Visual Facticity and the Technological Gaze: Permanence, Discreteness and Comprehensiveness

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By

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The undersigned, appointed by the dean of the Graduate School, have examined the thesis entitled

VISUAL FACTICITY AND THE TECHNOLOGICAL GAZE: PERMANENCE, DISCRETENESS, AND COMPREHENSIVENESS

presented by Chris Hall,

a candidate for the degree of Master of Fine Arts

and hereby certify that, in their opinion, it is worthy of acceptance

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Professor J Brett Grill

Professor Nathan Boyer

Professor Kristin Schwain

Dedication

To my family and friends, for their unwavering love and support.

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With gratitude…

To J Brett Grill for your generous guidance in so many matters.

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Abstract

Seeing-machines have long been used to discover new things about ourselves. We fantasize about devices that will enhance our senses and provide us with 'facts' about our hidden aspects, such as our inner bodies, or our psychology. But these viewing machines tend to obscure just as much as they reveal. By focusing vision they also constrain it and lose the context of that which is viewed.

The search for the factual is so pervasive in society that it tends to be taken for granted by the sheer commonality of it. This diffusion of seeing-machines (some mechanical, some text-based) seeking out facts has necessitated my thesis calling upon a range of examples of how we use artificial systems to observe: x-rays, digital libraries, psychological tests etc. This broad approach was taken to emphasize the enormous popularity of mechanistic ways of seeing the world.

My art project is a visual critique of the 'visual facts' provided by seeing machines, with a particular emphasis on technology's view of the body. The longevity, objectivity and comprehensiveness of artificial views of the physical body and psychology are scrutinized in my work. My images are created with a body scanner that creates degraded 'digital casts' of a posed model. This 'digital cast' is then lit virtually in

a computer program before being printed on translucent paper and finally backlit in a display case.

The result is a collection of images that depict ambiguous bodies that vacillate between recalcitrant materials and digital fragmentation. These images are housed in light boxes that resemble computer monitors and x-ray displays as a means of eliciting the technological gaze's view of the body.

Chapter 1: Visual 'Fact': Discreteness and the Permanence

That twenty centuries of stony sleep

Were vexed to nightmare by a rocking cradle,

And what rough beast, its hour come round at last,

Slouches towards Bethlehem to be born?9 –W.B. Yeats, *the Second Coming*

This section will examine the ideas of digital and visual 'fact'. For the purposes of this thesis, visual facts are considered to have two essential properties: discreteness and permanence. In regards to discretion- facts must not contain any degree of ambiguity: they are either true or false. This binary nature is just as essential as their repeatable provability. Frequently, seeing-machines are needed to hunt down discrete visual facts that are invisible to our naked eyes. These seeing-machines imbue their findings with a level of authority but are also hindered by severe constraints. Also, if an idea is to be considered a 'fact', it must *remain* proven for a length of time. The longer a 'fact' is considered true the more weight it carries within a culture. The validity of knowledge and objects is linked to the idea of the 'permanent'. A clear example of this can be seen in all manner of museums, institutions dedicated to the promotion of what is valid through the conservation of what is deemed worthy. The purpose of this chapter is to

explore the conflation between the ambiguous and the discrete, as well as the intertwining of the ephemeral with the 'permanent' within visual and digital information. Discretion and permanence are two qualities of a 'fact'. If we were to examine contemporary digital information through the lens of discretion and permanence, how 'factual' is it?

We have been fantasizing about equipment that will reveal the hidden nature of things for hundreds of years. In folklore, vampires are thought to be revealed through the use of a mirror; they cast no reflection whereas humans do. Another historical example of mirrors being used to illuminate a hidden 'fact' is seen Landry's *Ritter vom Turn* (Fig.1.1). The woodcut serves as a warning against the subtle sin of vanity. A narcissistic woman preens herself, oblivious to the devil revealed to the viewer in her mirror. 150 years later in Europe and optical equipment was still being used in the establishment of 'fact'. Leeuwenhoek's rudimentary microscope proved the existence of animals too small to otherwise see. Eadweard Muybridge's high speed camera conclusively proved that all four horse's hooves leave the ground (briefly) when the animal gallops. These seeing machines enhance our natural vision and allow us to perceive things beyond their normal range of sight. Telescopes allow us to see farther; endoscopes provide a visual tunnel into a human chest, high speed photographs capture the motion of objects too quick for our natural senses to perceive. These devices all amplify our normal perceptions past their biological limits in order to reveal imperceptible, 'visual truths'. These 'visual truths' are hugely important when trying to prove the validity of a theory (and the falsehood of others). Van Leeuwenhoek's

microscope *confirmed* the existence of microscopic life and paved the way for the germ theory of disease because his device allowed us to *see* microscopic life. The theory of microscopic life dates back to ancient times, but Leeuwenhoek's microscope converted the theory into a concrete fact by showing us animals beyond what our naked eyes can see. Likewise, Muybridge's high-speed camera confirmed the suspicion that a horse temporarily leaves the ground while galloping. The issue of how a horse runs is not the point; the real issue is the power of a viewing device. With the help of a camera, we can *know*. But the findings of these machines must ultimately be interpreted, and interpretations are colored by social factors. Muybridge's photographs were not entirely accepted by a skeptical public who were used to photographic hoaxes 'proving' the existence of ghosts. Simply capturing visual information about the world is not enough to achieve the status of 'fact'.

Scholar J.R. Ravetz discusses the sociological side of fact-hood when he discusses the birth of a scientific 'fact'. He describes the arduous journey of a research paper, emphasizing not only the painstaking work that goes into the research itself, but the need to convince others of the value of the findings (Ravetz 181). In peer reviewed research papers, if the referees are unconvinced of the value of findings, then any 'facts' contained in the research will soon be forgotten, having been deemed unworthy of preservation. In this way, facts can be viewed as at least partially socially constructed, since their discovery can never be truly divorced from the value assigned to them by other people. To use a famous example, we cannot say Galileo was simply confirming the speculation of Copernicus when his telescope proved that the earth revolved around the

Sun. The impetus for this discovery is inseparable from the religious and social unrest of 17th century Rome. Since 'facts' are dependent on social factors, in that way they are quite frail. Another frailty of the seemingly impervious fact lies in its longevity. Knowledge that ceases to be preserved ceases to be a 'fact' (Ravetz 146).

For information to be transmitted and understood, it first must be made into some sort of record, whether it be an algebra textbook, an online recipe for beef, or a vehicle's owner's manual. These may seem like trivial examples, but keeping records and codifying knowledge is in fact an expression of power. The word *archive* is derived from the ancient Greek word 'arkhe', which described the home of the archon, depository of official state documents. The connection between the records of arkhe, and the power of a ruler is still seen in the modern words an-archy, and mon-archy. These terms are tied to the Greek verb Arkho, "to begin, rule, govern". A great deal of power is wielded by the determiner of *what*, and *how* information is recorded as well as how it is presented to those who have been granted access to it, and finally how long it is preserved.

For instance, future perceptions of the Nixon administration will inevitably be influenced by the Watergate scandal whose very existence hinges on the preservation of audiotapes. The conclusion of the Second World War is also preserved in the form of two documents: the American and Japanese copies of the Japanese Instrument of Surrender. It bears mentioning that while the two information contained in the American copy is identical to the Japanese version, their presentation differs. The American copy is bound in leather with gold lining and the seal of both countries, the Japanese version is

bound in rough canvas without seals. The Allied presentation is akin to a scholastic diploma or award while the Axis presentation is much more mundane. The Japanese message is clear; this document is not special and warrants little attention. Another component of the power dynamic of archiving is taxonomy, the ordering of recorded data into a form that is understandable to its intended audience. The organization of information is part of how it's presented and in the end determines the level of its influence. The library of congress is a powerful institution not only because of its vast wealth of information but because it is meticulously catalogued allowing the literate to navigate the archive.

Visual facts thrive on discreteness and permanence. The visual findings of high-speed cameras and other seeing-machines are meant to make visual declarations about the world in an effort to understand it. The images provided by these devices are meant to resist ambiguity, they are intended to decisive prove or disprove a notion through imaging, such as germ theory being confirmed by the observations of a microscope. Once these visual facts are gathered, the information must be deemed worthy of being archived. The longer they are stored, the higher their level of authenticity.

Digital Cataloguing as a method to gather and conserve 'facts'

The organization of records is another form of technical seeing. It presupposes that the world is catalog-able and if we simply use the correct apparatus we can categorize it into discrete pockets of information. Computers seem to be the ideal tool for identifying and cataloguing information because of their legacy of discreteness and

permanence, but in many ways, digital information is ambiguous and ephemeral. Like all seeing-machines, a digital view of the world is myopic and temporary.

To catalogue a thing is to exert some measure of power over it, simply by observing and claiming to understand it well enough to categorize. The biblical book of Genesis, the first action performed by the newly created Adam is to *name* the animals. In the words of Aho, "labels never merely *describe*, they *prescribe* value (e.g. 'terrorist', 'genius', 'psycho'). It could be argued that all digital archives, are expressing their own power, in their effort to catalogue it virtually. Disembodied knowledge in the form of virtual archives (digital libraries) is an expression of the *technological gaze*.

The technological gaze refers to the notion of viewing something exclusively through viewing machinery. It is a view of the world through the lens of the X-ray, the microscope, or an airport's body scanner. The term 'technological gaze' can also be used to describe ways of seeing that are abstract: charts and graphs that reveal online social network activity, or personality tests design to reveal hidden criminality (a more thorough discussion of this is found in chapter two). Online libraries allow us to experience museum exhibits and art shows *remotely*. We are able to magically conjure books from Google's online literary database to our laptops without leaving our beds. The technological gaze offered by virtual archives offers not only a greater amount of information than could ever be housed in a single building but one that is easily searchable and can be experienced as if we were omnipresent. We can virtually dash from an art exhibit in Spain to a catalogue of fossils on display in California.

Many of these digital archives (weather.com, webmd.com) are meant to present the viewer with an archive of facts. Facts themselves are thought to exist in a binary state: they are either true or they are false. Ambiguity is the enemy of fact. Similarly, digital information exists in a binary condition.

Digital information, like other languages, is intended to reduce ambiguity in order to facilitate comprehension of the world.

Art historian Proulx asserts:

> Rooted in symbolic logic, digital technologies carry a heritage of *disambiguation*- a dominancy of reason based principles writ furtively in algorithms and protocols. They thus espouse ideologies via systemized calculation and centralized command, despite the commonly-perceived, transparency, fluidity and egalitarianism of the Net.

