DATA SHADOW

Remixing Our Public and Private Selves in the Age of New Media

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Data Shadow: Remixing Our Public and Private Selves in the Age of New Media

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Thesis

The goal of *Data Shadow: Remixing our Public and Private Selves in the Age of New Media* is to design work that explicitly communicates the negative effects new technology has on our privacy, and further, on our public and private identities.

New media technology has taken away our ability to control our private information, and has also facilitated the misuse of that information. Making private information public threatens anonymity, increases the likelihood of stolen identity, and has the potential for homogenization of culture. As we become more aware of our data shadow (i.e. the abundance of private information surrounding us), we are likely to change how we behave in public, blurring the lines between our public and private identities. Awareness of our data shadow is likely to make us guarded in how we behave in public, and subsequently, resentful for the erosion of our privacy at the hand of new media technology.

The methodology I employ in *Data Shadow: Remixing our Public and Private Selves in the Age of New Media* uses technology in various social experiments in a reflexive manner to illustrate the loss of privacy and blurring of our public and private identities in the age of new media. Experiments were conducted in film, installation, and computer interactive projects.

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Dedication

For my wife, sounding board, and editor, Amy.

Acknowledgments

I would like to thank several people as without their input, guidance, and support, *Data Shadow* would not have materialized. First, I would like thank Carlos, Karolina, Kate, Keiko, Lynn and Peter whose creativity and sincerity kept me engaged and challenged throughout the past two years.

Second, I greatly appreciate the direction provided by my advisor, Brian Lucid, for his insightful ideas and input. I would like to also thank Joseph Quakenbush, and Jan Kubasiewicz who dared me to test new mediums and push my creative boundaries. Additionally, I would like to thank my Massachusetts College of Art instructors Gunta Kaza, Dana Moser, Fred Wolflink, and Stephan Moore as enrollment in their courses provided me with the theoretical and technical bases for creating *Data Shadow.* Finally, *Data Shadow* would not have been possible without the continued support of my family and friends who made numerous sacrifices so that I could devote my time and energy to developing a thesis for which I am proud.

Identity & Privacy Defined

The concept of identity originated in philosophy. Seventeenth century philosopher and scholar John Locke defined identity as, "a thinking intelligent being, that has reason and reflection, and can consider itself as itself, the same thinking thing, in different times and places."[1]

Eighteenth century philosopher David Hume expanded on Locke's definition of identity, emphasizing the concept of rapid fluidity. He stated that we as humans appear as, "a bundle or collection of different perceptions, which succeed each other with an inconceivable rapidity, and are in a perpetual flux and movement."[2]

Stanford University philosopher Eric Olson compares the concept of identity to the quintessential new media device — the computer. He states, "A modern descendant of this [Hume's] view says that you are a sort of computer program, a wholly abstract thing that could in principle be stored on magnetic tape (a common idea in science fiction)."[3]

For the purpose of my thesis, identity is defined as a collection of different perceptions, which continually succeed each other depending on location. For example, my public identity consists of superficial activities such as my daily travels, the products I purchase, and the relationships I forge in the physical world (i.e. "meatspace") *and* cyberspace. While my private identity is comprised of my personal belief system that defines who I am and what I represent – both of which cannot be defined by my superficial activities.

The concepts of public and private spheres can be traced back to ancient Greece. Philosopher Aristotle's "distinction between the public sphere of politics and political activity, the polis, and the private or domestic sphere of the family, the oikos, as two distinct spheres of life, is a classic reference to a [public and] private domain."[4] Nineteenth century lawyers Samuel Warren

and Louis Brandeis expounded on this concept in their famous Harvard Law Review article and defined the modern American idea of one's right to privacy in 1890 as, "the right to one's personality" and "an individual's right to be left alone."[5]

Is the differentiation between public and private domain important? Is the right to privacy critical in an established democratic society? Contemporary philosopher Joeseph Kupfer speaks to the importance of privacy indicating that, "…privacy is necessary for one to develop a concept of self as a purposeful, self determining agent. Privacy enables control over personal information as well as control over our bodies and personal choices for our concept of self."[6] Author Julie Inness believes the "…need for privacy [is] to protect intimate information about oneself, access to oneself, as well as intimate relationships and decisions about one's actions."[7] University of Southern California professor and philosopher Ferdinand Schoeman believes in, "…the importance of privacy norms that allow one to restrict others' access to them as well as privacy norms that enable and enhance personal expression and the development of relationships. Privacy provides protection against overreaching social control by others through their access to information or their control over decision making."[8]

In the United States, the legal concept of privacy maintains four major violations of individual privacy.[9] They are:

Trespass, or unreasonable intrusion into another's seclusion while gathering information;
Theft or appropriation of another's name or likeness for commercial purposes;
Libel, slander, or injury to reputation such as being portrayed in a false light; and,
Public disclosure of embarrassing facts.

Even though as citizens of the United States we reside in a democratic society where the "power" is in the hands of the people, I believe the right to one's privacy remains critical. Not only does privacy enable the development of the concept of self, but it also gives individuals control over their personal information, protection against social control, and enhances personal expression. While new media devices add productivity and enjoyment to our lives, they do so while generating large trails of personal data which is jeopardizing our private identities by making them public against our will.

Background

My passion for new media devices developed at age five, when I became entranced by the interactivity and escapism offered by such new media toys as ColecoVision's handheld football, Namco's Pole Position arcade game, and Coleco's ADAM computer. I enjoyed and thrived on my ability to create, manipulate, and control a "virtual universe".

By age 13, my enjoyment of new media devices expanded and my interest in mixed media design began to flourish. This expansion can be traced back to the rich experiences created by listening to music and viewing their album covers. I chose to pursue a career in new media design, as the medium allows me to incorporate my three major passions — sound, design, and technology — in the creation of a whole new form.

As an adolescent, I unconditionally accepted the role of new media, enjoying its recreational and functional benefits; however, I have become more skeptical about the negative effects technology has on our privacy. We have become so accustomed to using technology in our daily lives that we ignore or choose to ignore how it has compromised our privacy.

Earliest Memory of New Media

My love affair with new media began on December 25, 1980. This particular day had all of the usual moments to which many children at the age of five can attest. The night before, anticipation of a bounty that would make Blackbeard jealous was overwhelming and quickly produced insomnia. When the morning finally arrived, all expectations were met.

In particular, two gifts stole my attention. One was a medium sized box with my name on it. I quickly gravitated towards it, as the others with my name were

tiny in comparison. I skillfully removed the tape from each flap that was holding the paper together, ultimately revealing a picture of an odd shaped, educational toy, "Speak & Spell: Fun With Words", from a company called Texas Instruments.

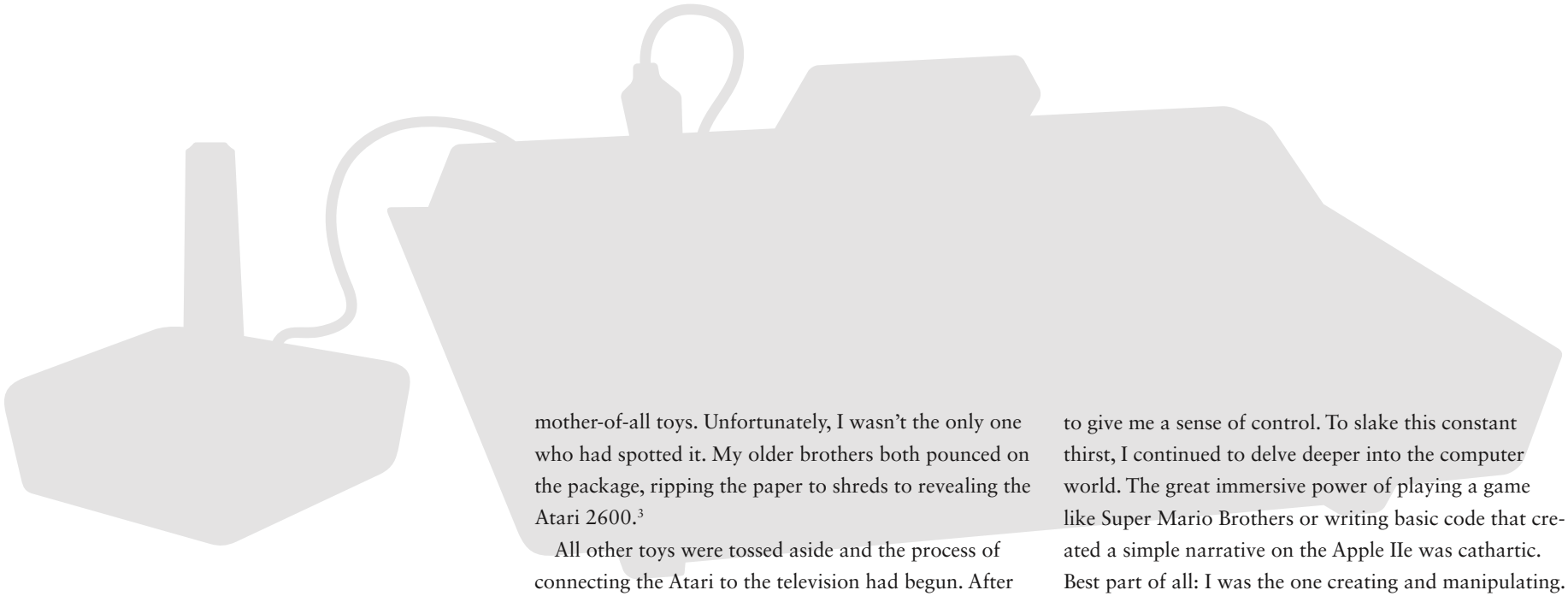
"Speak & Spell" was an orange plastic tablet[1] comprised of an LED screen and a large colorful touchpad with letters. In addition, it had a handle for ease of carrying. When I pressed the "On" button, a quick little tune played (not unlike the sounds emanating from R2D2 in Star Wars), and "HELLO" lit across the LED screen. A robotic voice then prompted me to spell a word. Once I heard the word, I was to spell it using the touchpad. Each letter I pressed was spoken by the robotic voice. Once I believed that I had spelled the word correctly, I pressed enter and would be told if my spelling were right (or wrong). The love affair with electronic media had begun.

A surprisingly simple concept, "Speak & Spell" was heightened by the use of technology, and in particular, interactivity. This little machine was not telling me in a passive way what the word was and how it should sound, but rather was interacting with me and providing feedback. This "give and take" interaction with a toy was alien to me, but at the same time, created an indelible mark on how powerful new media objects could be. In the past, I had looked at disgust at any object, toy or otherwise, with educational in its title, but the fact that the "Speak & Spell" was labeled educational did not matter.

In retrospect, I now realize that "Speak & Spell" played an important role in my development and attraction to new media objects. That little toy held my attention with a simple, (in terms of today's technology), computer interaction. The fact that there was a layer of learning below the layer of "fun" without my conscious realization shows the power of technology and its invisible effects.

The other gift that Christmas was even more influential in my relationship with new media. In the corner of the living room, there was a large box not completely covered with wrapping[2] that had caught my eye amongst all the ripped paper and recently opened, shiny toys with bells, whistles, and flashing lights. This present had my name and my two older brothers' names on the tag, so I knew, even at age five, that this would be the

Image of childhood toy
Speak & Spell



mother-of-all toys. Unfortunately, I wasn't the only one who had spotted it. My older brothers both pounced on the package, ripping the paper to shreds to revealing the Atari 2600.[3]

All other toys were tossed aside and the process of connecting the Atari to the television had begun. After my father cajoled the wires into place, the channel was dialed to 3 (the "snow" channel), the game Combat was put into the slot of the black and fake wood console, and the switch was flipped. Little did I know at the time, but that switch would spark my imagination and a lifelong relationship with not just video games, but with computers and technology. From the Atari to Apple to Nintendo to IBM to Sega to Xbox and back again to Apple, computers and gaming have since been a large part of my life.

Computers provided a way of escape. Different from my other more passive hobbies like watching films or listening to music, computers let me control and interact with a virtual universe—the interactivity aphrodisiac. In particular, during my adolescence, control over my own destiny was a top priority. These machines encouraged me to seek alternate outlets, mostly in the virtual world, to give me a sense of control. To slake this constant thirst, I continued to delve deeper into the computer world. The great immersive power of playing a game like Super Mario Brothers or writing basic code that created a simple narrative on the Apple IIe was cathartic. Best part of all: I was the one creating and manipulating.

While my interest in the digital age is not unique, as many others my age enjoyed the same tools, I have taken a divergent path where I actively utilize the technology to create new media projects and objects.

Why New Media Design?

My interest in the design aspect of new media can be traced back to 1988, eight years after the "Speak & Spell" and Atari Christmas. At age thirteen, many things in my life were in flux. It was the summer before high school, and I had the pangs of anxiety that comes with the fear of the unknown. What follows might seem as a minor blip on the radar of life, but for me, the impact was considerable.

On this day in July, just like any other day, my sixteen year old brother returned home from work, a part time clerical sales position at Strawberries Records. He had

Louder Than Bombs **The Smiths**, sleeve design Morrissey, layout Caryn Gough, and art co-ordination Jo Slee 1988.

been working there for a little over six months, and once in a while, he would bring home records[4] and tapes of bands I had never heard of, let alone understood the meaning of their names. Bands with exotic names like Depeche Mode, Sigue Sigue Sputnik, Camouflage and some with more mundane names like New Order. We would listen to the music, and then we make mix tapes out of the better cuts.

But, on this day, my brother brought home an album that quickly transformed into a rusty wrench and jammed itself into my well-oiled teenage psychological machinery. The album was *Louder Than Bombs* by The Smiths. The album cover was the first telltale sign that there was something different about these Smiths. I did not have a clue who The Smiths were. Were they a family? Where had they a come from (did I even care)?

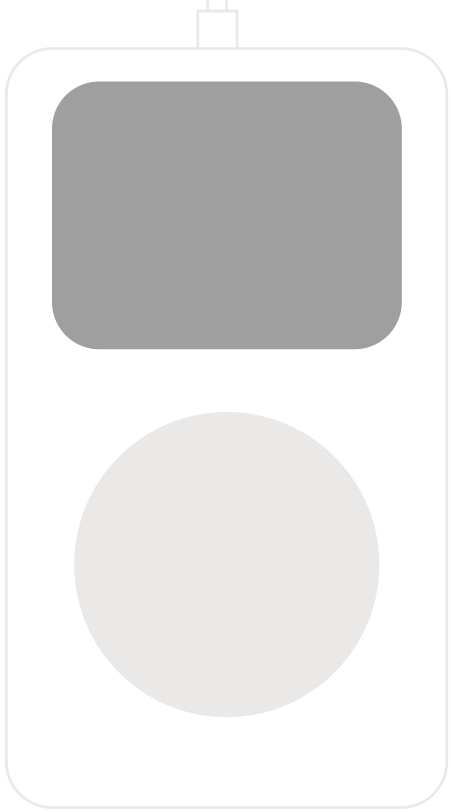
With a name as generic as The Smiths I must confess, I did not hold out much hope for a great experience, but there was something that instantly could not be ignored. With a burnt orange background emblazoned with a washed out image of a woman smoking a cigarette, the cover had a design element that spoke to me on a visceral level. The image was nothing I had ever before seen on an album, let alone anywhere else. It seemed that it was meticulously cared for from the serif typeface (Goudy Catalogue) in white to the image of the row houses with a string of laundry hanging across the buildings on the back cover. The fact that the packaging of the album affected me emotionally on a visual level before I had listened to the music, struck me at the time as odd, but at the same time, intriguing. On top of the design, there were song titles like: “Is it Really So Strange?,” “Shoplifters of the World Unite,” “Panic,” “Heaven Knows I’m Miserable Now,” — all perfect for a brooding thirteen year old. As I listened to the music, all expectations created by the crisply designed sleeve were met.

