concept of performance framing is central to understanding the background sociological concepts inside which a formal method is placed (Dix et al 2005). They further explained that the term ‘frame’ was developed by sociologist Erving Goffman and was meant to construct context within the limits of which individual and social interaction can take place. The term ‘frame’ involves a multi-model understanding of the way we perceive and interpret the world. For example when we see a theatrical play the primary framework is the reality of sitting in a theatre and the secondary framework is the construction of fantasy in the play (Dix et al 2005).

With this in mind, I watched with the intent to identify frames within the secondary framework, the construction of the live performance. Once the performance was over, I started to draw out a series of frames that described the beginning, middle and end of the performance. To maintain consistency I wrote a heading, descriptions, and listed transitions in visuals, sound, lighting, choreography, pyrotechnical instrumentation and transitions out. Full details of this close reading are listed in *Chapter 4: Analysis and Results*; the table below is an abbreviated description of the eight main frames referenced.

Table 3.1 Crude Awakening Abbreviated Frame Description

<i>Type</i>	<i>Description</i>
Frame 1	The Event Start: consisted of the pre-performance experience of being able to view the ten-story oil derrick structure and metal sculptures on stage unrestricted.
Frame 2	The Air Raid Siren: stage parameters became restricted, followed by a truck driving across the stage; a World War 2 air siren sounding and smoke filled the air giving the illusion of a real-world battlefield.
Frame 3	The Small Ground Fireworks: included visions of the smoke clearing and the small white/gold fireworks appearing as if oil was spouting up from the ground.
Frame 4	The Large White Fireworks: represented taller white fireworks focused our attention from the ground to the top of the oil derrick
Frame 5	The Large Red Fireworks: represented the tall white fireworks transitioning to a red colour.
Frame 6	The Mushroom Cloud: a fire display of a 1,000-foot mushroom cloud exploding, the smell of fuel and heat from the flames was overwhelming.
Frame 7	The Fire Plume: 1,000-foot flame devoured the oil derrick structure.
Frame 8	The Oil Derrick: consumed by fire collapses to the ground crumbling into a heap of burning embers.

3.2.2 Understanding the larger media ecology

As the result of searching for *Crude Awakening* on *YouTube* through the Related Videos feature, I discovered video content for the film called *Crude Awakening*. The film, produced in 2006 by European journalist and filmmaker Basil Glepke and Ray McCormack, is a documentary that polls oil company consultants, OPEC officials and ex-White House advisors who discuss issues and concerns about running out of oil.²² I believe there are connections between the performance and the film, however, in the context of this case study we will focus on the immediate similarity - they both share the same name and call to action. The connections between the real world phenomena, the

²² This is text from the film *Crude Awakening* web site www.oilcrashmovie.com

global issue of our dependency on fossil fuel, the film, the magazine articles, the performance; and posts to social networks are evidence that the message is making its way through the larger media ecology. Many years ago, Marshall McLuhan stated that media ecologies were a means to arrange various media to support each other so they won't cancel each other out, instead they buttress one medium with another (McLuhan 1977). New York University, Media Ecology program founder Neil Postman states:

A media ecology looks into the matter of how media of communication affect human perception, understanding, feeling, and value; and how our interaction with media facilitates or impedes our chances of survival (Postman 1970).²³

By looking at the *Crude Awakening* media ecology I was able understand the broader context for the live performance and draw associations to its meaning. In *Chapter 5: Discussion*, I introduce future work that examines the broader implications of *YouTube*-like websites, such as Flickr or Blogger as contributors to the *Crude Awakening* media ecology.

3.2.3 Procedures for collecting videos on *YouTube*

YouTube is the research Mecca for social design researchers interested in the broader context of understanding how networked technologies work. Each video is produced with intention and exemplifies the hybridization of technology and culture. The rationale for choosing *YouTube*, are twofold, its popularity and the embedded playlist feature allows you to preview and collect videos easily. In 2007 *YouTube* had developed a community that could be characterized as the channel-hopping, iPod-shuffling generation brought up with pervasive technology and incessant media (Silva & Dix

²³ Neil Postman's remarks in *The Reformed English Curriculum* in A.C. Eurich, ed., High School 1980: The Shape of the Future in American Secondary Education (1970).

2007). *YouTube* promotes itself as the sixth largest Internet destination, with over 72 million unique monthly visitors.²⁴ These researchers have identified *YouTube* as the Internet phenomenon of 2006, in the sense of a site, idea or meme that spread with extreme speed due to the size and social interconnectedness of the Internet and claim:

YouTube allows users to express (or portray) themselves; the system does the serious work of constructing identity and building sociality. People become familiar with each others' work, alliances are forged and enemies are noted and by all means if you are participating, you are a part of a community. We have identified two (overlapping) classes of people: those who browse and those who produce content. In the producer role, the purpose and goals are closer to traditional systems – to upload a video, change some setting (Silva & Dix, 2007).

In this case study, I examined the role of the producer and the people who documented, edited or remixed the video content of the *Crude Awakening* performance. Analysis of the videos I collected can be viewed in *Chapter 4: Analysis and Results*.

Embedded in the *YouTube* interface design is a search feature that allows visitors to search for video content by subject name. To begin the search, I entered '*Crude Awakening*' and then selected the videos that matched *Oil Derrick Explosion @ Burning Man 2007*. While watching the selected video, I then continued the search through the Related Videos, the embedded feature that retrieves from the *YouTube* database of videos of similar content. Paul Dourish addresses the fact that relationships between the audience and producer are treated as two separate domains. He suggests that these domains have occupied space in the cultural framework and has shaped the way we view creativity and the world, he states:

Meaning is not inherent to information; information is made meaningful.

²⁴ YouTube.com is an American owned User Generator Content system that allows people to upload and share video around the world should be earlier given that you refer to it on page one

Intentionality is a matter of context, and of doing (Dourish 2001).²⁵

In the first attempt the search findings revealed the search engines accuracy to retrieve the unrelated and related relationships to the subject matter. When searching for *Crude Awakening* I retrieved videos such as the *BP Refinery* or the *Edison Natural Gas* explosion, along with videos related to *Crude Awakening* the film. Finally, as discussed further in *chapter 5*, I learn through the search procedures, that while I could find subject-related videos, I could also gain insight into the subject as it relates to the system design.

The *YouTube* playlist feature was also a critical tool for collecting and viewing videos for this research. It is designed to be another level of personalization offered to account holding members. To use this feature all one has to do is set up an account. A person using this feature is able to view each video consecutively, and review lists of videos, page by page – with a thumbnail image of the video and system generated details on the length, viewer ratings, date posted and descriptive information pertinent to each video.

3.3 Test Case Study

Under the supervision of professors John Bowes and James Bizzocchi, I developed a test plan to analyse the relationships between the *Crude Awakening* live performance and its video documentation on *YouTube*. John Bowes suggested that I direct my attention to Charles E. Osgood's methods as a means of analyzing aesthetic judgment (Osgood 1957). James Bizzocchi laid out a set of procedures for conducting a close reading on both the *Crude Awakening* live performance and system design. This data

²⁵ On page 185 in the book *Where the Action Is*, author Paul Dourish reflects on the roles of knowledge managers as people who understand how the information is stored – not what it means.

later became the scales used for measuring the differentials of the video content. The test study involved five videos samples. Videos were collected from a *YouTube* search query for ‘*Crude Awakening 2007*’. The table below illustrates the five videos collected, and the eight *Frames* of the performance. Check marks are placed where the frames in the composition of the video matches that of the live performance.

Table 3.2 Test Semantic Differentials

	<i>Frame 1</i>	<i>Frame 2</i>	<i>Frame 3</i>	<i>Frame 4</i>	<i>Frame 5</i>	<i>Frame 6</i>	<i>Frame 7</i>	<i>Frame 8</i>
Video 1						X	X	X
Video 2						X	X	X
Video 3			X	X	X	X	X	X
Video 4					X	X	X	
Video 5						X	X	X

Based on these test results, I learned about the role of the producer in uploading videos to *YouTube*. Results from the test plan revealed that all five videos capture *FRAME6* Mushroom Cloud and *FRAME7* Flame Plume. Submission statements reinforced the idea that the explosion was the most significant iconic symbol. Listening to the sound also brought the attention to the ‘awe factor’ of the explosion and how the mushroom cloud was the climax to the performance. These findings lead me to explore the deeper meaning of the Mushroom Cloud as a cultural symbol. In Peggy Rosenthal’s paper, *The Nuclear Mushroom Cloud as Cultural Image, 1991*, her research uncovers through interviews with military personnel who had watched the first nuclear tests conducted by the United States on July 16, 1945. She claimed that globally the image of the mushroom cloud represents the bombing of Hiroshima, Japan in August 1945. She also suggests that in American culture, the mushroom cloud has come to symbolize ‘the

birth of a new world' a procreational image that expands to its ultimate and becomes creational.

