

Information in Excess: X-rays and The Personal Ad as Visual Narrative



Gordon M. Holman
Parsons School of Design
MFADT
April 19, 2002

Table of Contents

Title

Table of Contents

Table of Figures

Chapter 1: Introduction 4

1.1 Basic Concepts and Ideas 4

1.2.1 Reasons for the Project 4

1.2.2 Reasons for the Project 5

1.3 An Overview of the Thesis Document 6

Chapter 2: Research 7

2.1.1 Evolution of a Thesis 7

2.1.2 Evolution of a Thesis: Midterm 8

2.2 X-ray X-ray History 8

2.2.1 Wilhelm Conrad Roentgen 9

2.2.2 Roentgen Rays Published 10

2.2.3 Thomas Edison, Fluoroscope 11

2.2.4 Medicine and the Radiograph 12

2.2.5 Radiation and Therapy? 13

2.2.6 Radioactive Exposure 14

2.3 The X-ray: How they Function 14

2.4 The X-ray: Significance in the Years Following 15

2.5.1 The X-ray and Other Uses: Angiograms 16

2.5.2 Ultrasound 17

2.5.3 Computed Axial Tomography 17

2.5.4 Magnetic Resonance Imaging 18

2.5.5 Contemporary Views 18

2.6 The Poetics of an X-ray: My Thoughts on the Images 19

Chapter 3: Methods 22

3.1.1 Strategy X-ray: Visualizing 22

3.1.2 Initial Obstacle 23

3.2.1 Strategy Personal Ad: Visualizing 24

3.2.2 Strategy Personal Ads: Initial Obstacles 25

3.3 Strategy: Combining the Two 26

Chapter 4: Process 27

4.1 The Process: Research Personal Ads 27

4.2 Research Medical Terminology 28

4.3 The Personal Ads 28

4.4 Submission to General Populous 31

4.5 Source Image Database 34

4.6 Create the X-rays 35

4.7 Print Output 41

4.8 Design Light Panel 42

4.9 Construction of Light Panel 43

4.10 Installation 44

Chapter 5: Evaluation/Conclusion 47

5.1 The Work: A Recap 47

5.2 Difficulties 48

5.3 The Future 48

Bibliography 50

Chapter 1: Introduction

Chapter 1.1

Basic Concepts and Ideas:

We live in an information crazed and saturated world making it difficult to hide one's personal self as well as wade through the surrounding excess. As technology continues to develop so increases our insatiable desire for accessible information. Try plugging your full name into a search engine while online and see how eerie the results can be. In some cases you may be surprised at how many other "Gordon Holmans" there are out there. It is at this moment that we become soberingly aware of how vast the Internet is, how small we are simply existing within an over-saturated information-exchanging world.

On the flip side, an individual may seek outlets for making his/herself known, sometimes more overtly than necessary. All too often we find ourselves in an excessively populated homogeneous situation and we need a way to stand out and express ourselves. An example may include being a rock band and trying to get one noticed amongst all of the other fledgling unsigned collaborations. A band may resort to writing music or altering their looks to appear similar to other more popular bands; "selling out" as most true fans would refer to this unpopular attempt at exposure.

Classified Ads provide another example, the ads are a device for seeking or selling, whether it is a lawnmower or a potential mate. In both situations an ad is submitted to a print periodical or an online database with the intention of making ones' few words stand out amongst the tremendously over-saturated pages.

So in an effort to comment on this societal trend I have selected the personal ad and the X-ray as metaphorical devices for exposing my lighter, but artistic view. The X-ray is a visual metaphor that emulates our ability in day to day activity to seek out information amidst the masses. The personal ad is not only a device for engaging the viewer in the subject matter but represents our incessant quest to find "the one".

Chapter 1.2.1

Reasons for the Project: My Work/My Interests

A lot of the work I appreciate today and strive to create is very detail oriented, painfully executed, information rich art. To be more specific I am drawn to

detailed landscape paintings, works containing maps, architectural and schematic drafts and anything that provides evidence of process. I also enjoy books picturing how things work (see Stephen Biesty's "Incredible Cross-Sections"), as well as medical illustration. For a majority of my life I have been fascinated with the sciences, especially biology and the illustrations that are associated with the texts. I appreciate the intricate detail and extreme care the artist/scientist takes to depict anatomically correct species. Colors are used carefully as devices for providing realism while line quality is usually varied depending on the level of introduced value. In addition to these inspirational works I also appreciate irony and levity when interwoven thematically. When an image possesses an accompanying narrative whether textual or placed within the image itself I believe a greater sense of depth and meaning can be added to the work.

My work, both analog and digital, is most often conceived under extreme scrutiny at an excruciatingly slow pace (long hours and eyes burning). I prefer to work in this manner as an attempt to emulate my inspirations. As a fine artist I chose to attend Parsons to become 'digital'. I have learned to convert my analog art skills into a digital form. As a result, my attention to detail and slow processes got even slower as the realism I strove for in my traditional art had the opportunity with the right technology to become even more hyper-realistic. After initial frustration and a steep learning curve, I have learned to enjoy bringing my drawings to life by mastering a new tool (the mouse in cooperation with the computer) for the creation of a new art form.

Chapter 1.2.2

Reasons for the Project: What I Want To Do

When considering the scope and duration for expected research and development of the thesis I realized the importance of choosing carefully. I did not want to lose steam in the middle of the year nor inspiration to work when times became, to use a euphemism, frustrating. During the summer of 2001 I sat down on many occasions and tried to list my interests according to topics I knew I would like to explore.

I needed to find something that seemed academic yet did not get too dry or trite in the process. I knew I wanted to produce something that required artistic skill and ultimately would result in an aesthetically engaging format. A painting, digital art, physical installation, website, film, animation or textual script were just some of the mediums I could consider. As the first semester progressed and my exploration into radiology expanded I became aware of a growing desire to work with digital art in an effort to reproduce and enhance the X-rays I had been staring at for quite some time.

Being able to continue to be an artist and keep up my drawing skills while having some fun, mastering a new tool, (the mouse as previously mentioned) and exploring new mediums was important. I knew this was a good method for turning a potentially painful major project into an enjoyment. I am confident my ultimate decision is quite successful in delivery and original in theme.

Chapter 1.3

An Overview of the Thesis Document: What to Expect

This project has evolved from some brainstormed interests to a fully researched and constructed process. I introduced this thesis document with a brief definition of the basic concepts and ideas surrounding such a project. I then followed with an articulation of the motivation for the thesis. After the overview of this document I will present the following chapters: Research, Method, Process, Technical Requirements, and Evaluation/Conclusion.

In the Research Chapter, I discuss the initial plans for the project from the first semester through the evolution to the early second semester. I will also discuss original forms the project potentially could have taken and how the research (particularly the fascinating investigation into the history of Radiology) influenced my direction for the ultimate goal of the thesis. All will transition into the following chapters the Method and Process.

In Method and Process Chapters, I discuss the strategies I considered, how I chose them and why I chose the ones I used. All of this will become clear as I walk the reader through the chronological processes used to create the final piece.

In the final Chapter entitled Evaluation/Conclusion I describe what exactly was achieved and the final outcome of the design and technology piece. I discuss what areas I had difficulty with and what the immediate future has in store for the thesis. I also mention the future of the project outside the Parsons arena and how it lives on in potentially different approaches.

Chapter 2: Research

The thesis as we know it is a construction of ideas. The purpose of this document is to articulate the unfolding thoughts that developed over the course of the past year. The following chapter is meant to provide a background for the reader in hopes of establishing the thought processes of the artist and how a project such as this matures. In this section I discuss the research conducted in medical software and interface design, X-rays as art and the fascinating history of Radiology.

Chapter 2.1.1

Evolution of a Thesis: Summer Plans

During the summer of 2001 we as MFADT students were required to begin our thesis research and development of ideas. Requirements were made for construction of production websites and notebook/sketchbook creation for collection of thoughts, sketches, photos, skills learned, etc.. As of the September review I had developed a plan to work with educational software designed for medical students studying radiology.

As an important bit of background, up till now I had followed the multimedia track at Parsons with particular interest to interface design. I was planning on sticking to my strengths and working with educational mediums with hopes of creating a CD-ROM for advanced medical students. My thinking soon changed. After being quite confident with a well formed and solid idea of what I wanted to create for a thesis project, criticism and self-doubt came down hard initially on the research end of the topic. I had chosen to work with Radiology as I am fascinated with the images and wanted to provide an accessible software that aided medical students in reading the X-rays themselves. I soon learned that a Radiologist not only has numerous years of medical education but an additional 5-7 years of training to become a practicing specialist. I know we were to be told to be optimistic in our thinking initially but I think the learning curve was a bit extreme for such a piece.

Suggestions came in for a development of a software that would aid the average person/patient, the ones who are about to go through the procedure and even the ones who just simply found the X-ray image and process aesthetically pleasing or interesting. I began to follow this route for a while until the midterm critique.

Chapter 2.1.2

Evolution of a Thesis: Midterm Critique, Changes in the Right Direction

At the midterm critique I was instructed to possibly look at the subject matter in a new light (no pun intended). I had presented an updated proposal and thoughts for interface designs and where I was at in my research of Radiology as a whole. To be honest I was finding myself to absorb the information at a rather slow pace so the comments that followed were in some ways a blessing in disguise and a relief. Many were concerned and questioned how I would avoid falling short of the information I had to learn in a year? Medical Radiology as previously stated is a 5-7 year post medical student practice, be realistic. Other criticism landed on the fact that I had become way to product oriented and was getting sidetracked on the interface design and what the final form would include.

I needed to take a step back and try to refocus on what the true interests were with working in this direction, what my real ideals and interests were and why I was looking to work with X-rays so much. Many believed I had developed or already possessed an X-ray fetish. It was true in some ways, I was fascinated with the image, its ability to disclose information that is normally hidden and in such an aesthetic manner. The subtle changes in grayscale vales and slight granularity juxtaposed with the supporting text comprised a beautiful and somewhat hypnotizing document for me. I began my thesis a new from this point forward and focused on the images and the technology that helped create them.

Chapter 2.2

X-ray History: Radiology, What a Concept!