In retrospect, I realize that this was a unique experience that transcended both the visual and aural medium. While this is not the traditional definition of mixed media, (one being a flat two-dimensional form and the other a musical composition), the melding of these two diametrically opposite mediums to create this experience, was a big paradigm shift in my thinking. The rich experience I had with both mediums colliding at once, could not have survived if there were only one element.

The "Smiths" experience fueled my continued interest in music, sound and design. I opted to pursue a minor degree in Studio Art during my undergraduate studies at Lake Forest College and chose to work for the Massachusetts Cultural Council, an organization which funds and rewards artists for their creative abilities. After honing my technical web design skills at Boston University, I realized that I wanted a career dedicated to multimedia design. The Dynamic Media Institute at Mass Art was a perfect fit.

Recent Relationships with New Media

Over the course of the past ten years as I have become increasingly interested in new media design, my unconditional acceptance of new media objects has given way to my questioning the effects that these devices have on my surroundings and on me. Recently, one event alerted me to the threats new media devices pose on our privacy. This "revelation" occurred while I was riding the Boston subway system. A cold early morning, while commuting to work, on the crowded subway, I had my usual commuter survival items: an iPod MP3 player and a book; however, this was not the usual commute. The



train stopped for a medical emergency, so people began to get restless. I was standing close to the door, reading my book and listening to music. When I looked up from my book, I saw a man seated down the row throwing his arms in the air and shouting; (he had spilled coffee on himself.)

While the outburst itself was remarkable, what really shocked me was the reactions of the other passengers. As I scanned the train, I noticed that the majority was, like me, listening to personal music players; however, instead of absorbing the absurd scene, they opted to stay inside their digital bubble. They were attempting to control their environment by using technology as a digital barrier to block out the outside world, forging a private enclave in a public space to avoid having to deal with incidents such as this one on the train. By using their MP3 players, passengers blurred the line between their public and private identities, behaving differently than if they were not listening to the device; further, the impact on their fellow subway rider was negative.

I realized that morning, that I was as guilty as the others in trying to control my environment and create a private space within a public domain. For seven years,

I have used technology in the form of a music player, Walkman, personal digital assistant, or cell phone as a barrier to protect my privacy from the outside world. This became glaringly apparent when I saw my fellow passengers behaving exactly like me. This event systematically changed how I perceive my relationship with technology, and subsequently, changed my view of how we use technology to protect our privacy and ourselves. I realized that our relationships with technology went far beyond the enjoyment and functional levels.

Recognizing the guardian role that technology was increasingly playing in people's lives, I began to research the potential negative implications of our reliance on these devices. I found that the same technologies I had been relying on for "protection" of my privacy were actually sending out my private information without my knowledge.

Our relationships with new media devices have created new social dilemmas like these that are only now surfacing. Additionally, these dilemmas are not likely to fade with the release of the next version of devices; they are likely to expand. For instance, everyone likely has a story regarding his encounter with the disrespect a cell phone user has exhibited in a public space, having experienced a stranger's phone conversation in the close quarters of public transportation, a restaurant, or even a movie theater. This compromising of social etiquette is attributable to the "digital age." Nonetheless, a more insidious dilemma—that of technology's negative impact on our privacy—is lurking beneath the surface.

Purpose of My Thesis

"The effects of new media on our sensory lives are similar to the effects of new poetry. They change not our thoughts but the structure of our world."
—Marshall McLuhan, 1969[1]

Introduction

The proliferation of new media devices and programs such as cell phones, personal digital assistants (PDAs), instant messaging, E-mail and MP3 music players, has significantly changed the structure of our world, adding convenience, productivity and enjoyment to our daily lives. Nonetheless, are people aware that their whereabouts at any moment can be tracked by their cell phone, that the public and private sectors can monitor their (PDA) Internet viewing, or that a rental car agency can bill them for a speeding violation for which they were never stopped by the police?

As a technophile, I thoroughly enjoy and value the functional and emotional benefits delivered by new media devices and programs. Yet, living in the modern world filled with the convenience of Automatic Teller Machines, instant auto loan approvals, etc., I understand that there is a price to be paid. As Neil Postman eloquently states in his book *Technopoly*, "anyone who is…familiar with the history of communications knows that every new technology for thinking involves a tradeoff. It giveth and taketh away, although not in equal measure."[2] While Postman was referring to television, I think his observation also applies to the computer age. I now recognize the negative effects new media has on privacy. *Data Shadow: Remixing our Public and Private Selves in the Age of New Media* illustrates the "price" privacy has paid for the benefits delivered by technology.

The contexts of "self-possession, autonomy, and integrity"[3] align with how *Database Nation's* author Simson Garfinkel defines privacy as, "the right of people to control what details about their lives stay inside their own houses and what leaks to the outside."

For *Data Shadow: Remixing our Public and Private Selves in the Age of New Media*, I designed work that

explicitly shows how new media devices and programs negatively impact our autonomy, our protection against social control, and ultimately, our privacy. Further, this work illustrates how these gadgets also have the potential to limit personal expression, to increase the homogenization of culture, and to change how we represent ourselves in public. I believe that my role as a new media designer is to make the invisible data that is compromising our privacy visible and tangible, so we are able to recognize its negative impact and regain control of our autonomy and personal expression.

Benefits of New Media

Before evaluating the threats to privacy posed by technology, it is important to recognize the numerous benefits delivered by new media devices and programs. In this technological age, the availability of knowledge has exploded. With so many different options for retrieving and exchanging data, obtaining information and becoming informed has never been easier. On many accounts, our lives and society are of higher quality due to the contributions of new media.

Accessing and harnessing knowledge are extremely empowering. With the aid of low-cost modern technology, rural communities now have the opportunity to access a wide network of knowledge, previously aggregated in urban centers. In turn, this privilege has acted as a change agent for the betterment of these citizens' lives. Also, with inexpensive technology like cell phones, impoverished regions no longer have to raise the significant capital necessary for large telecommunications infrastructure projects in order to be "connected."

Technological advancements also have the potential to facilitate positive social change, something that was unthinkable twenty years ago. For example, in the Philippines, text messaging was used to organize peaceful demonstrations against a corrupt government.[4]

From a historical perspective, the communications phenomenon facilitated by new media can be compared to the social upheaval that accompanied Guttenberg's invention of the printing press in 1440 which enabled the proliferation of literacy and knowledge throughout society. For centuries the printed word was the major source of information for Western civilization. Nonetheless, a major limitation of the book in spreading knowledge was its delivery system, and specifically, the speed

of the system.[5] For centuries, the book was hamstrung by relying on human (or animal) to transport it to areas beyond where it was printed.

By the mid 1800s, reliance on human/animal as the deliverer of information declined with the invention of the telegraph. The telegraph ushered in a new age of information dissemination and collapsed time and space in regard to how information was communicated.

The inventions of radio, film, television, and computers in the 19th and 20th centuries created even faster delivery systems. With location no longer a limitation, information could be spread instantaneously, improving literacy exponentially. Ideas, social issues, political treatises, and an infinite number of other accomplishments too large to list have been shared in the blink of an eye. Today, data is not tied to a location and the age of knowledge has never been more pronounced than in the age of new media.

Social Dilemma: Our Privacy at Risk

While the benefits of new media are numerous, they do not come without disadvantages. E-commerce and technology developments create and threaten privacy issues. As indicated in the Encyclopedia of New Media, globalization, media convergence and the malleability of multimedia have created a fascinating but often conflicted landscape where the definition of (individual) privacy is simultaneously eroded and altered by technological means.[6] On many levels, we have entered the age of surveillance and built a virtual panopticon, where everyday actions have come under the eye of Big Brother.

New media is characterized by its two-sided nature. On one side it has the ability to empower and entertain people, and on the other, through tools such as cookies, personal information gathered by search engines, and workplace e-mail monitoring, new media also makes us more vulnerable to surveillance.[7] Nonetheless, given the engaging qualities of new media devices, we are also more likely to feel enthralled, blurring the lines of our public and private identities such in the case of the iPod users on the Boston subway.

Postman describes in his book Technopoly that since the era of the book, the time for reflection and analysis of available information has been significantly reduced. With our current predicament, Postman believes that,

"What we are left with is information that has become a form of garbage, not only incapable of answering the most fundamental human questions but barely useful in providing coherent direction to the solution of even mundane problems."[8]

I believe Postman's comment is a bit extreme, but not too far off the mark. Like Postman, I fear that no one is even noticing that the abundance of data emitted from our new media devices and programs has become an issue. The ability of computers and other new media devices to collect and store information (personal or otherwise) is not a new phenomenon, but do we realize that the ubiquity of technology enables virtually every moment of our lives to be tracked, compiled, and filed away? Also, I fear that our reliance on the functionality of new media is accompanied by our acceptance of its oversimplification of our personal choices (i.e. reputation systems).

Information gathered by new media gadgets (and stored in computer databases) is flooding "the system,"and in the process, is jeopardizing our privacy. Information once thought to be private has become increasingly public, remixing and blending together our public and private identities. For example, prior to cell phones, a person's exact location could not be tracked; anonymity was widespread. Now, due to the pervasiveness of cell phones, private information that may seem socially unacceptable (i.e. eating at McDonald's, browsing at an adult bookstore, etc.) is available to public parties such as cell phone companies (and whomever they choose to share their database with) by simply accessing a computer database. This development not only has the potential for people to change their behavior (i.e. identity) based on what they feel is socially acceptable, but more importantly, eliminates their control of personal information that they once exclusively managed. E-commerce and e-mail represent two examples of how new media has negatively impacted our privacy.

E-commerce practices represent intrusions of privacy, as data mining of personal information and demographics is growing tenfold.[9] Frequently, the privacy of online consumers is not well protected in electronic transactions, as companies rely on cookies to monitor visitors' online activities. Most Web browsers are designed to divulge every Web site people visit, as well as the IP (Internet Protocol) addresses that may identify indi-

vidual users. The information is collected and stored in databases to create detailed profiles of user preferences in everything from shopping to reading. This information is extremely valuable to companies that rely upon mass marketing—but threaten our personal privacy and personal expression.

E-mail, while very convenient, is not a very secure form of communication, as the (electronic) trail that it generates discourages privacy as well as security. For example, although e-mail may be considered "private" by the sender and recipient, in actuality, it can easily be forwarded to (and revised by) others without the consent of the original sender. Further, both senders and recipients can be subjected to breaches of confidentiality, as employers can easily monitor e-mail which is just one of the many dense ethical and legal issues related to e-mail privacy.[10]

In general, people have welcomed technology into their lives, appreciating the convenience and functional benefits new media devices and programs bring; however, I question whether the general public has reflected upon how our privacy has been compromised by these inventions. Do we realize that marketers consider our personal information to be essential to their companies' success? Every time we decide to participate in the digital world, whether through something as advanced as ordering a book online (e-commerce) to something as mundane as pumping gasoline (paying via a credit card), we are creating a new "entry" into a database owned by someone who we will likely never meet. Further, there is not just one database, but rather countless databases containing our personal information. Also, how genuine is this information anyway?

The people who oversee the data collection have no mechanism to separate the wheat from the chaff, and we as the users, are unable to control what information is used. Who is to say that the information gathered in our everyday lives is correct (or incorrect)? Is it fair to say that because of a book I bought at Amazon that they (the "collectors") know that I would like these other books as well (because the algorithm and data imply this)? I do not like to be defined by what I have purchased on my credit card or where I have been as noted by my cell phone call log. Nonetheless, the danger remains that there is data surrounding me that does in fact "define" me to an increasing number of parties, and my control over what details in my life stays inside "my house" is severely limited.

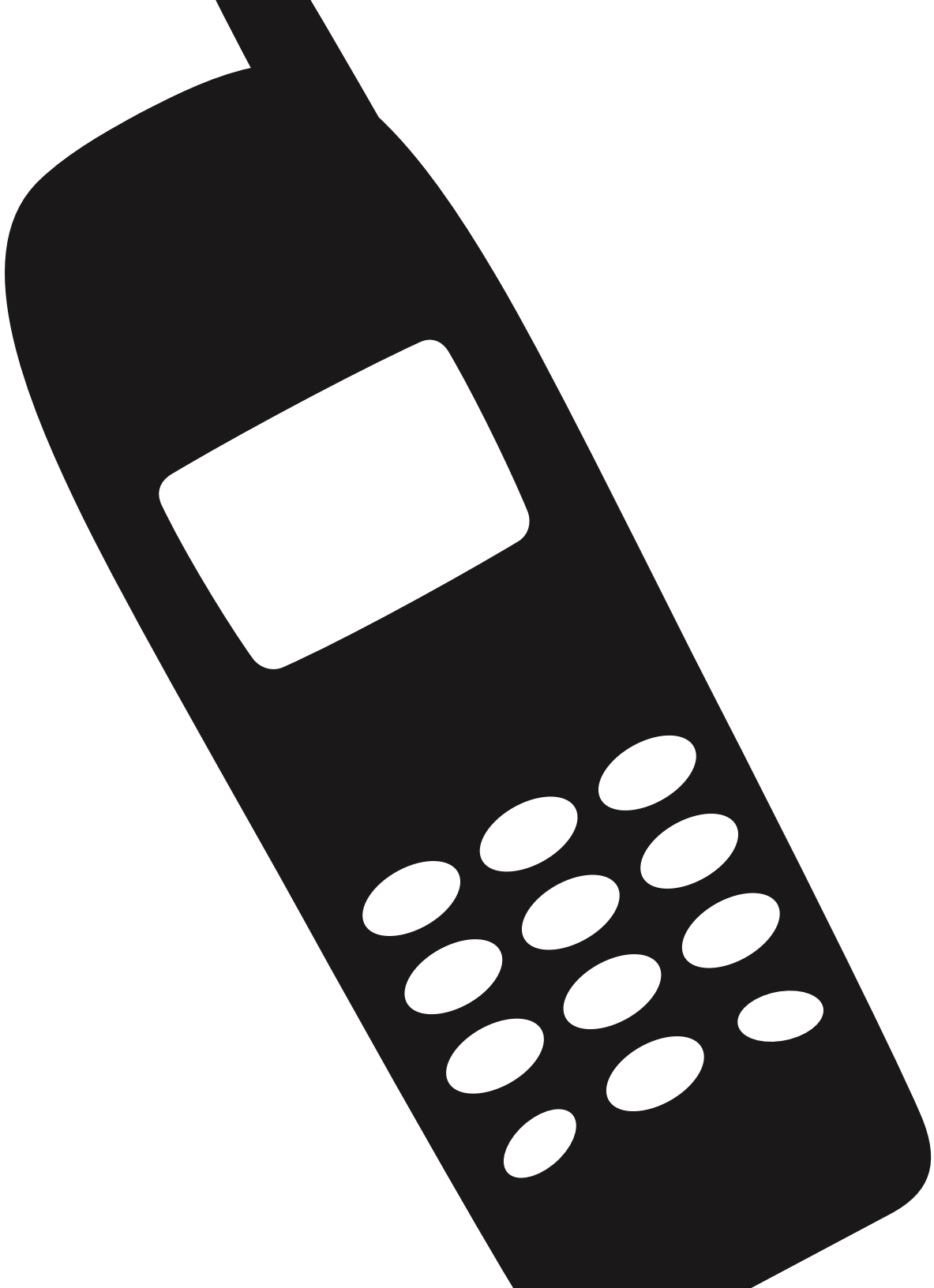
To me, equally as troubling as this loss of control is the apparent apathy of society. Postman described the age we live in a "Technopoly", which he defined as a "…deification of technology [where] the culture seeks its authorization in technology, finds its satisfaction in technology, and takes its order from technology."[11] In other words, we have become so enamored by the power of technology that we have lost ourselves, and incidentally, control of our privacy along the way. Author Howard Rheingold, who "…spent much of the 1980s [to the present] exploring the intersections between human consciousness, creative activity, and new technologies,"[12] categorizes the dangers that modern technology has on society as, "three kinds of potential threats: threats to liberty…threats to quality of life…threats to human dignity…"[13] Rheingold provided anecdotal evidence of these potential threats with the following examples:

> …in 2002, BBC News reported that the image of the average urbanite is caught on closed-circuit televi-

sion cameras three hundred times a day… in 2001, Virgin Mobile admitted that they had stored the location records of every mobile call made by each one of its one million customers since the service launched in 1999.[14]

In addition to the erosion of our privacy by the mere collection of data, we face further exploitation, as data collection agencies are extremely vulnerable to identity theft. ChoicePoint, an organization who provides insurance companies with background information on prospective policyholders, recently reported that more than 110,000 identities tracked by their database were stolen.

The potential risks that such surveillance has on our privacy needs to be addressed by government. Several privacy-enhancing technologies have been developed and privacy legislation has increased in recent years; yet, it is questionable as to whether we even realize or acknowledge that this erosion is happening.[15] The development of Web-browsing software based on the Platform for Privacy Preferences Project (P3P), the software-writing guidelines developed by the Web's standard-setting



body (World Wide Web Consortium: W3C) represents a progress toward giving users more online control of their personal information.[16] Legislation to protect individuals' right to privacy from both the private sector and government has developed through a variety of industry-specific statutes such as the 1970 Fair Credit Reporting Act (privacy of financial information), the Privacy Act of 1974 (privacy of government collections), the 1986 Electronic Communications Privacy Act and the Telephone Consumer Protection Act of 1997 (privacy of communications), and the Video Privacy Protection Act of 1998 (privacy of other personal records).[17] Nonetheless, until awareness reaches a critical level, activism is not likely to force changes and legislation that truly protect our privacy.

I strongly believe in the right to privacy as well as the right to control personal information. Like most, I place significant value on privacy and trust. I have assumed that I controlled my privacy by restricting the information I share. Further, I grant my trust only to those who I believe will respect my wishes. Once people learn that they are carrying significant amounts of easily accessible, personal data (i.e. on their cell phone, credit card, etc.), I believe they will place increased value on their privacy and anonymity. With the loss of privacy and anonymity, trust becomes compromised, likely making people increasingly wary of each other, as well as altering their public and private identities due to the uncertainty with their surroundings. Given the current rate of technological advancements, we will likely be able to know everything about everybody—but will that be a good thing? I do not think so.

Preview of Data Shadow Exploration

I believe that my role as a new media designer is to make the invisible data that is compromising our privacy visible and tangible, so we are able to recognize its negative impact and regain control of our autonomy. In the upcoming chapters of *Data Shadow: Remixing our Public and Private Selves in the Age of New Media*, I provide historical and contemporary perspectives on the relationship between new media technologies and privacy. First, I investigate the initial intent of three pioneers in new media—Vannevar Bush, J.C.R. Licklider, and Douglas Engelbart—and highlight their inventions. The document also highlights work from artists in the fields of video, film, new media, and the fine arts, which addresses relationships with technology, its impact on privacy, and the overriding social effect.

Finally, I share my design work which speaks both directly and indirectly to the thesis, as the latter provides a contextual perspective and speaks to the process I employ.

Historical Context

The impact of new media, and the computer, in particular, on late 20th/early 21st Century society is arguably as powerful as the effect of the telegraph on the 19th Century, changing the social, ethical, and legal landscape.

Neil Postman describes the arrival of new technology in *Amusing Ourselves to Death* as, "each technology has an agenda of its own…a metaphor waiting to unfold."[1] Postman also adds that, "…if we start from the assumption that in every tool we create, an idea is embedded that goes beyond the function of the thing itself."[2] What differentiates the new media age of the previous decade from the past is the ability to collect, store, and sort inordinate amounts of information. Further, following Postman's line of thinking, in the case of new media technology, the embedded idea may be the capability to track *everyday* behavior, and ultimately, invade personal privacy. For example, e-commerce threatens online users' privacy; other technological developments both create and prevent privacy infringements.

In the beginning…

The world that we live in is ruled by digital computing, and I willingly accept this reality. One of the major consequences of the computer is the concept of "the database", or a central storage for data (of any kind). This concept is not new to the new media age. Census data was taken by hand as early as the mid-19th Century and the Library of Congress has been collecting data (in the form of books) since 1800.

Nonetheless, what is new is the expansiveness of the data. Computers continuously expedite the process of sorting and connecting copious amounts of information, thereby enabling the user to obtain more meaningful answers than previously available. More importantly, the computer has enabled users to store significant amounts of information in a relatively small space. For example, the online search company Google has begun a Herculean project to archive online 15 million books from five of the world's most prestigious universities—an endeavor only possible by the emergence of digital computing and its by-products like the Internet.

Vannevar Bush

Scientist Dr. Vannevar Bush was one of the first to write publicly about the idea of easy, seamless data retrieval. In "As We May Think," an article he published in Atlantic Monthly in 1945, Dr. Bush insisted that too much information existed for researchers to stay current on the latest research.[3] To address this problem, he proposed several hypothetical devices, including most significantly, the Memex.

The Memex was designed as a supplement to human memory, intended to store and organize an individual's books and records. According to Bush, the Memex would enable a, "scholar…to create her own knowledge tools as connections within reams of information, share these tools, and use complexes of tools to create yet more sophisticated knowledge that could in turn be deployed toward this work."[4] Similar to another Bush invention, the Rapid Selector, the Memex would use microfilm to store and rapidly access material. This analog machine, modeled after the workings of the brain, would arrange information by association, rather than by the typical alphabetical system.[5]

Bush made other notable contributions to new media development. He is credited with making significant advances in analog computing, creating the Rapid Selec-

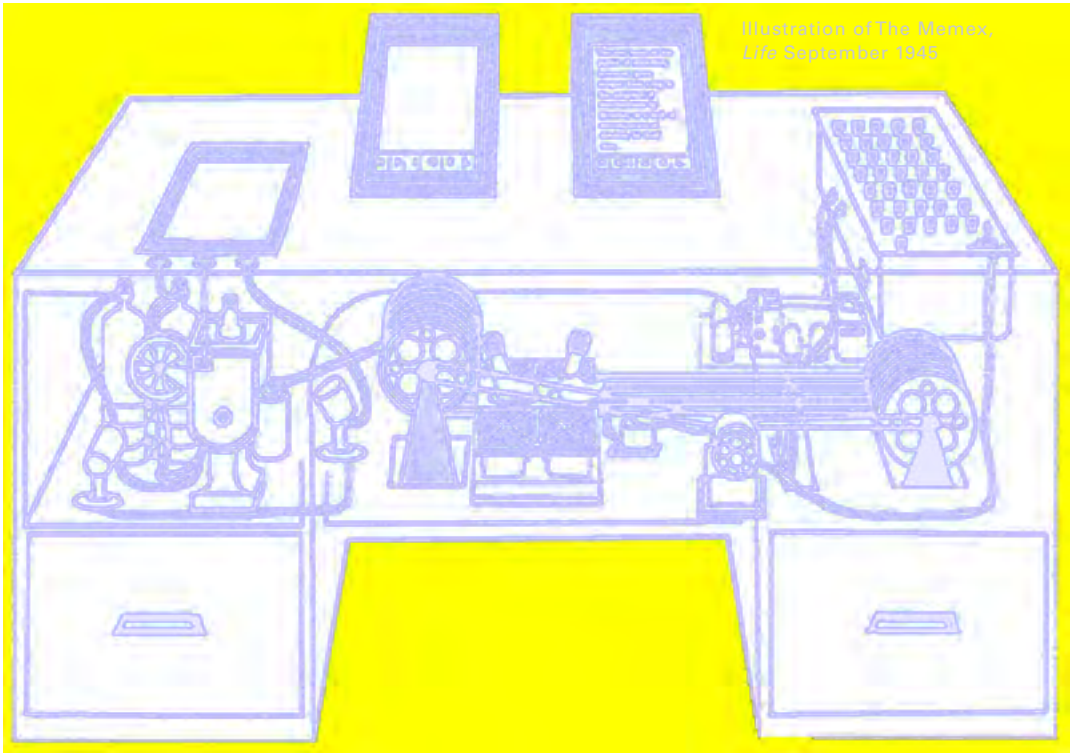


Illustration of The Memex, *Life* September 1945

tor and the Differential Analyzer, a computer designed to compute differential equations, and ultimately, the foundation for the digital computer. Nonetheless, Bush's inventions were secondary to his commitment to bring academic and scientific researchers together with the military.[6] His success in securing a partnership between the military and science is illustrated in his participation in the top-secret Manhattan Project, which supervised the development of the atomic bomb.

Bush's intentions were altruistic. He believed that the answer to the excess of information was to create machines (i.e. Memex) that were designed so that individuals could organize and access their own records with flexibility to continually add new information, and then to create new trails (i.e. associative indexing).[7] He hoped that knowledge (and easy access to it) would create understanding and prevent unnecessary conflict. Bush saw technology as the salve for humankind's woes, similar to expectations in the 19th Century when people expected that a new technology (the telegraph) would usher in a utopian world filled with peace and understanding.

Bush's rejection of linear, sequential indexing in favor of an interwoven web of associative references has inspired many computer and Internet researchers. His Memex computer inspired scientists like E.F. Codd of IBM to create what we now know today as the relational database and Tim Berners-Lee to create the Internet.[8] MIT engineer J.C.R. Licklider cited "As We May Think" as a major influence and dedicated his 1965 book Libraries of the Future to Bush. Stanford University senior research engineer Douglas Engelbart, inventor of the computer mouse and developer of the first functional hypertext system, wrote a letter to Bush in 1962 indicated that "As We May Think" influenced his own research. Additionally, the 1987 Hypertext Conference in Chapel Hill, North Carolina, cited Bush's "As We May Think" as being extremely influential on the conceptualization and development of hypertext.[9]

Unfortunately, new media technology has not delivered the utopian society Bush envisioned. While Bush's goal of creating (computerized) tools that expanded human comprehension has materialized, his quest for decreased conflict has not. Instead, through the use of a mouse, keyboard, and Internet connection, it is easy to locate information on just about any topic, or more shockingly, about any person. While Bush does not appear to have reflected upon the impact of new media on our privacy during his inventive years, he would undoubtedly be shocked at our decreased control of personal information at the hand of the invention he inspired Just as new media technology has solved many of man's problems (i.e. storing and organizing information), it has created new ones, such as the invasion of privacy. Our dependence on new media devices, many of which Bush masterminded, has diverted our attention from privacy issues, as we appear to be enthralled by the storage-related and communicative features of these tools.

J.C.R. Licklider

Building upon the ideas of Dr. Bush, J.C.R. Licklider in his 1960 paper titled "Man-Computer Symbiosis" envisioned the modern day computer that would, "bring computer machines effectively into processes of thinking that must go on in 'real time,' time that moves too fast to permit using computers in conventional ways."[10] When computers could do little more than crunch numbers, Licklider imagined computers as interactive devices, capable of taking on rote, time-consuming tasks of data processing, record keeping, and remote information access that were drudgery—and 85% of everyday life.[11] He believed that by having the computer do the heavy lifting (i.e. compiling and collating data on demand and in the blink of an eye), we could in turn think

harder, achieve new insights, make more important and complex decisions, and ultimately, create connections that would help in business, pleasure, and general life.