3.3.1 Journal Article

Professor James Bizzocchi and I co-authored a paper called Transcoding Place and presented it at the Internet Research 9.0: Rethinking Community, Rethinking Place, IT University of Copenhagen, Denmark, 2008. This paper introduced the *Crude Awakening* test plan results and methods for measuring semantic differentials and understanding systems design. The paper investigated the large implications of *Crude Awakening's* networked echoes in order to understand how communities enact agency in today's digital world culture. In the context of this thesis, this paper established an argument for using close reading methodology as means of understanding social/machine agency, as well as, discussing the cultural implications of social media in general. This paper also established a framework for further discussions with my Senior Supervisor Ron Wakkary who was able to identify this multi-scaled research space, as one that combined culture, system design, and agency, and that within itself was a design practice. The full PDF version is available at www.interactionionart.org/research.html

CHAPTER 4: ANALYSIS AND RESULTS

4.1 Overview

This case study analyzes the *Crude Awakening* media ecology and focuses on a subsection of interactions between the live performance, interface design and video documentation posted to *YouTube*. Through a mixed methods approach that combines close reading and semantic differentials I define the dynamics of this communicative ecology as a means of modelling a framework that could be applied to the architecture of an API. In this chapter the inferences and assumptions made by the data collected are examined. These findings reveal that data posted to *YouTube* documenting the *Crude Awakening* performance have semantic similarities that are unique to the nature of the event - itself. Implications of how these findings can be applied to semantic technologies are discussed and further explored in *Chapter 5*.

In the section Transcoding Culture, I introduce the method used to conduct the close reading for the *Crude Awakening* live performance to produce a semantic scale. This scale was used in the second stage of this analysis to provide a systematic way to measure the semantic differentials of the video documentation on *YouTube*. In the section System Design, I introduce methods used to conduct the close reading on the *YouTube* interface for uploading videos during the time of this research (November 23 2007). Through this process, I analyze the composition of the interface design bringing attention to the page components and their interactions. The results of this study reveal that perimeters communicated through the design of the interface design shaped the dynamics of the

communicative ecology. In section Social Agency, I review the 87 videos collected from *YouTube* and analyse the semantic differentials of each video to the scale benchmarking the live performance. I also analyse the status features built into the system design that identify the date the video was uploaded, its length and title. In the concluding section, I summarize the *Findings* of this research and discuss how this mixed methods approach can help to define a multi-scaled research space and inform the design of APIs.

4.2 Transcoding Culture

In this section, I present the analyses and results of the close reading on the *Crude Awakening* performance. In *Chapter 2: CONCEPTUAL THEMES*, I reviewed the concept of transcoding as a practice of people transferring their thoughts and experiences into digital form. I drew upon Manovich's theory that our ability to transcode relates back to the history of cinematography and the way it has shaped our ability to capture, frame and compose our experiences (Manovich 2001). In *Chapter 3: Research Methods*, I discussed the context of the performance and the procedures used for conducting the close reading. I introduced the concept of 'framing' and how it has been applied to this study as a way to identify *Frames* that mark dramatic shifts in the theatrical composition. Results from this close reading were used to produce a scale that benchmarked the performance and used to measure the video documentation.

In tables 4.1 to 4.8 details of this close reading are presented as a textural framework that document the characteristics of each frame. I started by documenting the transitions in and out of each frame describing the ellipse of time. I examined the distinctive visual effects that characterized the each frame like the appearance of a truck

or the colour of the fireworks. I described each frame's audible landscape including the audience response or the actual sounds generated by the explosions. Noting the choreographic element of each frame was perhaps the most important, as these details outlined the movement and gestures of the audience. And finally I described the pyrotechnical instrumentation (fire and explosions) in each frame, which required incredible engineering by the artists to orchestrate.

The aim of this textural framework was to capture the characteristics of the theatrical composition and identify the poetics of the performance experience. This is not a new idea, since the late twentieth century there has been an explosion of interest in semiotics, the science of signs and the processes by which we communicate. In this study, eliciting the signs and symbols embedded in the performance and how they compare to the video documentation on *YouTube* is the primary goal. In the book *The Semiotics of Theatre and Drama* author Kevin Elam states:

Dramatic information may be conveyed by any or all of the systems involved, being translatable from one kind of message into another irrespective of the physical qualities of the signs or signals involved: the information 'night falls', for instance, can be conveyed by means of a lighting change, a verbal reference or, in Kabuki theatre, gesturally (Elam 2002).²⁶

Elam recognized that one could not reduce the experience of a complex theatrical work to a textural framework; however, he did claim that we could develop a textural framework as a means of detecting patterns (rhythms) in the semantic narrative that communicates the performance. Categories used to build the framework for the *Crude Awakening* case study were based on elements of theatrical composition and the unique

²⁶ In the book *The Semiotics of Theatre and Drama*, author Kevin Elam provides a structuralistic point of view to the composition of theatre. His vision of artists or composers is over simplified along with their role in along with what they are trying to recreate in their work.

characteristics of the *Crude Awakening* performance. As mentioned in chapter two Manovich explains that cinematography has shaped our ability to capture, frame and compose our experiences, for this reason transitions in and out of each frame, and attributes of visuals, sound and choreography were key definitions. A unique characteristic specific to the performance is the pyrotechnical effects like the mushroom that could only apply to *Crude Awakening*. Observing theatrical communications in terms of this simple framework outlined the many factors within the semantic space. I refer to this framework as the scale marking the beginning, middle and end of the *Crude Awakening* live performance. The scale captures the characteristics of the theatrical composition and identifies the poetics of the performance experience in eight frames. The significance of this scale to this research is that it provides a way to measure the semantic differentials of the videos documenting the performance as discussed in the *Social Agency* section of this chapter.

Table 4.1 Event Start

<i>Type</i>	<i>Description</i>
Frame 1	It was very cold sitting on the desert floor at 1:00am in the evening. I sat surrounded by people in front of a very large wooden oil derrick and five large-scale metal figurative statues. The area around the central core of the performance site was fenced off. Fire marshals were starting to patrol the outer parameters of the performance area. The whole setting was very dark the only light on the art installation was from the reflections of arts cars, lazars pens, and other fiery objects.
Transition In	Walking up to the location, looking for a place to sit.
Sound	Crowds speaking, fire marshals giving directions, music from art cars, propane forced through small pipes, the voices of the couple immediately beside us. And ongoing conversations with my partner.
Visuals	Oil Derrick with 7 large sculptures of people praying.
Choreography	N/A
Pyrotechnical	Fire radiating from the hands of the figures.
Transition Out	Air raid siren sounds.
Figure 4.1 Event Start	 <p>© 2007 Vicki Moulder</p>

Table 4.2 Air Raid Siren

<i>Type</i>	<i>Description</i>
Frame 2	The air raid siren sounded, I turned to look at the art installation, to see a truck drive across the front of the installation, with a smoke machine leaving a trail of smoke across the performance space. A dark silhouette of the oil derrick against the night sky revealed itself. The atmosphere was luminous, it looked very much like a WWII film image after a city had been bombed. I was also reminded of the television documentation of the Americans bombing Baghdad and the burning oil fields in Iraq.
Transition In	Air raid siren starts and smoke fills the air.
Sound	Air siren, murmuring of people talking, the background sound of music.
Visuals	Oil derrick, figurative sculptures and half of the audience barely visible.
Choreography	N/A
Pyrotechnical	Smoke
Transition Out	Smoke starts to clear and the siren stops.
Figure 4.2 Air Raid Siren	 <p>© 2007 Vicki Moulder</p>

Table 4.3 Small Ground Fireworks

<i>Type</i>	<i>Description</i>
Frame 3	As the smoke cleared ground fireworks emerge. It looked like glowing streams of oil were spouting up. There appeared to be seven or eight streams of fireworks placed around the derrick. It looked like oil coming up from the ground – and – I remember thinking the fireworks looked very unusual. The light from the fireworks illuminated the installation from the ground up creating large shadows that distorted the oil derrick as irregular patterns on the playa floor.
Transition In	Smoke cleared, slow bubbling of fireworks emerging from the ground.
Sound	Fireworks igniting, murmuring of people talking, the sounds of music.
Visuals	Golden fireworks illuminating the art installation casting large shadows.
Choreography	Fireworks, shadows on art installation flickering on the playa floor
Pyrotechnical	Fireworks
Transition Out	The small ground fireworks grow into geyser-like fireworks.
Figure 4.3 Small Ground Fireworks	 <p>© 2007 Victoria Moulder</p>

Table 4.4 Large White Fireworks

<i>Type</i>	<i>Description</i>
Frame 4	There was an evolution of fireworks from the ground spouting up even higher, like larger fountains of light. They gave the impression of overflowing geysers gushing with oil. This continues for 5-10 minutes. I impatiently thought that it would never end, and at times I felt as though too much attention was focused on this section of the performance. I wondered why they would repeat the same visuals over and over again – I was frustrated with this part of the performance.
Transition In	The small ground fireworks grow into geyser-like fireworks.
Sound	Fireworks igniting, murmuring of people talking, the sounds of music.
Visuals	White fireworks illuminating art installation.
Choreography	Fireworks, shadows of art installation flickering.
Pyrotechnical	Fireworks
Transition Out	White fireworks turning into large red fireworks.
Figure 4.4 Large White Fireworks	 <p>© 2007 Victoria Moulder</p>

Table 4.5 Large Red Fireworks

<i>Type</i>	<i>Description</i>
Frame 5	By the time the tall white fireworks had changed to red, it felt like hours had passed by. The metaphor of the transition was clear. The oil had turned to blood. Streams of red light were engulfing the art installation. The mood was intensifying – I felt like I was in the middle of a war or the bombing of an oil field.
Transition In	White fireworks turn red and the sky starts to explode.
Sound	Fireworks igniting, murmuring of people talking, the sounds of music.
Visuals	Red fireworks illuminating art installation.
Choreography	Fireworks exploding in sky and ground.
Pyrotechnical	Fireworks
Transition Out	Red fireworks taper down until there is just the smoke hanging over the art installation.
Figure 4.5 Large Red Fireworks	 <p>© 2007 Victoria Moulder</p>