Proulx is describing the extreme discretion needed in computer programming. These languages by necessity seek to eliminate ambiguity. On a micro-level, computers operate in discrete ways: they only able to function based on what the code of their programs dictate and these codes simply describe slight differences in voltage (either on or off) (Proulx, 13). A keyboard key or mouse button is either pressed or it is not. Within the programs themselves, ambiguity is to be avoided at all costs. Within a 3D modeling program, the simple act of lining up a cube with the end of a table is riddled with

ambiguity (which part of the cube? what corner of the table? above or below? (Fig.1.2). A seemingly straight forward task like this cannot be performed until the *specific* parts of the geometry and *exact* destination are made clear to the computer. Despite the legacy of discretion associated with the digital, the physical aspect of computers (e.g. their tangible volume) is opaque.

Digital devices seem to possess impossible properties, which directly contradict the analogue world. A USB flash drive purchased in 2013 will be shorter and thinner than previous models yet can contain four times as much data as a physically larger 2010 model. If a passenger car were somehow able to shrink in volume yet increase its storage capacity three-fold it would be seen as suspending the laws of physics. Digital cameras are another example of the digital world being opaque.

Analogue cameras can be built out of something as simple as a box pierced with a pinhole, a shutter, and a piece of film. These are tangible components that we can manipulate with our hands. From the beginning of photography, cameras have been physically modified by their users. It is a much simpler task to manipulate a film camera than a digital one. Digital camera technology is much more complicated and convoluted than that of a film camera. A digital camera does not contain a traditional film back; its internal anatomy is an enigmatic mass of circuit boards. While it still possesses a glass lens and a tangible shutter, the film itself has been dematerialized. Our access to the interior of the camera itself has been removed. We can still manipulate imagery, but we are forced to do so digitally. This denial of access to digital devices is what John Steely Brown refers to as 'System Opacity'.

Brown has coined a term that describes the enigma of how digital devices actually work. Smart phones and laptops lack a mechanical component that we could understand by watching it in action. When we open the hood of our car with the engine running, we can actually *see* and *hear* the belts spin as they supply power to the engine. When we remove the case of a desktop Dell computer, nothing mechanical seems to be happening at all. The physical, driving force behind digital technology is mysterious, opaque. It is ironic that the medium so frequently used today to provide us with visual fact is itself so mysterious. The lens through which we are viewing ourselves is in many ways opaque. Can knowledge provided by devices we know little about be said to be truly 'factual'? Unless we thoroughly understand the mechanics of how these machines are gathering information, how certain can we be of the information's accuracy and comprehensiveness? For example, security personnel in airports need to be trained to understand what their machines are capable of detecting before they can make an informed reaction to an alarm. A metal detector is simply meant to find metal. A body scanner will dutifully reveal the naked body of a passenger, but these devices are calibrated to react to specific triggers without regard to context. A metal detector will announce the presence of the substance in the body, but it cannot determine if the metal is part of an artificial hip or a weapon. The security person must understand the context of the viewing machine's findings before a threat level can be assessed. The raw findings of the device alone are not enough to generate a 'fact'. Another element of that validity of a fact is how long the information is preserved. Antiques, historical documents, and personal artifacts (childhood photos etc.) all gain validity based on the

length of their preservation. The impulse to archive as much as possible provides us with the impression that we can protect ourselves from loss and death. The underlying drive to archiving is our innate fear of depletion. Archives provide us with a mental salve against the injury of loss. 'Permanent' records provide a soothing (though imaginary) barrier against the destructive forces of time.

Since the world of digital data is intangible, the need to preserve it seems strange to us, assuming the idea occurs at all. In fact, the belief in the indestructibility in digital data underlies the popular sentiment that embracing Facebook photos and 'tweets' uploaded in a state of intoxication will be there to haunt us forever. We may be turned away by a potential employer because the employer's knowledge our past misbehavior, knowledge provided by an immortal digital record. In 2011 New York representative Anthony Wiener resigned his congressional seat amid a public scandal stemming from his sending of lewd photographs to a 21-year-old female student via Twitter. Also in 2011, Georgia public school teacher Ashley Payne was forced to resign from teaching after the school principal discovered a Facebook photo of her imbibing alcohol in a European pub on a class trip (Sullivan). It is widely assumed that simply because a digital picture or statement can 'go viral' (spread rapidly across the internet) that what is uploaded there stays forever. But this simply is not the case. Despite our fears of being perpetually haunted by digital information made public, online data is anything but permanent.

In 2013 it is popularly believed that the most reliable way to preserve information is digitally, if it can be uploaded to the Internet, even better (Dvorak, 2). But the actual

longevity of digital records remains in doubt; the true lifespan of the average jpeg burned onto a CD may only last between two and five years (Blau, 1). A 2007 study focusing on the longevity of online citations in six leading communication journals discovered that after 4 years only 61% of their online citations were still available. 37% had been eroded by condition known in scholarly circles as 'link rot' (Bugeja and Dimitrova, 215). A similar study found that the majority of the sites access in Australia's Pandora (the online Australian national archive) were inaccessible by 2007. The gradual decay of online records is alarming since we yearn for the permanent.

Of all optical devices, computers are the newest and most seductive. They possess a heritage of anti-ambiguity and longevity. If we look closer, however, they are not entirely discrete and their ability to store information is anything but permanent.

Digital Permanence and Big Data

Facts become more convincing the longer they 'live'. Validity is intertwined with longevity. This can be seen in archiving of numberless amounts of records in government funded museums. We believe that the longer something can be observed, the truer it is. For example, a major factor in determining the validity of a scientific fact is its *repeatable* observability. For a fact to be true, it must not only be seen by others, but also remain seen over time. Written language itself was born out of the need to document the world in a lasting fashion. Contemporary digital documents such as Facebook profiles and big data are also meant to record the world by creating

enduring documents. These methods of capturing the present to relive it in the future are part of a larger struggle. The need to preserve can be seen as a symptom of our own need to survive: we are designed to avoid death as long as possible. The aversion to death engenders an undying thirst for anything that will still be here tomorrow.

Much of our lives are spent in an effort to ensure permanence (Mason 200). We construct houses out of flame retardant materials to preserve them, Western marriage is considered a sacred contract for life, and U.S. Supreme Court appointments bear special consideration because of the power a permanent political seat holds. Legal cases are guided along the same path as previous cases built upon similar facts, *precedents*. Historians frequently describe dire times as 'politically uncertain', or 'chaotic'. Our comprehension of the world depends on our ability to conform our current experiences onto the framework established by our past (Garcia-Lorenzo, 3). The photographs on our walls (both of our physical dwelling and Facebook page) serve to remind us of what has been; to reinforce our past experiences of the world as a mode of preparation for future events. Without some measure of routine and predictability, we feel lost, forced to improvise our every move in an environment we can only react to. Cultural permanence is frequently embodied in the written language of sacred documents such as the Holy Koran or Christian Bible. When societal sentiments gain enough traction in the public sphere they are exalted into specifically written federal and state laws, as seen in the Women's Suffrage movement, Roe vs. Wade, and the Californian Proposition 8 enacted in 2008 (a typical battle in the current cultural struggle to *define* marriage). When we

collect information and then store it for safekeeping, it can only be seen as endorsement, a testimony of the information's perpetual merit.

There is still room for debate but scholars generally agree that humankind began archiving written information in Mesopotamia approximately 5,000 years ago (Sprochi,5). While the popular conception is that writing gradually appeared from simpler pictograms, true written language appeared suddenly and fully developed, complete with grammar and syntax. There are no preliminary, simplified, grammarless versions of the first writing systems (Egyptian, Mesopotamian, Chinese, and Mesoamerican) (Sprochi,9). It was a need-based invention whose hour had come. Civilization had become so complicated (large numbers of livestock changing hands, agricultural techniques, complex alliances between societies) that our biological memory was overwhelmed. It had become too difficult to memorize inventories of cattle, or how much of a dowry one family owed to another. Society had developed too many moving parts for the human mind to reliably record (Robinson, 36). Some of the oldest documents that remain with us are records of dry goods delivered to an Egyptian warehouse (A.P., 1).

Collecting information and protecting it from the ravages of time is of particular importance in the digitized West. Scholar Ingrid Mason explains:

People have a continuing need to go backwards and 'mark the spot,' or experience material in its 'time' digitally (e.g. to cite a journal article in an academic paper by linking though a permanent identifier to an online journal, or to play a computer game developed to run on Windows 3.1 in that operating environment, or in one that emulates it). Research and cultural interest in historical cultural content (digital and

analogue) has not waned; it is evident in the development of permanent identifiers and of emulation technologies. (Mason, 200)

The 'emulation technologies' Mason refers to are the multitude of programs meant to exactly mimic the behavior of obsolete software. Many are used to facilitate 'retro' gaming experiences. This allows a modern user to enjoy a relatively primitive 8-bit Nintendo game of Super Mario Bothers on a contemporary Windows-based desktop PC.

Mason continues:

> The need to fix things in time and retain artifactual and documentary material from the past is to a degree forensic in nature; authenticity is crucial to society's understanding of historicity, whether measured in centuries or seconds. Pressure is being asserted on digital technology to meet these interests and needs, so that questions, such as 'what happened?' or 'what was?' can be answered with a degree of confidence- confidence that the evidence being examined, or material utilized, is as consistent as possible with what was examinable when it was created and used, and has not been altered to skew its content or context and, thus, its potential meaning. (Mason, 201)

Mason is describing the belief that in order comprehend the present, and to better anticipate the future, we must first understand the past by securing it. Securing

the past requires us to have well-preserved, authentic information about it readily available. In the United States, the National Archives and Records Administration represent the zenith of this desire for reliable historicity through permanence.

The National Archives and Records Administration (NARA) was formed in 1934 and charged with collecting and preserving the acts of congress, presidential proclamations, executive orders, and federal regulations. NARA is also responsible for improving public access to these records. This enormous archive, located in Washington D.C., houses numberless federal documents, as well as anything else deemed "significantly historical", such as President Nixon's presidential helicopter. But physical space is limited, and difficult choices must inevitably be made as to what documents are valuable and which ones are not. Those that are determined to be valuable are preserved for decades, those that are not are either briefly kept or immediately discarded. The criteria that determine a document's worth are highly fluid. Ebbs and flows in Federal funding, available physical space, and shifts in public interest are all factors in the choice to destroy or save a record. Interpretation is also involved here; some tapes that are viewed as worthless today may become priceless in the future due to a shift in global politics or a high-stakes legal battle (Heminger, Kelly 12).