Licklider's work centered on the computer's ability to store and communicate information. In his 1965 book titled *Libraries of the Future*, Licklider discussed how documents could be stored in digital form without losing their value. He presented a detailed analysis of the intellectual processes involved in acquiring, organizing and using knowledge.[12] When computer scientist Robert Fano published his Licklider biography in 1998, he noted that libraries were only beginning to catch up with Licklider's ideas from twenty years earlier. In "The Computer as a Communication Device," a 1968 article Licklider co-authored with Robert Taylor, he established principles regarding the critical role computers play in human communications. He anticipated that large (computer) communities would form, organized not by geography, but by shared interests, spurred on by the interactivity of computer communications, "when minds interact, new ideas merge."[13]

Most notably, Licklider was a visionary for the development of what has become the Internet. He was the first director of the Information Processing Techniques Office (IPTO) at the US Department of Defense's Advanced Research Projects Agency (ARPA).[14] There he oversaw one of the most productive and creative periods in the history of computer science, recruiting key people and securing the groundwork for the 1969 creation of the ARPANET, the predecessor to today's Internet. His optimism for the ARPANET project overcame opposition from leaders who considered "on-line" computing to be a farce and a waste of government funding – may be his greatest contribution.[15]

As writer David Bennahum noted in Slate magazine in 1996, Licklider influenced a multitude of computer scientists—some of whom went on to invent video games, the mouse, the graphical computer displays, the "windows" interface, and "icons."[16] Furthermore, the Internet was devised by people who Licklider hired to work for him at ARPA—notably his IPTO successor, Robert Taylor. In addition, under Licklider's direction, ARPA funded research at four of the first universities that offered a computer science degree.[17]

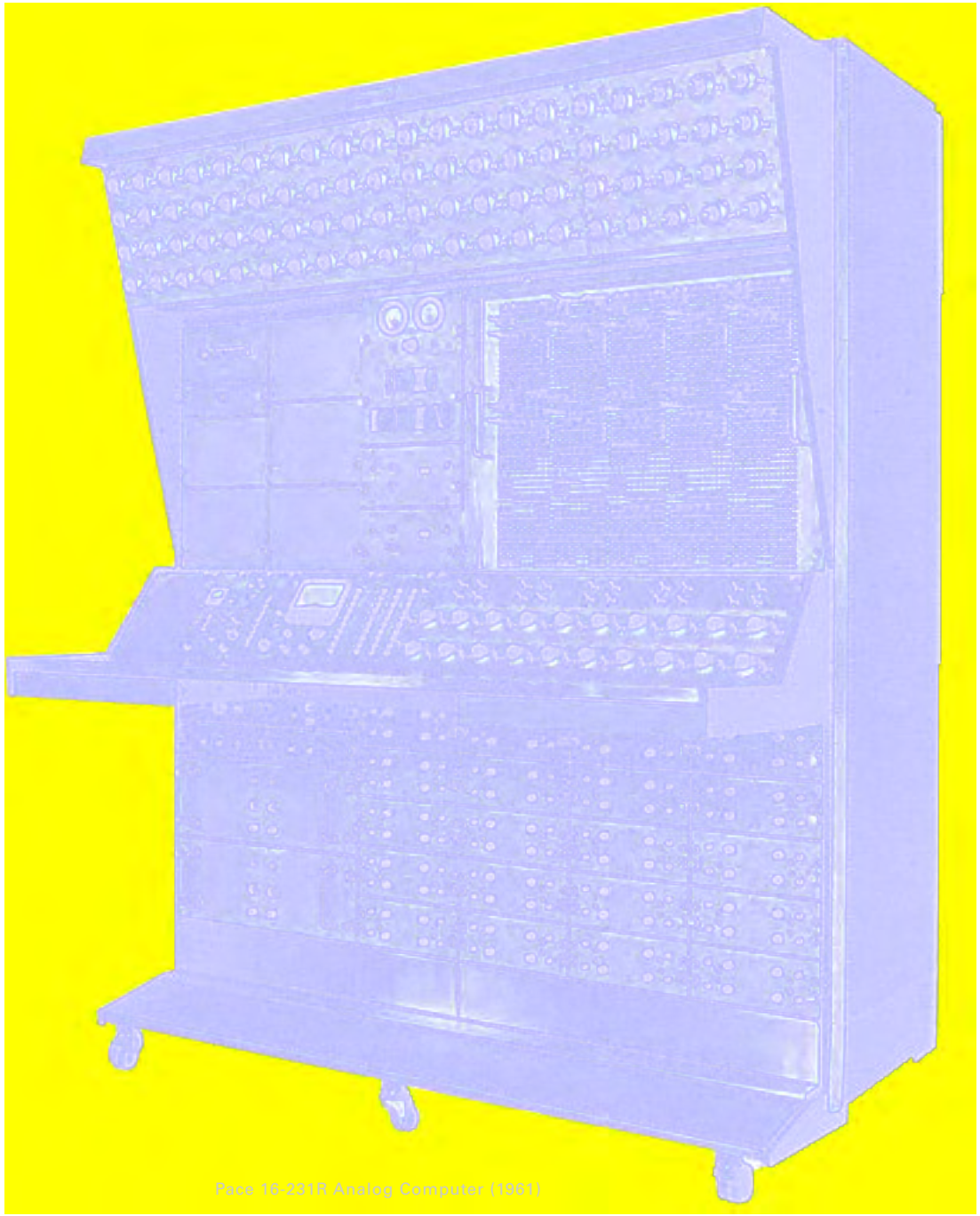
Licklider's background in psychology affected his optimistic yet naïve approach to new media.[18] An engineering psychology specialist, he simply believed that computers could and should function more like the human brain, and ultimately, serve as an essential partner and (mechanical) extension of the mind. He was equally worried about the tools and social implications of the computer age. In "The Computer as a Communication Device," he expressed concerns about a "digital divide," worrying that people with scant resources would be at a major communications disadvantage compared to the wealthy.[19] Nonetheless, as writer John Naughton noted, Licklider's guiding insight was that a symbiotic human-computer relationship would create a whole that would be greater than the sum of its parts, and ultimately, have a tremendous impact on improving the human condition.[20]

While Licklider would be pleased by the array of "tools" that have been created to relieve the pressure of tedious and time consuming tasks, he would likely be disturbed by the nature of the human-computer relationship. While the creation of a cottage industry of marketers, corporations, and government agenices devoted to scrutinizing private and personal data may not have offended Licklider, he would likely be disenchanted with man's inability to control the flow of (personal) information gathered and stored by the computer. Licklider's contributions, the Internet in particular, skewed our views of privacy, as many people are now more willing to sacrifice control of personal information for the convenience and speed of communications.

Douglas Engelbart

Influenced by Bush and Licklider, Douglas Engelbart is a pioneer in human computer communications. His accomplishments in the areas of personal computing and networking are considered nothing short of revolutionary.[21] Further, his theories on using computers and software to augment the human intellect has led to the development of graphical user interface (GUI) and the computer mouse.

Engelbart believes that the complexity of problems facing the world is growing faster than our ability to solve them. Influenced by cybernetics (the science of communication and control), he has dedicated his work to using computers to augment the collective human intelligence ("augmentation of human intellect"), to enable new forms of creative thought, communication and collaboration for people in workplace and domestic contexts.[22] In his 1962 "Augmenting Human Intellect: A Conceptual Framework" article, Engelbart argued for the development of online libraries and for storing/retrieving documents electronically. Additionally, he stated that by having a symbiotic relationship with the computer one would be able to,



Pace 16-231R Analog Computer (1961)

> …approach a complex problem situation, to gain comprehension to suit his particular needs, and to derive solutions to problems. Increased capability in this respect is taken to mean a mixture of the following: more rapid comprehension, better comprehension in a situation that previously was too complex, speedier solutions, better solutions, and the possibility of finding solutions to problems that before seem insoluble.[23]

Interestingly, Engelbart's interest as an (electrical) engineer was not in the technical but in the social and human aspects of technology, and in particular, how the computer can be used as a tool to serve the desires of the user. In his laboratory, Augmentation Research Center (ARC), which was funded by ARPA, his research focused on a co-adaptive learning environment involving the co-evolution of the user along with the computer.[24] In 1963, he and his team developed an On-Line System (NLS) which was described as an integrated environment for idea processing and featured several tools that computer users now use on a daily basis (i.e. an outline editor for idea development, a mouse/pointing device for on-screen selection, shared screen teleconferencing, hypertext linking, word processing, e-mail, on-line help systems, and a full windowing software environment).[25] In 1967, he hosted a Network Information Center (NIC) for ARPA-sponsored labs, which were networked to facilitate resource sharing. NIC provided basic library services (indexing, referencing, and basic information retrieval), online services using the Journal (which allowed for permanent indexing and storage of mail submissions), and Mail programs.[26]

Engelbart's developments ushered in a new era of interactive computing. When ARPA cancelled ARC's funding in the early 1970's, many ARC members went to work at the Palo Alto Research Center (PARC) where many of Engelbart's creations were refined and used as the basis for the Altair, the first personal computer. Additionally, in his invention of the mouse, Engelbart used a design process that focused on ergonomic and cognitive factors, which led to the conception of the computer user as socially constructed and situated in processes by which technology is developed and diffused.[27] Engelbart is credited with foreseeing the rise of the knowledge worker – workers who create, manipulate, and diffuse information and who work collaboratively and asynchronously.[28]

In 1989, Engelbart founded the Bootstrap Institute at Stanford University to foster high performance organizations by developing enabling technologies and promoting collaboration.[29] As outlined in "On Bootstrapping," the focus of this work is to bring together computer vendors, developers, and end-users to work in commonality on the technology that today's rapidly changing world requires.

While Engelbart, like Bush and Licklider, is pleased with the evolution of the symbiotic relationship between man and new media, he is frustrated, describing the information age as an "unfinished revolution."[30] Engelbart believes the computer industry regards office automation as the be-all and end-all of technological innovation, and that it falls far short of its promise. Engelbart describes, "If technological innovation were Mount Everest, we've only climbed about 3,000 feet up the 29,000-foot mountain. My picture of where we can get is so far beyond where the World Wide Web has gotten us," he said. Overall, Engelbart is frustrated by the progress of using technology to boost human intellect and the byproducts (i.e. privacy invasion) of society's reliance on technology.[31]

Historical Reflection and Coming Attractions

It would be naive to think that Bush, Linklider, Engelbart or any other early computer scientist intentionally meant any harm with their contributions to the creation of the computer and new media. However, in their effort to solve one set of problems, the fathers of digital computing, have produced another, which in my opinion, has negative implications for our right to privacy, our trust of others, and contentment with expanding our use of technology in the era of new media.

Artists Work

In investigating the negative impact of new media technology on privacy, I revisited the work of artists who have influenced me, as they have dealt with this topic in unique and engaging ways. Their work spans from traditional films to Internet-based experiments to new media installations. Included are brief descriptions of the most relevant work and how these selections have influenced my thesis work.

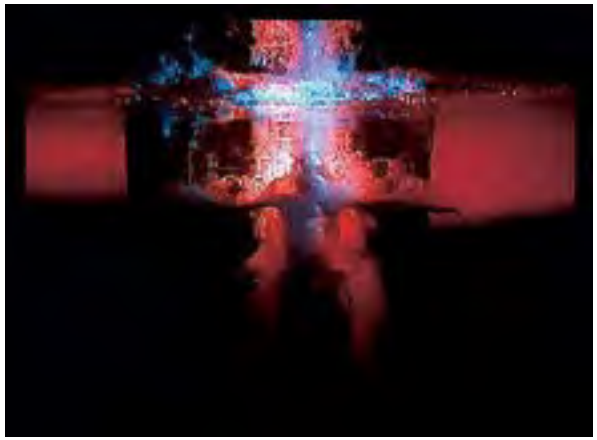
Video & Film

As a medium, video and film can be used in unique ways to display many different feelings, thoughts, and ideas that other static mediums such as painting or sculpture lack. By blending sound with images through careful editing, video and film create an immersive experience for the viewer that pulls them out of their world and into the one created on screen. The following four artists possess the innate skill to create an experience that resonates with many basic human emotions by using video and film to their fullest capacities. These artists have inspired me to experiment in video and to use it to create communicative design work that is both subtle and meaningful.

Bill Viola – Five Angels for the Millennium (2001)

A pioneer of film and video art since the early 1970s, Bill Viola employs both sound and image to profound effect. In his major work titled *Five Angels for the Millennium* (2001), five individual video sequences (Birth Angel; Fire Angel; Ascending Angel; Creation Angel; and Departing Angel, pictured) are projected directly onto the walls of a darkened gallery.

Viola explains the uncanny origins of this work, as, "Five Angels came out of a three day shoot in Long Beach that I had undertaken for several other projects. All I knew was that I wanted to film a man plunging into water, sinking down, below, out of frame—drowning. A year or so later, going through this old footage, I



Images from *Five Angels for the Millennium (2001)*

came across five shots of this figure and started working with them – intuitively and without a conscious plan. I became completely absorbed by this man sinking in water, and by the sonic and physical environment I had in mind for the piece. When I showed the finished work to Kira [Perov], my partner, she pointed out something I had not realized until that moment: this was not a film of a drowning man. Somehow, I had unconsciously run time backwards in the five films, so all but one of the figures rush upwards and out of the water. I had inadvertently created images of ascension, from death to birth."[1]

Viola's work is said to be spiritually and fundamentally based on our most immediate senses, "countering the vilification of technology".[2] His work is attributed with bringing "video art full circle to reflect the deep spiritual issues faced by people throughout time."[3] For example, in his video Opus, the focus is communication, removing the cold, impersonal qualities often associated with technology. Additionally, his installations prove that television and video, often associated with a lack of thoughtfulness, are but the opposite, using the media to deliver great beauty and meaning. His work is said to resemble "a poetic interpretation of his rich inner life and the world around him."[4]

During my time at Mass Art, sound and motion, more so than other mediums, have captured my interest. Further, I find Viola's ability to evoke emotions from his work awe-inspiring, particularly his ability to elicit emotional reactions regarding the disparagement of technology. In such pieces like *P2P-Public to Private* and *Untitled 2*, I attempted to generate feelings or emotions from viewers with mixed results. Like Viola, I tried to focus on our immediate senses, addressing the negative impact of technology on privacy.

Images from *Poke in the Eye/ Nose/Ear 3/8/94 Edit* (2004)

Bruce Nauman - Poke in the Eye/Nose/Ear 3/8/94 Edit (2004)[5]

Using his body to explore the limits of everyday situations, Bruce Nauman explores video as a theatrical stage and a surveillance device within an installation context. One of his more noteworthy pieces, *Poke in the Eyes/Nose/Ear 3/8/94 Edit*, has been included because it contains several qualities and ideas that I was trying to achieve with my piece *Untitled 1*. One idea I appropriated was Nauman's ability to make the viewer uncomfortable at the subject matter they were viewing.

Nauman is at his best when his work both captivates the viewer, and yet, at the same time, challenges them and makes them feel uncomfortable. It is this dichotomy that I try to strive for in my work. Specifically, in pieces like *iPod Cocoon* and *Me and My Data Shadow*, I have tried to engage the viewer in their appreciation of technology, while also confronting them with the threats to their privacy that accompany use of technology.

Nauman's challenge of conventional thinking is similar to the tone I wish to achieve with *Me and My Data Shadow*. Emerging out of the Minimalist tradition in the mid-1960s, Nauman rejected its highly controlled and theorized aesthetics and engaged in art rooted in discovery.[6] His introverted curiosity demonstrated a unique style of questioning. In a series of experiments, he performed various mundane and repetitive acts, such as walking around the perimeter of a square, throwing balls, applying makeup, and playing the violin.

Image from *The Flat* (1968)

Jan Svankmajer – The Flat (1968)
Jan Svankmajer's video *The Flat* has been described as: "A reflection on an alienated life in which a thing (i.e. an inanimate object such as a spoon, table, picture frame, etc.) absurdly refuses to accept what it is meant for and aggressively attacks the man's freedom until he declares and signs his defeat. This horrifying warning is a combination of human and object animation. In the surrealist and absurdist tradition, Svankmajer created a film that contained a dark subject of oppression and put it in the setting of a comedic film with great effect. Svankmajer's approach influenced both *If You Like This* (film and installation) pieces.