Table 4.6 Mushroom Cloud

<i>Type</i>	<i>Description</i>
Frame 6	After all of the fireworks there was a pregnant pause that filled the air with anticipation. The smoke settled and I could see what looked like torches at the four corners of the oil derrick. Four large pipes were attached to the sides of the derrick. The pipes simultaneously ignited, sending long fire plumes into the centre of the derrick, and then forming a very large mushroom cloud that overshadowed everything. The sensation from the heat of the explosion blew over my face; the fiery clouds rolled into the mushroom cloud shape - an amazing spectacle. I thought about the American military soldiers who had watched the first atomic blast in Nevada. I thought that this is what it would be like if I was in a war. I thought about a lot of things that were very abstract. Being so close allowed you to see, smell, and feel the art installation - an all-senses event. The contrast of the mushroom cloud against the black night sky left a strong imprint of the image.
Transition In	Red fireworks stop, and the smoke settles.
Sound	A loud explosion, people screaming in awe, the sounds of music.
Visuals	A high-contrasting mushroom cloud engulfs the sky.
Choreography	One large mushroom cloud.
Pyrotechnical	Four fire cannons igniting.
Transition Out	Mushroom cloud dissolves.
Figure 4.6 Mushroom Cloud	 <p>© 2007 Victoria Moulder</p>

Table 4.7 Flame Plume

<i>Type</i>	<i>Description</i>
Frame 7	After the mushroom cloud had dissolved, there was a calm that filled the air. Slowly a plume of fire emerged from the centre of the oil derrick. The plume extended high above the structure and appeared to be under a lot of pressure. I could feel the force of the pressure through the ground. I could see the flames consuming the oil derrick and before too long, the entire structure was on fire.
Transition In	Mushroom cloud dissolves.
Sound	Forced gas, murmuring of people talking, the sounds of music.
Visuals	Fire plume illuminates oil derrick from inside out.
Choreography	One single focus on the fire plume.
Pyrotechnical	One fire cannon ignites
Transition Out	Fire plume dies down and the oil derrick is on fire.
Figure 4.7 Flame Plume	 <p>© 2007 Victoria Moulder</p>

Table 4.8 Oil Derrick on Fire

<i>Type</i>	<i>Description</i>
Frame 8	The oil derrick is on fire. I can see that this large is soon going to fall to the ground. The wood is burning in the pattern of how the structure was built. Lots of cross shapes. It had a very strange effect – meaning that the structure was solid yet at the same time because it was on fire you knew that it was going to collapse. Finally after a few minutes, the oil derrick did falls to the ground and a cheer was heard from all that had witnessed the event.
Transition In	Plume dries up, oil derrick on fire.
Sound	People talking, murmuring of people talking, the sounds of music.
Visuals	Burning oil derrick structure, people are starting to walk away from the performance.
Choreography	N/A
Pyrotechnical	Burning oil derrick structure.
Transition Out	Oil derrick crashes to the ground all that's left are the praying figures.
Figure 4.8 Oil Derrick on Fire	 <p>© 2007 Victoria Moulder</p>

In summary, in tables 4.1 to 4.8 details of the close reading of the *Crude Awakening* performance are documented. The textural framework identifies eight separate frames; each frame marks a dramatic shift in the theatrical composition through the transitions in and out, sound, visuals, choreography, and pyrotechnical characteristics. The significance of this research benchmarks the performance by drawing attention to the semantic weight of the composition. I learned from attending this performance of the limitations of trying to transcode the experience especially the more visceral sensations like smell and temperature. Overall the descriptions given provide a high level account of the rhythm through the performance.

Under the category of sound I noted the steady stream of people responding to the performance either with laughter, talking, yelling, and shouting as a constant rhythm underlining all other sounds. Sounds that could be heard above the audience response were described separately in each frame. In *Frame 1* the sound of forced propane through the hands of the metal sculptures. *Frame 2* the air raid siren, and in *Frame 3, 4, and 5* the sound of fireworks in many variations. The explosion of the mushroom cloud punctuated the performance in *Frame 6*. The forced jet fuel in *Frame 7* was perhaps the loudest. And in the *Frame 8* the burning and breaking of wood as the oil derrick fell to the ground marked the end of the performance.

It was apparent after analysing each frame that the visual effects implied the broader implications of the interpretation of the work. For example in *Frame 1* the metal sculptures of people praying in front of the oil derrick denoted a worshipful relationship to oil, and is also a powerful cultural metaphor that implied other meanings, like all people who pray are followers – or – people are worshipping with blind faith. In *Frame 2*

the visuals of the smoke engulfing the entire oil derrick gave way to the scenes of a war. In *Frames 3, 4 and 5* the escalation of fireworks from the ground implied the appearance of oil geysers gushing from the ground. The mushroom cloud in *Frame 6* as discussed in the test case to Americans means the procreational aspects of a new area. And the *Frame 7 and 8* the final complete emergence of the oil derrick in flames and its fall denote a collapse of an era.

The audience boundaries to the stage shifted with the pyrotechnical and choreographic implementation, which were clearly defined by the transitions in and out of each frame. For example in *Frame 1* people were invited into the primary stage area to view the sculptural objects. In *Frame 2* people were made to stand on the outside of the boundary area to avoid exposure to the pyrotechnical features. The smoke from *Frame 2* still lingered in the air as small fireworks from *Frame 3* emerged. As the fireworks grew larger in *Frame 4*, in *Frame 5* they transitioned from white to red. In *Frame 6* all of the fireworks stopped and there was pause before the 1,000-ft tall explosion leaving a lasting optical impression of the mushroom cloud. This vision was then followed by *Frame 7*, which was the instrumentation of fire plume that consumed the entire oil derrick until it's final collapse in *Frame 8*.

The complexity of measuring semantic differentials within this case study is a sticky matter because meaning itself is a matrix of subjective and objective perspectives. For this research the performance scale, represents my account of the experience from beginning to end, and the video documentation on *YouTube* represent 87 people's impressions of the performance. This section concludes the first stage of the analysis, the second stage of this analysis focuses on the system design for the purpose of

understanding page components and interactions.

4.3 System Design

In *Chapter 2: Conceptual Themes* I introduced the notion that web page interactions are the inner workings of how communities learn, change and grow (Dourish 2001). I focused on the work of social theorists Lave and Wenger who claim that in becoming a member of a community; one learns not only how to exercise the skills of that community, but also to exercise them as a member of that community. I talk about the *YouTube* community as discussed by Silva and Dix as two (overlapping) classes of people: those who browse and those who produce content. I describe the producer as a person who categorizes and tags video content. Under *Research Implications*, I discuss in detail the value of this research and in understanding the interactions of people posting video content to *YouTube*. I claim that further exploration is required to chart the dynamics of communicative ecologies so we can build systems with the very flexibility inherent to social movements.

In the following section, I examine the web page components used by people to select, categorize and tag video content posted to *YouTube*. The value of identifying these components brings attention to how these interactions have shaped what the producer can upload. Moreover, by studying the video upload web pages step-by-step we discover yet another variable in the chain of transcoding experiences to the Internet. In tables 4.9 to 4.11 the close reading findings of the Video Upload (Step 1 of 2), Video Upload (Step 2 of 2) and Video Upload – Upload Complete web pages are explored. Each component and interaction is categorized to form the textural framework that outlines the interface experience.

Table 4.9 Video Upload (Step 1 of 2)

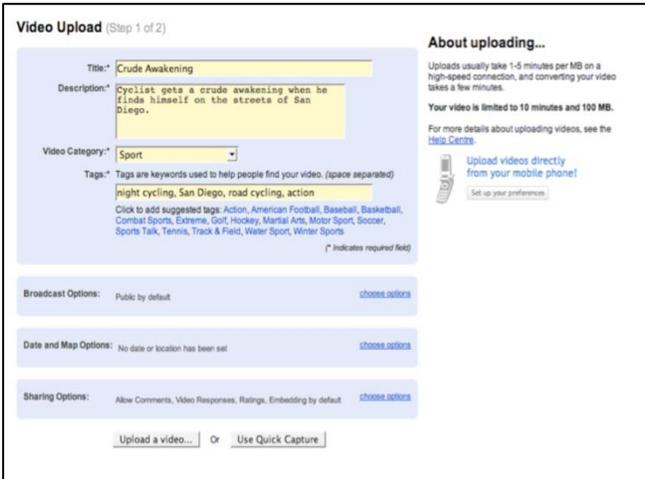
<i>Components</i>	<i>Interactions</i>
Video Content Description (Top left)	This interface component combines: the title, description and tags input boxes, along with the video category drop down menu. All of fields are required to post a video.
Contextual Information (Top right)	This interface component combines information about uploading video content and includes these statements: <ul style="list-style-type: none"> - Uploads usually takes 1-5 minutes per MB on a high-speed connection, and converting your video takes a few minutes. - Your video is limited to 10 minutes and 100 MB. For more details about uploading videos, see the [link: Help Centre]. - Upload videos directly from your mobile phone! [Link: Set up your preferences]
Contextual Options (Middle left)	This interface component combines information about other options you have to completing extending the published video to a broader audience and includes these statements: <ul style="list-style-type: none"> - Broadcast Options [link: Choose Options] - Data and Map Options [link: Choose Options] - Sharing Options [link: Choose Options].
Button (Bottom left)	Click button [link: Upload a Video.....]
Button (Bottom left)	Click button [link: Use Quick Capture]
Figure 4.9 Video Upload (Step 1 of 2)	 <p>The screenshot shows a web form for video upload. The title is 'Crude Awakening'. The description is 'Cyclist gets a crude awakening when he finds himself on the streets of San Diego.' The video category is 'Sport'. The tags are 'night cycling, San Diego, road cycling, action'. There are sections for 'Broadcast Options', 'Date and Map Options', and 'Sharing Options', each with a 'choose options' link. At the bottom, there are buttons for 'Upload a video...' and 'Use Quick Capture'.</p>
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Table 4.10 Video Upload (Step 2 of 2)