As I allowed myself to follow a direction I was visually attracted to I realized it was necessary to investigate the history and technology required to create such information rich, aesthetically intense pieces. What I soon discovered was that I was not alone in my X-ray fascination nor appreciation of such visually engaging images.

From a look at the X-ray's discovery by, societal impact, and generation we may begin to establish an appreciation for the practice that is radiology. Following the X-ray's chronology, we will look at today's most commonly used methods of biomedical imaging for such a momentous technology. At this moment a solid understanding of the subject and its impact on the medical world will become apparent and its contribution to my ultimate thesis process. However, I would like to define Radiology, as it is necessary in comprehending how such a specialized profession became so widely used. Radiology is the branch of

medicine that deals with the use of radioactive substances in diagnosis and treatment of disease. X-rays are used in medical radiography or fluoroscopy to identify abnormalities within the human body. It is a common, essential and indispensable part of preventive and therapeutic medicine. Doctors can see into the body to facilitate the diagnosis of diseases and abnormalities without a painful, invasive procedure. Through the use of contrast materials radiologists can see more than just the skeletal structures, but organs, soft tissue, and nervous systems within the body.

The X-ray emerged from the laboratory and into widespread use in a startlingly brief leap. Within a year of its discovery, the application of X-rays to diagnosis and therapy was an established part of the medical scene. But one may ask how this is possible when history proves invention and discovery usually require considerable time before global acceptance is attained. The best solution would be to go directly to the discovery.

Chapter 2.2.1

X-ray History: Wilhelm Conrad Roentgen

The X-ray was first discovered by a man named Wilhelm Conrad Roentgen on November 8, 1895. He was born in Lennep, Germany on March 27, 1845 and by 1869 obtained a degree in Mechanical Engineering and was awarded a degree in Physics. While working as a professor of Physics at the University of Wurzburg, he made this famous discovery.

Roentgen's 1895 laboratory was filled with items resulting from the work of many other scientists and inventors who were his predecessors. Evangelista Torricelli, an Italian, and Otto Von Guericke, a German invented a workable barometer and the vacuum pump. This technology allowed other scientists to develop gas tubes, which became an essential part of the X-ray process. One of the most notable scientists of Roentgen's day was Sir William Crookes, who made major improvements in the design of the vacuum tubes.

On November 8, of the same year, Roentgen was at his laboratory table investigating cathode-ray fluorescence by passing electricity through highly evacuated Crookes-Hittorf tubes. These Crookes tubes appeared much like today's fluorescent light bulbs. The lab was equipped with a large electric coil that fed high voltage electricity to the Crookes tube. About nine feet away from the tube and large electric coil was a sheet of paper coated in Barium Platinocyanide, a phosphorescent material. When the tube was illuminated the light radiated a bluish glow. There were theories back in the 1800s that there was more than just this bluish light emanating from the Crookes tube (called ethers). Roentgen was one of many physicists at the time investigating this hypothesis. He placed a large, black, cardboard box over the Crookes tube in an attempt to shut out all of the light. To be sure it was light tight he turned off the lights in the

room and much to his surprise he saw that Barium Platinocyanide paper across the room glowing a brilliant greenish hue. Roentgen saw no light coming from the box yet picked up the paper and no matter which way he held it, the paper continued to phosphoresce. He began to place random objects from around the room in front of the paper and saw that certain materials would absorb the rays coming from the Crookes tube. Then upon placing his hand in between the paper and the tube he saw the faint outline of the bones within his hand.

It is impossible for observers accustomed to modern imaging processes to gauge the mixture of wonder and doubt Roentgen must have felt that day. He realized that a previously unknown "invisible light" was causing the fluorescence of the paper and the resultant image. As a consequence of this theory he dove into a series of meticulously planned experiments for another seven weeks before going public with his discovery of this strange phenomenon. He worked in isolation, telling a friend simply, "I have discovered something interesting, but I do not know whether or not my observations are correct." In fact, one wonders if Roentgen's experiments were as much to convince himself of the actuality of his observations and to expand the scientific data surrounding such a strange happening. Because the letter "X" is used in mathematics to indicate an unknown quantity, he called his new phenomenon an "X-ray."

Chapter 2.2.2

X-ray History: Roentgen Rays Published and Popular

On December 28, 1895, Roentgen wrote up his findings in the Wursburg Physical Medical Society Journal and became instantly famous. At a January meeting of the society his X-ray was named the "Roentgen Ray" after literally X-raying Albert Von Kolliker's hand (the president of the society) in front of the crowd. So enthusiastic was the scientific community over this discovery that within weeks, newspapers, magazines, and professional journals around the world were giving careful explanations of the mysterious rays, along with detailed instructions on their production and uses. By February, most urban centers and many small towns across the U.S. had seen their first demonstrations of the "new light." More than a thousand articles and over fifty books about the "Roentgen Ray" were published in that first year.

Within one-week following Roentgen's discovery, equipment was rapidly manufactured and installed in colleges, high schools and public spaces. "New Light Sees through Flesh to Bones!" cried the U.S. newspapers in mid-January 1896. The headline, "Hidden Solids Revealed!" accompanied line drawings of Roentgen's radiographs and detailed diagrams on generation of the rays. "Soon every house will have a cathode-ray machine," one excited inventor speculated.

X-ray mania had taken over the world in the late 1800s and the development of skeletal radiography began. The human hand as well as bones and joints became

ideal subjects because they absorbed X-rays so well. Dr. William Morton was a great contributor to the development of skeletal radiography as he authored one of the first books on the "new light" simply called "X-ray" in 1896. He has also been credited with the first dental and single-film full body skeletal radiograph in the United States. At this time of development and history making all kinds of people were trying to make their mark as the first to X-ray any particular anatomical part. Francis Williams from Boston, has been credited with an image of a foot in a button-up shoe. It is said that the radiograph took over twenty-five minutes to make while the model was bombarded with the dangerous X-rays.

Chapter 2.2.3

X-ray History: Tomas Edison, The Fluoroscope and a Crazy Society

Thomas Alba Edison proved to be a major contributor to the development of X-rays as well as a showman in the public eye. He loved the limelight and stated to the press, that he would be the first to get an image of the living brain in action as well as a 'domestic' version of Roentgen's discovery. As a publicity stunt Edison had a portrait photograph taken while illuminated only by the bluish glow of the "X-light". Weeks passed as the renowned inventor worked in his laboratory, while the eager media anticipated his further improvements. Shortly, Edison released the hand-held Fluoroscope to the public that became the first significant X-ray imaging improvement since the discovery. It simply consisted of a tube with a fluorescent screen at one end and an eyepiece at the other. A body part placed between the X-ray tube and the screen produced an image even in a lighted room because of the enclosed viewfinder.

Much to Edison's distaste, he did not succeed in capturing an image of the human brain nor developed a domestic version of the X-ray machine. The closest any inventors of the time got to a domesticated X-ray machine was the skiagrapher's apparatus. All one needed to set up an X-raying practice was a hand held fluoroscope, an electrical discharge coil and a Crookes tube. All of which were readily available. A man named H.A. Falk in 1896 did come forward with a suspected X-ray of the human brain, but he later admitted that it was a phony made of cat intestine, filled with a mercury compound and contained in a tin can. However, a month later Edison discovered that calcium tungstate would fluoresce brighter than the original barium platinocyanide, a further improvement to the image quality revolution. The world was buzzing with its new toy and developments continued to occur almost daily. Studios opened to take "bone portraits," poems about the X-ray appeared in popular journals, and the metaphorical use of the rays found them popping up in short stories, political cartoons, and advertising. Detectives threatened the implementation of Roentgen's X-rays for the pursuing of potentially cheating spouses, and lead underwear was produced to foil attempts at peering with "X-ray glasses."

Chapter 2.2.4

X-ray History: Medicine and the Radiograph

Within a month of the first announcements in U.S. newspapers, doctors reported patients demanding radiography for broken bones and foreign bodies. Neither before nor since has a new medical technology been accepted as quickly as the X-ray. Soon the realization came about that these images could be used for more than just show. They could be used in medical procedures for diagnostic and treatment benefits. For the first time in mainstream medicine, a complex electrical machine intervened in the traditionally sacred relationship between physician and patient. All sorts of questions had to be addressed for instance, who would use the machines, what kind of training would they need, who would pay for the apparatus, who would read the plates or decide on therapeutic applications? Events like these in the early history served as an example for a lot of what was to occur in medicine in the twentieth century. Questions arose concerning cost, advancement of technology, and professional specificity were first addressed at the turn of this century by the men and women who thought of themselves as 'radiological pioneers.'

On February 3, 1896, Dr. Edwin Frost of Dartmouth University conducted the first diagnostic X-ray for medical purposes. Following the introduction of X-rays into the medical practice men and women with a heightened visual acuity and an "experienced" eye were in demand. Unfortunately all this was still new to the world making the practice of reading and producing diagnostic X-rays an accessible profession. Photographers, Engineers, and Machinists all tried their hand in the new field surely to the distaste of radiologists today. Dr. Mihran Kassabian, was believed to be the first radiologist. Images can be seen of him and other practitioners holding up a hand-held Fluoroscope to the patient's body while he/she stood in front of the large discharge coils and Crookes tubes. Previous records of their work would hang proudly from the walls as if to display knowledge and experience in the field.

Shortly after Roentgen's discovery, it was noted that a camera could be used to produce a permanent image from the fluoroscopic screen. It was also important to note that the camera could record more information than the eye could see on the fluorescent screen. In the late 1930s, physicians around the world were searching for a way to "screen" large segments of their countries' citizens for tuberculosis and other lung diseases. Because mass X-ray screening with bulky, conventional equipment was impractical, photofluorographic devices (composed of a camera and a hand-held fluoroscope) were set up in clinics and hospitals around the world. Mobile vans equipped with photofluorographic X-ray units eventually allowed countries all over to move about and screen their populations.

Chapter 2.2.5

X-ray History: Radiation and Therapy?