Image from *Rear Window* (1954)

Alfred Hitchcock – Rear Window (1954)
In *Rear Window*, Hitchcock showcases incredible his skill and ability to take a noir short story (by Cornell Woolrich) and create a film that is not only true to the story, but also enhances it by using the medium to its fullest. Also impressive is Hitchcock's ability to create a mood of suspense, mystery, and fear in the limited space of just one room. The obvious theme of the movie is voyeurism and Hitchcock revels in it. He creates a film that plays to our curious nature and our need to know about other people's lives. This theme of voyeurism resonates with my thesis and our straddling the worlds of our public and private lives in the technology age. Specifically, it indirectly touches upon how we may behave differently if we know we are being monitored.

New Media

Five new media pieces influenced my thesis, as the artists and designers dealt with the social impact of technology in unique and varied ways, using software, installations, and online exhibitions.

Alex Gallow – CarnivorePE (2002)

Inspired by, and named after, the now defunct FBI search tool that would have allowed the federal agency omnipotent-like access to information on the Internet, Galloway created Carnivore, a satirical piece of software. As the website states, "Carnivore is a surveillance tool for data networks. At the heart of the project is *CarnivorePE*, a software application that listens to all Internet traffic (email, web surfing, etc.) on a specific local network. Next, *CarnivorePE* serves this data stream to interfaces called "clients." These clients are designed to animate, diagnose, or interpret the network traffic in various ways. Use *CarnivorePE* to run Carnivore clients from your own desktop, or use it to make your own clients." As an open source collaborative piece of software, has inspired artists and designers to create work that visualizes Internet traffic, and in some cases, shows the dangers of having your information "floating about" for prying eyes to see.

Screen capture of *CarivorePE* client interface (2002)

Image from *Carnivore.Webcam.Sniffing* (2004)

Image of *AEgis: Equipment for a City of Strangers* (1999-2000)

Danil Rothaug – Carnivore.Webcam.Sniffing (2004)
Danil Rothaug took the *CarnivorePE* software and created a social commentary on the surveillance aspect of or new technology. Rothaug describes this piece in the following statement, "By 09-11, at the latest, surveillance has become one of the most disputed weapons in preventing criminalism. Video monitoring of public places and web cams are already part of our daily environment. Somebody somewhere traces everyone using a digital device.[9] *Carnivore.Webcam.Sniffing* combines both optical - (web cam) and data-surveillance - (Carnivore) tools into a real time augmented-reality installation. The supervised person is removed out of the video-image and replaced by his digital personality, generated out of his own digital activity."[10]

According to Rothaug, *Carnivore.Webcam.Sniffing* "was not invented to improve current surveillance methods. It's rather supposed to gather attention to the topic itself."[11] I found his unique approach and poetic visualization of data and its surrounding presence quite intriguing and successful. Further, several of my thesis projects applied Rothaug's ideas of data and surveillance omnipresence.

Krzysztof Wodiczko, Adam Whiton, Sung Ho Kim, Jurek Stypulkowski, Kelly Dobson, and Brooklyn Model Works - AEgis: Equipment for a City of Strangers (1999-2000)
AEgis deals with our duality and how we represent ourselves to the outside world and how we guard our true selves. In this piece, Wodiczko and his collaborators use the myth of, "…the AEgis cloak of Athena, bearing a Gorgon's head that she used to protect herself and others."[12]

The piece is comprised of, "…two wing-like screens enclosed in a backpack hanging from the shoulders of its wearer. When the wearer is ready to deploy the equipment, the screens will unfold in response to physical or verbal commands and simultaneously play prerecorded video and sound images of the wearer's face driven by a concealed laptop computer."[13] The creators describe the goal of the piece as, "…to represent dual (and often dueling) truths, those living contradictions that define, depict, and can sometimes destroy individual existence." [14] This duality in identity and the use of new media as the mediator attracted me to AEgis. Like Wodiczko's other work, AEgis probes the social and cultural effects of new media on our lives and raises questions on how we are dealing with this new age.

Image of *Data Mining in the Amazon* (2002)

Image of the installation *Swipe* (2002)

Angie Waller - Data Mining the Amazon (2002)
Data Mining the Amazon was culled from the Banff Centre online exhibition titled *Database Imaginary*, which presented work of new media designers who used, "…databases to comment on their uses and to imagine unknown uses…to comment on everyday life in the 21st century."[15] In her piece, Waller created a book based on the Amazon.com ("Amazon") model of data mining to visualize, map, and graph the filtered database.[16] Waller then, "collected and cross-fertilized a selection of Amazon recommendations and graphed relationships between books customers bought on Amazon.com in conjunction with their music CD purchases."[17] She then added, "…a political slant by profiling relationships between politically liberal and conservative titles, popular books among the US military, and profiles on world leaders such as George W. Bush and Margaret Thatcher."[18] For me, the ideas behind D*ata Mining the Amazon* were more intriguing than Waller's final solution. By using the database and its contents (data) to make absurd connections, Waller was able to expose the data for what it is - just data with no meaning until people place meaning onto it.

B. da Costa, J. Schulte, and B. Singer - Swipe (2002)
Swipe, another piece in the *Database Imaginary* exhibition, was an installation that consisted of, "…a bar/security desk complete with scanner and interactive database – and opening night performance uses the barcode magnetic stripes on drivers' licenses to reveal to gallery visitors that databases are an essential technique of power in today's social field."[19] When the visitor to the installation would hand their driver's license to the bartender for verification of age, they would receive, "…personal details and a demographic analysis (provided back to you) with your drink…While a bartender prepares the drink order, the Swipe cash register matches the driver's license information with remote and local databases and runs a demographic analysis. Within minutes, a data "receipt" is ready and is delivered with drink to the customer. "[20]

My Contextual Thesis Work

Understanding my artistic and technical influences as well as the vision and process employed in contextual work provides insight into how I approached my thesis projects which are presented in the subsequent section. Some of the contextual design pieces were created before the thesis argument was developed; others were created with the thesis in mind, but turned out to be smaller experiments that were left aside for various reasons.

Untitled 1

Untitled 1 was created in my second semester at Mass Art for the Design as Experience class where I was given the task of creating an experience. I chose to shoot in black and white, a thirty-second film that showed a close- up of me shaving.

Process:

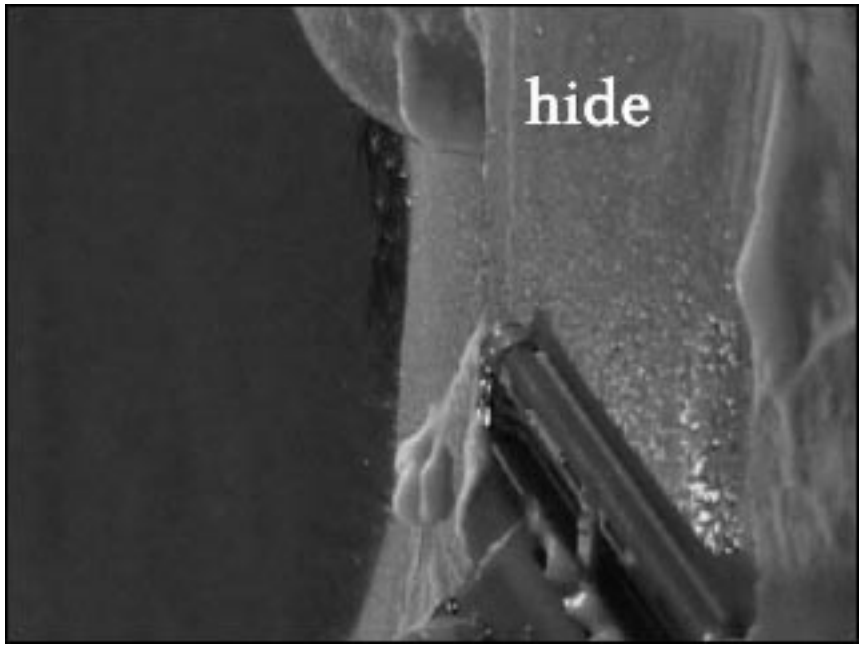
For *Untitled 1*, I selected the medium of video, as I had not used this medium before and thought it would enable the creation of a rich experience comprised of both sound and visual. *Untitled 1* also represented the first time I addressed the themes of public and private identity in my design work.

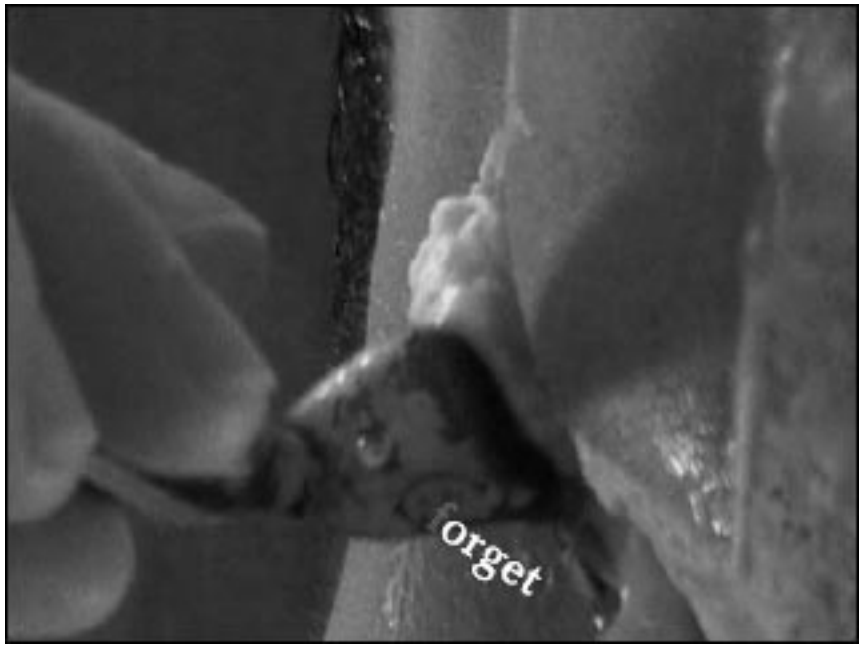
Influenced by Bruce Nauman, I used myself as the subject and developed a piece that expressed the private feelings of doubt and uncertainty in one's ability and exposed these emotions to the world. My aim was to create a personal, individual experience that would transcend this singularity and speak to the universal. I did not use a formal process, but rather, improvised my approach, as I felt this would create the most genuine outcome.

Conclusion:

I was pleased with *Untitled 1*, particularly given that I viewed the project as an experiment, a means for me to explore the medium. My selection of *Facades* by Philip Glass for the soundtrack effectively set the pensive mood for the piece. Additionally, the use of dynamic typography helped to blatantly communicate my private feelings of doubt and frustration to the viewer. Each time the blade of the razor went across my face, a word would appear. As the blade was lifted, the word disappeared. With each subsequent stroke, a new word would appear and then disappear, uncovering my private emotions that I typically try to keep from the public.

While *Untitled 1* did not speak directly to the impact of new media devices and programs on privacy, it explored the concepts of public and private worlds. Additionally, *Untitled 1* provided a platform for visually exploring these realms instead of just speaking or writing to them. *Untitled 1* illustrates how technology can publicize information we prefer to keep private. *Me and My Data Shadow*, a project discussed later, builds upon Untitled 1's premise, outlining the data (some of which we may prefer to contain within our private world) that is emitted from and collected by our new media devices.





Images from the short film *Untitled 1*

Untitled 2

Untitled 2 was also designed for the Design as Experience class, the charter being to further explore the concept of experience. I selected video as my medium to continue my experimentation with related tools and the expression of feelings of doubt. The visual included shots of a journal which I started keeping for assistance in the creative process and images of plastic milk bottles.

Process:

While creating this film, I wrote the following: "For reasons beyond my comprehension, I have recently become fascinated with one-quart, plastic Hood milk bottles. Something about the bottle's shape (reminiscent of glass milk bottles of the past) and their soft white color resonates emotionally with me." As a result, I started to collect the bottles, hoping that an idea for the second Design as Experience project would come out of them. I wanted to find out if there was something beyond the aesthetic attraction. Strangely, the bottles felt like a beacon of some sort, trying to guide me into some interesting area of investigation.

This "inspiration" was then followed by a fallow period that every designer and artist dreads. Ideas were not coming easily and my work was suffering. I began keeping a journal, a new experience for me. I started to think about how I close off my emotions from the rest of the world. Similar to *Untitled 1*, the creative process for developing this film exposed a personal and private element, in this case, addressing the dilemma of designer's block.

Conclusion:

While this film revisited feelings of doubt, in my opinion, the final execution was less successful than that of *Untitled 1*. A lack of clear direction on the visual side is largely attributable to *Untitled 2's* failure to vividly convey emotions of doubt and lack of confidence, and ultimately, to generate an empathetic response from the viewer. Nonetheless, the project was successful in that I continued experimenting with video.

Most importantly, from *Untitled 2*, I learned the importance of employing theory and process. Stymied by the creative block, I neglected to revisit major artistic and literary influences such as the work of Bill Viola and the writings of Neil Postman. Devoid of a contextual backdrop, *Untitled 2* was unfocused and failed to communicate with the audience on the intimate level to which it was intended.

Images from the short film *Untitled 2*



Images from the *P2P – Public to Private* film

P2P – Public to Private

P2P – Public to Private was initially designed for my thesis; however, after refining my topic, it no longer spoke to it. I wrote the following description of the context and original intent of *P2P – Public to Private*. "With our new media devices, we are constantly negotiating our public and private selves. In public, we use cell phones, music players, and wireless personal digital assistants (PDA) to puncture the thin wall between the two worlds. We think we are creating an impervious private bubble in a public space using technology as our tool of choice; but, this assumption is false. Music leaks out of earphones; sound leaks out from conversations on a cell phone call, enabling eavesdroppers to realize a complete picture of the conversation; and, PDA screens can be peered by roving eyes. In this installation, I am attempting to show the blurring of the lines of public and private worlds." Specifically, I intended to show how when using technology in a public place, we behave as if we were in private (i.e. private identity), and that this has negative societal implications.