Digital archiving is rife with its own challenges: rapid software updates do not always ensure an older document can be read by a later version of the software that birthed it. The longest lasting physical storage materials (paper, microfilm, nickel slugs) do not allow for the preservation of sound or video. The magnetic discs used in hard drives breakdown far more quickly than paper. The Internet itself is constantly shifting

and obscuring old web pages with new ones. If permanence is a criterion for a 'fact' then the digital medium is lacking. Even if the information capture by digital devices was somehow perfectly preserved for the long term, having the proper machinery to read it is another challenge.

A repository of obsolete machines, kept in good working order by skilled technicians has been a strategy attempted by MIT. After all, having access to the machinery that interprets documents is vital if we are to understand them in the future.

The former head of NARA, J.W. Carlin explains:

> ...one cannot just go buy in a store the Sony Model 800 machines on which former President Nixon recorded the famous White House tapes that came to light during the Watergate investigation. In fact, the National Archives has found only eight machines that will play the original tapes, including Nagra TRVR recorders for which it seems possible to find spare parts only in Europe. Similarly, it is hard to find workable equipment that will play the original Dictabelt and tape recordings of White House conversations made by Presidents Eisenhower and Johnson, let alone records electronically dictated by thousands of other government officials decades ago. And a home movie-maker made the original Zapruder film of the assassination of President John F. Kennedy with a camera that is now obsolete.

Many in the digitized West are alarmed at the prospect of letting files slip away that may be of future use. There is a popular sentiment that virtually every aspect of life should be documented and presented, even if they only member of the audience is the original documentarian. Popular websites like Instagram, Pinterest, and Twitter are meant to record and preserve even the most temporary of thoughts and daily events. These virtual 'footprints' are part of the larger need to somehow delay our own demise by exercising our power to preserve. Our death-anxieties are soothed by maintaining our surroundings as long as possible, we preserve to provide the illusion of our own permanence. For us, the permanent is indistinguishable from 'the good'.

Another statement from Carlin, former national archivist:

> It will be worse than sad if the marvelous technologies that are giving us a new information age outrun our ability to keep a record of it. We hope to learn how to use new technologies to keep records better and even cheaper. For the sake of both democracy and history, we must.

Carlin is expressing the notion that our culture will somehow be invalidated by the loss of records of it. He is arguing that without an exact record of the past we will have no reliable way to understand the contemporary moment and by implication the future. In his view, the past serves in many ways as a kind of cultural compass. This 'archival impulse' has also permeated into many modern American corporations.

The compulsive need to hoard arises when the privileging of archived items goes haywire, and every artifact (physical and digital) is deemed important enough to be preserved. An individual afflicted with Obsessive Compulsive disorder feels that every item in the home may be of future use and therefore must never be thrown away. Items pile up on top of each other until the home of a hoarder effectively becomes a cluttered prison from which they cannot escape without outside help. Similarly, 'digital hoarding' arises from the mistaken belief that all data is important enough to warrant preservation.

'Digital hoarding' has become a thorn in the side many American corporations who lack the tremendous resources needed to save the mountain of data employees are generating daily (Bertolucci, 1). Since many business documents could be needed to protect the company from liability in the face of a future lawsuit, they must be saved. But there is not room for everything, and deciding what warrants preservation and what does not has become so urgent that many companies have been forced to adopt and enforce 'information life-cycle management' policies. These rules are meant to generally determine the half-life of a business document, based on its perceived importance at the moment.

The need to save as much as possible is born out our fear of death. Languages which are no longer used natively are referred to as 'dead'. The association is clear: that which is forgotten is somehow no longer alive, and it is better to be alive. When it comes to 'fact', to be forgotten is to die. An instance of the contemporary struggle between digital preservation and digital 'forgetting' can be seen in the thousands of Facebook pages of the deceased.

A recent study revealed that this year alone, 3 million more Facebook profiles of the dead would be added to the staggering 30 million that already exist (Kaleem, 1). Facebook's current policy assures the survivors of the deceased that their loved one's page will be up 'forever'. The dead will no longer appear in news feeds, although they may still be tagged by friends in newly uploaded photos. Only other users who were already 'friends' with the deceased may post on their wall posthumously. The longevity of these social media graveyards is uncertain. Church argues that, despite the views of cyber-alarmists concerned about embarrassing twitter photos coming back to haunt them, an online "gravescape" is less permanent than an architectural one or a paper obituary.

He advises:

> Though it may seem impossible to erase one's online presence, the Internet is perpetually shifting and obscuring old pages and sites. When one site is upgraded, the old site ostensibly disappears, although many pages are cached by the InternetArchive. In effect, the Internet is biased toward a vastness of data at the marked expense of permanence. (Church 5)

Church is weighing the positives of the communal mourning facilitated by Facebook with the impermanence inherent to websites. Church also describes the peculiar space created by social media that allow users to 'type themselves into existence'. He argues that because online social identities exist based on jpegs and words on a screen, once a person dies their Facebook avatar (which has not changed) is

seen as keeping them alive (in some fashion). Comments addressed to the deceased as if they were still living are frequently seen on the Facebook 'walls' of the dead. This leads to another peculiarity described by Church, the conflation of *private* mourning (in the comments aimed at the deceased) in a very *public* setting of social media.

The vast numbers of pristine virtual graveyards found on Facebook illuminate the underlying impulse of archiving: the human desire for continuity and fear of death and loss. In general, we don't want things to simply *end*. Instead we seek the familiar as a way of perpetuating what we are already 'know' ('better the devil you know, than the devil you don't'). The concept of an afterlife is one of continuation, of our existence not abruptly stopping with death but extending onward in some fashion. The love of the security long-term 'facts' and dogmas provide is tied to this need for continuity. The root of the need for consistently available information is related to our innate fear of death and uncertainty. In order survey millions of Facebook pages of the once living and extrapolate trends from it, Church needed to consult such sources as Entrustet, a 'big data' collection firm.

Big data (predictive analytics) refers information about people, vast amounts of it. Exabytes (One Exabyte equals one billion gigabytes) of information that contains what we buy, drive, eat, view and communicate with floats across the web every moment of every day. This information is especially prized by data collection agencies such as Oracle, whose objective is to 'scrape' the data looking for behavioral patterns. These patterns are then sold to corporations as marketing guides. In early 2012 U.S. consumers were

riled by the news story of Target somehow anticipating a teenage girl's pregnancy, a pregnancy unknown to her parents. The story goes that by studying her shopping habits over time Target was able extrapolate the girl's condition and began mailing her coupons for baby clothes and formula, coupons which were initially received by her bewildered father (Hill, 1). But the technological gaze of big data is not completely prescient.

It does not follow that just because we have seas of data available to us, we are able to make sense of it. When one purchases a toothbrush at Walgreens, the race, gender, social class, and ethnicity of the purchaser are not necessarily recorded. These personal details enhance the information to a level of which big data is blind. Boyd explains the difference between size and representativeness, "Big Data is exciting, but quality matters more than quantity. And to know the quality, you must know the limits of your data".

Big data, like other forms of the technological gaze, fulfills a particular fantasy, the Western fantasy of absolute vision through information so all-encompassing that it simply must be accurate and comprehensive. When surveying a population, the larger the sample size the more reliable the information gleamed from the survey. But no matter how many millions of sales receipts or tweets Coca-Cola sifts over, they must eventually *interpret* the data. And interpretation is ultimately an imaginative, ambiguous act.

Boyd elaborates:

> Every act of data analysis involves interpretation, regardless of how big or mathematical your data is. There's a mistaken belief that qualitative researchers are in the business of *interpreting stories* and quantitative researchers are in the business of *producing facts*. All of us are interpreting data. As computational scientists have started engaging in acts of social science, they've come to believe that they're in the business of facts and not doing any interpretation. You can build a model that is mathematically sound but the moment you try to understand what it means, you're engaging in an act of interpretation.

Boyd is promoting the importance of applying sociology to the information captured by big data companies such as Oracle. He is reminding us that it is collecting numberless amounts of tweets is an act of endorsement. Examining the tweets of a certain demographic in a particular area is not strictly generating 'facts' but also claiming the importance of those tweets, which is ultimately a value-laden act of interpretation.

Preservation is ultimately about our struggle to defeat death and validate our ideas of what is true. A properly preserved artifact can serve to convince us of the permanence of life. They also validate 'visual facts'. The older the document, the more authentic and more important it becomes. We associate being forgotten with being deceased and therefore powerless. The need to extend existence is now largely handled

by computers, but this is risky: format updates and hardware disintegration are so rapid that a digital file is among the most brittle of mediums.

Digital Permanence and Ambiguity in the Art World

Two contemporary artists who address issues of digital frailty and predictability: the German photographer Thomas Ruff and Shaurya Kumar. Of all of his conceptually-based photographic efforts, Ruff's *jpegs* contains the most meaningful connection to my project. A typical example, *jpeg rl04* (2007, Fig.1.3) has Ruff turning the technological gaze back onto itself: we are viewing a jpeg through a microscope.

The viewer is able to examine the visual anatomy of a jpeg image in extreme close up, as if the digital file were somehow placed under a scientist's instrument for examination and dissection. The scenes Ruff choses to depict in *jpegs* are frequently of technological violence such as warheads being launched or the twin towers collapsing on 9/11. Ruff enlarges these relatively tiny files to colossal sizes and turns what was originally seamless, into discrete blocks of color that renders the image almost incomprehensible. The jpeg series informs the viewer of the shortcomings of digital vision: the automatic averaging of colors and the mechanical summarization of detail that takes place on a level too small for our eyes to see. Ruff revels in showing the degradation of digital 'fact' in the face of scrutinizing inspection. These images also emphasize the ephemerality of digitally recorded history. If all that we possess are

grainy videos and pixelated jpegs of 9/11, how does this affect our level of certainty about the event? How strongly does our understanding of a 'fact' correlate to the quality of the data that is tied to it? Ruff's extreme enlargements of jpegs of recent disasters display the ambiguity of low resolution digital images and by implication questions the validity of the commonly-held perception of their objectivity. Also at play in Ruff's *jpegs* series is a questioning of our access to history.