The French researchers, Pierre and Marie Curie in July 1898 discovered the element polonium. Further study revealed a second substance so high in radioactivity it emitted up to two million times as much radiation as uranium. By December they had isolated radium. Dr. Emil Grubbe (1875-1960) was the first person to ever irradiate two patients of skin cancer in January of 1896. Why he was prompted to introduce radiation as a form of therapy is unclear but he revolutionized medicine of the day. He was twenty-one. Soon after this startling discovery radiation became the form of treatment for all kinds of lupus, ringworm, skin infections, and other abnormalities. Radiation therapy caught on so much that it is rumored a bar in 1896 was advertising radium shots so friendly patron could "drink to their health." The drink was a combination of radium, liquor and a phosphorescent material.

In 1865 the German chemist, August Kekule discovered the chemical structure that became known as the benzene ring that later would contribute to the first contrast materials used to enhance X-ray imaging. Two months after Roentgen's discovery, the first angiogram was performed by injecting contrast media into the blood vessels of an amputated hand of an old woman. Mr. Haschek and Dr. Lindenthal discovered what soon became a new branch of Radiology, at Professor Franz Exner's physicochemical institute in Vienna. The contrast medium was a combination of mercury compounds (consisting of lime, cinnabar (mercury) and petroleum).

In 1897, Dr. Walter Bradford Cannon, a United States physician, developed the use of a Barium compound for the purposes of GI Radiology. He placed Bismuth and Barium Mixtures in the food of geese and other animals noting their digestive tract could be outlined on an X-ray plate. He had developed a method of fluoroscopying the gastrointestinal system using a barium compound. He later deduced that organs like intestine and other soft tissue with the help of a contrast mixture like Barium could help our X-raying of these otherwise invisible areas of the human anatomy. Almost one hundred years later, this is still the primary method for visualizing the digestive system. All of these revolutionary new discoveries seem slightly surprising since early equipment was primitive, electricity was not readily available, and no one had true experience and little if any literature existed. They were quite dangerous set-ups with many open wires and contacts, let alone the frequent exposure to X-rays floating all over the place.

Chapter 2.2.6

X-ray History: Radioactive Exposure

The first Radiologist Dr. Mihran Kassabian had some major medical complications as a result of frequent exposure to the X-rays. While holding a fluoroscope his hands came into contact with the radioactive waves resulting in multiple malignant tumors. He documented this devastation until his death due to radiation over exposure. Thomas Edison was one of the first scientists to publicize the potential dangers of the invisible light. While working for long periods of time with the Fluoroscope he complained of severe pain in his eyes. The early pioneers of X-rays had no reason to expect that the new rays would have any physiological effect, and consequently there was no reason for protecting themselves from the rays. However, people soon became deathly afraid of radiation and the effects of X-rays as many well-known pioneers of the practice began to die off. Full body lead armor suits complete with lead glass for viewing were a preliminary answer to the immediate problem. Today science has reduced the size and weight of the protective garments to a large lead apron. As health interests escalated, society as a whole began to question the components of these devices and how they were in actuality, working.

Chapter 2.3

The X-ray: How they function

The X-rays are produced by a displacement of energy within the highly active Crookes-Hittorf cathode-ray tube. Within the tube is a cathode and an anode. On the cathode side (negative end) there is a filament that resembles a light bulb's. The cathode is hooked up to a low voltage source (~10 volts) that glows when activated producing a cloud of negatively charged electrons which gather around the filament in a process called thermionic emissions. On the other side of the tube is the anode (positive) which is connected to a very high voltage of approximately 100,000 volts. The electrons on the negative side begin to fly rapidly to the positive side because they are repelled from the negative. Because of the large quantity of electrons and the high voltage some of the electrons keep flying past the anode because they have a tremendous amount of kinetic energy. Once past the anode there is nowhere else to go but collide with the glass wall of the tube. Here the electrons are forced give up their energy and most often in the form of heat but some give up their kinetic energy in the form of X-rays.

That was the 1800s, today the X-ray tube is similar to the Crookes tube but a few changes have been made in the order of efficiency. The anode is located directly across from the cathode, and is hooked up to a rotor and a bevel. The bevel is used to direct the electrons (converted to X-rays) in a particular direction, and concentration with great accuracy. Before the X-rays used to bounce off all over the place and would take hours to get a good image. Initially there were so many electrons and in such a high concentration they began to fly across to the anode and blow right through it. With the rotor in place at the point of impact, the rays can be distributed evenly over the bevel thus rendering the life span of the anode a lot longer. Today when you go to get an X-ray often times you will hear a whirring noise (this is the rotor on the anode starting up).

Chapter 2.4

The X-ray: Significance in the Years Following

In the early days of radiology, fluoroscopy was the preferred method for viewing the chest area. However, in 1913, William David Coolidge's hot cathode tube provided the ability to consistently produce quality chest X-rays on radiographic film. Coolidge had developed a new X-ray tube that, unlike the old gas tube, could provide radiographs with consistent exposure and quality. As a research scientist with GE, Coolidge did initial work on improving the filament in light bulbs. His work with tungsten filaments played a major role in the development of modern X-ray tubes. As an aside the heart and lungs were and still are the most frequently radiographed part of the human anatomy. In the early 1900s a standard gas X-ray tube was used for radiation therapy. With Coolidge's hot-cathode tube, deep therapy treatment could be performed. Further investigation led to the development of a high-voltage unit known as the betatron and as radiation therapy progressed, the development of cobalt units and linear accelerators revolutionized patient treatment and curative methods for cancer.

Four years after Roentgen's discovery of the X-ray (1900), Antoine Beclere published a paper on the theory of dark adaptation, the process of adjusting the user's eyes to a dark room for fluoroscopy, and in 1916, Wilhelm Trendelenburg introduced red goggles to further enhance the procedure. Despite Thomas Edison's announcements about the significance of fluoroscopy, the early radiographic plate yielded more diagnostic information than the fluoroscopic screen. Not until the late 1950s did the development of image intensification deem the red goggles obsolete. The new images being produced were so bright they could be viewed in an undarkened room.

Less than one year after Roentgen's discovery of the X-ray, the famous neurologist Harvey Cushing used X-rays for the diagnosis of patients' neurological problems and neuroradiology was born. In 1899, while using the X-ray, a tumor was localized in the brain of a patient. Before then, no one had developed a method for visualizing the internal structures of the brain with a

contrast media shortly following a Walter Dandy introduced ventriculography. By using air as the contrast medium to visualize the ventricles of the brain. The

The roots of nuclear medicine reflect back to Henri Becquerel's discovery of radioactivity in 1896, which later spurred on the study of Marie Curie and husband Pierre. Later documentation announced Ernest O. Lawrence developed the cyclotron in 1931, and paved the way for major experiments later conducted at the Radium Institute in Paris. Irene Curie, the daughter of Pierre and Marie, and her husband, Frederic Joliot, produced artificial radioactive isotopes in early 1934. After the Joliot-Curie announcement, physicists from around the world began to search for additional types of radioactive isotopes.

Within twelve months, over a hundred new forms of artificial radioactive material had been discovered. Additionally, Georg de Hevesy played an important role in these early discoveries. He is credited with establishing the half-life calculation for radionuclides and the initial tracer experiments used in the clinical setting today. Most of the information may not strike the typical layman as interesting or meaningful but the purpose of it is to prove there was a tremendous amount of activity circulating around one discovery made not too long before. Evidence shows that Wilhelm Roentgen's unique discovery truly changed the world and immediately became a useful tool for medical science.

Chapter 2.5.1

The X-ray and Other Uses: Angiograms

Angiography has seen strong traditionalist methods throughout recent history as it is proven to be very successful in the areas of diagnostic and treatment radiology. In 1931 other chemists noted that this compound chemical structure the benzene ring, used in the first angiogram, was the carrier of iodine. Subsequently in 1954 the first iodinated contrast media was introduced. Since then this has been the medium of choice for performing angiography. During that early time numerous advances were made in the development of specialized radiology equipment, pressure injectors, film changers, catheters, guide-wires, and other tools used by the angiographer and cardiologist and continue today to be continuously updated and redesigned for optimal use. This is an "invasive procedure", because it requires a radiopaque (absorbs X-rays) injection into the patient. This substance is commonly called a "Contrast Agent" or "Dye". Usually a very tiny tube is used to place the contrast into a particular artery or vein. While the artery or vein contains this radiopaque material, it will block the X-rays, and will cast a shadow of the injected vessels onto the X-ray film or fluoroscope. This image will reveal the shape of the artery, and can help to diagnose an obstruction, blockage, or narrowing (stenosis).

Chapter 2.5.2

The X-ray and Other Uses: Ultrasound

The ability to see anatomical structures without the use of ionizing radiation proved to be a major advancement in modern medicine. Ultrasound first originated in the work of physicists exploring energy propagation by sound waves. Fifteen years before Roentgen's discovery of the X-ray, Pierre and Jacques Curie explained "piezoelectricity" and developed the principle that ultimately led to the development of ultrasonic transducers. In the early 1900s, a group led by Paul Langevin experimented with high-frequency ultrasound to detect submarines, leading to the development of sonar. But it was not until the 1960s that ultrasound scanning became a recognized medical tool. Today Ultrasound is most frequently used in the documentation and monitoring of a mother's pregnancy. This was not however the first form of radiological imaging that originated from another field of investigation before finding new purpose in the medical profession.

Chapter 2.5.3

The X-ray and Other Uses: Computed Axial Tomography (CAT)

Godfrey Hounsfield, a British inventor, first developed the CAT scanner in 1972. Previously, in 1967 he led a design team that constructed the first British solid state business computer named the EMIDEC 1100. He wanted a computer that could recognize, process and store patterns, in particular in the written word. It then occurred to him that this process may be a useful tool in other fields besides his own. By 1972, he developed the first of a series of prototypes known as the CT or CAT scanner (Computed Axial Tomography). The CT Scanning machine was able to take a series of pictures of the human body at multiple angles and perspectives called slices. The collected information was then fed into a computer and applied to a series of mathematical equations and outputted as an accurate diagram of the individual's region. These images are called "sections" or "cuts" because they appear to resemble cross-sections of the body.