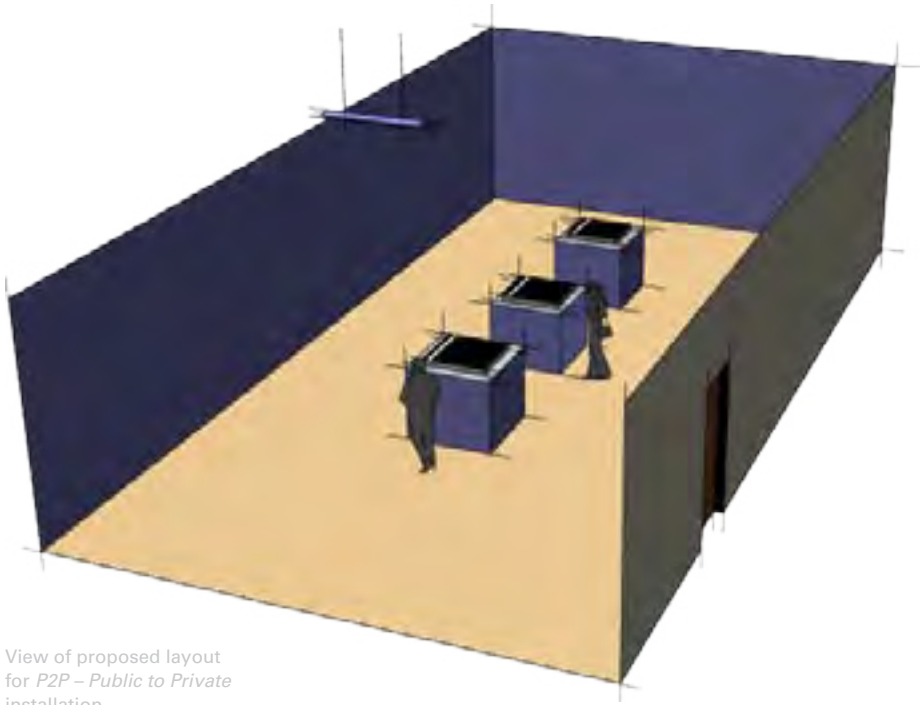
Process:

For this project, I wanted to develop an installation, as I felt this medium would be the best forum to communicate the multiple "layers" of the privacy and identity issues. Given the complexity of the project, I first developed the contextual outline. Specifically, I proposed designing three kiosks, where each kiosk represented a person interacting with a new media device or program (i.e. a cell phone, iPod MP3 music player, and device with Global Positioning Software (GPS)). Each kiosk was equipped with LCD-projected, interactive pieces that the user would be able to manipulate and with which to interact. For example, each kiosk had three different public and private events (i.e. public/private interaction while using a cell phone) that the user would be able to see and explore. In addition to the visual, the interactive pieces were to include sound recorded with the particular event(s). The user would be able to control the sound by sliding the slider across the plane of the piece. In presenting this concept at the mid-term presentation, I created a video for one of the kiosks, which showed an iPod user who was oblivious to his outside surroundings, and how his obliviousness then affected others around him.

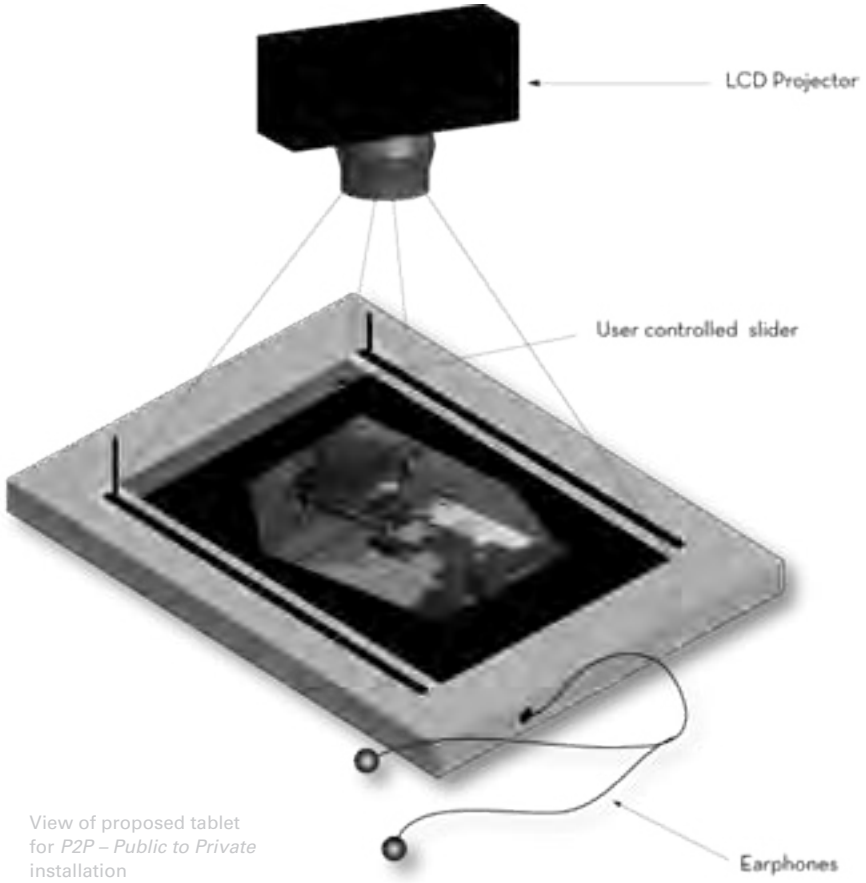
Conclusions:

The goal of this piece was to show how our, "continuous use of our (new media) devices has shifted the perception of public and private space blurring the lines, and shifting the blame for our selfish public actions to our technological devices." While illustrating my point of view, I had hoped to increase audiences' consciousness of the impact of these devices on our privacy, identity, and behavior. Based on the feedback I received and my decision to refine my thesis topic, honing in on the invasion of privacy enabled by new media, I opted to shelve the project. SSpecifically, several logistical questions were raised at the mid-term presentation that would have been addressed when moving from concept to execution. The audience asked whether the kiosks were necessary and whether the video was effective in (blatantly) conveying this blurring of public and private space.

Overall, I was pleased with my development of the *P2P – Public to Private* concept, as it incorporated interaction, sound, and visual to the experience. If I had revised my topic toward exploration of the blurring lines between our public and private space, I am confident that I would have been able to address the logistical questions.



View of proposed layout
for *P2P – Public to Private*
installation



View of proposed tablet
for *P2P – Public to Private*
installation

Me and My Digital Shadow

I developed *Me and My Digital Shadow* last semester for the purpose of my thesis. I wanted a piece that visualized the data shadow generated by our use of new media technology.

Process:

Using myself as the "subject," for one week I tracked in a diary every time I used a digital device. The criterion for a diary entry were that the activity had to be technological in nature and had to leave a trail of data. For instance, each time I made a cell phone call, used the Internet, received an email, had an Instant Message conversation, or used a credit/debit card, I created entries in my log.

The manual tracking was time-consuming, as I discovered that there are many tools and gadgets that I use everyday without any thought that they are "beaming" and logging personal information to unknown parties. What I found most intriguing was the amount of information I created with relatively restrictive rules for tracking. If I were to annualize the information, the amount would be astronomical.

After collecting the data, I contemplated how to visualize it. Through significant reflection, I arrived at the design: a self-portrait using this data as the bits and pieces to create the picture. I took the data, and with the aid of a piece of software called Artext, created an image. Every line of text used to create my image represented information generated by my use of technological devices that could be traced back to me and provide insight to others about who I am.

Conclusions:

As an experiment, *Me and My Digital Shadow* was successful, as it grappled with the ideas and theories proposed in the thesis. While the final execution of the design was not as successful as I would have liked, I believe the failure can be attributable to the lack of substance in the data. When the piece was presented, viewers expressed their desire to see more personal information. This reaction could be attributed to viewers' familiarity with me (and my personality), as they wanted deeper and richer data. They claimed that the information presented, while personal to me, did not explicitly convey the idea of exposing someone's private digital life to the public. Nonetheless, my hesitation to show deeper personal data verified to me that (1) I am not an exhibitionist and (2) that the data has meaning that I would rather not have exposed for fear of misinterpretation, further validating my value of the right to privacy. Furthermore, I believe the audience's reactions would have been different if I had presented their personal data shadow. Overall, *Me and My Digital Shadow* speaks directly to my thesis topic, but given my decision to not further refine the visual concept, it serves as a contextual example.

Notebook used to track my digital trail

Thesis Work

Three design projects *iPod Cocoon*, *If You Like This (Installation)*, and *If You Like This (Video)* directly speak to my thesis—*Data Shadow: Remixing our Private and Public Identities in the Age of New Media*. These projects are also the best examples of my new media work, as they benefited from a well-planned process, feature contextual references, and clearly communicate my overall vision.

From the perspective of my thesis topic, these pieces show the negative effects new technology has on our privacy. Each uniquely illustrates how our public and private identities are surreptitiously negotiated by our use of technology. They rally for our increased control over our environment and our personal information in an effort to avoid living in a totalitarian "technopoly."[1]

On the following pages, I provide contextual background on each project, including why the subjects (i.e. iPod, reputation systems, and new media "surveillance") are important and pertinent to thesis. I summarize the creative process employed, and finally, analyze the project's outcome (compared to its original intent), examining the piece's overall effectiveness.

iPod

Cocoon: External to Internal

iPod Cocoon: External to Internal

The cult of the white ear-buds can be seen throughout the city of Boston and other metropolitan areas of the United States. In the February 15, 2004 *New York Times* article titled "The World at Ears' Length", writer Warren St. John describes a new culture of "walking zombies" in the nation's cities—the result of the proliferation of the Apple iPod.

Older personal handheld stereo systems predecessors of the iPod, such as compact disc (CD) and tape players were limited by their technological constraints—specifically the length of battery power and the media the players used. These devices only allowed a user to listen to recorded material for a short period of time, as media like CDs and cassette tapes had a limit of time, specifically between eighty and one hundred twenty minutes. Additionally, in the case of cassette tapes, the media was not continuously playing; the user would have to flip the tape at the end of each side. These limitations decreased exponentially with the advent of the Digital Audio Player (DAP).

In 1998, Diamond Multimedia developed the first DAP, the Rio PMP3000. Record labels quickly sued the company for copyright infringement in which Diamond eventually won[2]. This device also had its limitations; DAP could only store 32MB of data (translated to about 10 to 15 MP3 songs) and was relatively expensive. Nevertheless, its small size, portability, and ability to play the small compressed MP3s showed promise for the future.

In October 2001, Apple released their DAP called the iPod. The iPod was a portable hard drive with a five-gigabyte capacity and a lithium ion battery that according to Apple, enabled the player to last for 10 to 12 hours. Four years later, the latest version boasts a capacity of 60-gigabytes, 12 times that of the original.

Featuring the ability to store thousands of songs in a small portable console, the iPod ushered in a new way to experience listening to music. The user was no longer tied to battery lifespan or physically cumbersome and clumsy media. The age of the virtually endless stream of music had arrived. With its mammoth capacity, long battery life, and supreme portability, the iPod enabled the user to have his own "private universe" of music in the palm of his hand. A user could put his iPod music on shuffle and listen for up to three to four hours continuously without needing to recharge the battery. Further, he could block out external sounds, encasing himself in a sphere of sound that no one else could enter for this time period. Unfortunately, this private universe comes with a price.

Images from the *iPod Cocoon* video

The offering of a mobile private space in a public realm is an intriguing proposition. Using the iPod enables me to create a private space in not so private places (i.e. the subway, city streets, etc.). It also creates a soundtrack to my daily life, elevating the mundane activities to the sublime and giving them higher meaning by adding a new layer of experience. For instance, I now use the iPod as a way to catalog and bookmark events. When I first graduated college and moved to Boston in 1997, I could only listen to one album at a time during my walk to work—and it was not on an iPod but rather on a portable CD player. That period of time is now in my mind soldered together with that particular album. Now, I can have the iPod on shuffle and have hundreds of tunes bookmark a single event such as my daily commute.

The iPod's experiential benefits have come with a price to my life. There are events and occurrences that I have missed that could have the same effect as listening to the music on my DAP. For instance, I could have experienced joys from hearing the leaves crunching under my feet, a basketball bouncing in the distance, or a hum from a streetlamp. This seems like a minor price to pay, but is it? What are the consequences of shutting yourself off from the outside world while moving around in it?

Process:

In *iPod Cocoon: External to Internal*, I wanted to find out what happens to a user when they place themselves in their own self-imposed cocoon closed off from their aural, external environment. As an avid user of the product, I had been wondering what consequences there were to listening to my iPod while walking around public places each day. I realized that there was a whole external environment I had been blocking out, but I wanted to find out the overall impact.

Before outlining my design process, I decided to walk without my iPod for a week to begin to determine the potential effect of using technology to block out noises and create a private "bubble" in a public space, or perhaps best described as living in an "iPod cocoon". This investigation uncovered that it was not just the sounds that were being blocked out, but more importantly, social interactions. When people see that you are wearing the infamous little white ear buds, it is a clear "do not disturb" sign. Clearly, I am not the only one who wants this benefit, as Apple's sales figures indicate that over 4.5 million units were sold during the 2004 holiday season alone. This information raised the questions: are we creating an antisocial, passive-aggressive society and using these devices as the intermediary?

Images from the *iPod Cocoon* video

To answer these questions, I developed a sound-based experiment. I would record sounds duringof my daily walk around the city of Boston. Then, I planned on involving having willing participants, preferably regular iPod users, listen to the recordings while walking through the same areas in which the recordings were made.

Initially, I thought I would record my commute to work and then add the music I was listening to at the moment of the natural field recordings. I believed that having both my music and the field recordings mashed-up together would create internal and external tension. Eventually, this idea was altered. I did not mesh together the music and the field recordings because the music layer would potentially be too distracting and could have reduced the impact of the natural sounds. Additionally, once the user began listening to my recordings, I wanted him to feel disoriented due to the variance between the sounds recorded (i.e. sirens, children screaming, etc.) and the visuals and sounds they were actually seeing while walking around the city.

The final iteration of *iPod Cocoon* was a site-specific sound piece where the user followed detailed instructions to visit the same areas the recordings were made. Two iPod users participated. The initial reaction of one participant was that he felt disoriented and that the activity did not raise his awareness of the external environment being blocked. Instead, the piece had a similar effect to listening to music on the iPod—feeling cut off from the outside world. Nonetheless, both believed that the experiment was an interesting conceptual piece and it raised questions about the consequences of traveling around encased in the "iPod cocoon." Did it change their minds about how they were explicitly shutting out the public world? No, but in follow up interviews, they acknowledged that by using the iPod, they were consciously putting up a wall to create a private space in a public area.

Conclusions

In retrospect, the theoretical basis for the project was strong, but its execution could have been improved. For instance, on the technical side, the sound quality of the recordings could have been richer which in turn could have created a greater cocooning effect. More importantly, a larger group of participants consisting of iPod and non-iPod users would have provided better information on the piece's effectiveness. A more expansive test base would have further substantiated the negative impact that using new media devices has privacy, and in this case, how creating a faux private space not only closes people off from public and social experiences but also sacrifices the inflection that comes from having privacy. Nonetheless, the concept of creating a piece dealing with the social implications of new media devices was important for the future explorations for my thesis. Additionally, I became more comfortable with Adobe After Effects which has enriched other design pieces.


if you like this

If You Like This (Installation)

Over the past few years, development of "smart rooms" (environments that sense inhabitants and respond to them) and sentient objects (adding information and communication to physical objects) has accelerated dramatically due to the affordability of sensors and other "smart" chips. In an interview, astrophysicist Larry Smarr projects the future as "a world in which intelligent buildings whisper directions to visitors on the way to their destination."[4]

As convenient as this altruistic future As helpful and convenient as this altruistic future sounds, I feel that my privacy and my control over personal information are being sacrificed by technology's constant monitoring of our daily lives. Our public and private spaces are constantly negotiated, remixed, and blended together by technology such as PDAs, cell phones, MP3 players, and GPS tracking in our automobiles. Overall, we are losing the important right to privacy. In the not-so-distant-future when buildings will whisper directions, tags on clothing will give washing machines cleaning instructions, and cell phones emitting personal information will customize advertisement billboards, I cannot help but imagine the existence of an insecure and paranoid society that is concerned with where and to whom all the information that is floating around us is going.