The mass availability of digital cameras and smart phones has turned all of us into potential documentarians. Currently any event, regardless of its historical significance, can be easily recorded by random bystanders. Digital technology is enabling more and more people at all levels of income to record events with high definition sound and crisp color. The jpeg has becoming the standard unit of visual currency, available to nearly everyone. In this sense, history has become somewhat more democratic. Instead of relying solely on the historical account of a privileged few, more of us can have a say in *what happened* through the mass diffusion of imaging technology such as video-capable smart phones. For example, all we know about Henry VIII's appearance is based on the paintings of a single artist: Holbein the Younger (1497-1593), there are no surviving alternative versions of what Henry VIII looked like. Today, an event like 9/11 is known to us through hundreds of viewpoints, because the ability to record has been diffused across society.

But as recording has been popularized, it has also become increasingly mediated by technology. Our knowledge of events is now so dependent on reproductions (YouTube videos, Netflix documentaries etc) that our history has also become more

remote. Ruff's *jpegs* highlight this paradox: he displays his own personal 9/11 photos, but by enlarging them to show their digital construction, he exposes their homogeneity. Instead of receiving his personal account of 9/11, we simply see abstract bricks of digital color. Ruff's individual viewpoint has been converted into impersonal data. The critique of digital records continues with the next artist I will discuss.

Indian-American artist Shaurya Kumar explores the dangers of digital frailty when used for archival purposes in his ongoing project *The Lost Museum: The Fate of World's Greatest Lost Treasures*. Kumar works with computer scientists to 'hack' the digital versions of scanned masterpieces such as Picasso's Les Demoiselles d'Avignon. He manipulates the data of the scan at its most fundamental level, at times simply removing a single bit from its code but the effect this seemingly small change has on the image is enormous. The images of well-known paintings frequently become sliced into bands and those bands shifted out of position, scrambling the image. Kumar's hacked version Picasso's etched engraving *La Minotauromachie* looks as if it has been overlaid with a crossword puzzle, or cut into square which have then been randomly repositioned, chaotically disrupting the original image (2010, 4 Fig.1.4). Kumar lastly makes lithographic prints out of these images that he has digitally corrupted and further aestheticizes them, changing their original coloration to vibrant, almost psychedelic colors.

In *the Lost Museum* project Kumar has curated a collection of two kinds of masterpieces of art from around the world: ones that have already suffered physical damage (such as *The West Pediment of the Parthenon: Destroyed by Turks in 1637*) and ones are thought to be worthy of digital archiving by upper level art museums such as the

Museum of Modern Art in New York city. The merging of digital damaged modern art icons such as Picasso paintings with ancient art that was destroyed as the result of war has the strangely soothing effect on the viewer. The presentation of many precious artworks that have been destroyed along with the hypothetical breakdown of modern masterpieces makes us aware of the commonality of the destruction of art. The thought of losing a drawing by Leonardo da Vinci does not feel as disastrous when it's placed alongside an ancient Babylonian sculpture that was destroyed in the 2003 Iraq war. By collecting these images of artistic destruction, Kumar is reminding us of the routine loss experienced by the art world, where high profile paintings are frequently stolen or badly damaged as a result of war.

The digitization of objects is usually employed as a preservation method: museums produce digital 3D scans of artifacts and architecture in order to record the item's current state before the physical version disintegrates. Because of this practice, we tend to think of a painting that is been scanned at high resolution as somehow being protected; eternal. Since the vital aspect of art tends to be visual (there is not as much interest in how much the Mona Lisa *weighs*) high resolution scans seem to capture the 'soul' of a painting. However, digital scans themselves are impermanent, and reliance on them at the expense of physical preservation is perilous. Producing a digital archive of the contents of the Louvre may mislead us into thinking that its art works are in some way protected, even though the original, physical works are still just as fragile as they were before the digital version was created. Kumar is reminding us of the fragility of works of art, whether it is physical or digital. A 'permanent' painting is remains elusive.

Visual facts rely on discreetness and longevity. The authenticity of a fact hinges on its resistance to ambiguous, subjective interpretation, and how long it has been 'known'. Modern digitization continues the struggle between the discrete and the ambiguous, the permanent and the ephemeral.

Figure 1.1, Geoffroy IV de la Tour Landry and Michael Furter, *The Demon of Vanity and the Coquette*, woodcut, 1493

Figure 1.2, Kerry Kingston, *Ambiguious Selection*, 2010 (courtesy of Autodesk)

Figure 1.3 Thomas Ruff *jpeg co01,* Chromogenic Print (2004)

Figure 1.4. Shaurya Kumar, La Minotauromachie (2010)

Chapter 2: The Technological Gaze Bearing Witness to the Body

"One who sees, is one who sees within a prescribed set of possibilities, one who is embedded in a system of conventions and limitations"

-Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the 19th Century*

Constraints

The quote from Jonathon Crary speaks to the myopic side effects which stem from imaging devices and personality tests. Interpreting the world exclusively through machinery is always in some way misleading and at times tragic. The 1988 shooting down of Iranian flight 655 was largely caused by a case mistaken identity by an overzealous American naval crew relying solely on what their instruments told them. The 290 airline passengers who were killed were victims of technological interpretation; an interpretation of its flight path on American warship's radar. To some aboard the American vessel, the radar signature of flight 655 appeared hostile and warranted its destruction, to others it did not. Machinery that allows us to see the otherwise invisible has a history riddled with deceptions and mistaken assumptions based on limited data. No matter how cutting edge an imaging device is, our use of it is

inevitably tinged with fantasy, the fantasy of achieving absolute vision. The idea of vision that allows us to see anything we wish through the use of machinery is referred to as the 'technological gaze'. Shroeder explains, 'to gaze means more than to look at- it signifies a psychological relationship of power, in which the gazer is superior to the object of the gaze. Only highly advanced cultures have access to the machinery that facilitates a technological view of the world, a kind of privileged sight.

The phrase 'technological gaze' has been used in several contexts. It may describe a nation being viewed through governmental surveillance, the night vision of special goggles, or a computer model of an automobile. For the purposes of this thesis, I will discuss several forms of the technological gaze: x-rays, physiognomy, and predictive analytics, culturally. Machines that allow us to see that which is normally hidden carry no small kernel of power. The enormous research cost invested in new imaging technology as well as training personnel to operate and interpret the findings is staggering. Due to this cost, being able to use specialized imaging equipment is considered a privileged position in society and is not made available to just anyone. Currently to become an X-ray technician nearly always requires a bachelor's degree. Naval sonar operators must likewise undergo extensive training to use their equipment. Machines that grant one the power to see the otherwise hidden is reserved for select people. The mystery that is attached to these machines (how can a CT scanner see inside a human body?), and the limited number of people who can interpret them excites a romantic view of their observational powers. The principles empowering a medical imaging device to view the hidden body are unfamiliar to those without

scientific training. Only highly trained, privileged professionals (Surgeons et al) are able to understand them, to most of us (the patients) is also unclear what the limitations are of the machine's vision. For this reason, we tend to overestimate the range and accuracy of technology's gaze. Post 9-11, there was a wave of public backlash over the use of body scanners to detect weapons in airports. Passengers were leery of the prospect of having their naked bodies viewed by a stranger, despite the fact that faces and genitals are unrecognizably blurred when viewed through such machines.

A precedent of this bodily privacy concern can be observed in the public outcry seen in Victorian England against the use of the first X-Rays (Lentle, 513). A new kind of camera, one that could see through the dense layers of clothing favored by Victorians wealthy enough to afford medical care was seen as a lurid oddity. Female modesty was of such importance that the possibility of a naked body being viewed by strange men was a cause of great concern. This hysteria is a typical example of the public's anxiety agitated by a new visual apparatus. The more of us that a new machine reveals, the more naked we feel. The social aspect of a 'visual facticity' can be seen here: to the Victorians, the x-ray was another symptom of the corruption of sex. The x-ray machine was a wonder, but it was also viewed with suspicion: men could use it to leer at women through their clothing. This romantic overestimation of a machine's abilities to see can also be found in the centuries old practice of physiognomy- a kind of 'technology' that claims to reveal secret aspects of an individual (criminality, intelligence etc.) through a technical observation of the nuances of their body.

Today there are machines that purport to reveal parts of ourselves so hidden that they have no physical aspect at all: psychological tests. These tests promise to grant access to hidden aspects of our mental bodies. Modern, mental exams attempt to reveal our minds in much the same way as an x-ray reveals bones. These tests are also akin to physiognomy in that they try to predict the hidden capabilities of a person (criminality, trustworthiness etc.). They also are used to convert a specific individual into a *type* (manic depressive, schizophrenic, psychopath etc.). They accomplish this by striating the vague whole-ness of an individual into separated parts, assigning a numeric value to those parts. Examples of this kind of testing are used by the Target Corporation to determine an applicant's hirability, also the T.B.M. and P.C.M. tests used in the military to guide career paths. Another instance of a psychological test trying to perceive the hidden mind is the PCL-R used globally on prison populations to determine eligibility for parole.

In the late 1970's Canadian Dr. Robert Hare developed what would later become his magnum opus, the PCL-R. (Psychopathy Checklist Revised). This 20 question interview is meant to detect psychopathic personality trait in prison inmates. Seemingly open-ended queries are posed to the prisoner and based on *how* they are responded to a score is assessed. The verbal content of the answers said has less importance. For example, as part of the test a prisoner could be asked to recount a past incident in which they physically harmed another person. If there is a discernable lack of affect in the prisoner during their telling, it is interpreted an indication of psychopathy and two points are added. The higher the final score, the higher the degree of psychopathy and

the less likely it is the prisoner will be granted parole. This test has been adopted for use in a many governments, each with slight variations on the rules. Brazil for instance considers any score above 23 (out of 40) to be psychopathic and therefore immune to rehabilitation efforts while the United States sets the limit at 30 (Morana, Arboleda-Flórez, & Câmara, 1). These consequences of these tests are ultimately based on subjective interpretation, the interpretation of the prison psychologist administering the test.

A device (or 'test' in this case) that bestows great power, like that of privileged sight is also sure to stir up uneasy feelings stemming from the possibility of its abuse. Just as early X-rays machines were accused of enabling high-tech peeping toms to leer at women, the fear of governmental misuse delayed Dr. Hare from allowing the Canadian prison system access to the PCL-R (Spiegel, 1). . The concern of Dr. Hare and others was that a poor PCL-R score would be used to justify harsher sentencing. Dr. Hare's checklist was born in an academic research setting, was only intended for use in supervised university laboratories, not in federal prisons. Dr. Hare's fears were later proven to be well-founded, as the prison systems of virtually every developed nation has adopted some form of the PCL-R for use in sentencing. Dr. Hare feared (correctly) that the temptation to conveniently categorize prisoners via a numerical test score would be too great for governments to resist.