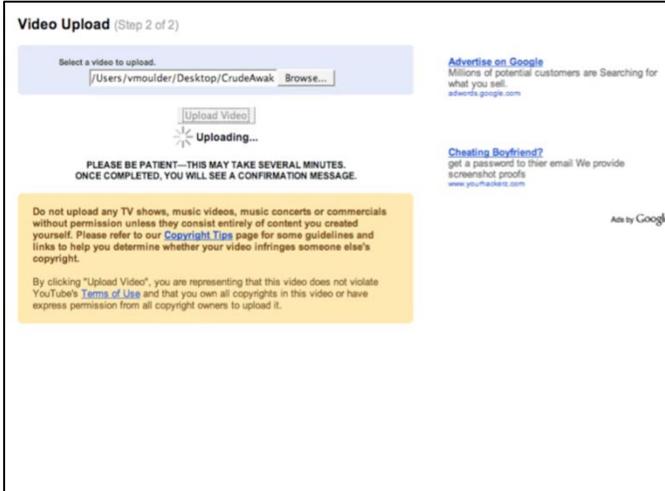
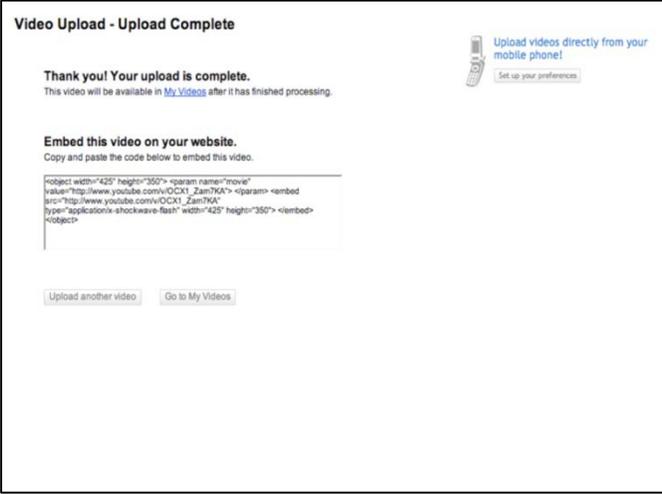
<i>Components</i>	<i>Interactions</i>
Video Content Description (Top left)	This interface component instructs the user to select a video to upload using a file browse feature. A user can enter the location of the file using the input box or one can browse files select.
Button (Bottom left)	Click button [link: Upload Video] A visual display indicating the system's response to uploading the video.
Contextual Information (Top right)	This interface component is used for displaying advertising, the text reads: <ul style="list-style-type: none"> - [Link: Advertising on Google] Millions of potential customers are searching for what you sell. - [Link: Cheating Boyfriend?] Get password to their email. We provide screenshot proofs.
Contextual Options (Middle left)	This interface component confirms information about copyright and Terms of Use the text reads: <ul style="list-style-type: none"> - Do not upload any TV shows, music videos, music concerts, or commercials without permission unless they consist entirely of content you created yourself. Please refer to our [link: Copyright Tips] page for some guidelines and links to help you determine whether your video infringes someone else's copyright. - By clicking "Upload Video", you are representing that this video does not violate YouTube's [link: Terms of Use] and that you own all copyrights in this video or expressed permission from all copyright owners to upload it.
Figure 4.10 Video Upload (Step 2 of 2)	 <p>© 2007 Victoria Moulder</p>

Table 4.11 Video Upload Complete

<i>Components</i>	<i>Interactions</i>
Video Content Description (Top left)	This interface component is used to confirmation that the video has uploaded, the text states; Thank you! Your upload is complete. This video will be available in [link: My Videos] after it has finished processing.
Contextual Information (Top right)	This interface component is used to direct the users attention to mobile phone use, the text states; Upload videos directly form your mobile phone! [Link: Set up your preferences]
Contextual Options (Middle left)	This interface component combines information about options to embed video, the text states; Embed this video on your website Copy and paste the code below to embed this video. HTML code to embed
Button (Bottom left)	Click button [link: Upload another video]
Button (Bottom left)	Click button [link: Go to My Videos]
Figure 4.11 Video Upload-Complete	 <p>© 2007 Victoria Moulder</p>

Overall the significance of this close reading revealed that the interface design incorporated two major interface properties; the top navigation, which connected users to the larger *YouTube* website; and the main body of the web page, which lead people through the video upload process. This close reading focused only on the video upload process for the purpose of uncovering the underpinnings of the information architecture that placed emphasises on the importance of each step.

The top navigation was important to the video upload process, as a person would sign up as a member of the *YouTube* web site to post a video. This means leaving the video upload page and entering personal information into a set of input boxes, agreeing to the terms of use and submitting the request. Once a member a person could then post video content.

Throughout the main body of the video upload web pages the information architecture reveals these content areas; the video content description (top left), which provides the input boxes and instructional information to upload the video; the contextual information (top right), which provides additional information that supports the upload process; the contextual options (middle left), which introduces users to the ways they could disseminate their video content beyond a producers content area on *YouTube* to the boarder social networks. And the confirmation buttons placed at the bottom of the page that confirmed completion of each step.

In summary the close reading helped to identify key features of the information architecture, the nature of the web page components and the step-by-step procedure for uploading video content. I also learned that the overall functionality of the web page components included many more features then uploading a video e.g. a video

compression tool, mobile uploads, and posting to social networks. Perhaps one of the most significant discoveries was in understanding the direct relationship between the interface design and the perimeters to what and how a producer could upload video content. For example I learned that a video could not exceed maximum of 100MB in size and 10-minutes in length. I also learned that the process required a producer to name, categorize and describe their video content. This stage of the analysis completed the second part of the case study. These findings along with the live performance scale provided the tools required to evaluate the videos posted to *YouTube* as explored in the *Social Agency* section of this chapter.

4.4 Social Agency

In this section I present the analyses and results of measuring the semantic differentials of 87 videos observed on *YouTube* documenting the *Crude Awakening* performance. In *Chapter 2: Conceptual Themes* I introduced the notion of agency as described by Laura Ahearn as a concept that relates to and is affected by socio-cultural conditions and the capacity to take action. I used the term communicative ecology, as discussed by Foth, Gonzalez, and Kraemer as a milieu that involves a mix of media, organized in specific ways, through which people connect with their social networks. In *Chapter 3: Research Methods* I discuss the procedures for collecting and storing the videos and describe strategies used to measure the semantic differentials. I introduce Osgood's analysis of artwork whereby the interpretation of meaning relies on both the encoding of (the creator's intent) and the decoding (the 'appreciators' feelings of significance). In this case study the artists of the *Crude Awakening* performance, Dan Das Mann and Karen Cusolito were very clear about their intent in the creation of the

artwork - to dramatize the worshipful relationship and dependence modern man has toward oil. In contrast, some members of the audience measured what they found to be significant about the performance by recording and posting a video to *YouTube*.

In *Chapter 2: Conceptual Themes* I report that 1 to 2 Exabyte of unique information is being uploaded to the Internet per year. This is roughly 250 megabytes for every man, woman, and child on earth. Research into the social aspects of computing, including the ways in which we store and retrieve data will ensure that this wealth of knowledge will be as recognized as cultural assets, remain public and maintained sustainably over time.

How we store and retrieve data posted to social media sites, on many levels is an emerging subject for fields such as library science, information visualization and semantic technologies. In this case study, I wanted to look at how people transcode culture to the Internet, with the assumption that if I could describe a conceptual model of those influences I could possibility model the patterns of data that are inherently similar. In other words, I could potentially produce a conceptual model to build APIs that search specifically for cultural material.

The ways in which search engines retrieve information relies partially on the way information is structured, and how programmers, develop algorithmic sequences that tell the application to rove through the data and retrieve – what the search criteria is based on. Within the first stage of this case study I conducted a close reading on the actual *Crude Awakening* live performance documenting it's theatrical structure. Then I conducted a close reading on the *YouTube* interface design documenting the system perimeters to define what a producer could post. These findings gave definition to the actual *Crude*

Awakening live performance and the *YouTube* interface design. The analysis to follow is divided by two sections. In the first section I measure the semantic differentials of video content against the semantic scale of the live performance. In the second section I identify similarities in the date of upload, length and titles against the system design characteristics.

4.4.1 Semantic Differentials of Video Content

As discussed in the section *Transcoding Culture* of this chapter a close reading of the of the *Crude Awakening* live performance gave definition to eight frames, The Event Start, Air Raid Siren, Small Ground Fireworks, Large White Fireworks, Large Red Fireworks, Mushroom Cloud, Fire Plume, and Oil Derrick. This scale was used to provide a systematic way to measure the semantic differences of the videos content in the 87 videos documenting the live performance.