Today, powerful database technology and e-commerce practices used by online retailers like Amazon enable the continuous monitoring of consumers' shopping and buying habits. By tracking and analyzing consumer habits, the (online) retailer can formulate buying trends that could be beneficial for "similar" consumers. This technique, called a reputation system, enables the retailer to advise the consumer on what "similar" shoppers have purchased and enjoyed. For instance, if I am considering purchasing a book by new media author Lev Manovich on Amazon.com, as soon as I enter a search for all books by Manovich, I will instantly receive recommendations about other books that might interest me. This recommendation is based on what other titles were bought during previous Manovich purchases.

Undeniably, this can be beneficial for both the consumer who finds items he would have never thought of and for the retailer who likely increases sales; however, it is unnerving to me to know that a seemingly private history of what I have seen is catalogued and used without my permission. What would happen if this database technology was exported from cyberspace to "meatspace"? Would this recommendation system broaden a user's knowledge or would it be more of a hindrance

If You Like This first iteration Clown painting with motion detector

and annoyance? I explored the answers to these questions in the piece titled *If You Like This (Installation)*.

First Iteration Process:

If You Like This takes the database recommendation system out of cyberspace and places it in "meatspace", specifically within the context of an art museum. It examines what happens if you entered a museum; walked up to a painting such as *Time Transfixed* by René Magritte; and became entranced by the beauty of the colors, the forms, the absurdity of the train coming out of the fireplace; and, after five minutes of standing in front of the painting, a recorded voice beams out from the painting and says, "You seem to be really enjoying this piece by René Magritte. Other museum patrons who have enjoyed this piece have also enjoyed *Catalan Landscape* by Joan Miró which can be found on the second floor." If you stayed viewing *Time Transfixed* after the first message, a different recommendation would then be spoken to you.

Ultimately and ideally, I envision this piece powered by Radio Frequency Identification (RFID) tags implanted in the museum buttons received at admission. Sensors and transmitters would be placed around the museum, tracking the RFIDs and sending the data of the individual's engagement with pieces throughout the museum back to the database server. The database would then analyze the data and define patterns to help it formulate recommendations. The database would work in a hierarchal and emergent manner where the less relevant data is relegated to the bottom and more relevant data emerges to the top. For example, the person who looks at a Rodin sculpture for a few seconds and then moves on to the gift shop would be relegated to the bottom.

In *If You Like This (Installation)*, I wanted to address whether such a system would be a benefit or a detriment to an individual's museum experience. The intrusive nature of this system may potentially ruin the private reflection that occurs regularly at a museum; however, educational benefits include discovering works of art that one may have overlooked while visiting the museum.

While theoretically, I think *If You Like This (Installation)* would function most effectively using the sophisticated RFID technology, the original piece I created contains a more simplistic version of a reputation system. For the first iteration of this project, I soldered a circuit board of a 40-second message recorder/player. I then fed the recorder/player through a relay switch that was then connected to a (soldered) motion detector. To complete the system, I attached the circuit to a painting (of a

View of the electronics on the back of the Clown painting

clown purchased at a Somerville antique shop). When a user approaches the painting, the motion detector is triggered and then triggers the message player to play. The message is a recommendation for the user to see another piece of work that might interest him. The initial reaction to this piece was that the humor of the painting and the concept blended with the topic, ultimately creating a unique, enjoyable experience. The viewers believed that while the recommendation system had its benefits, the downside of having a painting speaking to you outweighed them. Specifically, viewers expressed their desire for the private reflection and personal exploration traditionally experienced at an art museum.

Second Iteration Process:

For the second iteration of *If You Like This*, I decided to make the paintings more interactive and the reputation more disruptive to the museum experience. To achieve this, I created two scenarios that pushed the concept to the extreme of our data shadow, emphasizing how our shadow could be used against us. This iteration still detected the presence of the viewer, but instead of using a simple motion detector attached to a playback device (which was somewhat problematic in the first iteration due to it being triggered by the slightest motion), I attached a pressure switch floor pad that fed data to a computer that then imported the data into Macromedia Flash for processing. Once the data was fed into Flash, it monitored the length of time the viewer was standing in front of the piece. Based on the length of time, two scenarios resulted.

In scenario A, the viewer walks up to the painting. After standing in front of the image for a lengthy amount of time (over a minute), the painting begins to speak quietly to the viewer. The painting compliments the viewer on his good taste. The longer the viewer stays in front of the painting, the more detailed the compliments become, mentioning the great taste the viewer has not only in art, but also in the restaurants they go to, the clothing they buy, the cars they drive, etc. Subsequently, the painting starts to give the viewer recommendations on other pieces of art in the gallery that would suit his tastes. (The painting is able to speak specifically to the viewer's history by retrieving personal information from his credit/debit card purchase that enabled his entry to the museum. One assumption for the project is that no patrons pay with cash.)

In scenario B, the viewer walks up to the painting but only stays for a short period of time. The painting takes offense to this and begins to hurl insults at the viewer, questioning his taste and abilities to discern good qual-

Images from *If You Like This Installation* 5.9.2005

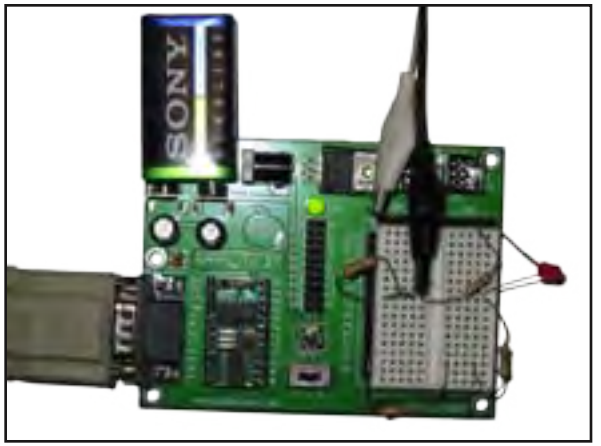
ity by listing the viewer's recent purchases and activities. In similar fashion, the painting is able to access this information from the viewer's credit/debit card used for entry into the museum.

By adding these new elements of interactivity in the second iteration of this piece, I hoped to build upon the first iteration, creating a more provocative and more dramatic experience for the viewer. By adding these new elements of interactivity in the second iteration, I hoped to build upon the first iteration, creating a more provocative and dramatic experience for the viewer. When presented at the Electronic Projects for Artists class, there was a positive reaction to the piece. The viewers believed that the idea of having your private information spoken out loud by a painting was both humorous and frightening, which was my intent.

Conclusions

Unquestionably, the emergence of modern technology such as sensors and chips has created a unique world of e-commerce where consumers are presented with convenience and economic benefits for their patronage. I developed *If You Like This* to inform the viewer of the implications of moving cyberspace tracking systems into "real space" (i.e. meatspace) and specifically, in this case, into an art museum. While importing commercial recommendation systems into a cultural arena may facilitate additional discovery of new items, in my opinion, it threatens to further erode privacy, ultimately fostering a society devoid of personal reflection and imagination. In this piece, I have attempted to show what happens when our private data is presented out of context, how it can be misused, and in some cases, used to define (and stereotype) us through our purchasing behavior.

Overall, I am pleased with the outcome of *If You Like This (Installation)*. The project incorporates not only the design skills which I have developed during my tenure at Mass Art, but it also reflects my programming and technical abilities. Further, it speaks directly to the negative impact of new media devices on privacy, and incorporates several elements showcased by major influences on my work. Specifically, *If You Like This* makes viewers uncomfortable with the visual images (i.e. Bruce Nauman) while also creating comedy out in the traditionally, stuffy art museum setting (i.e. Jan Svankmajer).



Basic Stamp used for *If You Like This* installation

If You Like This (Video)

If You Like This (Video) is a short, three-minute film designed to serve as the video companion to *If You Like This (Installation)*. The film gives context to the installation, illustrating how paintings at an art museum would obtain personal information about its visitors (i.e. from the swiping of debit/credit cards in transactional situations).

The idea for this project evolved from the reaction of my classmates and advisors to *If You Like This (I nstallation)* at the fall semester presentation. They indicated that they did not understand how the paintings would know personal information about museum patrons. This comment raised two issues: (1) the need for a companion piece to *If You Like This (Installation)* and (2) the lack of awareness of new media's threats to privacy. I created *If You Like This (Video)* to address both issues, ultimately demonstrating how personal data is collected, stored, and retrieved during our everyday activities, threatening our anonymity and privacy.

Process

Similar to my piece *A Hare in the Garden* (discussed later), I employed a structured, layered process in the creation of *If You Like This (Video)*. First, I developed a storyboard which followed a man through three activities of everyday life: grocery shopping, browsing at a book store, and visiting an art museum. Then, I filmed the segments at Stop and Shop, Barnes & Nobles, and the Museum of Fine Arts in Boston. I developed a script for the reaction of the paintings to the museum patrons {from scenarios A and B of the Second Iteration *If You Like This (Installation)*}, and subsequently, set the footage to the voiceover response of the paintings as well as to music. I selected music by Klaus Doldinger from a 1970 German TV Commercial called "Wild Freshness." The music conveyed the atmosphere of a spy movie, generating feelings of danger and invasion, yet in a humorous manner.

In terms of tools, I used Abode After Effects for the visual piece and Apple Logic Express for the sound component. While I am pleased with the overall outcome, I wish I used film instead of video, as the quality of the (video) medium did not meet my aesthetic expectations. Visually, the grain of film adds an extra feeling that the pixilated look of video lacks. Nonetheless, given my graduate student status, this was an inevitable limitation.

Conclusions

Overall, I am pleased with the *If You Like This (video)*, particularly given time and budgetary restrictions. The

film serves as a good companion piece to *If You Like This (Installation)*, further communicating how our privacy is being sacrificed by our reliance on new media technology and the negative repercussions. Additionally, this piece shows how in three distinct everyday situations our privacy may be compromised by the use of new media devices and programs. *If You Like This (Video)* incorporates an educational element to my thesis portfolio, as the medium (film) adds illustrative layers not affordable in the installation form.

The reaction of viewers speaks to the effectiveness of *If You Like This (Video*). The audience laughed, yet also indicated that they had not thoroughly contemplated the abundance of personal information "out there because of our high tech devices." Additionally, my classmates and professors expressed feelings of discomfort knowing the abundance of personal, traceable data, and at the prospect of this data following them, particularly to previously "public places" (i.e. art museum) of personal reflection. Given their interest in art, they indicated that they feared that our culture would become so homogenized that Amazon.com reputation systems would exist in non-commercial settings such as that of an art museum, draining society of its creativity and personal, individual reflection. *If You Like This (Video)* delivered upon my intentions—alerting and informing viewers of threats to our privacy, making them feel uncomfortable regarding future implications, yet maintaining their sense of humor throughout the awareness process.

Images from *If You Like This (Video)*

Conclusion

In *Data Shadow: Remixing our Public and Private Selves in the Age of New Media*, I created work that provokes viewers, making them reflect on the negative effects that new media technology has on our privacy.

While new media continues to add convenience, productivity, and enjoyment to our lives, it does so while generating large trails of personal data, jeopardizing our private identities—making them public against our will. *Data Shadow* serves as a call to action for the new media design community to communicate and address the exploitation of privacy.

Key Findings

My thesis reveals three key findings that will impact new media designers' approach to conceptual, visual, sound, and computer/electronic programming elements. First, as demonstrated in the reaction to the first presentation of *If You Like This (Installation)*, not only do people not realize how information generated by one device/application can be used by another, but also they do not comprehend the sizable amounts of traceable data generated. This feedback solidified the need for greater exposure of the negative impact of new media on privacy, as even those in the design world were unclear on the generation and circulation of private information as a result of using such devices.

Second, *Data Shadow* indicates that privacy remains a cherished right. No where is this more evident than in the recent iPod phenomenon. People are using this device to both enjoy music and to create private cocoons within public spaces, using the device as a "do not disturb" sign in their public surroundings. As a result, people are featuring their private identities in public spaces, blurring the lines between these two entities due to their use of new media devices.

Finally, *Data Shadow* outlines how people may be more willing to accept decreased privacy in cyberspace but have not fully considered the implications in "meatspace," such as within the confines of an art museum. The popularity of Amazon.com as well as viewers' reac-

tion to *Me and My Digital Shadow* (i.e. wanting more personal information) supports this. Nonetheless, *If You Like This (Installation and Video)* uncovered extreme resistance to the prospect of decreased privacy within "meatspace," as viewers were extremely dissatisfied with how their personal experiences (i.e. in a museum) could be significantly altered while their anonymity and control of personal information could be reduced to nothing. Further, the new media capabilities (i.e. reputation system) outlined in *If You Like This* imply further homogenization of culture if such programs were to reach wide acceptance including in public settings of personal reflection and introspection such as museums and places of worship.

Thesis Contribution and Significance

New media pioneers like Dr. Vannevar Bush, J.C.R. Licklider, and Douglas Engelbart devoted their lives to creating new media devices that supplement our abilities and communications. Significant time, energy, and research have been dedicated to the design of user interfaces of technological devices such as cellular phones, personal digital assistants, MP3 music players, etc. Recently, several privacy-enhancing technologies have been developed and privacy legislation has increased. Nonetheless, to date, the design community is only slowly focusing its resources on determining how it can increase society's awareness of new media's privacy infractions, and furthermore, incorporate design elements which address privacy erosion.

From a design standpoint, *Data Shadow* recommends incorporating conceptual, visual, sound, and programming elements that address new media's invasion of privacy and advocate informed consent of the sharing of personal data. Within devices, information (whether it be communicated visually, by sound or by computer/electronic programming) should indicate the entities that the data trail may reach. Designers should incorporate warnings of identity theft into these devices, protecting user anonymity and misuse of information. Within e-mail, instant messaging, and other online communication programs, caution and warning messages should be communicated, alerting people to the possibility of the message reaching outsiders. Further, it is of self-interest for business and the government to have the confidence of the people with whom are doing business; designers can work with these entities in fostering exchanges that offer value and transparency to all participants.

Most importantly, designers should install in the cause for expanded regulation of new media as it relates to privacy. Currently, regulation and regulators' knowledge of this issue lags behind people's use and technology's ability to bring forward this issue. By creating installations, films/videos, and other communicative exhibits, the design community can continue to raise awareness of new media's threat to privacy. Through supporting data protection laws and regulatory bodies, the design world can assist in carving out spaces where surveillance is not going to happen and there is not an unwarranted infringement of privacy. This would also assist in protecting against the homogenization of culture, specifically in situations like that explored in *If You Like This (Video)* where personal reflection should be provided.