The enhanced vision provided by tests and machinery seems to offer nothing but benefits. But just as the naval radar screens ignored the context of Iranian Flight 655's flight

path, and the PCLR tends to reveal deviant personality traits engendered by the prison itself,

a medical endoscope provides a deeper yet shallower view of the body.

Endoscopic Technology has now features micronized video cameras that allow a patient to view their own surgery as it is happening. From the patient's point of view, this technology makes their inner body seem more transparent. But from the Surgeon's perspective, the body has been made more opaque by mediating it through a video camera with a tiny field of view (much smaller than that offered by our eyes). Dijk explains the difference between the patient and surgeon's experiences of the endoscopic gaze:

> Video-endoscopy creates a strong sense of transparency to an outside viewer, yet for surgeons this technology means less, rather than more, access to the patient's inner layers. The specialist is no longer looking directly at the insides of a real body – its organs and intestines laid open through an incision in its skin – but at a mediated body: mediated by the camera and a video display hanging over the operating site. Compared with open surgery, endoscopic surgery requires radically different skills: hand–eye coordination occurs through the video viewer and its electronic display. Because the patient's skin is only minimally pierced, the surgeon has to navigate her instruments through minuscule openings. Whereas open surgery aims at enhanced visual acuity in the 'original material' itself, the endoscopic gaze tries its utmost to overcome the local circumscription of the eye. Mediation through the video-endoscope may

> also limit the surgeon's view to such an extent that she misses vital information. For instance, after the endoscopic removal of stones in the gall bladder, chips may still obstruct the entrance to the liver or the pancreas, but because of the instrument's limited scope they remain invisible. In some cases, this may lead to additional open surgery to rectify complications arising from the instrument's limitations (van Dijck, 224).

Every instrument that opens up new vistas also sets new restrictions. Despite its visual claim of transparency, the endoscopic gaze provides an inherently constrained perspective on the interior body.

Contraints Engender Narratives

The perceived power offered by machines (and tests) that reveal the invisible is seductive. A penetrating vision is so alluring that we may be unaware that the more closely we view a subject, the less of its surroundings are visible. The gaps in the information gleaned from seeing machines provide venues for narratives and biases. To return to the opening example of the technological gaze, the American naval crew that accidently shot down Iranian flight 655 did not take into account the flight schedules of a nearby Iranian airport. When the aircraft appeared to be approaching the American warship, the social context (the potentiality of it being a civilian aircraft) was ignored. A narrative was created and applied, designating Iranian Flight 655 as a threat. If the American Naval crew had taken into account the civilian flight schedules of nearby airports, perhaps they would have used more discretion before downing the

aircraft. The loss of context leading to the creation of a narrative can also be seen in the use of the PCL-R. The test will (arguably) detect criminal deviant tendencies in test subjects. But the social context of the subject matters: in this case it's a prisoner eligible for parole. The test subject may have been incarcerated for years, developing anti-social habits that were acceptable in a prison environment simply to survive. The result is that the findings of the PCL-R may be a forgone conclusion based on who it is used on. The psychopath test is simply confirming the presence of anti-social behaviors developed and encouraged by daily life in prison. The PCL-R is a modern 'instrument' (Its inventor, Dr.Hare's term for it) meant to detect and quantify one's personality. The previous 'instrument' used to perceive and diagnose a personality is the practice of physiognomy.

Enormously popular the 18th and 19th centuries, the pseudo-science of physiognomy views the body as a kind of text that can be read like a book if the observer simply has the right viewing apparatus and knows what to look for. The physiognomy practiced by Johann Caspar Lavater is a kind of proto-technological gaze. Lavater was the first to claim that signs on the surface of the body indicated the unseen interior of the body, with a reliability that made these readings a branch of science, alongside chemistry and physics.

Hoffman describes the Swiss pastor's work:

> Lavater's monumental work was titled *Physiognomische Fragmente zur Beförderung der Menschenkenntniss und Menschenliebe* (1775-78), and published

in english as *Essays on Physiognomy Designed to Promote the Knowledge and the Love of Mankind by John*

Casper Lavater, Citizen of Zurich and Minister of the Gospel. Rapidly translated and disseminated in multiple editions throughout Europe over the course of the nineteenth century, it studied the visible contours and surfaces of the body, using drawings,

diagrams, and silhouettes in order to arrive at conclusions about 8 Archival bodies the unseen "interior" of the person, that is, the person's soul or moral character. "This Science enables us to form a judgment of the interior by the exterior," declares Lavater early in the first volume, and again: "one of the chief ends I have in view in this work, is to prove that there is a Physionomy; to demonstrate that Physionomy is true, in other words, that it is the real and visible expression of internal qualities, which are of themselves invisible" (1789–1798, 1:2_, 27). This belief in the body as the outward shape of soul constitutes the body as a visual archive, a source and a storehouse for information that provides a basis for moral judgment.

Hoffman goes onto describe how various technological developments have driven the change seen in representations of the body and affected physiognomy. She argues that the depictions of *individual* subjects, via the appearance of silhouette portraits and the development of copper etching techniques in the 18th century (Fig.2.1), was a significant update to the physiognomic imagery of prior centuries, which

was executed via woodcut, and was based on *types* of people (Fig. 2.2).

Technology's reinforcement of physiognomics can be further seen in the late 19th century photographs meant to document and diagnose hysteria in Salpetriere asylum (Hoffman). Physiognomy had at this point found an ally in 19th century positivists, those scientists who believe that the universe can be fully understood by gathering observed data from it. Positivism maintains that the world operates strictly according to laws, and those laws can only be observed and understood by collecting sensory information from the external world itself. To 19th century positivists and physiognomists the camera would seem the ideal instrument to observe humanity and draw conclusions from its findings.

Hoffman again:

> With the development of photography in the course of the nineteenth century, along with new methods of statistical analysis, the activity of representing bodies and body parts re-newed its claim to scientific objectivity. This new technology of representation constituted the human body in its entirety and in its parts as a source of data that could be extracted through measurement, comparison, and analysis. Photographs of human figures—heads, body parts, contours, and surfaces—provided both the instrument and the material for projects that measured and documented the body. Robert Hirsch (2000) notes that the positivists of the second half of the nineteenth century found the "perfect tool" in photography: it strengthened their ability to ground themselves in the belief that "social progress and human knowledge" could be obtained through "precise

ordered observations, classification, and comparison of external events".

The objectivity of the camera, along with new methods of statistical analysis was used to document attacks of 'hysteria' in the Salpetriere hospital late 19th century Paris. Physiognomists had been using sketch artists to record the distorted bodies of women suffering what modern science would call epileptic seizures. The pencil drawings were later abandoned in favor what was perceived as the perfect accuracy of photographic records. The camera was seen the key to unlocking the mystery of what was seen as mental illness. If the distortions of the body could be fully understood, the internal struggle that they represented could be resolved as well. The complete understanding of the body depended in its impartially accurate depiction via photography. The camera was viewed as 'perfect' instrument of the white male physiognomist to 'prove' his various prejudices (Hoffman) was it viewed this way at the time? Re-phrase: the tendency of women to be hysterical, the primitiveness of the African, the degeneracy of Jews, and the inherently corrupt nature of born criminals. A *photograph* capturing the particular details of a sloping, low forehead and a hooked nose was promoted as 'evidence' of the physiognomist's social biases. The inherent bigotry of physiognomist's 'findings' are painfully obvious today, but when viewing machines are first introduced to the public, part of their appeal is the viewing machine's perceived lack of bias. Endoscopic photographs of the body's interior are an example of this.

In her article he *Technological Gaze in Advertising*, written for the Dublin Institute of Technology, Campbell describes a recent cultural perceptions of the body seen through instruments. She reveals that during the Vietnam era, imagery produced

by X-ray, MRI and CT equipment started appearing in American and European medical journals. These images proved so compelling that they soon spread to mainstream films, television shows, popular literature and magazines. Newer machines were allowing the industrialized west to view portions of the human interior "for the first time". When new scientific images are first introduced to the public, they are initially seen as objective, pure, representations without a political agenda. A CT scan of a skull was initially promoted as being raw, naked reality (Campbell, 4). But the endoscopic images first seen in in films such as Fantastic Voyage (1966) are in fact part of the cold war cultural doctrine. The film serves to promote the power of American technology: not only can 1st world technology explores outer space but it can also explore *inner* space, the deepest recesses of our own bodies (Van Dijk, 234).

We long for machines that will empower us through faithful images of ourselves, exterior and interior, physical and psychological. Part of the fantasy of the technological gaze is that the images themselves are apolitical. We tend to believe these imaging machines are objectively describing the physical world and revealing the hard truth of whatever subject they are aimed at. But all imagery is bound to multiple meanings, and some of the most seemingly clinical imagery contains the residue of narrative.

Norah Campbell maintains that the volume of in utero photographs contained in Lennart Nilsson's seminal work *a Child is Born* (1965) cannot be fully appreciated today outside of the narrative of abortion rights (Campbell, 5). The framing of the subject, the fetus and the dehumanization of the mother herself to an inky black environment leads

a modern viewer to assume that rather than simply documenting a natural event, Nilsson is making a right-to-life argument.

The gaps of information left by viewing machines are filled in with our own beliefs. The technological gaze claims to be objective, but it offers such a constrained view that its imagery is always supplemented by our subjective imaginings. On a fundamental level, viewing machines are used to tell stories about our power to *see*. The more of the world one can 'accurately' document and present, the greater power one has (consider the etymology of 'intelligence', a word descended from a Latin verb meaning to *perceive*). At times, the invisible worlds revealed through seeing machines becomes the backdrop for telling stories, stories that are predicated on a societies power simply to *reveal*, to illustrate hidden truths through 'visual facts'.

Fantasies of Vision

The promotion of an entity's power-vision is enormously popular in the world of advertising and film special effects. Companies spend millions of dollars to create imagery that allow the viewer to perceive events from impossible vantage points (Campbell 7). When discussing the most common ways technology is used to gaze upon the body, we should start with the loss of our own bodies. Hi-tech television advertisements and films frequently invite the viewer to imagine themselves *disembodied*, flying through entire cities transformed into aestheticized data, such as

that seen in the IBM commercial *A Smarter Planet Relies on Data Analysis* (2010, Fig.2.3). This commercial places the viewer inside of a bit of raw computer data. We view the interior of a computer as romanticized cityscape, its buildings made transparent and its streets fashioned into a circuit board. The viewer flies the inside of a moving car to a hospital room in a flash. We not only see the buildings, people, and vehicles of the city but also raw data, in the form of mystically glowing numbers and shapes. An embodied viewer could never hope to soar from locale to locale or be given the gods-eye view of the world that IBM is claiming its data network provides. Being able to teleport, micronize and see through solid objects are among the fictional powers granted by a technological gaze.