Table 4.12 YouTube Video Semantic Differentials

<i>Performance Scale</i> (Frames listed represent the <i>Crude Awakening</i> performance start to finish)	<i>Video Frames</i> (The number of videos with corresponding Frames)	<i>Percent</i> (The percentage of videos with corresponding Frames)
Frame 1 Event Start	15	17%
Frame 2 Air Siren	10	11%
Frame 3 Small Ground Fireworks	19	21%
Frame 4 Large White Fireworks	24	27%
Frame 5 Large Red Fireworks	26	29%
Frame 6 Mushroom Cloud	54	61%
Frame 7 Flame Plume	41	46%
Frame 8 Oil Derrick on Fire	16	18%

In table 4.12 *YouTube* Video Semantic Differentials column performance scale lists Frames 1 through 8. Column video Frames lists the number of times a frame was capture in one of the 87 videos and the next column represents the percentage. The number of

videos with the content that represents the corresponding frames captured is the final results of this analysis. Through this process I learned that 54 videos included *Frame 6 - Mushroom Cloud*; and 41 videos included *Frame 7 - Flame Plume*. These two frames were recorded or edited to be side-by-side. I found this spike to be predictable, as the mushroom cloud was the climax and the fire plume was what followed in the composition of the performance. Fewer people captured the frames leading up to the climax with 26 videos including *Frame 5 - Large Red Fireworks*; and 24 videos included *Frame 4 - Large Fireworks*. Even fewer people captured the rest of the performance, with 15 videos including *Frame 1 - Event Start*; 10 videos including *Frame 2 - Air Siren*; 19 videos including *Frame 3 - Small Ground Fireworks*; and 16 videos including *Frame 8 - Oil Derrick on Fire*. The results of the semantic differentials proved that 61% of the people who uploaded videos to *YouTube* choose to capture the climax *Frame 6 - Mushroom Cloud* of the performance. Only 10% of the people captured *Frame 2 - Air Siren* this frame relied predominately on sound and had dark visuals making it very difficult to record. All other frames captured gave evidence of the gradual lead-up to the climax and its decline.

4.4.2 Semantic Differentials of System Design

As discussed in the section System Design of this chapter a close reading of the of the *YouTube* interface for loading video content gave way to definition to a list of page components that perimeters to what producers could publish to *YouTube*. We learned that the interface components were organized into categories such as: Video Content Description, Contextual Information, Contextual Options and Buttons to confirm and select the next step of the video upload process. I learned there was a three-staged process

to uploading a video. On the top left side of each page the video content description identified all of the video titles, length, and date it was uploaded. In tables 4.13 to 4.15 to follow the results of this analysis reveal patterns in the way people titled video content, the length and the date each video was uploaded to *YouTube*. The significance of this analysis will be discussed in greater detail in the *Findings* section of this chapter. In brief, I was able to identify trends in the ways producers use and contribute content to *YouTube*.

Table 4.13 Titles

<i>Popular Words</i>	<i>Video Title</i> (Represents the # of times the word was used in all video titles)	<i>Percentage</i> (Represents the % of times the word was used in all video titles)
Burning Man	67	76%
<i>Crude Awakening</i>	56	63%
2007	47	53%
Fire	26	29%
Oil	20	22%
Explosion	16	18%

For example, while analysing the words used in the title of each video I observed that ‘Burning Man’ was used in 67 titles; ‘*Crude Awakening*’ was used in 56 titles; ‘2007’ was used in 47 titles; ‘Fire’ was used in 26 titles; ‘Oil’ was used in 20 titles; and ‘Explosion’ was used in 16 titles. These observations showed that 76% of the people named their videos after the arts festival and 63% of the people named their videos after the performance; and that 53% of the people classified their video entry by year. Titles with words that described elements of the performance made up were fewer, 29% of the people used ‘fire’, 22% of the entries used ‘oil’ and 18% of the people used ‘explosion’. This is significant as it made clear that people have an inherent disposition to name and categorize contributions through a hierarchical naming e.g. the place ‘Burning Man’, the

event '*Crude Awakening*' and the year '2007'.

Table 4.14 Length

<i>Length</i>	<i>Video</i>
0:00 - 0:30	27
0:31 - 1:00	21
1:01 - 1:30	8
1:31 - 2:00	4
2:01 - 2:30	5
2:31 - 3:00	3
3:01 - 3:30	5
3:31 - 4:00	2
4:01 - 4:30	0
4:31 - 5:00	1
5:01 - 5:30	2
5:31 - 6:00	0
6:01 - 6:30	0
6:31 - 7:00	0
7:01 - 7:30	1
7:31 - 8:00	0
8:01 - 8:30	0
8:31 - 9:00	1
9:01 - 9:30	3
9:31 - 10:00	2
10:00 - +	2

In addition to the video titles I analysed each video length in increments of 30-seconds. Even though the performance was approximately 45-minutes long, and the *YouTube* interface would only allow a user to publish 10-minutes or 100MB of video I wanted to learn how these factors into what people choose to publish. While observing each video length to discover that 27 were under 30-seconds, 21 were between 31 to 60-seconds, and 8 were between 61 to 90-seconds in length. The remaining 27 videos were dispersed over the 1.30 to 10-minutes in length. Only 2 videos exceeded the 10-minute limit. The analysis of the video lengths was perhaps the most troubling. Even though

YouTube producers could upload 10-minute videos, we learned that 63% were between 0 to 90-seconds. This could be due to the availability of storage on peoples recording devices – or – the fact that people were using video recorders, like a snap shot camera.

The final stage of this analysis examined the date of which people posted their video content to *YouTube*. Trends in the way people responded to the performance was outstanding, on Sunday, September 2, 2007 the *Crude Awakening* performance happened at 1:45am and on Monday, September 3, 2007 the first video was posted. What is unique about this situation is that the performance was held in an area off-the-grid in the middle of the desert. People would either of had to travel to get to a location with Internet access or use GPS to post their video content. I contacted the producer who first publish their video to *YouTube* and asked him how he uploaded the video. He replied that after the performance he drove to Reno and posted the next day.

Table 4.15 Upload Dates (per month)

<i>2007 Month</i>	<i>Video</i>	<i>Percent</i>
September	79	90%
October	6	7%
November	2	2%

Table 4.16 September Upload Dates

<i>September</i>	<i>Video</i>	<i>Percent</i>
3 - 10/07	60	76%
11 - 18/07	14	18%
19 - 26/07	5	6%

Trends in video upload date were observed by analyzing each video entry. I discovered the 79 of the 87 videos were posted in September; 6 videos were posted in October; and 2 were posted in November. In the month of September 60 of the 79 videos

were uploaded between September 3 to 10, 2007 only 7-days after the performance; 14 of the 77 videos were uploaded between September 11-18 only 14-days after the performance; and 3 of the 79 videos were uploaded between September 19 -26 just 21-days after the performance. Perhaps one of the most significant discoveries of this research was that people immediately posted their video - 90% of the videos were uploaded within 3-weeks of the performance date and 76% of those videos were uploaded within 7-days.

4.5 Findings

This thesis adopted a mixed-methods approach that combined close reading and semantic differentials as a means of understanding the relationships between what people posted to *YouTube*, the system design and the *Crude Awakening* live performance. This method of analysing semantic differentials was to provide insight to a very important variable in human behaviour - meaning. The goal was to define the dynamics of this communicative ecology as a means of modelling a framework that could be applied to the architecture of an API. As a result, I have divided these findings into two sections, the first reports on how meaning is translated through human computer interactions. The second examines how these transactions could be applied to software architecture.

Meaning as a subject has many implications and in future work I hope to tackle the broader context in regards to HCI concerns. In the limited scope of this thesis I'm exploring if the artist's intent of the *Crude Awakening* live performance translated through the communicative ecology of *YouTube* and subsequent video postings. When James Bizzocchi and I co-authored the first paper documenting our test results we came to the conclusion that through the lens of agency, there was slippage of intention and

meaning in the various stages of choice. The Burning Man *Crude Awakening* artists exercised agency through the production of the performance; the audience who attended the event exercised agency; and a portion of that audience chose to transcode their experience and post videos to *YouTube*. As agency shifted across different classes of artists, participants, and video producers, meaning became malleable, shifting according to their perspectives. When writing about the connects between agency across stages we wrote:

In this regard, the artists incorporated a powerful visual meme - the mushroom cloud - at the heart of their performance. This same image dominates the multiple video manifestations and drives their successful propagation. The effectiveness of the mushroom cloud as a visual meme is not surprising. When many people post the same video image to a user-generated content system we see the collective patterns of semantic preferences, and in the process we can begin to tease out the cultural significance (Moulder & Bizzocchi 2008).

In this case study our test findings were supported, after reviewing all 87 videos, we discovered the 61% of the videos captured *Frame 6* - Mushroom Cloud and all other frames slowly increased in popularity leading up to the performance climax then gradually declining on the way down. The mushroom cloud maintained its dominance as a visual meme throughout the video documentation.

What was perhaps most surprising was the length of each video posted. Even though *YouTube* producers could upload 10-minutes of video (max 10MB), I learned that 63% only used 15% of their capacity, meaning most of the video's posted to *YouTube* were less the 90-seconds long. This further substantiated the observations of *Frames* captured, that introduced the idea people used the video like a snap shot, rather than documenting long portions of the performance, or remixing to create new artworks. In the process of analyzing the video dates I learned that all 87-videos were posted in the 3-

months after the event. In this time-span 90% of the videos were uploaded to *YouTube* in September; and 76% of the videos were uploaded within the first week. Findings of the video titles did not deeply reflect the intent of the artists, instead they identified the; event place - Burning Man; event name - *Crude Awakening*; event year - 2007; followed by the event attributes such as; fire, oil, explosion. This led to a clear understanding that people had prioritised naming tasks and that context (location) was more important, then a personal expression or what it meant.