The timing of *Data Shadow* is opportune, as society continues to forge deeper relationships and increased dependence on new media devices and programs. The three major *Data Shadow* projects—*iPod Cocoon*, *If You Like This (Installation)*, and *If You Like This (Video)*—explicitly show how new media devices and programs negatively impact our autonomy, protection against social control, and ultimately, privacy. In addition, *Untitled 1*, *Untitled 2*, *P2P – Public to Private*, and *Me and My Digital Shadow* introduce the concepts of public and private identities in varying ways.

Overall, throughout *Data Shadow*, I have communi-

cated my belief in that the role of a new media designer is to make the invisible data that is compromising our privacy visible and tangible. In my opinion, if designers take on that responsibility, we should be able to both recognize the negative impact (of new technology on our privacy) and regain control of our autonomy and privacy. *Data Shadow* serves as a call to action to the design community—to not only support expanded regulation of new media as it relates to privacy, but also to incorporate visual, sound, and programming elements that address new media's invasion of privacy and advocate informed consent of the sharing of personal data.

Additional Research

While social scientists, humanitarians, and politicians have been addressing the negative impact of technology on privacy for several years, the design community has only begun to direct their attention this way. Research should be conducted on how technological devices and programs can be designed so that users have control over their personal information, protection against social control, yet enables enhanced personal expression. Such research will be instrumental in assisting designers to incorporate elements which protect privacy while also facilitating functionality, convenience and enjoyment.

Future challenges in this field are several. Generating awareness of the privacy topic in the cluttered media will be challenging as will keeping pace with the evolution of new media technology. Nonetheless, what may prove most difficult is the collaboration with technological personnel, regulators, sociologists, and industrial designers to advocate legislation that further protects privacy in the new media age. For my part, I hope to keep questioning the effect technology has on our lives both the positive and the negative and use the findings to further enrich my design work.

Appendix

Anthology of Qoutations

The demise of our privacy in the age of new media is not unique to this era. The issue of privacy erosion has been a conversation piece since the first cave was discovered, called home, and shared by a clan of Neanderthals.

To understand how the issue of privacy in the new media age has been viewed by those outside the technical realms of computer science and technology, the views of prominent authors, of both fiction and nonfiction, were researched, as their work influenced my awareness of and interest in this topic. With the exception of George Orwell whose work was delivered in the 1940s, the sources are contemporary.

Howard Rheingold, author of *Smart Mobs: The Next Social Revolution*

On privacy: "Loss of privacy is perhaps the most obvious shadow side of technological cooperation systems. In order to cooperate with more people, I need to know more about them, and that means that they will know more about me. The tools that enable cooperation also transmit to a large number of others a constellation of intimate data about each of us."[1]

On identity: "Identity, reputations, boundaries, inducements for commitment, and punishment for free riders seem to be common critical resources all groups need to keep their members cooperatively engaged. These are the social processes most likely to be affected by technology that enables people to monitor reputations, reward cooperation, and punish defection."[2]

On new media (and its threats): "Smart mob technologies pose at least three kinds of potential threats: Threats to liberty: pervasive computing is converging with ubiquitous surveillance, providing the totalitarian snoop power depicted in Orwell's 1984.
Threats to quality of life: from individual angst to deteriorating communities, it isn't clear whether life in the infomated society delivers convenience faster than it erodes sanity and civility.
Threats to human dignity: As more people turn more aspects of their lives over to symbiotic interaction with machines, the more mechanical and less humane we become."[3]

George Orwell, author of *1984*

On control: "And if all others accepted the lie which the Party imposed—if all records told the same tale—then the lie passed into history and became truth. 'Who controls the past' ran the Party slogan, 'controls the future: who controls the present controls the past.'" [4]

On privacy: "…to do anything that suggested a taste for solitude, even to go for a walk by yourself, was always slightly dangerous. There was a word for it in Newspeak: ownlife…"[5]

On new media (and its risks): "Behind Winston's back the voice from the telescreen was still babbling away about pig-iron and the overfulfilment (sic) of the Ninth Three-Year Plan. The telescreen received and transmitted simultaneously. Any sound that Winston made, above the level of a very low whisper, would be picked up by it, moreover, so long as he remained within the field of vision which the metal plaque commanded, he could be seen as well as heard. There was of course no way of knowing whether you were being watched at any given moment. How often, or on what system, the Thought Police plugged in on any individual wire was guesswork. It was even conceivable that they watched everybody all the time. But at any rate they could plug in your wire whenever they wanted to. You had to live—did live, from habit that became instinct—in the assumption that every sound you made was overheard, and, except in darkness, every movement scrutinized."[6]

Simson Garfinkel, author of *Database Nation: The Death of Privacy in the 21st Century*

On privacy: "Orwell imagined a future in which privacy was decimated by a totalitarian state that used spies, video surveillance, historical revisionism, and control over the media to maintain its power. But the age of monolithic state control is over. The future we're rushing towards isn't one where our every move is watched and recorded by some all-knowing 'Big Brother.' It is instead a future of a hundred kid brothers that constantly watch and interrupt our daily lives." [7]

On the sources of threats to privacy: "Over the next 50 years, we will see new kinds of threats to privacy that don't find their roots in totalitarianism, but in capitalism, the free market, advanced technology, and the unbridled exchange of electronic information." [8]

On the invaders of privacy: "We're victims of a war on privacy that's being waged by government eavesdroppers, business marketers, and nosy neighbors. [9]

Richard Hunter, author of *World Without Secrets: Business, Crime, and Privacy in the Age of Ubiquitous Computing*

On authenticity in the new media age: "Historically, there have been three basic ways to authenticate someone--that is, prove that a person is someone in particular or is the person he or she claims to be. Confirm something the person knows, something the person has, or something the person is. In the age of Global Positioning System (GPS) technology, we can now add a fourth technique: somewhere the person is." [10]

On identity and control: "When I am under constant surveillance, who's in control? How much control do I have of my external environment? If I can't control the external environment—what people see—I can try to control the internal environment—what I present. It's very hard to project a mask, but people can have different personas at home and at work. You can imagine putting on a different persona as you go out the door. There's a different way of behaving in a public space when you're under surveillance. You're less honest, less authentic, and less different from others. It's the homogenization of public behavior." [11]

On new media and privacy: "Within 5 to 10 years, almost everyone will be [face] scanned multiple times daily…is it too much? It's a lot. It's pretty clear that, as a society, we don't know how to handle it yet. We do not know how to handle the boundaries between self and others when one's face is a gateway to almost everything one owns and does. 'You have zero privacy,' Scott McNealy, CEO of Sun Microsystems says, 'get over it.'" [12]

Neil Postman, author of *Technopoly: The Surrender of Culture to Technology*

On the impact of new media: "One way of defining Technopoly, then, is to say it is what happens to society when the defenses against information glut have broken down. It is what happens when institutional life becomes inadequate to cope with too much information. It is what happens when a culture, overcome by information generated by technology, tries to employ technology itself as a means of providing clear direction and humane purpose. The effort is mostly doomed to failure. Though it is sometimes possible to use a disease as a cure for itself, this occurs only when we are fully aware of the processes by which disease is normally held in check. My purpose here is to describe the defenses that in principle are available and to suggest how they have become dysfunctional." [13]

Also on the impact of new media: "With the rise of Technopoly, one of those thought-worlds disappears. Technopoly eliminates alternatives to itself in precisely the way Aldous Huxley outlined in *Brave New World*. It does not make them illegal. It does not make them immoral. It does not even make them unpopular. It makes them invisible and therefore irrelevant. And it does so by redefining what we mean by religion, by art, by family, by politics, by history, by truth, by privacy, by intelligence, so that our definitions fit its new requirements. Technopoly, in other words, is totalitarian technocracy." [14]

My Other Work

The following section outlines work I created during my two years in the Dynamic Media Institute program at Massachusetts College of Art. While these pieces do not fit within the guidelines of my thesis, they provide insight into my design process and the portfolio I have developed during my master's studies.

Title screen from *A Hare In The Garden*

A Hare in the Garden

A Hare in the Garden is a short, five-minute film I developed for the Design for Motion and Sound course. The assignment was to produce a film centered around a vegetable. The project was to explore motion literacy, understanding how the "language" of moving image and sound can be used to communicate effectively.

Process:

A Hare in the Garden was the first time I created a piece that involved multiple layers. The layers consisted of a written story I created, a storyboard that visualized the story, a film shot using the storyboard, and finally, edited film footage that was not only true to the original story but also enhanced it. The most challenging part about this four-step process was enabling chance. I knew I had to strike a balance between staying focused and true to the structure inherent in this layered process, while also allowing for some "happy accidents" that could transform a good piece into a great one.

At first, I was wary of the structured, layered approach because I have always believed strongly in improvisation in design. To my surprise, this creative approach actually helped create a richer, more focused piece. Nonetheless, from this project, I realized that this approach provides a good way to establish a system for arranging content and developing a message that resonates with viewers.

Conclusion:

From employing the layered process, I discovered that even with using such an approach, the vision in my head was not completely realized in the film. Time constraints and a limited budget were partly attributable for the final piece not meeting my original vision; however, these factors were minor issues, as the bigger issue was trying to take one medium (writing) and apply it to another (film).

I anticipate that such translations will always have issues. In this case, the descriptive aspect of the written word was not as pronounced in the film version. On the other hand, the film met with my desire to express the dry sense of humor that was absent from the written story. Overall, I consider the project a success, as the film generated the reaction (humor and enjoyment) from a variety of audiences – including Mass Art colleagues, family, and friends. *A Hare in the Garden* was an exciting and intriguing endeavor and the skill of storyboarding was a valuable addition to my creative process. Further, this experience was critical to *Me and My Data Shadow* which relied heavily on a layered process.

Storyboard image from the film *A Hare In The Garden*

Images from the film *A Hare In The Garden*

Title screen from *The Bird from Brueghel*

The Bird from Brueghel (homage to William Carlos Williams)

The Bird from Brueghel is a two-minute film that revolves around a piece of music. This piece was also created for the Design for Motion and Sound class. The project was to address the visual representation of all the major components of music—sound, pace, and rhythm.

Process:

While most of my previous film work incorporated some form of music to create a mood, in this project, for the first time, I focused on the music itself and designed a visual around it. First, I created a piece of music using samples of various ambient sounds like water, streams, and other natural forms. I then blended these sounds with a composition I created that included work by musicians including Brian Eno and Serge Gainsbourg. Finally, I mixed in the sounds of poet William Carlos Williams reciting his poem *Yellow Flower* into the ambient sounds/music composition.

Having addressed the music/sound component, I then created a storyboard that fit within the "feel" established in the sound piece; however, I encountered several challenges. Creating the music prior to the story was problematic, as I was trying to fit too many ideas and emotions evoked by the music into the design of the visual. Unfortunately, I never completed the storyboard, and therefore, the process lacked focus and I found myself on meandering paths.

In the first iteration, I tried to create a stop motion short but this medium proved to be too time consuming and I questioned the time/effectiveness trade-offs. Unsatisfied with the alignment of the music and visual, I ditched both the sound and the original storyline for a more impressionistic visual piece which had no major plot. I then set the visual to a commercial music release by the band Daft Punk entitled "Nightvision."

Overall, *The Bird from Brueghel* did not generate the thought provoking reaction I desired. I was not pleased with the mismatch of imagery (a bird flying amongst the clouds accompanied by a line tracing its movement) and the lack of a cohesive element. Ultimately, these shortcomings trace back to the jumbled process I employed. Nonetheless, in designing *The Bird from Brueghel*, I dove further into After Effects, improving my comfort and expertise with this tool which has been increasingly useful in subsequent pieces for my thesis.

Conclusion:

Even though I dropped my initial idea in favor of the more impressionistic theme, the essence of it is still present in the "final" iteration. The combination of the sound and the visual of birds flying with streams of color flowing through the air generated the whimsical feel for which I was striving. Also, the live action film of birds and the computer–aided design created a nice melding of forms that helped to achieve a rich aesthetic that only the computer can provide. Creating *The Bird from Brueghel* was critical to the development of *If You Like This (Video)*, as both required mastery of After Effects and the blending of sound and motion.

Images from *The Bird from Brueghel* video

Title screen from *The Musical Countdown*

Musical Countdown

Musical Countdown **was created for a course titled Digital Composition where I was tasked with creating a ten-second countdown using After Effects. The piece I created exceeded the ten second rule but for good reason; it consisted of musical lyrics and songs that contained numbers in their titles or numbers embedded in their melodies.**

Process:

After the tedious job of searching my music database to find the numbers, I edited the songs down to each individual number needed for the countdown. After the musical selections were trimmed, I put them together in a seamless, music soundtrack. Next, I designed a visual composition that complimented the soundtrack. For the design element, I decided to take the album covers of the edited pieces of each song. Then, I masked the album covers to a number (i.e. 1, 2, 3, etc.) in After Effects. The numbers were then placed upon a spinning record whose circular motion I created. The final visual element was that of The Beatles, sitting on a cloud and dressed in their Sergeant Pepper outfits,, dropping down on the spinning record and number one to end the piece

Conclusion:

Overall, *Musical Countdown* was an exciting and rewarding piece to develop. I had to overcome the initial hesitation that always accompanies the learning of a new tool (i.e. After Effects.) Being increasingly comfortable with After Effects, allowed me to create a piece that I feel truly takes the original idea and expands upon it. Additionally, the piece generated the emotions I desired—laughter and enjoyment—which reaffirmed that the piece is one of my stronger design creations.

Images from the *Musical Countdown* short film

Notes

Chapter One: Privacy and Identity Defined

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Chapter Two: Background

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2 This technique of wrapping presents would be a trademark of my father. When he'd run out of time/paper he just cover as much of present as a he could and just leave it.

3 For historical accuracy, this was not the first gaming system my family owned. My father was (and still is) a forward thinker when it comes to technology; he had purchased the Pong system long before I was conscious of being alive.

4 When I say records I mean LPs the large plastic black kind with grooves in them not CDs. Compact discs and their players were still a luxury and we had yet to own one.

Chapter Three: Purpose of My Thesis

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3 Garfinkel, Simson, *Database Nation: The Death of Privacy in the 21st Century*, Sebastopol, CA, O'Reilly, 2001, pg. 4.

4 Rheingold, Howard, *Smart Mobs: The Next Social Revolution*, Perseus Pub, 2002, pg. 157.

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Chapter Four: Historical Context

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10 Monfrot, Nick and Wardrip-Fruin, Noah eds., *The New Media Reader*, MIT Press, Cambridge, MA, 2003, pg. 75.
11 Jones, Steven, *Encyclopedia of New Media*, The Moschovitis Group, 2003, page 287.
12 Ibid, page 288.
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Chapter Five: Visual Artists Work

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Chapter Seven: Thesis Work

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Appendix: Anthology of Quotations

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