The first prototype of CT scanners had an X-ray tube with an open hole the size of a pin on one end for the X-rays to pass through on their way to the X-ray receptor. It took the prototype nine days of continuous operation to take a picture and then an additional two hours of post processing to create the image. Today, a CT Scanner can take a picture of an individual from chest to toes in less than a minute and output a picture in less than four minutes.

Chapter 2.5.4

The X-ray and Other Uses: Magnetic Resonance Imaging (MRI)

In 1952 the Nobel Prize in physics was awarded to Felix Bloch and Edward Purcell for their discovery of nuclear magnetic resonance. This discovery laid the groundwork for one of the most unique inventions in medical imaging since the discovery of the X-ray. In 1972, Dr. Paul Lauterbur developed the first of the MRI machines. He based his Magnetic Resonance machine on his previous studies with NMR Nuclear Magnetic Resonance. He knew that he could take nuclear magnetic resonance signals and localize them in space. He then realized that one could use a magnet, change the magnetic field (polarity) around an object (a human body) and reassign each of the points in space a new unique phase and frequency so they could be distinguished from adjacent nuclear magnetic signals. So the first prototypes were built and named Nuclear Magnetic Resonance Imaging machines, but as a result of public fear by the "nuclear" title it was reduced to simply MRI. Magnetic resonance imaging (MRI) uses a strong magnetic field, radio waves, and computers to look inside the patient's body. This can be done as a non-invasive procedure and without any ionizing radiation exposure to the patient.

In a more technical format the MRI does not use X-rays (nor any other type of "ionizing" radiation). Instead, it is a technique that combines a large magnetic field and some radio frequency antennas ("coils"). First, the magnetic field causes the protons in the atoms of water within the patient to all "line-up". Then, a high-frequency electro-magnetic pulse knocks many of the protons out of alignment. Next, a very sensitive radio antenna "listens" for the "resonance" signal that each proton gives off, as it goes back into alignment. These minute resonance signals occur in a pattern that a computer uses to create 3D information. The pictures look like "sections" or "cuts" - just like in CT. Except in the MR, the resulting image primarily reflects the water protons in the patient, as well as their chemical association with proteins, etc. Needless to say 1972 became a landmark year for the future of Radiology.

Chapter 2.5.5

The X-ray and Other Uses: Contemporary Views

As the years have progressed and Radiology has continued to evolve we find that it is the technology alone that seems to be the deciding factor for punctual, easy, and pain free diagnostic medical care. The next decade promises dramatic changes in diagnostic imaging, especially with detection and recognition of disease. We have seen a century of discovery to invention to improvement on previous invention. With all imaging procedures, improvements in picture resolution have led to more precise, accurate, sensitive, and specific diagnoses.

Image acquisition time has decreased, and patient comfort and acceptance have improved. The ability to manipulate and transmit data has also significantly enhanced diagnostic capabilities, and studies that once took several weeks to complete and that caused great discomfort to the patient now take only minutes and can be performed with ease for the patient. In the last quarter of the 20th century, computers and new radiological imaging technologies, such as ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI), changed the medical environment dramatically. Established imaging techniques, including conventional radiology, angiography, and nuclear medicine, have also undergone amazing evolution. The future of radiological technology seems limited only by our imaginations. When examining the history and more recent application of radiology and X-rays today one can easily see the overwhelming significance of the initial discovery. Hardly any one is alive today who has not had some form of X-ray imaging done to them making this "new light" an indispensable aspect of modern day medicine.

Chapter 2.6

The Poetics of an X-ray: My Thoughts on the Images

Following the in-depth research into the history and technology involved with radiology I felt I had a solid grasp on the subject matter and what I was about to embark on. I was even more inspired with the thesis project as I had learned and seen countless images and imaging devices/methods. At this moment I was not completely confident in the proposed form and structure of the thesis. I knew I wanted to think about a possible physical installation or an interactive multimedia piece focusing on the images and the reality that the images possessed. The project was still in a state of flux but there was support in critique and a renewed personal desire to create something different and less "product happy".

The thesis in this state became a poetic journey into the philosophy of the X-ray and what it was that felt right about working with the images. Why was I so driven to stick to this idea?

Personally, I believe there is an intense desire to understand the sinister, dark and evil side of human nature. These images (the X-rays) evoke a strong sense of death, and the funereal of which I am intrigued. Perhaps because it is unknown and taboo or perhaps it is simply the color scheme. Grayscale images, like black and white photography are classic and dramatic and I believe effect the affect of an individual viewer and possess the power even more so than most color images. I have studied psychology in all forms since beginning my undergraduate study in '94 from adult, adolescent and child developmental courses to social and the neurophysiological. I found myself again, fascinated with the human brain and how it orquestrates the functions of the overall being. How chemical imbalances affect the human's mental outlook on whatever it is he

or she does. The result could be an interest in the root of the human being and especially the male gender. The ID, the most basic of the egos, the driving force behind sexual as well as survival behavior. There is a primordial fascination with these biomedical images because we as a living being can look into what we are and see not only how we work but begin to understand on the most basic level of how we survive. Additionally, I believe that viewing these images gives us as an organic, natural, autonomous, being the self-satisfaction of knowing that we are alive and successfully surviving by holding or seeing a real-time document of our living selves.

The X-rays give us a glimpse into our primary selves; we can see what makes us a being. There exists a reassurance that we are made up of complex structures that can work together cohesively to function in such a way that we can be autonomous, procreating, self-servant, successful machines.

These images let us get in touch with the dark side simply by their appearance. Why is a skeleton or bone scan creepy or makes us queasy. Because I believe it can put some into too much of a sobering perspective. Maybe by seeing into one another and ourselves we can now see how close to death we are. Maybe we are sick or injured and our days are numbered. Or perhaps we simply see how fragile and soft we might be. Are we vulnerable? The tissue is easily torn, the fat under our skin builds up and can cause internal problems, the red life fluid that courses through our veins is limited and if lost at a rapid rate by simply scratching the surface of our soft bodies we may die. The dark imagery tells us that we all die. What if the images were pink and warm in hue, resembling images of birth and life? This would possibly be reassuring? The grayscale images at the moment due to today's limitations in technology are what we have at our disposal for viewing such mortal images. Perhaps some day technology will allow for some our ability to see these images in real-time, full color and in the third dimension.

These biomedical images strike us in different ways either by scary fixation, fascination, queasiness, or academic study and artistry; it puts into perspective our own mortality. Again, we all die. We all become part of the earth again. Do we regenerate or reincarnate? Am I scared of death or do I have to be afraid of death? Will my ID support my personal outlook of my own survival and progress of "how I'm doin'" in life when viewing these images. I believe that people today like to view horror movies, thrill seek, be adventurous, gamble or get tattoos because it makes them feel as if they live a bit closer "to the edge" putting them in perspective of their own mortality.

Someone may ride roller coasters because they feel closer to death, or are dubbed a thrill seeker for jumping out of a plane. I believe it makes one feel more at intune with his or herself, "I have never felt so alive" they proclaim. These people know that by (sometimes more benignly than others) cheating death they are indeed alive. So on a seemingly more basic level, we are fascinated with our physiological makeup and "how it possibly works" as well as knowing why we are alive and that we truly are indeed alive. Biomedical imagery to me is an

affirmation that we exist and we are real. I want to evoke this same affect within viewers of my work.

An additional quality of the X-rays are their ability to tell a story. They reveal what is hidden and essentially represent a visual narrative of the individual. I concluded my semester with the thinking that I was going to write narratives to accompany the visuals as an attempt to provide theme and increase public interest.

Chapter 3: Methods

The focus of this chapter is on the strategies devised and implemented for proper forward progress. Many decisions have been made, rejected and then revised to ensure the best possible outcome. The X-ray is a major aspect of the thesis project and as noted in the previous chapter it is an image that carries tremendous meaning and importance to the artist. It became vital to the project's success for the artist to reevaluate the mechanisms that engage the viewer. Not only was this necessary for the artist's wellbeing but also for the vitality and substance of an original project.

The theme of the project took on a new twist and one that would ultimately inspire and interest the viewer. As a recap, remember previously mentioned our surrounding information crazed and saturated world making it difficult to hide one's personal self as well as wade through the surrounding excess. And as technology continues to develop so increases our insatiable desire for accessible information. We also act differently, for instance, an individual may seek outlets for making him or her popular or celebrity. Sometimes methods are used that become more overt or personally exposing than necessary. So in an effort to comment on this societal trend I have selected the personal ad and the X-ray as metaphorical devices for exposing my lighter, but artistic view. The X-ray is a visual metaphor that emulates our ability in day to day activity to seek out information amidst the masses. The personal ad is not only a device for engaging the viewer in the subject matter but represents our incessant quest to find "the one".

Chapter 3.1.1

Strategy X-ray: Visualizing

The X-ray has many qualities that I felt fit nicely in carrying the metaphor and visual goal I was seeking. The dominant reasons for implementing the X-ray aside from my personal deep-rooted feelings are the following. As the artist, I believe the X-rays, if drawn carefully and the proper applications are used in creating the pieces they can become beautifully engaging works of art. I have always felt this and strongly believed in the aesthetic potential of the X-ray. With time, patience, an obsessive artist and the willingness to reject poor decisions (create numerous iterations) the results could reveal startling effects.

In support of the X-ray as a metaphor, the ability to expose what's is hidden or beneath the surface provides a great irony to the overall piece. It is always interesting for the viewer to be able to look into something, to have the opportunity to find out more about the subject being examined. The ability for an X-ray to disclose information that is hidden below the surface is a great parallel to the societal trend I reiterate.

A trained Radiologist as we now know studies in an academic environment for 5-7 years following medical school. I believe this level of education is not necessary to read and somewhat comprehend the basic X-ray. With a little knowledge of the human anatomy the average layman should be able to understand what is going on in the document. If he or she takes a closer look they may be able to dissect specific parts of the image like impacted wisdom teeth, or a fractured clavicle. We are able to do this because we have all had previous experiences with X-rays whether we have had one conducted on ourselves or seen others. To be able to look at the X-ray image gives us a glimpse of that being and what is really going on inside and for us to investigate and somehow infer what is happening inside that particular scan gives us great satisfaction.