From a designer's perspective patterns within social networks can represent collective activities good or bad. When we can identify patterns we can evaluate if something is broken and needs fixing; or if its the emergence of something new and could be defined by machine processing. This is important because the more information we have about the way technology is used in everyday life; the more we can automate system features to be more useful.

When it comes to designing system that contextualize meaning things become very tricky. Meaning is contextual and has two sources the first from an unknown context, which cannot be established: and the second from the fundamental reflection of the space and time in the language (Mikhailov & Boyko). When thinking about machine processing, one needs to realize that syntax is a set of formal rules and semantics involves meaning attached to those rules. I culled through the data collected and conceptualize a set of rules that could be transferable to machine processing. It is natural to assume that since most of the videos where posted within the first 7-days that any clustering of videos with a similar title would equal the event documentation. In general form: X looks for clusters of videos posted to the Internet with similar titles that would be recognized as Y

the event documentation, or $X [title] = Y [event documentation]$. I conceptualized sketches of programmable associations that could best describe the *Crude Awakening* event, such as:

look for titles:

[event place] + [event name] = [event context]

then looks for image shape:

[most popular image] = [event climax]

then look for length:

[video upload capacity] – [15%] = [event climax]

then look for date posted:

[videos posted the last within 3-days] + [event title] = [event]

In summary, I believe that the future of system design will depend on collaborations between designers and programmers to build programmable equations and will require a shift in perspective for all working groups. The first major hurdle would require designers to adapt what they already know about visual and structural aesthetics to frameworks that interpret patterns of data. This type of proto-social interaction modelling, currently exists, and introduces a whole new set of political and cultural implications that should be approached with extreme caution. For example the friends-of-friends feature in Facebook recommends friends you may want to add. While the results may be interesting, a person may not want to see this feature at the forefront of their profile, or they may not want to use Facebook in this way. When looking for patterns of use in system design, there is always the danger to assume that what is popular with the masses, is popular for all. With this in mind the observations revealed a number of

patterns in the nature of how video producers posted content to *YouTube*. Questions on how these findings could be applied to the semantic web and future research will be addressed in *Chapter 5: Discussion*.

CHAPTER 5: DISCUSSION

In this chapter, I examine the limitations and future applications of this research. I start by outlining methods used to evaluate the data collected from this case study. Procedures for conducting a close reading were defined in *Chapter 3: Research Methods*, I introduced the concept of ‘framing’ and how it has been applied to this research by identifying frames that mark a dramatic shift in the theatrical production of the *Crude Awakening* live performance. Results of this close reading were successful, as I was able to benchmark the performance and measure the semantic differentials of the video content. I learned that by researching video content on *YouTube* one could develop a broader context for understanding how networked technologies work. I claim that videos documenting the live performance exemplify the hybridization of technology and cultural production. In conjunction with the semantic differentials, I introduce the importance of analysing system designs. The close reading of the *YouTube* interface for uploading videos was successful, as I was able to use this analysis to identify parameters for posting video content. More over, I discovered that by using more than one method for analysing the *Crude Awakening* communicative ecology; I was able to accurately access the scope of which *YouTube* participants’ transcoded their experience to the Internet.

In summary contributions of this research have provided insight into methods for conceptualizing API architectures and the benefits of future collaborations among design teams. Through this process I identified patterns that could be considered a semantic thumbprint of the event. This thumbprint revealed the design characteristics of the

communicative ecology and exemplified how technologies could be used to seek similar data clusters. The importance of this research brings to focus the use of technology in context. In the sections to follow I discuss the limitations of this research and future work as it could be applied to semantic web technologies. While these research methods are experimental the overarching concept is fundamental to the future of how system designers will integrate content of a social and cultural nature.

5.1 Limitations

In this section the limitations of this case study are revealed, as it relates to the *Crude Awakening* live performance and to social design practices. The goal of this research was to analyse the dynamics of this communicative ecology a means of modelling a meta-framework that could be applied to software architecture. And through this process, define a broader context for discussing the hybridization of technology and cultural production. Social design practices as discussed in *Chapter 2: Conceptual Themes*, has been defined as value added to the design process that contributes to improving human well-being and livelihood (Holm 2006).

In many ways, by applying social design practices, we are asking the question; how does this design serve the greater good? This position implies that there is a higher ethical standard in measuring the work we do – beyond aesthetics and functionality. As stated by Ivar Holm the commitment to the design value of social change can often be seen as an overriding principle that is conducted and implemented at the expense of other design values (Holm 2006). Subsequently, corporate sponsors whose sole purpose is to promote their products for purchase do not generally accept the design value of social change. For this reason, the limitations could be within the idea of social design as a

concept being associated with a political movement, and not a vehicle to support consumerism.

Other limitations reside in the use of methodological triangulation, which refers to the use of more than one method for gathering data. Social theorist Alan Bryman states:

The idea of triangulation has been criticized on several grounds. First, it is sometimes accused of subscribing to a naive realism that implies that there can be a single definitive account of the social world. Such realist positions have come under attack from writers aligned with constructionism and who argue that research findings should be seen as just one among many possible renditions of social life. As such, triangulation becomes a device for enhancing the credibility and persuasiveness of a research account (Bryman 2009).

A second criticism is the use of triangulation assumes that sets of data deriving from qualitative and quantitative research methods can be unambiguously compared and regarded as equivalent in terms of their capacity to address a research question. For example, the close reading findings on the *Crude Awakening* live performance, and the findings of the semantic differentials collected on the 87 videos posted to *YouTube*, may have more to do with the possibility that the latter addresses personal views, as opposed to the more general voiced in the more public arena such as *YouTube*.

A third criticism is in the type of methodologies I choose to combine. A close reading is a qualitative method, which is both strongly inductive and reliant on individual interpretation of the artifact or experience. Close readings of aesthetic works often call to attention the theorization of art to expose the cultural significance. Even though the artist's intent in the creation of the *Crude Awakening* performance was to bring to attention to a global crisis – our dependence on oil, how did these aesthetics resonate through its creation or interpretation? The use of semantic differentials is a quantitative methodology that combines many different factors. In the context of this study, three

factors have been applied – subjects (87 videos), scales (based on live performance), and system design (based on *YouTube's* requirements). In an attempt to discover the natural dimensions of this multi-scaled research space there are many factors which together account for the variance in meaningful judgments.

Triangulation has come to assume a variety of meanings, although the association with the combined use of two or more research methods within a strategy of convergent validity is the most common (Bryman 2009). This process has attracted some criticism for its application as it could lead to a naively realist position – meaning the findings conducted in one study could be applied to all similar phenomena.

5.2 Future Work

In this section, I explore the possibilities of how aspects of social design research practice can be applied to semantic web technologies. I start by reviewing the overarching concept of the semantic web and then look at how the results of this research can be applied to the design of APIs.

Like social design, the semantic web is an evolving term that can be perceived through many different lenses. As a person who truly is concerned about the preservation of culture I support Tim Berners-Lee's vision of the semantic web as one universal medium for data, information, and knowledge exchange and he explains:

... that by augmenting web pages with data targeted at computers, and by adding documents solely for computers, we will transform the web into the semantic web. For some, envisioning the semantic web means, the design of an environment whereby tasks perform ways to build meta-frameworks in which people have the opportunity to view data in a more meaningful and contextualized manner. These meta-frameworks would be designed to contextualize a subject and provide breadth and hopefully represent diverse perceptions. Rather than graphic, database, information and social designers focusing on individual components of the web, the

data created by people would be, by its own nature, built as a meta-framework, that would spur the development of automated web services such as highly functional APIs (Berners-Lee 2003).

People have become highly skilled at managing the fragmentation of the Internet, and have developed coping mechanisms for filtering through the information, and making sense of it. The semantic web promises to offer a comprehensive way to contextualize the relationships to data. To Internet users, the semantic web would appear as a new way of viewing information. It would potentially blend into our current search methods like *Yahoo*, *Google*, or the like, and perhaps even manifest into new types of tools that can be integrated into other software applications. In any form, the semantic web will allow us the ability to search through all of the information on the web in a meta-framework of relationships.

From a technological perspective, the implementation of the Semantic Web, can be interpreted as a new set of W3C standards to build a more data-friendly web for search engines; customisable APIs (web applications); contextual tools (very smart web applications) that understand the objects inside text and links; and semantic databases that annotate web information. Through this case study I've come to understand the semantic web as set of key components that drive the semantic distribution within a Resource Description Framework (RDF) and Web Ontology Language (OWL). The W3C Semantic Web Activity group further explained the concept by stating:

RDFs that integrate a variety of applications from library catalogues and Internet directories, to syndication and aggregation of news, software, and content, to personal collections of music, photos, and events using XML as a interchange syntax. The RDF specifications provide a highlight ontology system to support the exchange of knowledge on the web. The OWL is designed for use by applications that need to process the content of information instead of just presenting information to people. OWL facilitates greater machine interpretability of web content than that

supported by XML, RDF, and RDF Schema (RDF-S), in that it provides additional vocabulary along with a formal semantics (W3C SIO 2009).

