48-SST-TP02

PORTRAITURE OF THE EXPERIENCE OF TIME

An Interactive Qualifying Project Report

submitted to the Faculty

of the

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfillment of the requirements for the

Degree of Bachelor of Science

by

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Date: March 13, 2006

1. Portraiture
2. Experience of Time
3. Photography

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Abstract

Time is a central element in modern society, traditionally examined as a quantity only. This IQP looked at the common social experiences of time, a question pursued through observation and research, to find subjects and key ideas to be expressed. The final goal, a portrait of social experiences of time was presented as four photographic essays, which worked to provoke the viewer's own thoughts and experiences. The photo-essays showed a spectrum within time, between the mechanical and biological interpretations.

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EXECUTIVE SUMMARY

Time is an under analyzed, underappreciated, and under realized subject, especially in modern culture. It is everywhere; in our scientific research, in our daily life, our work, our play, even in our development as individuals. It is a key element in our modern social structure, but it is one that is rarely researched.

The literature on the subject of time is very broad. It varies from historical developments, from the first Egyptian water clocks, to the delicate escapement watches, through the realization of the periodicity of the pendulum, and finally to the quartz crystal and atomic clocks we base most of our modern time-keeping on. This is not the only analysis of time, however.

Scientific studies have looked into time as an absolute, unbending quantity, as well as a quantity that can be warped at the speed of light. Time is measured on different scales throughout academia, from the short time spans of chemical reactions to the long spans of evolution or astronomical phenomena. Research has been done into how humans and animals learn time and how it affects them. With this comes work into the rhythm of life, and the biological patterns dictated by time.

Philosophy has weighed in on the subject, opening up the concepts of time with a variety of different approaches. While most of the scientific research focuses on physical and biological time, there is work into many other "types" of time. This includes metaphysical time, looking at larger patterns, personal time, the warping of time with respect to one's self, on through sacred, profane, micro, and synchronous dynamics of time.

All of these dynamics combine to show a great variety in the possible interpretations of time. It is something that is experienced by everyone, and as such, there is an infinite number of

experienced of time. In fiction, many of the fantastical ideas have been explored. One fictional excerpt which intrigued me, and spurred the main question of the project, hypothesized a world where time was seen either in a purely mechanical, or purely biological sense, and detailed the difficulties in the interaction between the two. This led to the creation of the question for this project; how do we experience time? Is it in the mechanical, the biological, or in another sense entirely?

With this question phrased, the methodology had to be created to develop the portrait of time. The published methods of portraiture had to be adapted to look at the social aspect of a technology, not the examples of schools and individuals, which had published precedent. One of the key ideas that persisted from portraiture is the idea to look for the good, not for the bad in a given situation. This directive helped to shape the feelings of the portraits, to make them provoke thought about one's own interpretations of time, not to insult one's experiences as narrow or different from others.

The basis of the methodology in this project was to observe the effect of time on social dynamics and interactions, to see how time made a different in day-to-day life. This was a challenging toolset, as it required me learn to see time in everyday situations. It was in this that I observed first-handedly the individual responses to time that allowed me to build ideas and concepts for a portrait of time. By being a vigilant, engaged observer in many locations of social activity, including coffee shops, airports and classrooms, I was able to gain insight towards the common experiences of time.

With this, I was able to create a method to capture this experience as a portrait. My medium of choice was photography, initially due its familiarity and later due to the element of timelessness involved. Through research, I was able to find precedent for using photographs as a

medium for capturing atypical subjects, such as time and sound. With this, I was able to review my observations and draft concepts for photo-essays, based on their practicality and their potential to engage and provoke the viewer. The timeless nature of photographs let me approach the central subject in a number of different ways, to broaden the impact of the portrait.

The final portrait was presented as four photographic essays, intended to be displayed in a series. Each was focused on everyday objects; a pocket watch, alarm clocks, a playground swing, a series of footsteps left in the snow. They were intentionally composed without individuals in them, allowing the viewers to project themselves into the image. The subject of time was approached both directly, through photography of timepieces, as well as symbolically, through combination of progressive photographs. Through the chosen layout, they formed an artistic "spectrum" of time, from the strict mechanical sense of the pocket watch, to the natural biological rhythm marked off by footsteps in the snow.

Through the research of time and the creation of the portraits, I was able to draw conclusions on the social experiences of time. While time can be seen as a purely mechanical or biological quantity, it is better seen as a spectrum between the two. Time is not a two-sided coin; it is a vast field which can be seen through thousands of different lenses, all of which produce a different individual experience of time. The two approaches serve more as endpoints, between which individual interpretations lie. Within this spectrum, there are some constructions which are commonly favored, but none which are universal within any society.

The final photographic essays fulfilled the goal of provoking the individual to think about time. While it is difficult to encourage change in any preconceived notion, it is possible to spur thought on a subject. Since an individual's opinions on time are often overlooked by the

individual themselves, the photo essays served well to bring the subject into the open, which then encourages the viewer to apply some level of consideration to the subject.

This IQP also served as a learning experience in the development of a methodology. The rigorous formulations of portraiture had to be adapted to use on technology, and even further onto the often hidden social aspects of time. For the portrait itself, the decision of medium was a key one, and influenced the final result and the conclusions developed within the portrait. It was also a challenge to confront individual bias towards the subject of time. As everyone has an existing idea of time, it is difficult to present the subject subtly; it is more effective to show time as a strong theme and force the viewer to analyze the portraits according to their own views.

By looking at the experience of time, it has given me a better understanding of how society interacts with technology. The physical clock is irreplaceable in modern culture, but there is a further dynamic which is often unrecognized. The inherent element of "body" time is equally important in daily life, from life cycles to the tempo of footsteps. The shared cultural experience of time is then a combination of these two interpretations of time.