While looking at the X-rays one can view these pieces in two different ways resembling the way we absorb information. We can look at them on a global view or a level of high scrutiny. No matter which method we choose how we look at the images, we are gathering information and surrounded by it as well. When we look at an X-ray we may see the whole image and know that it is an image of a foot. Upon further scrutiny we may see all sorts of abnormalities existing within the X-ray of the foot.

Chapter 3.1.2

Strategy X-ray: Initial Obstacle

An initial question when developing the thesis was the issue with engaging the viewer in such a medically oriented image. As the artist one of the major goals of the thesis project was to create something that was successful in concept as well as public reception. How does this potentially dry image work in society's eye. The X-rays could be perceived as not aesthetically pleasing because of their medical and sterile, or potentially negative context they are most often observed in. Many would often have difficulty separating the image from the context and this was not good. I knew I needed to get as far away from the doctor's office metaphor as possible. I removed the action of taking the image and placing them on the light board that was mounted on the wall. The images then became separated and literally taken off the wall.

As mentioned in the previous segment, I believed strongly in the image and what it had to offer. The subtle shades of gray and back lit transparencies were just loaded with potential energy for success, all they needed was enhancement and another context. I chose to construct the images as new original pieces, they would remain as true to the form as possible but exhibited enhanced contrast, sharper lines and a light supporting narrative.

Chapter 3.2.1

Strategy Personal Ad: Visualizing

The personal ad although not visual was a very colorful and interesting opportunity for me. I knew I needed to carry the metaphor of engagement with the public, the information and narrative even further and as a result the personal ad became the best solution. It is an extremely engaging and frequently humorous look into an individual's life. Here was an opportunity for me to 'expose' the viewer to an interesting individual's personal life.

Many ads posted today possess a writer's ability to interweave themes into written text, to set the tone, and be as over the top as desired. The ads are usually very short (6 lines) if posted in a print format, and a bit longer if viewed online. But despite their brevity the author can usually use this to his or her advantage. The ads can be written to the point and as succinctly as possible. It becomes important to the author to put it all out on the table and essentially expose his or herself immediately to any potential reader. Within these simple and overt ads lies a theme. Usually, the ads are geared towards meeting the ideal dance partner or in a more adult scenario a sexually compatible match.

The ads short, succinct, to the point format allows for not only for the author to use the excuse to be as blunt as possible but the general public, of which this is intended, can access hundreds in a short amount of time. The papers and online columns that host these mini-want ads enjoy economy of size so they can accommodate as many as possible allowing for the pool to be as heterogeneous as possible. As a viewer can then read the ads by category and filter out the ones I may not be interested in and seek out the ones I want to find. Because of their small size it also becomes easy to submit the ads to a personals database and the ability to become many different matches is attainable.

As the numbers of ads submitted increases the more universal they become in format and style. Trends carry over in writing styles and common vocabularies are established.

'Desperately seeking perfect middle-aged SWF for long walks on the beach and romantic candle lit dinners...'

For those who frequent online and print personal ads the SWF, SF, SM, SWM, SGM, SGF etc become very familiar. Due to brevity and urgency to get all of the necessary information into the ad the anagrams become essential. Just as this singles ad vocabulary becomes universally accepted so does the court room stenographer or the new trend of sending text messages via cellular phone.

As noted earlier the information submitted to the newspaper, print periodical, or Internet match site may become one of many but is a form of very accessible information. It is known that hundreds of thousands of personal ads are

submitted to these sites daily and the reason for such high numbers due their success. The way these personal ad resources are so successful is because they are an accessible medium. They can be picked up and read anywhere. It is a little like playing the lottery, you have to be in it to win it. It is very easy to buy a ticket and become one of the masses, and it is just as easy finding an outlet that sells the tickets. Accessibility is the key to making this work. I have to be able to easily find and submit information into the melting pot that is the online database.

When a client submits his or her ad to the general populous there is another very appealing aspect of the process. The man or woman has the freedom to be as discreet or as revealing as he or she feels necessary. When creating the personal profile one is confronted with a series of questions that help expedite the matchmaking process. These questions most often include age, body type, ideal match (seeking female, male, either, etc.). Depending on the individual's desire for exposure he or she can locate the matchmaking outlet that suits their particular needs.

Chapter 3.2.2

Strategy Personal Ads: Initial Obstacles

A few initial question marks arose when the personal ads were being thought through. The first of the issues was the time element involved when submitting an ad to a printed periodical such as the newspaper or Village Voice. The rules became a bit tedious and required less of a spontaneous posting in that the submission needed to be placed by 5pm on the Thursday before the week it was to be printed. The print date then was scheduled for the Tuesday following and wouldn't be on the stands until Wednesday afternoon. The ads also had a limit of no more than 6 lines and were to be reviewed before printed and then only kept in circulation for the following 6 weeks. So the solution to this issue was to avoid the printed personal outlets but to go online to the free, and much more discreet sites. There the artist could produce as many ads as he wished and all while remaining anonymous.

It also became soberingly clear that the ads submitted were likely to get lost in the masses no matter how clever and outrageous they might be. It is likely that hundreds of thousands were posted and at least hundreds posted on a particular hosting in one day. It is likely there would be none if best minimal responses to the ads. So the solution became clear that the X-ray images that were to be produced needed to be based on the ads not the unlikely and unpredictable responses. Upon writing the ads the client should have a good idea of what his or her potential mate should look like so it was obvious that the artist should write the ads with an idea in mind what the X-rays should look like. Ultimately deciding on the fact that the artist should write the ads for the X-rays to be juxtaposed to them not the responses. There was no necessity to develop an

external "rule" to decide which X-ray to use. This is just the artist's judgement call. If choices are choices based on intensity of feeling that is fine. The audience should be made to feel the artist's enthusiasm and adoration for the medium.

Chapter 3.3

Strategy: Combining the Two

There is a fitting symbiosis in the interaction between the personal ads and the X-rays. Both provide a nice visual narrative for the audience to easily access. They offer irony and a lighter side to the thesis work as a whole and can be appreciated when presented out of their respective expected contexts. The final piece engages the viewer by offering information into an individual's life and it really does not matter whether the material is fictional or not.

In the construction point of view there seem to be minimal constraints for the artist and the viewer alike to become engaged in the piece. The final product also nicely exposes a bit about the artist and the artist's mentality that I feel adds a fitting finishing touch.

Additionally I want the audience to gain an appreciation for the X-rays as they are a beautiful medium. The viewer should identify and appreciate the lighter side of such a large, potentially dry conceptual project. And finally achieve an understanding of the artist's interaction with the public and find the alternative solution to the root problem original and refreshing.

Chapter 4: Process

The following chapter is an in depth look at the steps required to create the final installation piece. The research conducted, and some of the problems encountered will also be discussed. To accompany the text within the divided sub-chapters will be some of their associated schematics, process drawings and final photos and prototype images. I intend for this step by step chapter to illustrate not only how the piece was built but also show us how the final implementation relates to the previous chapter's concepts.

Chapter 4.1

The Process: Research Personal Ads and Submission Platforms

The first step to creating such a work began with familiarizing myself with the personal ads and recognizing the vocabulary used most frequently. I also sought appropriate and accessible mediums for the singles ad submission. I needed to find the best possible outlet for getting my ads "out there". So I read hundreds of popular forms of singles ads in weekly circulation both in print format and online including telephone voice-mail services.

A site called AltMatch.com ultimately turned out to be the best solution for posting because the turnover of approvals for ad submission was within the shortest time frame of 24-72 hours. They after some trial and error seemed to be the most adult oriented and liberal in accepting potentially offensive or to use a euphemism over the top ads. The site became a perfect hunting ground for my ads. (www.altmatch.com)

This is the first of the online submission platforms I used. Unfortunately I soon realized after numerous rejections to my ad postings that the site was too conservative for my purposes. I had been referred to their alternate site Altmatch that seemed to work nicely. (www.one-and-only.com)

Although electronic ad submission was permitted on the Village Voice site, the timing element mentioned earlier and the level of interaction required was too high. I was at the mercy of print deadlines and newsstand dates. (www.villagevoice.com/personals)

The site Match.com, didn't work because it simply required a client to sign his or her life away before engaging in the search and post process. As someone concerned with anonymity the site was not conducive to this prerequisite. Such things as required voice mail messages and lengthy personal and ideal match profiles were recommended. (www.match.com)

Chapter 4.2

The Process: Research Medical Terminology

At this moment it became necessary to gather as many common terms found within day to day medical procedures as well as some interesting or humorous medical jargon. I searched online, encyclopedia, and academic sources in hopes of inspiring themes and potential visual metaphors. I ultimately prodded many friends who practice in the medical field for inside jokes, different terms, favorite stories, themes etc. The majority of the terms and themes I decided upon can be seen in the following chapter segment, the ads.

Chapter 4.3

The Process: The Personal Ads

The following section involved writing the creation of themes and writing the ads. Displayed below are the six ads chosen for online submission and currently can be found online at AltMatch.com (www.altmatch.com). The goal for the creation of the ads was to provide a medical theme that was as familiar and as it was diverse from the rest of the set. Accompanying the ads online are their corresponding photos which were created with a digital camera and manipulated in PhotoShop in an effort to provide irony to the ads as well as maintain relative anonymity. (Figures 4.3.1-4.3.6)



Fig.4.3.1 Ad #1 Photo Submission

1. SHOW ME YOUR... TEETH!

SM enjoys frequent flossing and has low probability for gingivitis. Enjoys a vigorous brushing especially when more than one partner is involved. Desperately seeking an individual with a pronounced mandible, spotless dentition with good alignment while firmly seated in their sockets. No missing or decaying teeth preferred large incisors a plus.