In summary, through this case study I have designed and tested a method for analysing the *Crude Awakening* live performance and its video documentation on *YouTube*. By considering the relationships within this communicative ecology, I have found parameters that could be applied to future work as guidelines for designing APIs. In greater detail *The Free Online Dictionary of Computing* (FOLDOC) explains how APIs function to interpret parameters and claim:

...that APIs operate at a source code level and provides a level of abstraction between the application and the kernel (or other privileged utilities) to ensure the portability of the code. An API can also provide an interface between a high level language and lower level utilities and services that are written without consideration for the calling conventions supported by compiled languages. In some cases the API's main task may be the translation of parameter lists from one format to another and the interpretation of call-by-value and call-by-reference arguments in one or both directions (FOLDOC 2009).²⁷

When we consider designing APIs with parameters that support diversity we are in fact incorporating social change as a design value. Although the terms are not mutually exclusive, they both imply a movement away from a top-down approach to system design. Moreover, if we think of social agency as a component of the semantic web environment, whereby the tasks perform ways to build meta-frameworks in which people have the opportunity to view more meaningful data; it's hard to imagine how this would not revolutionize the design process. Bottom-up approaches that foster frameworks, for loose couplings of data would design multiple viewings, contextualize a subject and provide breadth of meaning.

²⁷ The Free Online Dictionary of Computing (FOLDOC) is a computing dictionary that focuses on the acronyms, jargon, programming languages, tools, architecture, operating systems, networking, theory, relating to computing in one online dictionary at <http://foldoc.org>

CHAPTER 6: CONCLUDING STATEMENT

*‘Computing not computers will characterize the next era of the computer age’
Malcom McCullough 2004*

As discussed in chapter two, computer interfaces are often referred to as ‘skins’ or the layer above the computer’s functionality – the screen view of what we see - the buttons, the images, and the way the information is presented. In fact, the computer interface is the mechanism that determines what we can view, select, and publish to the web. It is the portal that transfers data from our lived experience to the virtual.

Currently what connects culture to system design on the Internet is ‘like-equals-like’ and on some level, people will need to decide whether homophily is a feature or a bug.²⁸ For example, on *Facebook*, the number of friends you have in common with someone may lead to a friend recommendation in ‘people you might know’. In the paper *The Value of the Unpopular*, authors’ Jutta Treviranus and Stephen Hockema discuss the current condition of the web, emphasizing popularity as a kind of echo-chamber that rules out diversity, minority views and innovation. They pinpoint several areas of system design that could extend the notion of diversity to social networks, communication information sources and decision-making tools. These researchers claim that studies have proven that by including diversity as a design value, the results lead to better decisions, more effective problem solving, greater creativity and innovation, better prediction, and

²⁸ Bernhard Rieder, while discussing, Algorithmic Proximity at IR9 uses the term homophily to understand socio-genesis or the process through which low-level communications crystallize into a real relationship. Definition of homophily (e.g. love of the same) is the tendency of individuals to associate and bond with similar others.

in the long term, resilience to external challenges and increased viability (Treviranus & Hockema 2009).

In this case study, I have designed and applied a method for analysing the *Crude Awakening* live performance and its video documentation on *YouTube*. By considering the relationships of this communicative ecology, I've started to define a wider variety of possibilities, modalities and interactions that could be experimented with as unique architectures. From this perspective, the concept of transcoding has become common practice in navigating the interaction between the real and virtual world. With the rise of the Internet over the last 20-years, we have to face-the-fact that the dualistic borders between real and virtual have merged into some kind of 'vireal' form of a globalized net-mediated space (Russegger 2006).

While writing this chapter, I discovered that the DARPA launched ten red balloons across the U.S. in a network challenge to celebrate the 40th anniversary of the precursor to the Internet – the Arpanet.²⁹ *The Open Red Balloon Project* challenged people to self-organize on the Internet, so that DARPA could learn how information disseminates through social networks. On Saturday, December 5, 2007 they put out a call to people on the Internet to report their red balloons sightings, then they made the reported data public, to see who would be the first person (team) to make sense of the data, locate the balloons and win \$40,000. Within hours, the MIT team had won the contest - yes, hours.

While reading about the *Open Red Balloon Project*, I realized how time, agency, and context played a dramatic roll in understanding how social networks operate. In

²⁹ On Saturday, December 5, 2009 The Defence Advanced Research Projects Agency (DARPA) launched The Open Red Balloon Project, www.openredballoon.com. DARPA is an agency of the United States Department of Defence that is responsible for the development of new technology like Sputnik and the earlier interpretation of the Internet.

comparison to *Crude Awakening* communicative ecology, the Open Red Balloon communicative ecology was a 1-day event and motivation to participate was winning \$40,000. Where *Crude Awakening* was a live performance, tied to a larger social movement that was self-organized in real life. The difference being, some of the people who experienced live performance exercised agency by posting their videos to *YouTube* over a period of 3-months.

In future work, I look forward to conducting further research on the phenomena of *Crude Awakening* from a cultural perspective. In this thesis I only scratch the surface of the *Crude Awakening* media ecology and did not have the time to examine the propagation of other images, text and dialogue surrounding this topic on the Internet. Nor did I get the chance to discuss the larger cultural significance of the mushroom cloud as it relates to the world today. I had explored the deeper meaning of the mushroom cloud as described by Peggy Rosenthal as a cultural icon in American culture that has come to symbolize the bombing of Hiroshima, Japan in August 1945; and ‘the birth of a new world’ a procreational image that expands to its ultimate and becomes creational.

While reviewing the 87 videos, it was clear that while some people composed their videos like snapshots, others had produced extensions of the original artwork, remixing with visuals and adding spoken word and sound elements. Evidence of this can be found in excerpts from **triggerbunny**, in his *YouTube* post on September 09, 2007:

An edited version of the long but amazing finale of "Crude Awakening" @ Burning Man this year. I was lucky enough to be sitting third row and felt the intense heat this baby put off. Probably one of the coolest things I've witnessed in a long time.

The siren wasn't going the entire time...but I liked how eerie it made the piece feel. Add to that some Godspeed You! Black Emperor and it makes for an interesting perspective on what "Crude Awakening" is about, in

my opinion.

Sorry about the low quality...took a crappy camera to BM this year and compression makes it look worse.

What is being said?

The car's on fire and there's no driver at the wheel.
 And the sewers are all muddied with a thousand lonely suicides
 And a dark wind blows
 The government is corrupt
 And we're on so many drugs
 With the radio on and the curtains drawn
 we're trapped in the belly of this horrible machine
 And the machine is bleeding to death
 The sun has fallen down
 And the billboards are all leering
 And the flags are all dead at the top of their poles
 It went like this
 The buildings tumbled in on themselves
 Mothers clutching babies picked through the rubble and pulled out their
 hair
 The skyline was beautiful on fire
 All twisted metal stretching upwards
 Everything washed in a thin orange haze
 I said, "Kiss me, you're beautiful..
 These are truly the last days"
 You grabbed my hand and I fell into it Like a daydream or a fever
 I woke up one morning and fell a little further down
 For sure it's the valley of death
 I open up my wallet
 And it's full of blood.

*Dead Flag Blues song lyrics, by Godspeed You! Black Emperor,
 Montréal, Canada, 1998*

When examining the relationships between agency, convergent technologies, and the construction of meaning, one has to accept the inherent and increasing complexities of networked culture. Individual and collective activities are constantly translated, systematized and reorganized within multiple meta-frames of conceptualisation and communication.

Networked computation means that we model the world through multiple representations of data, text and symbolism - including the ways we build databases, construct taxonomies, and channel both private and shared interactions and contributions. These accumulate into powerful and far-reaching cultural effects. With convergence shaping the way we share information, there is a communicative ecology that grows through bottom-up processes of self-organization and gives rise to complex semantic networks. Therefore, we need to continue to examine the operations of systems like *YouTube* in order to identify and improve the means by which networked communities form, learn, change and grow.

Hopefully, in the process, we'll create a broader context for discussing the hybridisation of technology and cultural production; determining that digital social architecture, unlike traditional architecture, is a fluid system that evolves and changes alongside social movements, and this dynamic results in the creation of shared meaning.

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APPENDICES

Appendix A: Research Ethics Informed Consent

On the topic of ethics in regards to social media sites like *YouTube*, I contacted Michael Wesch, PhD Assistant Professor of Cultural Anthropology, Digital Ethnography Working Group, Kansas State University for advice. He responded by explaining that for the most part research on sites' like *YouTube* is considered 'secondary data' but the works people produce are creative acts of living people, so some consideration is necessary. I contacted those whose work was the most important to this case study and explained what the research was about. I also then asked permission to any photographs or videos I presented in relation to this research. The following statement regarding informed consent is as follows:

INFORMED CONSENT

I am conducting research on videos posted to *YouTube* that document the *Crude Awakening* live performance at the Burning Man Festival, 2007. Videos collected will be analysed for their composition. I am interested in discovering what people captured as the most significant aspect of the performance. I will also be writing papers and giving conference presentations on this research. To see this work in progress visit <http://interartionart.org/research>

If you have any questions or concerns you may contact Vicki Moulder, MA Candidate at vmoulder@sfu.ca, SIAT, SFU, Surrey, BC, CA

Appendix B: Semantic Differentials of Video Content

In *Chapter 4: Analysis and Results* I include a summary of the YouTube Video Semantic Differentials in Table 4.12. The table below lists the 87 videos reviewed. The ‘X’ represents the corresponding live performance frame that was captured in each video.