The fantasy of surgical medicine that leaves no trace and provides perfect healing is a typical fantasy created by the technological gaze. The enormous popularity of these early works ensured that technological gaze bearing witness to the body would be coopted by common visual culture to point of almost becoming almost unnoticeable. Several successful visual artists have the technological gaze their main subject.

Contemporary Artists

David Webster (b.????) uses light boxes to display images of strange distortions of the human body as seen through machinery. Webster's preferred choice of technological gaze is decidedly medical. He has been making imagery of body parts via

x-ray and displaying them on walls as if they were paintings since the 1980s. In his X-ray image *Six Sacred Positions of Buddha* (Fig.2.4) the human body has become a kind of text. Webster's subject adopt sacred Buddhist hand positions meant to invoke fearlessness, meditation etc. By turning the body into a kind of document, Webster links his art to the history of Physiognomy, the pseudoscience that claims if given the right instrument the body can be literally be 'read' like a text. We can also view stretched and distorted interior anatomy in his digital photo piece *New Hand I* (2003, Fig.2.5). *New Hand* resembles an x-ray but it's coloring is sepia, more akin to 19th century photography than modern x-rays, which tend to be either grey or bluish. We see the bones of an appendage but they twist and spiral outward so abruptly that the 'hand' resembles an aquatic plant. The wild alteration of the hand's anatomy functions as a visual critique of the medical gaze. By distorting the anatomy of the hand while using a clinical x-ray aesthetic, Webster is reminding us that even detached, hi-tech equipment that reveals the body is still malleable. The visions provided to us by machines will inevitably be filtered and distorted to adhere to one ideology or another.

Webster also uses the endoscopic gaze to turn the body's interior into paintings that resemble flattened, formal abstractions. His oil painting *Inactive/Lactating Breasts* (2000, Fig.2.6) resembles a late 20th century abstract painting. We see flat, white and purple blobby shapes against a field of intense pink. The title informs us that this painting displays the cellular differences between a woman who is nursing and one who is not. Since we know nothing else of the two women being depicted we feel an urge to fill-in-the-gaps by creating a narrative. The inactive cells on the left appear chalky and

shriveled compared to the voluminous violet cells on the right. I cannot help but assume the lactating cells are 'happier' and healthier than the inactive (i.e. lazy) cells on the left. To me this painting presents us with a scientific view of biology but also privileges motherhood above being childless. Webster is illustrating our tendency to assign a narrative to even the most detached scientific imagery.

For his 2003 exhibit, *Nervous Disorder*, he displayed paintings of various bodily processes, some banal (*Digesting Bacon* (2000), some disastrous (*Heart Attack* (1998)). All of the paintings are highly representational, but they are of such a microcosmic view of the body, that the cells and tissues resemble playful, color-field abstractions (Axel). Each of these conflates the technological gaze of the microscope and abstract paintings of the latter half of the 20th century. Webster is arguing that the apparently objective imagery captured by ultrasounds and endoscopes is just as vulnerable to interpretation as an abstract painting on the gallery wall. A bodily growth that seems cancerous to one surgeon will be interpreted as benign when evaluated by another doctor. Webster is only one of many successful contemporary artists who reimagine the body through the employment of a technological gaze.

The technological gaze is also seen the work of the husband and wife team of Lilla LoCurto (b.????) and William Outcult (b.????). Their first collaboration, *Self-Portrait* (1992) established what would later become their most recognizable avenue of content: the frailty of the body as seen through a technological gaze. A 1997 collaboration with MIT, the United States Army and two mathematicians added what would become another constant element to their work: body scans (Posner). The piece,

selfportrait.map (1997, Fig.2.7) depicted the photographs of the naked bodies of the artists themselves, but flayed and distorted out of three dimensions and onto two. This speaks to the reduction and simplification of human subjects seen in psychological tests such as the PCL-R. What the viewer witnesses in LoCurto and Outcult's art is the representation of people becoming informated into shells of their former selves. The hollow figures that appear in the couple's video speak to the failed 'science' of physiognomy, which rather than reveal the interior of a person, simply reduces them to merely superficial, surface information. This piece also depicts a failed attempt at the complete mechanical mapping of a person. In *selfportrait.map*, LoCurto and Outcult have attempted to show so much of the body simultaneously that the result is a confusing mass of limbs and hair. By showing us *everything* at once, we can understand very little of the figure being shown, similar to the incomprehensibility of information being generated by big data firms. There is simply too much visual information to make sense out of it.

An excerpt from their website pertaining to their videos:

> The representation 3d objects on a flat surface has been a concern for artists through the centuries and with the advent of computers ever more complex objects could be digitally recorded and transformed, altering our sense of space and physicality….
>
> …Human frailty has been an ongoing theme for us an manipulating the spatial coordinates of these three-dimensional photographs contributes a sense of de-

> realization to our work, making the figures we use both anonymous and universal…The cameras of the scanner we use only record external information and thus the figures are represented as hollow, three dimensional objects. This lends a sense of de-realization to the resulting images, the feeling that nothing is real. (http://locurto-outcault.com).

Their subsequent projects *Thinskinned* (2004, Fig.2.8) and *Timeline* (2005) also feature bodies being violently exploded and sliced into geometric pieces of data. These technological photographs exhibit impossible perspectival conditions that recall the disembodiment of the viewer mentioned earlier by Campbell. Locurto and Outcault's imagery shows the viewer every side of the body simultaneously, an impossible feat for our normal senses. In this digital approach to early Cubist objectives, we find ourselves observing the body's exterior from above and below, the front and rear, in a dynamic arrangement of flesh-bursts. It is as if our eyes have become detached from our heads and are floating around the room with the body on display, barely able to make sense out of the mishmash of anatomy .Our viewpoint is just as tortured and flayed as the bodies themselves, the vision of the viewer is receiving the martyrdom of Saint Bartholomew. Being reduced to a skin (flaying) has long been equated with torture in mythological depictions in western painting. Prominent examples include Michaelangelo's (1475-1564) alleged self-portrait in his *Last Judgement* frescoe (1541) and Jose de Ribera's (1591-1652) *Apollo Flaying Marsyas* (1637). For a person to lose their volume and be reduced to a husk is to become a powerless caricature. Art expressing both wonder and paranoid skepticism of technological advances is found in

the next artist I shall discuss in relation to my project: the British enlightenment painter Joseph Wright of Derby (1734-1797).

Prior to Wright, paintings of candlelit interiors had been prominent for hundreds of years. One recalls Carravaggio's *The Calling of Saint Mathew* (1600), and George De la Tour's (1593-1652) *Penitant Magdelene* (1636) but these scenes are almost always religious. When De La Tour does paint a secular genre scene of gypsies or card cheats, the dramatic tenebrism found in his biblical works is noticeably reduced, the illumination flattened. Only deeply felt Christian subjects warranted Caravaggio's and La Tour's most spectacular Chiaroscuro effects. Wright's innovation is to employ theatrical lighting that had previously been reserved for dying saints and newly born Christ children to display laboratory experiments and public scientific lectures. While it may be tempting to label Wright as simply deifying the industrial revolution by using reliable Counter-Reformation lighting strategies, there are deeper issues being dealt with. For instance, *Experiment on a Bird in an Air Pump* (1768, Fig. 2.9) depicts a small gathering of adults and children observing the suffocation of a dove. While some of the on lookers are fascinated, others react with horror and concern for the dying bird. Wright presents the wonder and cruelty of scientific observations (Dominiczak 75). He is painting the immorality inherent to societies need to view *everything*.

We are endlessly fascinated by the empowerment that comes with being able to see the once-invisible. For hundreds years western societies have developed technologies that will allow the viewer to see faster, more deeply, and farther. But these optical devices always seem to obscure as much as they reveal. Viewing

machines suffer from a myopic loss of context, whether it is a radar screen that cannot differentiate between civilian and military aircraft, a personality test that is given to subjects that have had to adapt to life in a penitentiary, or the endoscope that penetrates tissue deeply but narrowly. To compensate for the lack of context inherent in technical images, we assign narratives to them and interpret them subjectively. In the end, even the most 'factual' image is in many ways form of *story-telling*.

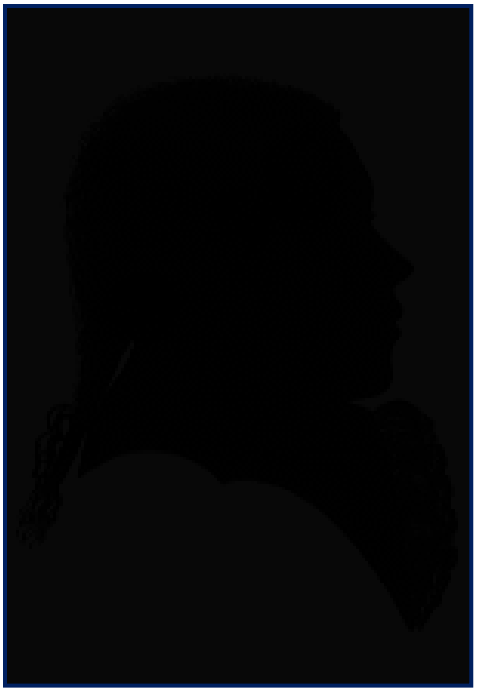

Figure 2.1: Ludwig van Beethoven as a boy (18th century)