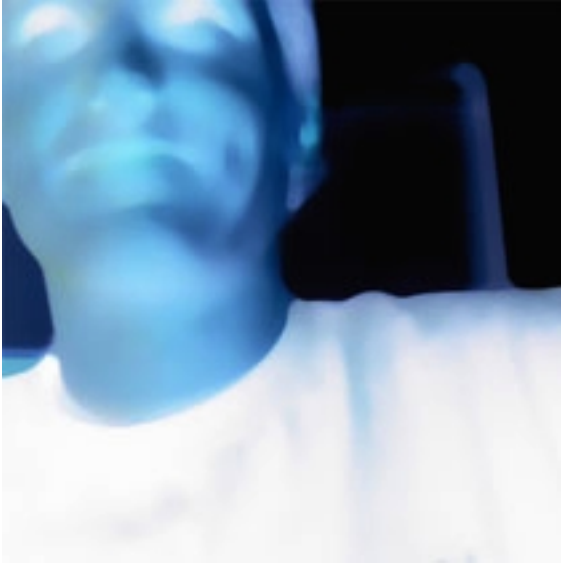


Fig.4.3.2 Ad #2 Photo Submission

2. REVEALING LIBIDO

Tall athletic, male seeks SF for a little clubbing out on the town. Proper physique is required. A proportionate pelvis, as gynecoid as possible (the inlets possess diameters adequate for childbirth) is always a plus! I'm looking for full range of motion through the hips including flexion, extension, abduction/adduction, as well as internal/external rotation. A woman exhibiting all the right parts is the right candidate for me! So lets heat up those joints and cause a little friction surely we can make a spectacle of ourselves.



Fig.4.3.3 Ad #3 Photo Submission

3. NICE BONE DENSITY!

Desperately seeking exciting SF who possesses all 206 bones w/ particular interest to nice lean clavicles and good density, a normocephalic skull w/o gross deformity is preferred. I am a tall, slim, SWM with an android pelvis and an extended left fibula and enlarged semitrical patellas. Please respond with a sense of humor and possibly a photo as we may commence your proper physical examination!

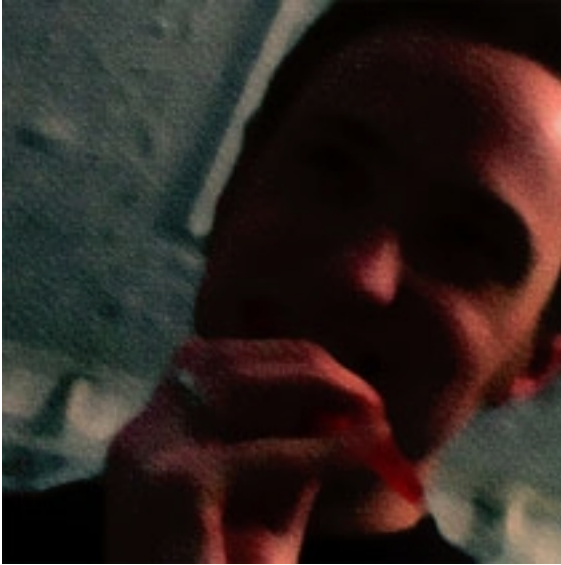


Fig.4.3.4 Ad #4 Photo Submission

4. TREMENDOUS GLANDULAR CONTROL

Tall young good-looking male seeks feisty female who will engage in overt sensual group hygiene clinical. Must be free from unnecessary cerumen buildup and excessive sudoriferous glands, as our activities will often involve steam chamber cleansings. If you struggle with chronic hirsutism a preparatory shave is highly recommended. I can't wait for your response! Please be creative, clever and exposing!!

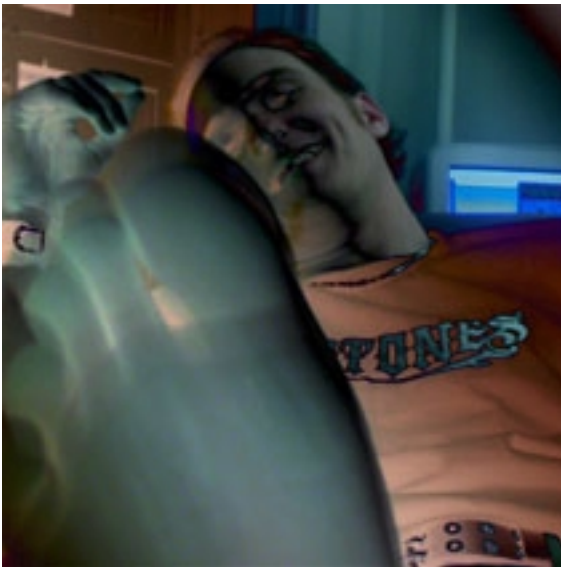


Fig.4.3.5 Ad #5 Photo Submission

5. RUBBING DEEP INSIDE

Good Looking SWM seeks sultry, lengthy massages all over feet particularly meta tarsals, and phalanges...nothing better than a woman who knows how to use her...um...hands. Offering sensually intense spinal cervical curve rubs particularly over lumbar region and specializing in the ever popular heated deep tissue thoracic rubs. Would greatly appreciate a photo or x-ray of self to ensure proper compatibility!



Fig.4.3.6 Ad #6 Photo Submission

6. LOOK INTO MY ENLARGED PUPILS

Attractive, SWM aggressively seeks similarly attractive SF with lovely bone structure, lean muscle mass and ideal body weight. I find myself particularly attracted to eyes possessing clear sclera (uniformly white, and non-icteric). The orbits should be properly spaced between sockets slightly deep and no dark undershadow. Please no Visene freaks or Red Eye Morning Mongers. Please openly respond with a sense of humor and we can begin to gaze into one another's true self.

Chapter 4.4

The Process: Submission to General Populous

The next step was to post the ads online. As a prerequisite false profiles and electronic mail addresses were created. Hotmail and AltMatch.com provided the necessary services to conduct the following steps of the thesis process (www.hotmail.com, www.altmatch.com). (Figures 4.4.1-4.4.2)

The Contact List of E-mail Addresses:

x_ray_guy@hotmail.com
x_ray_guy2@hotmail.com
x_ray_guy3@hotmail.com
x_ray_guy4@hotmail.com
x_ray_guy5@hotmail.com
x_ray_guy6@hotmail.com

Still Image (Screen-Grab) of an Ad Posted: AltMatch.com.

REVEALING LIBIDO!!!

Tall athletic, male seeks SF for a little clubbing out on the town. Proper physique is required. A proportionate pelvis, as gynecoid as possible (the inlet possess diameters adequate for childbirth) is always a plus! I'm looking for full range of motion through the hips including flexion extension abduction/adduction as well as internal/external rotation. A woman exhibiting all the right parts is the right candidate for me! So lets heat up those joints and cause a little friction surely we can make a spectacle of ourselves.

(New York, New York, United-States)

Lifestyle:


I am Single.

I smoke occasionally.

I do not have children.

Man seeking Woman
Mailbox: 1954511

zoom in



Age: 30

Respond to this ad
or become a member:

Your e-mail address

Fig.4.4.1 AltMatch Ad#2 "Revealing Libido"

Brief information is listed below the ad itself. Information such as smoker or non-smoker, age, marital status, any offspring, lifestyle and body type. Photos were often recommended for submission as it attracts up to 5 times as many responses. I am not quite sure if this ad really would attract a potential mate but am positive it stands out.

Still Image (Screen-Grab) of Online Profile: Hotmail.com.

Update your profile information and click **OK** when done.

First Name

Last Name

E-mail Address **x_ray_guy@hotmail.com**

Country/Region

State in *United States*

Zip Code

Time Zone

Gender Male Female

Birthday (e.g. 1978)

Occupation

Fig.4.4.2 Hotmail Profile

Both AltMatch and Hotmail required brief background information as to set up a reference profile. It is relatively accessible and easy to set up multiple e-mail and online ad accounts.

Chapter 4.5

The Process: Source Image Database

In order to begin drawing the images, supplemental research of the technologies available for each of the chosen themes was necessary. For instance, the first ad (see chapter 4.3) had a dental theme. Research of the appropriate technology dealing with a dental theme was conducted. Results located five major types: bitewing, full periapical series, occlusal, panoramic, and cephalometric. The panoramic style was chosen for inspiration and creation of the first X-ray. As the themes were determined and technologies researched images were collected and fed into a simple organizational system. Since each ad had a distinct underlying theme and the image style was predetermined; organization was relatively distinct and intelligible.

Below is a grid of some of the images used in creating the X-rays (see following chapter 4.6).



Fig.4.5.1 Source Images

All kinds of X-rays are displayed above. Some were scanned from primary sources other hand drawn or digitally reworked. An image of a hand with an

optical mouse below it is displayed in this quadrant (See from left/top, 3rd col. 2nd row). I personally enjoyed the irony in this one while constructing the X-rays.

Chapter 4.6

The Process: Create the X-rays

Below are displayed the scaled down, low-resolution versions of the final X-rays completed. Each image was created in PhotoShop 6 and the text and layout were finished in Illustrator 9. Using the source images sketches were drawn in graphite and then scanned. Each scan was used as templates for completion of the digital art. The ads are juxtaposed with their appropriate ads below because the images are too low in resolution to be able to read the text on them. (Figures 4.6.1-4.6.6)



Fig.4.6.1 Dental X-ray

1. SHOW ME YOUR... TEETH!

SM enjoys frequent flossing and has low probability for gingivitis. Enjoys a vigorous brushing especially when more than one partner is involved.

Desperately seeking an individual with a pronounced mandible, spotless dentition with good alignment while firmly seated in their sockets. No missing or decaying teeth preferred large incisors a plus.

This piece was examining a dental theme and is based on a panoramic scan. Impacted wisdoms can be identified as well as extra long incisors and canines.



Fig.4.6.2 Pelvic X-ray

2. REVEALING LIBIDO

Tall athletic, male seeks SF for a little clubbing out on the town. Proper physique is required. A proportionate pelvis, as gynecoid as possible (the inlets possess diameters adequate for childbirth) is always a plus! I'm looking for full range of motion through the hips including flexion, extension, abduction/adduction, as well as internal/external rotation. A woman exhibiting all the right parts is the right candidate for me! So lets heat up those joints and cause a little friction surely we can make a spectacle of ourselves.

In an attempt to continue the dancing/flexibility theme the pelvis is slightly tipped and each leg kicked out as if the X-ray was conducted while the patient was dancing.