Table 6.1 Complete Semantic Differentials of Video Content Data

#	F1	F2	F3	F4	F5	F6	F7	F8	QA
1						X	X	X	EX
2		X		X	X	X	X	X	EX
3						X	X		G
4			X	X	X	X	X		OK
5		X	X	X	X	X	X	X	EX
6			X	X	X				OK
7			X	X	X	X	X		Poor
8								X	EX
9						X	X		G
10	X	X	X	X	X	X			EX
11			X	X	X	X	X	X	G
12	X								G
13	X	X	X	X	X	X	X	X	EX
14		X	X	X					G
15						X	X		OK
16	X	X	X	X	X	X	X	X	EX
17	X								G
18			X	X	X	X	X	X	G
19					X	X	X		OK
20	X								G
21	X								G
22						X	X		G
23						X			OK
24	X								EX
25						X	X		OK
26						X			EX
27						X			G
28				X		X			OK
29						X			EX
30					X	X			OK
31				X	X	X			OK

#	F1	F2	F3	F4	F5	F6	F7	F8	QA
32	X								OK
33						X	X		OK
34			X			X	X		G
35					X	X	X	X	OK
36		X							G
37						X	X		EX
38						X	X		G
39			X	X	X				OK
40						X	X		OK
41						X			OK
42		X	X						OK
43			X	X	X				OK
44						X			G
45				X					OK
46						X	X		OK
47							X		OK
48						X	X		OK
49								X	G
50							X		OK
51						X	X		OK
52			X						OK
53							X		OK
54	X								G
55				X					OK
56	X								G
57	X								OK
58						X	X		OK
59						X	X	X	EX
60									N/A
61						X	X		OK
62						X			G
63				X	X	X	X		OK
64						X			OK
65					X	X	X		OK
66						X	X		OK
67						X			OK
68					X	X			EX
69			X	X	X				G
70								X	OK
71		X	X	X					OK
72						X	X	X	G
73						X			OK

<i>#</i>	<i>F1</i>	<i>F2</i>	<i>F3</i>	<i>F4</i>	<i>F5</i>	<i>F6</i>	<i>F7</i>	<i>F8</i>	<i>QA</i>
74			X	X	X	X	X	X	EX
75						X	X		EX
76						X			G
77							X		OK
78					X				OK
79				X	X				OK
80				X	X				OK
81						X	X		G
82	X	X	X	X	X	X	X	X	EX
83	X								G
84	X								OK
85						X	X		EX
86						X			OK
87						X	X	X	OK

Appendix C: Semantic Differentials of System Design

In *Chapter 4: Analysis and Results* I include Table 4.13 Titles, Table 4.14 Lengths, Table 4.15 Upload Dates (per month) and Table 4.16 September Upload Dates as summaries of the YouTube Video Semantic Differentials System Design data. The table below lists the full details of the 87 videos originally reviewed on *YouTube*.

Table 6.2 Complete Semantic Differentials of System Design Data

#	Title	Length	Date
1	2007 Burning Man FireBall Explosion	0:36	09/04/07
2	Crude Awakening Burning Man 2007	2:41	09/05/07
3	Burning Man 07 Oil Derek	0:11	09/03/07
4	Crude Awakening Fireball - Burning Man 2007	2:31	09/03/07
5	Crude Awakening Music Video	9:15	09/21/07
6	Burning Man 2007 - Fireworks	5:26	09/03/07
7	crude awakening explosion	10:13	09/05/07
8	Burning Man 07 -Crude Awakening falls...	0:59	09/05/07
9	Burning Man Oil Derrick from 1 Mile Away	1:01	09/05/07
10	Crude Awakening - Burning Man 2007	3:28	09/09/07
11	Oil derrick explosion at Burning Man 2007 crude awakening	1:55	09/05/07
12	Crude Awakening Pyrokinetics Burning Man 2007	0:59	09/05/07
13	crude awakening . burning man 2007	4:54	09/12/07
14	Burning Man 2007: Crude Awakening Fireworks	3:47	09/04/07
15	Crude Awakening Explosion, Burning Man 2007	1:29	09/18/07
16	Crude Awakening - Burning Man 2007 UdTv	15:50	09/29/07
17	Crude Awakening at Burning Man 2007	0:31	09/05/07
18	Crude Awakening at Burning Man 2007	9:58	09/12/07
19	Crude Awakening Burning Man 2007	2:27	09/09/07
20	Birth of Crude Awakening for Burning Man 2007	7:05	10/08/07
21	Crude Awakening Burning Man 2007	1:06	09/06/07
22	Crude Awakening: Oil Derrick Explosion (slow mo)	1:37	09/05/07
23	Crude Awakening Blast at Burning Man 2007	0:23	09/12/07
24	Crude Awakening Tower View Burning Man 2007	0:53	09/19/07
25	Burning Man 2007 - Crude Awakening - Fireball	1:10	09/05/07
26	Crude Awakening Nate Smith Fireball 2007 Burning Man	0:32	09/09/07
27	Burning Man 2007 - Crude Awakening - Explosion	0:14	09/06/07
28	Burning Man Fireball - 2007	1:06	09/29/07
29	Crude Awakening Nate Smith Fireball 2007 Burning Man	0:36	09/08/07

<i>#</i>	<i>Title</i>	<i>Length</i>	<i>Date</i>
30	Crude Awakening	2:19	09/03/07
31	burningman :: crude awakenings (adina)	8:57	10/03/07
32	Crude Awakening Burning Man 2007 Pyrokinetics	0:18	09/26/07
33	Crude Awakening Burn	1:02	09/18/07
34	Crude Awakening Burn - Burning Man 2007	3:25	09/15/07
35	Crude Awakening Burning Man 2007 Oil Derrick Explosion!	3:04	09/13/07
36	burningman :: crude awakenings nuclear air raid siren	0:29	09/07/07
37	Crude Awakenings - The burn	9:14	09/08/07
38	Crude Awakening Explosion	0:55	09/09/07
39	Crude Awakenings - The fireworks	9:23	09/08/07
40	Crude Awakening The Big Bang - not a theory	2:07	09/10/07
41	Burning Man Crude Awakening Explosion 2007	0:40	09/05/07
42	Crude Awakenings - the build up	5:16	09/08/07
43	Crude Awakening Fireworks 2	1:30	09/10/07
44	Burning Man 2007 - Black Rock City - Mushroom	0:27	09/03/07
45	burningman :: crude awakenings fireworks	0:29	09/08/07
46	BRC Crude Awakenings fire explosion	0:39	09/09/07
47	burningman :: crude awakenings	0:28	09/09/07
48	Crude Awakening Oil Derrick Explosion	0:28	09/08/07
49	burningman :: crude awakenings	0:21	09/09/07
50	Crude Awakening burn	0:08	09/06/07
51	Crude Awakening Project	0:40	11/20/07
52	burningman :: crude awakenings fireworks	0:21	09/07/07
53	burningman :: crude awakenings	0:10	09/09/07
54	Crude Awakening at Night	0:22	09/09/07
55	Crude Awakening Fireworks	0:17	09/10/07
56	Crude Awakening Oil Derrick sculptures	0:07	09/08/07
57	crude awakening	0:10	09/03/07
58	Big Explosion at Burning Man	0:32	09/05/07
59	Burning Man 2007 Explosion	0:35	09/04/07
60	Exploding 200 LBS of Gasoline at Burning Man 2006	0:22	09/05/06
61	Oil Derrick Explosion - B'Man 2007	0:54	09/04/07
62	Biggest Fireball EVER!!!! Oil Rig -- Burning Man 2007	0:36	09/17/07
63	Burning Man oil derreck tower fireworks mushroom 2007	3:00	09/11/07
64	burning man Oil Derek explodes mushroom style	1:35	09/05/07
65	Burning Man - Tower Burn 2007	3:14	09/07/07
66	burning man 07 crude awakening	0:25	09/14/07
67	Burning Man, Oil Rig lit on fire	0:06	09/18/07
68	Crude Awakening - The burn	1:32	09/04/07
69	BRC Crude Awakenings fireworks show	9:59	09/09/07
70	burning man 07 crude awakening	0:07	09/14/07
71	alarm and fireworks	3:26	10/18/07
72	Burning Man Festival: 2007 Big Fire Ball Explosion	0:35	09/04/07
73	Burning Man Oil Rig Explostion 2007	1:00	09/05/07

<i>#</i>	<i>Title</i>	<i>Length</i>	<i>Date</i>
74	Burning Man Oil Rig Explodes into a 300+ ft Fire Ball / Mush	0:32	09/04/07
75	Burning man 2007 Fwwosh	0:25	09/04/07
76	Burning Man 2007 Oil Derrick	0:47	09/10/07
77	Oil Rig Burn-Burningman 2007	0:20	09/03/07
78	Crude Awakening fireworks, Burning Man 2007	0:16	10/26/07
79	Fireworks for the Oil Rig cont. -- Burning Man 2007	2:06	09/17/07
80	Fireworks for the Oil Rig -- Burning Man 2007	2:05	09/17/07
81	Burning Man 2007 Tower	1:20	09/05/07
82	Burning Man - 2007 - Flaming Tower	3:31	09/08/07
83	Burning Man 2007 Tesla Funken	0:15	10/10/07
84	Burning Man 2007	0:41	09/05/07
85	Burning Man Oil Derrick Blowing the F Up	0:48	09/06/07
86	Burningman 2007 -The Oil Rig - Mushroom Cloud	0:12	11/17/07
87	Burning Man Festival: 2007 Big Fire Ball Explosion	0:35	09/04/07