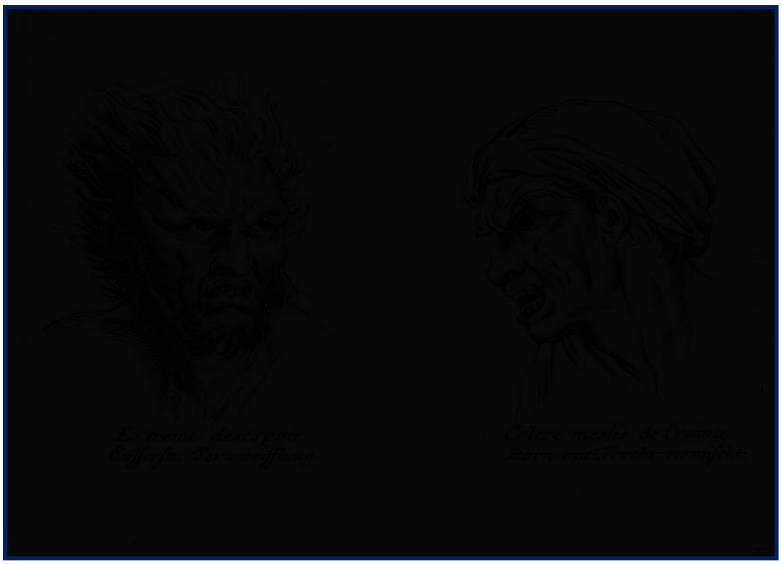

Figure 2.2: Illustration from an 18th century Physiognomic text

Figure 2.3: IBM, *A Smarter Planet Relies on Data Analysis*, (2010)

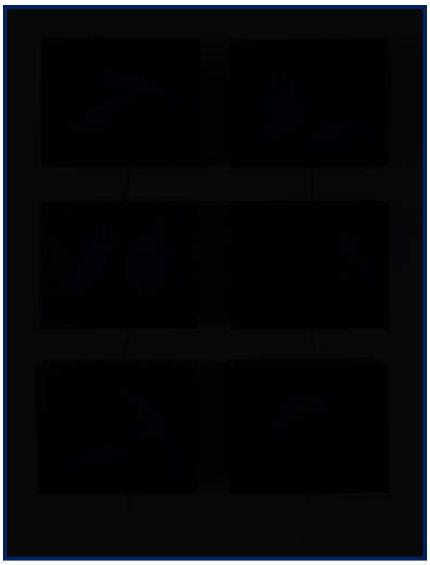

Figure 2.4: David Webster, *Six Sacred Positions of the Buddha* (1995)

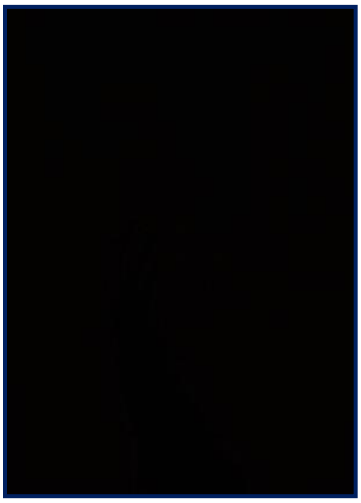

Figure 2.5: David Webster, *New Hand I* (2003)

Figure 2.6: David Webster, *Inactive/ Lactating Breasts* (2000)

Figure 2.7: Lilla Locurto and William Outcult *Selfportait.map* (1997)

Figure 2.8: Lilla LoCurto and William Outcult, *Thinskinned*, (2004)

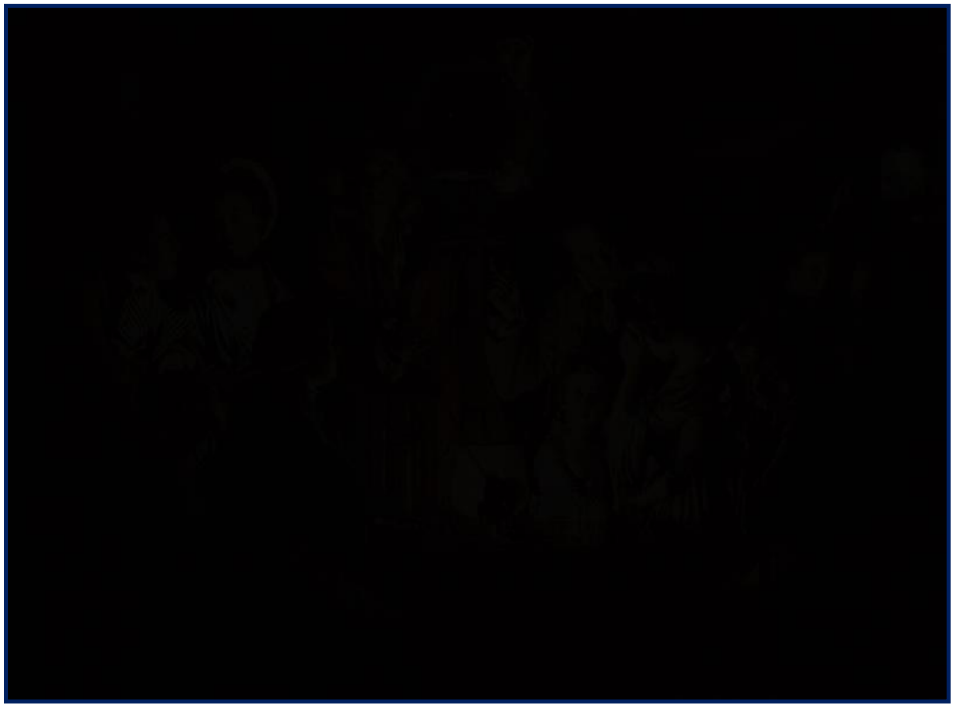

Figure 2.9: Joseph Wright of Derby, *Experiment an a Bird in the Airpump* (1768)

Chapter 3: *Facticities*

Full fathom five thy father lies;

Of his bones are coral made;

Those are pearls that were his eyes;

Nothing of him that doth fade,

But doth suffer a sea-change

Into something rich and strange. - William Shakespeare, the Tempest, Act I Scene ii

***Facticity* Series**

The intention of the imagery in my project is to merge several influences: the objectivity of photography, the baroque lighting of the enlightenment painter Joseph Wright of Derby, and a digital view of the body provided by modern imaging equipment. My imagery consists of digital body scans light virtually in a computer program before being printed on translucent paper and lastly backlit.

The initial phase of my process consists of capturing three dimensional data of a person's body. I instruct my subject to assume a certain pose and slowly wave an infrared sensor over his or her body. The poses I have my sitter adopt are related to archiving including: typing (a reference to written language described in chapter 1), adjust camera tripods (alluding

to the technological gaze mentioned in chapter 2) and dig with shovels (in an effort either to preserve something underground or unearth a valuable previously hidden).

The scanner I use sends out invisible beams of infrared light that stop when they strike a surface in order to create a point in space, it is essentially measuring the range of thousands of points across the terrain of the sitters body. The points in space generated by my scanner are concurrently triangulated into a volume via software that is connected to the scanner. This digital volume begins as a vague, blob-like form but as more and more points are collected, definition increases and a human body begins to appear. The volumes generated by the scanner are digital casts, captured from life. Traditional body casts are made by wrapping plaster around a sitter, removing the plaster shell and casting into more plaster in the cavities of the shell (Fig.3.1). In my images, instead of plaster, points in space are calculated along the surfaces of my sitter and a digital husk of his or her body is created.

The digital cast is a three dimensional record of the sitter's pose. In other words, it is a 'visual fact' about their body at a particular moment in time. Moving the scanner to 'view' the sitter from different angles helps it to better understand the forms it's seeing and consequently the scan takes on higher and higher resolution. The more ways the device scans the person, the more accurately it understands their volume. However, in order to make a comment on the limitations of viewing machines (as discussed in chapters one and two) I have elected to constrain the viewing angles of my scanner, this leads to computer models of the sitter that have an abundance of detail in certain areas and gaping holes in other areas. The gaps in the figures allow us to see that these are paper-thin husks of humans, their depth has been removed. The voids and thinness found in my figures are meant to parallel the fundamental problem with all optical devices: myopia, that is to say the enhancement of a certain *kind* of vision at the cost of others. Previous examples of this were the accidental shooting down of

Iranian Flight 655, the narrow field of view offered by endoscopes, and 'big data's' loss of social context mentioned in chapter two. Viewing machines that reveal a hidden truth always seem to obscure at the same time. For this reason I have elected to present human bodies as digital casts that have a wide range of detail; some patches are captured with utmost precision and appear lifelike while other portions of the body are hardly scanned at all and as a result are unrecognizably vague.

Once I am satisfied with the degrees of precision and ambiguity in the sitter's digital cast, I import it into a 3D rendering software, transform it visually into a material such as stone, and light it virtually. The package that I use, 3D Studio Max, allows one to disguise geometry as virtually any substance imaginable. In an effort to speak about the conclusiveness, inflexibility and durability of 'visual facts' and certainties, I have chosen to transform my digital casts into adamantine materials such as marble, granite, and gold. I also introduce a virtual light source that bathes this digital casts in a warm glow, like that of the candle light seen in Joseph Wright's paintings. Once I am satisfied with the image, I import it into Photoshop and add subtle elements to make it seem photographic: a slight film grain, a dark vignette along the edges of the image, a depth of field effect, and a small amount of glare. These final touch ups are meant to shift the image away from the abstract, strange world of the virtual reality and ground it in the visual language of the camera, an optical device that has a long history of proving 'visual facts': Muybridge's documenting a galloping horse, racist physiognomy studies etc. The camera has long been associated with visual 'evidence'.

Finally this image is printed in ink onto a piece of translucent paper, 36 inches by 36 inches. This print is then installed in a light box and illuminated from behind by several rows of long-lasting (11 years of constant use) LED lights. My process begins with the invisible, infrared light of the digital scanner and comes almost full circle to the visible light of the LED strip. Light

itself has traditionally been used as a metaphor for knowledge in the west. "Illuminated" manuscripts claim to reveal divine information. The age associated with the greatest advances in science is referred to as the "Enlightenment". A flash of insight may be referred to as a 'bright idea'. My decision to backlight my imagery and place the light boxes in a darkened room was also meant to reference X-ray displays (Fig.3.5). These displays are emblematic of the technological gaze's observation of the body, a gaze meant to find normally hidden visual facts about us.

At the core of this work is the conversion of invisible, mysterious, infrared energy into a perceivable, semi-tangible luminance. What was previously unknowable light source is 'explained' by our ability to see it with the assistance of digital imaging. The subjects themselves, amorphous humans have been calcified and stratified into the 'known' (at least visually). In this collection of images, digital viewing technology is borrowing the authority of the camera in order to provide a convincing illusion of the explicit, the certain. Likewise, the symbolic image of translucency seen in the waxy marble figurines has also been made literal by my decision to print on diaphanous paper and light from within.