Fig.4.6.3 Bones X-ray

3. NICE BONE DENSITY!

Desperately seeking exciting SF who possesses all 206 bones w/ particular interest to nice lean clavicles and good density, a normocephalic skull w/o gross deformity is preferred. I am a tall, slim, SWM with an android pelvis and an extended left fibula and enlarged symmetrical patellas. Please respond with a sense of humor and possibly a photo as we may commence your proper physical examination!

Here the X-ray seems a bit standard except for the abnormally tipped head and extra long exposure. I added a few extra bones to the neck instead of the normal 7 in hopes of playing off the ideal "206" this ad seeks.



Fig.4.6.4 Clavicle X-ray

4. TREMENDOUS GLANDULAR CONTROL

Tall young good-looking male seeks feisty female who will engage in overt sensual group hygiene clinical. Must be free from unnecessary cerumen buildup and excessive sudoriferous glands, as our activities will often involve steam chamber cleansings. If you struggle with chronic hirsutism a preparatory shave is highly recommended. I can't wait for your response! Please be creative, clever and exposing!!

Here was a difficult ad to create. The ad calls for again an ideal match, someone in this case who essentially doesn't sweat to much and has little body/facial hair. I believed the ad was seeking an extremely feminine and sexy woman. Since beautiful women are sometimes referred to as possessing nice clavicles I chose to break this one.



5. RUBBING DEEP INSIDE

Good Looking SWM seeks sultry, lengthy massages all over feet particularly meta tarsals, and phalanges...nothing better than a woman who knows how to use her...um...hands. Offering sensually intense spinal cervical curve rubs particularly over lumbar region and specializing in the ever popular heated deep tissue thoracic rubs. Would greatly appreciate a photo or x-ray of self to ensure proper compatibility!

An ad that seeks a massaging partner, particularly one who performs on feet needed an ad that appeared as if the toes were tingling or wiggling around potentially due to massaging or another form of stimulus.



Fig.4.6.6 Eyes X-ray

6. LOOK INTO MY ENLARGED PUPILS

Attractive, SWM aggressively seeks similarly attractive SF with lovely bone structure, lean muscle mass and ideal body weight. I find myself particularly attracted to eyes possessing clear sclera (uniformly white, and non-icteric). The orbits should be properly spaced between sockets slightly deep and no dark undershadow. Please no Visene freaks or Red Eye Morning Mongers. Please openly respond with a sense of humor and we can begin to gaze into one another's true self.

This was the last ad and the most difficult to construct. Many different iterations included images of the full face, both profile, frontal and even anterior views. In this case the ad seeks a mate who possessed symmetrical eyes and dealt with a specific focal point. I did want to draw too much attention to the rest of the skull so rotating the head, and creating the appearance of an overexposed lower jaw helped keep the focus on the orbits.

Chapter 4.7

The Process: Print Output

Serious consideration was made to the print medium and how it was going to appear. Choices included Vellum, opaque Vellum, translucent Vellum, Acetate, Frosted or Matte Acetate, and Thin Plastic Sheets. Ultimately the decision was made for an offset print onto a film called Letraset. The material resembles a low weight acetate except that the ink is burned into the film. When an ink jet printer was initially used the results became cloudy and almost superficially greasy.

Print Output Statistics:

165 Line Screen
Emulsion Up
Print Positive (+)
No Crop Marks
72dpi (Intentional for rough
pixelation)
13"x19" Print Output

Print House:

Print Icon
W18th St. Betw. 5th&6th
good 24hour turnover
quality handling
\$39/print reasonable
friendly service and accessible

Chapter 4.8

The Process: Design Light Panel

Research Materials, Draw Schematics, Collect Materials (Figures 4.8.1-4.8.6)

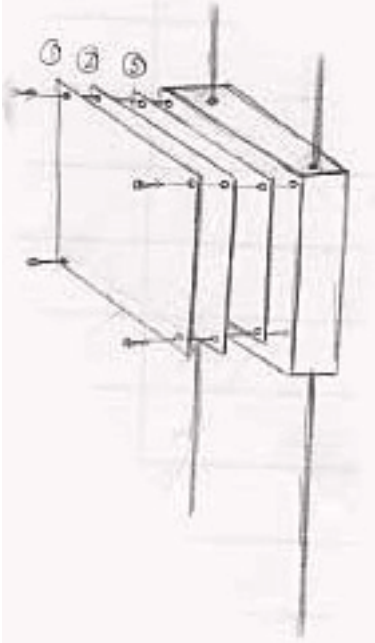


Fig.4.8.1 Layered Schematic

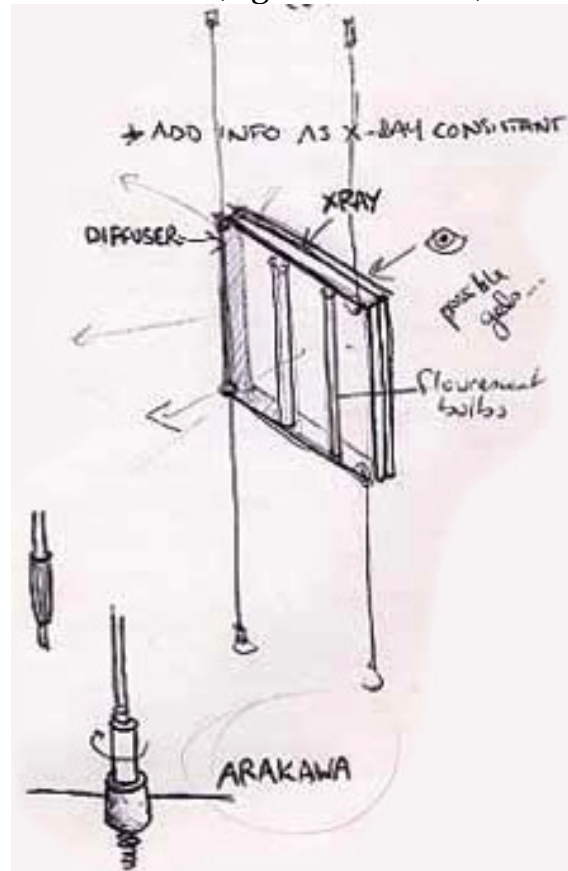


Fig.4.8.2 Potential Installation Attach



Fig.4.8.3 Rough Space Install Schematic

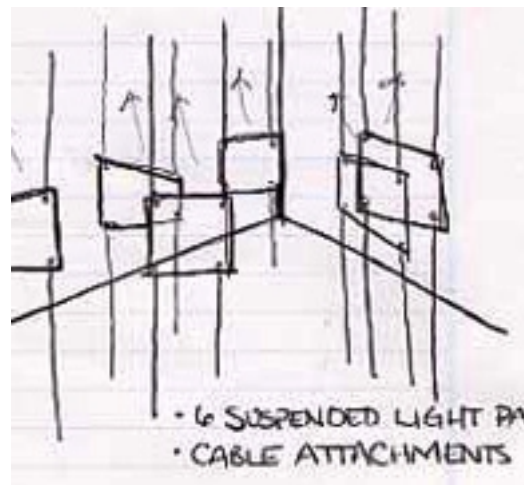


Fig.4.8.4 Space Install Schematic



Fig.4.8.5 Original PhotoShop composite of wall mounting.



Fig.4.8.6 Floor/Ceiling installation hardware with cables.

Chapter 4.9

The Process: Construction of Light Panel

The photos of the prototype are displayed below in (Figures 4.9.1-4.9.4).

The box was constructed from 3/4"x4"x8' select pine
 Two Fluorescent Bulb housing units
 13"x19" white translucent plastic
 13"x19" picture frame glare free glass
 1/2" aluminum stripping
 13.75"x19.75" Masonite Board
 5 5/8" circular plastic vents

1 standard outlet black cord
Painted white on the interior and stained lightly on the exterior



Fig.4.9.3 Prototype with X-ray



Fig.4.9.3 Without X-ray



Fig.4.9.3 Exposed Prototype



Fig.4.9.3 Anterior View

Chapter 4.10

The Process: Installation

Conceptualize, Make Schematics, Stills, Research Space

Below are the displayed 3-D stills created in hopes of better visualizing the space and what ideally the piece would look like. The stills represent four different angles of the space. The light panels are suspended from the ceilings and bolted to the floor with metal brackets. The electric supply is wired in through the rafters above (not depicted). The 6 light panels are displayed at eye level and positioned in many different angles. This prompts the viewer to wind a path around the pieces.(Figures 4.10.1-4.10.4)



Fig.4.10.1 Eye Level of Installation



Fig.4.10.2 Above View of Installation

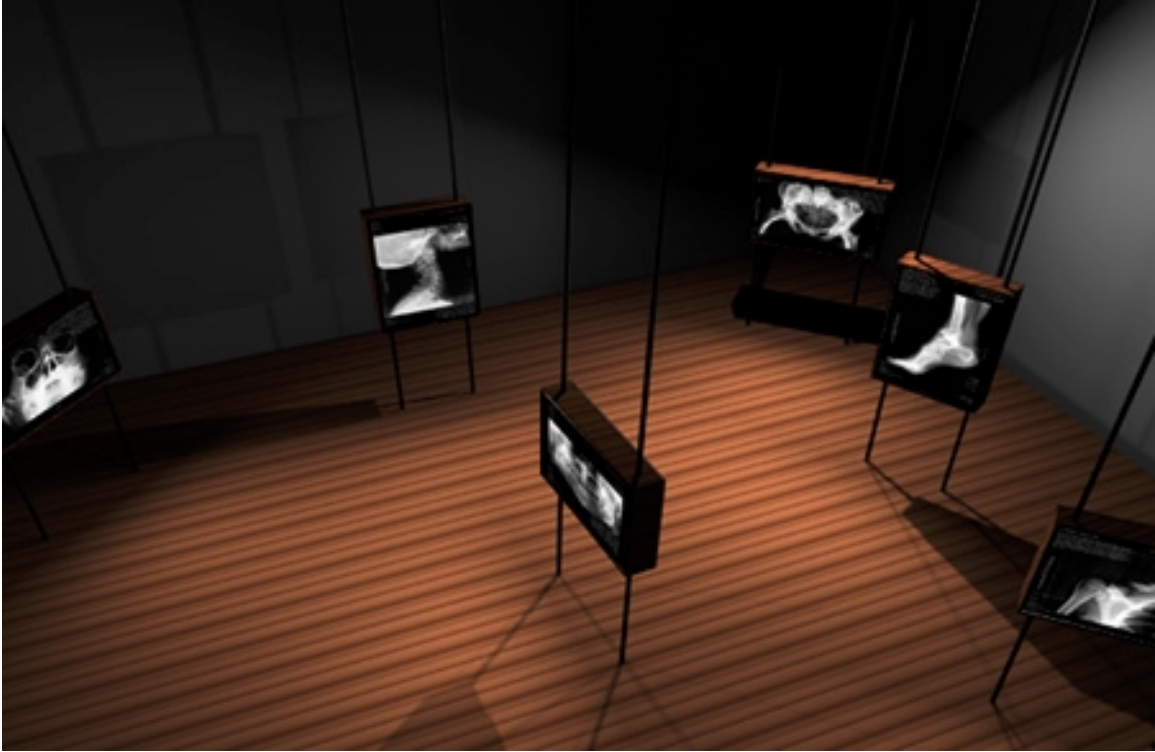


Fig.4.10.3 Center Above View of Installation

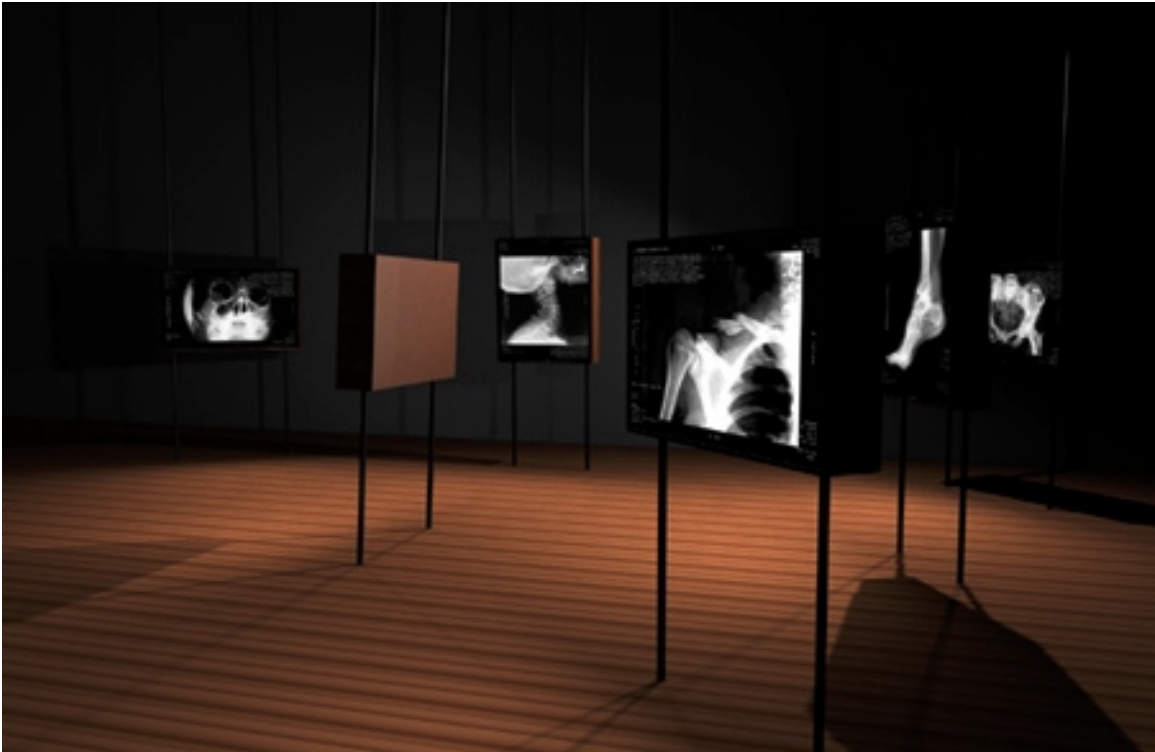


Fig.4.10.4 Right Wall View of Installation

Chapter 5: Evaluation/ Conclusion

In this chapter, Evaluation/ Conclusion, I would like to reflect on my work and seize the opportunity to assess how well I have achieved my preset goals for this project.

Chapter 5.1

The Work: A Recap

It is interesting to look at a project that spans one complete academic year of conceptualization. Throughout the previous chapters I have discussed the original thoughts and plans for this project and explained the evolution from one idea to the next. Ultimately ending up with a piece that reacts to a trend that has emerged on a societal scale. In figuring out the best possible method for attacking such an artistic piece I managed to find a way to utilize skill sets that feel close to and inspired by. To be able to create an artistic piece that possesses elements that interest me and have them work as the best possible solution for a successful piece inspired me to work and actually enjoy such a large scope of a project.

The final installation is a series of six suspended light panels that form a cloud of information. This set of six panels is meant to show the X-rays in a different context than their preconceived surroundings. Juxtaposing the X-rays are the accompanying personal ads that like the X-rays, are found presented in an abnormal context. The pieces are meant to be read, glimpsed, scrutinized, touched, and walked around. The personal ad and the X-ray play off each other attempting to disclose an ironic but appropriate visual narrative. The viewer is meant to survey the surrounding pieces and garner as much information from them as desired. After viewing all of the pieces he or she will have gained enough comprehension to deduce the basic theory the artist has addressed in the work. To approach each panel or simply view it from a distance are two methods of information gathering. The piece is presented in such a format conducive for global speculation and individual scrutiny. Within each individual piece lies the ironic narrative and the metaphors as they should be seen.

The level of craftsmanship and meticulous nature the X-rays are constructed is intention from the artist's point of view. It is necessary for me to present beautiful imagery in hopes of attracting the public opinion and curiosity all while gaining an appreciation for the 'faux-scans'. The Personal Ads became a device for adding social interest and a humorous irony to the work. It was also important to me to have the opportunity to write in this manner as I enjoy it very much and wanted to disclose a bit of insight about the artist to the viewer.

Chapter 5.2

The Work: Difficulties

Throughout the project I ran into a few question marks and still to this moment believe I am in a bit of a dilemma with the installation. I have never had the pleasure of working on a project of such magnitude and have definitely learned to appreciate as well as loath the process. In the beginning I approached the project fresh and willing to accept change. As the semester and concepts progress it becomes harder and harder to let go of good ideas. It is difficult to avoid focusing on the end product when the majority of the piece had not been developed. It is essential to have a timeline and a series of basic goals that are abided by.

With the goals in mind it should be easier to attack the project in small manageable packets. Otherwise the tendency to become bogged down with product or final results is inevitable. This is where I always stumbled. I often work from the final result backwards. In example I wrote the Personal Ads with a good idea of what the X-rays should look like. This is ok for smaller sections of the project but again, for such a large piece it is essential that each level be assessed individually, slowly and methodically.

The current issues I am concerned with have something to do with the installation. I am confident the light panels should be presented at eye level and clustered in a format similar to the ones seen in Figures 4.10.1-4.10.4, however I am still trying to figure out the best possible solution for attaching the pieces to the floor and ceiling. I am thinking metal plates screwed into the floor but this involves drilling and seems unfortunately the obvious solution. I am still investigating a different attachment solution as I have some time before the inaugural installation.

Chapter 5.3

The Work: The Future

When building this piece I knew I wanted to make something that would continue to have a life beyond the Parsons auditorium. This needed to be a piece that could be sound visually and distinct as a timeless piece yet could undergo minor thematic changes as to continue a tour of sorts. I would like to see this piece travel around in a gallery situation while morphing the thematic content. For the first show I am investigating personal ads I have written, but maybe then I could create a show based on the responses achieved. If this exhausts itself then I could look at a theme for all six X-rays and Ads to contain. Perhaps an all dental

theme, or a dominatrix theme or one based on the "Survivor" reality television series. I see a lot of potential for this piece to take different shapes and forms as it is simply constructed and possesses many elements of which one or all can be altered. I look forward to the future of the X-ray/Personal Ad works, now if I could only come up with a title.

Bibliography

1. A Century of Radiology: A Project of Radiology Centennial, Inc. 1993
<http://www.xray.hmc.psu.edu/rci/centennial.html>
2. A.D.A.M Online Anatomy and Research Materials and Interface.
http://anatomy.adam.com/index_start.htm
3. The A.D.A.M Health Illustrated Encyclopedia
<http://www.nlm.nih.gov/medlineplus/encyclopedia.html>
4. Advances in Biomedical Imaging
<http://jama.ama-assn.org/issues/v285n5/ffull/jsc00355.html>
5. In Celebration of 100 Years of Radiology: X-rays in Medicine
<http://www.ttsh.gov.sg/di/articles/100years.html>
6. Health Information: A service of the National Library of Medicine/ National Institutes of Health.
<http://www.nlm.nih.gov/medlineplus/>
7. Human Anatomy: Radiologic Anatomy Images
<http://www.emory.edu/ANATOMY/Radiology/Home.Page.MENU.HTML>
8. Normal Radiologic Anatomy: X-Ray, CT, MRI and Ultrasound virtual hospital.
<http://www.vh.org/Providers/TeachingFiles/NormalRadAnatomy/Text/RadM1title.html>

9. Radiology update 2001: A four-article symposium
http://www.postgradmed.com/issues/2001/06_01/montgomery_intro.htm

10. ROENTGEN CENTENARY: A CENTURY OF X-RAYS: Australia celebrates 100 years of x-rays
<http://www.usyd.edu.au/su/radiology/rcent.htm>

11. The American Roentgen Ray Society
<http://www.arrs.org/>

12. The History of Radiology: September 22, 1999 Modified: September 28, 1999
Copyright: 1999 by the University of Florida
<http://www.medinfo.ufl.edu/other/histmed/klioze/index.html>

13. The Medical Radiography Home page.
<http://web.wn.net/~usr/ricter/web/roentgen.html>

14. WILHELM ROENTGEN [1845 – 1923]
<http://top-biography.com/9072-Wilhelm%20Roentgen/>

1995 marks the 100th anniversary of the discovery of X-rays by Wilhem Conrad Roentgen.
http://www.softcode.com/X_ray.html