'Permanent' Materials

There is a long history of civilizations using durable materials such as gold, granite, and marble to display their longevity. Ancient artifacts such as the Victory Stele of Esarhaddon speak to us about as much about his perceived immortality as his military prowess. Bronze

doesn't corrode from oxidization the way iron does, and piece of marble (if kept clean and indoors) will undergo little perceivable change over hundreds of years. The Washington Monument obelisk is composed of marble, granite and gneiss stone. These substances are meant to display the *eternal* nature of the republic. For this reason I have decided to compose my figures of out of marble, granite, and gold. These are all substances historically associated with the propaganda of durability, rationality and authority. The pixel-like edges of my figures speak to their digital nature (a discussing of the fragility of digital information can be found in chapter one). My figures possess a subtle geometric overlay that resembles an object created by a CNC router (Fig.3.3) or an item born in a 3D printer (Fig.3.4). The bodies in my images appear to be digital shells made from minerals and metals. The conflation of fragility and strength is meant to reference the imagined durability of 'visual facts'. Also, the hardness of stone and metal is meant to allude to the *certainties* provided by seeing machines.

Marble Figure: *Facticty_02*

This light box features the image of marble fingers pressing keys on a stone computer keyboard (Fig.3.6). The marble is cream colored, extremely translucent, and strewn with reddish veins that recall human blood vessels. The striking translucency and veins running throughout the stone confuse the boundaries between the delicacy of the body and the strength of the stone. We are torn between thinking this object is delicate or indestructible. In creating an image of something at once strong and delicate, I have attempted to parallel the strengths and weaknesses of 'visual facts' (examples of this can be found in chapter one).

We seem to be looking at the digits of a person in the process of fossilizing. The fingertips are fusing or dripping into the keyboard, the operator is literally becoming indistinguishable from his or her tool. The hands do not appear to be anxious about this stony metamorphosis. She appears to have worked peacefully until the ossification was complete. While a person turned to stone traditionally denotes tragedy (King Lot's wife, Medusa, Pompeii victims etc.), here the mineralization seems peaceful. The viewer is invited to speculate that instead of being a victim of exterior forces, the figure is an agent her own sea-change. It may be that she is actually causing her own mineralization by her digital work. Here I have attempted to comment our relentless pursuit of facts and certainties as discussed in chapter one. The lack of discomfort this figure is feeling is meant to mirror our welcoming of anything conclusively proven.

Granite Figure: *Facticity 04*

This figure is composed of a very rough rock lit from bellow by dim, orange light. The material itself could be seen as brown granite, but in certain areas it is flaking off in a way that bespeaks of rust. The rock or rust appears to be badly eroded by wind or water and the forms are losing their definition, making it difficult to identify them with certainty. He or she is adjusting some sort of viewing machine (Fig.3.7). They could be trying to ensure that the image they are capturing is level, sharply focused and as 'rational' as possible through the aid of a

tripod. The optical device the figure is calibrating is meant bring up the issues of the technological gaze found in chapter two. We are placed low in the scene, looking up at an ancient stone colossus operating a viewing machine.

The soft orange lighting suggests the candlelit interiors of enlightenment painter Joseph Wright of Derby (1734-97), such as that seen in *A Philosopher Giving a Lecture at the Orrery (1765)*. By appropriating a lighting cue from an enlightenment era painting, the image is placed within the tradition of scientific romanticism discussed at the end of chapter two.

Landscape Figure: *Facticity 06*

This image is of a boulder formation in either the very early morning or the last minutes of sunset (Fig.3.8). The foreground is occupied by a swelling hill of craggy rocks while the background contains strange vertical eruptions of stone that resemble either trees or nuclear mushroom clouds. These 'trees' are cracked and shattered by a digitally precise network of triangular fissures. The cracks in the 'trees' reveal the sky behind the vertical forms, informing the viewer that the 'trees' are as thin as glass and presumably just as weak. This geological scene has an apocalyptic element, as if we are witnessing the destruction of the earth itself. The viewer is facing the sun directly, causing a flash of glare to streak across a portion of the image.

In this image I have attempted to balance the apocalyptic with the picturesque. The glowing sunset is partially meant to link the image with the idealized, romanticizations of what

seeing machines can provide for us (detailed in chapter 2). But also to continue the archival component seen in the other images. My other scenes feature figures in the act of documenting. In this particular scene the environment is typical of that which is both romanticized and recorded: a sunset.

The decision to show so much destruction of a digital nature in this image was based on my research into the fragility of certainty in the form of stored information discussed in chapter one. Online information is popularly perceived to last forever but it is actually constantly eroding, much like landforms.

Gold Figure: *Facticity_09*

This image is set in a world made of gold. Looking through the eyes of the figure, we see a pair of golden hands collecting hair from a brush into a torn bag (Fig.3.9). The metal surface of the figure is pebbled with small bumps. This rough finish leads the viewer to suspect that the person was flash-cast in molten gold while they saving the hair. I choose to have the material of this figure mimic gold because of the incorruptible properties of the metal (its resistance to rust, acids etc.). It is also favored by financial advisors as a 'reliable' investment in uncertain economic times. In my thinking, the constancy of gold invokes the longed-for permanence of visual facts detailed in chapter one. Also, there is a correlation between the malleability of gold and the social aspect of 'visual facts'. Facts are never simply objective data, but instead serve a variety of political agendas (as discussed in chapters one and two). In this way, 'visual facts' are pliable, malleable information.

Beyond the hairbrush are golden walls which are faceted by a triangular pattern. The patterned geometry of the walls and figure is disturbed by a slightly grungy texture, as if the perfection of the triangular geometry was corrupted when it became transformed into gold. Instead of smoothing out the geometric surface by rescanning this figure from different angles, I have decided to leave it rough. This was done to preserve the scanned body's digital nature. By allowing the scanned body to look artificial, I mean to recall the artificiality of systems used to describe the body explained in chapter two.

This image is unique in that we are viewing the scene from the hair collector's perspective, none of the other scenes a viewed in first person. Since we see both hands simultaneously, one wonders how this picture was taken by the same person being viewed. Since presumably the individual doesn't have an extra pair of arms to operate the camera we must assume that this is a 'trick' photograph trying to convince us of its authenticity by using the device of first person format. This image is inspired by the long history of using cameras to 'prove' absurdities: spirit photographs, racist physiognomy studies etc., as described in chapter two.

The hair strands being collected invokes several historical precedents associated with the archival qualities of hair: Victorian hair wreaths meant to remind one of friends and honor the dead and hair used as DNA evidence in criminal trials. The use of hair in this image is meant to act as a *record* of the body. Control of hair itself is a struggle for many. We never seem to have enough where we want it and always have a surplus of it where we find it embarrassing. This struggle is intended to correlate to the effort needed to preserve (and occasionally dispose of) our 'visual facts'. Also, our constant online presence leaves trace records of our activities which we may find impossible to actively erase. In my thinking, the paradox of desperately

trying to save information while also constantly producing embarrassing amounts of it is also found in our relationship to our own hair.

Conclusion

Throughout our lives we hunger for certainty: the certainty of our records lasting, medical and psychological certainties, and the certainty of systems that can correctly diagnose and predict human behavior. In order to obtain these certainties we use artificial systems and tools (digital archives, physiognomy, and predictive analytics) to view ourselves and the results are always flawed. The view provided by seeing machines and seeing systems may be ephemeral, or severely limited in scope, or prone to politicization. My *Facticites* project is meant to investigate these flaws and generate imagery out of them. These images are meant to embody the seduction, as well as the fragility and constraints of mechanistic ways of seeing.

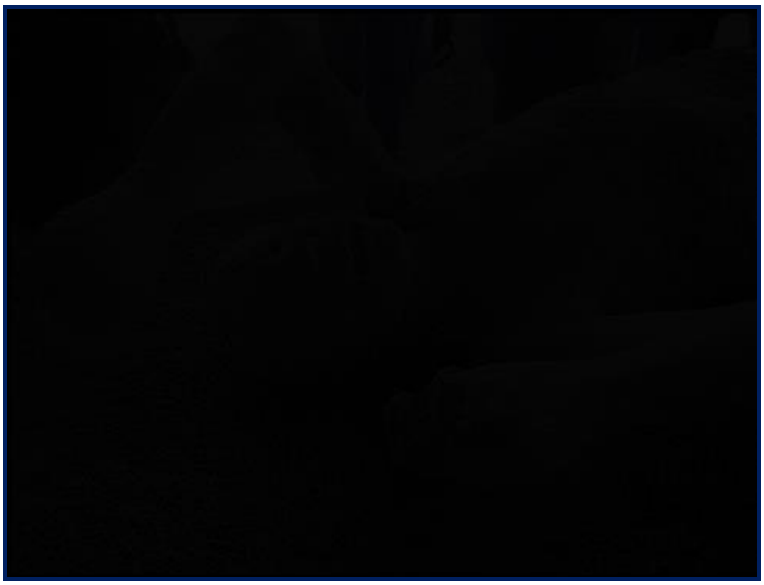

Figure 3.1, Pompeii Victim, Plaster Cast

Figure 3.2, Maker and title unknown, CNC routed wood

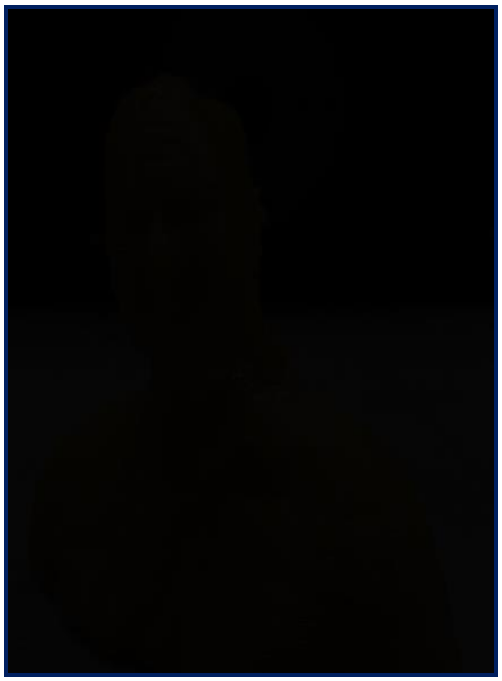

Figure 3.3, Maker and title unknown, 3D print

Figure 3.4, *Facticities* Installation View, 2013

Figure 3.5 *Facticity_02*, Virtual Photograph on translucent paper, 2013

Figure 3.6, *Facticity_04*, Virtual Photograph on translucent paper, 2013

Figure 3.7*, Facticity_07*, Virtual Photograph on translucent paper, 2013

Figure 3.8*, Facticity_11*, Virtual Photograph on translucent paper, 2013

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