1. INTRODUCTION

In modern Western culture, life is ruled by the clock. From the alarm clock which wakes us in the morning, to the lunch hour at noon, to the rush hour gridlock, the clock defines when we may do what in our lives. We multitask to fit more things into our time, and we micromanage to ensure that everything that we fit in, we finish. It has become a cultural obsession, this phenomenon of time. But in its importance, there lies a need to have a better understanding of it. Time, as we know it, is a technological extension of the natural rhythm of the world. This strict usage of time is, however, far from the only form of time.

The planet Earth has a fundamental rhythm. The day has always been understood, from one sunrise to the next, or from any other reference point. From there, time may be divided, with from "a day" into "day" and "night", hours, minutes, and seconds, just as well as time can be multiplied into a year. The year is a more abstract unit, but it is measured in the same manner, from one reference point, such as the first snowfall, to the next. With increased technology, we can track these elementary units more effectively, to create the current time system.

This natural time has become separated from the rhythms upon which it is based. Historical quirks, such as the lengths of the months due to the whims of ancient emperors, do nothing save confuse schoolchildren forced to memorize a rhyme. Nor do the numbers twenty-four and sixty hold great significance to us, beyond the divisions of a day; why do we still cling to them so religiously? If a human is placed in an environment devoid from the rhythms on which we base our days, such as in a cave, or away from the Earth itself, why will they still try to cling to a system made simply for ease and reference?

We take time to be a necessary element in an increasingly complex world. Children are taught to read time from an early age, watching the big hand and the little hand spin around the

clock face, neatly dividing their day into hours, minutes, and seconds, preparing them to wake up on time for their first day of school. But why is it such a necessary? By defining time via the twelve-hour clock face, we create a physical force in our lives, one that would not exist otherwise. This material interpretation of time, where every second is a physical quantity, charging forward at a constant rate, shapes modern society. This physical quantity becomes more abstract with the development of a digital clock, which will regularly mark off the passage of time without any reference to the natural cyclical character of time, as represented on the circular clock face.

Time, on the larger educational scale, is taught as the simplest of things, as an infinite quantity, akin to a number line extending to infinity. This makes education in history easier, piling event on top of event, like a deck of cards. Mathematically, time may simply be added, one quantity to another, as if one was purchasing apples at a grocer. Yet this ignores many facets of time, even the varied perception of time inherent from a young age. If a child or anyone becomes bored in their class, it will inevitably feel as if the class is becoming longer and longer, until they are obsessively checking their watch, only to be disappointed when but a few seconds have passed. This kind of "dilation" of time is only scientifically accounted for when traveling near the speed of light; how is this taking place in the mind of a child in class?

As time becomes more and more a part of our lives, it becomes more humanized. One of the strongest examples of the desire to anthropomorphize time is the term, "to kill time." While synonymous with "wasting time", it turns time from being a quantity into something alive, something with feeling and thought. Time is then less of a dangerous thing; if we think it might have feelings, maybe we will have the time to finish a job or catch a train. We imply a level of

forgiveness within time. Is this a misunderstanding of the system of time, or is it an intentional warping of the concept, to account for the apparent non-relative essence of time?

Lastly, when we begin to think about time, it is easy to assume that the time we know is a universal time. After all, the system of international time zones, centered off of Greenwich, England, encompasses the entire globe. But does that mean that everyone prescribes to that system of time? What about the cultural "feel" of time; is it not true that some countries move "faster" that others? Take for example, the French society, where it is common to break from the day for a long, leisurely lunch break, and to enjoy a meal consisting of many gourmet courses. Compare this to the American norm of a forty-five minute lunch break, highlighted by a sandwich brought from home, often turned into a "working lunch", affording one no break from the day. Can these two be said to use the same constant clock?

These questions beget study, and this problem has consumed the time of philosophers and other researchers throughout history. However, for all of the analyses made, for all of the theses laid on the nature and interpretation of time, they make no change on the beast of time as it runs free in the world. It is this beast which requires observation. As time influences all of us from an early childhood onwards, it merits study in a form beyond traditional philosophical analysis, and beyond physical definitions and quantization.

The question of the definition of time is not a single question. In fact, the mere idea encompasses an infinite number of questions. Why is it that time may crawl, or race? Is time money? What time is it, really? Is time linear? Is it cyclic? Is it possible to reach a timeless state through meditation, as many gurus believe? What is the past, and what is the future? There are simple explanations, based on our current interpretation of time, but they far from sufficient.

These are all social questions, in essence, as time is a natural development which now serves to make social interactions more structured and regular.

In the creation of this portrait and in the application of our methodology, a fundamental question is posed; what element of time is to be the subject of the portrait? Is it the scientific time, defined to the nanosecond via the atomic clock? Is it the cultural time, which may drag, fly by, or be wasted? Is it a historic time, measured by the passing of events, not by regular, periodic means?

The goal is, instead, to look at the juncture between modern society and time. This is seen primarily through the technology of time, the extensions of the concept into physical means. The clock, foremost, but also the planner, the TV guide, the family calendar, even the dates of birth and death seen on a gravestone are the technologies of time. These are all solid mechanisms of time; are there other ways to see this natural quantity? Can it be seen through our bodies, through heartbeats and breaths? It is, at times, a grayed border between the concept, the technology, and the information conveyed by it, but it is this border which will be the focus of study. The strong analytical tools of portraiture can be effectively used to look at the social aspects of a technology, not just the social aspects of an institution. By graying this border, between technology and more humanistic developments, we may understand more the social interplay which is constantly developing

As mentioned before, philosophical and scientific studies on the essence, nature, and definition of time have done little, if anything, to affect the common practice and activities of time. Instead, the goal of the portraiture of time will be to provoke, to instill thought and curiosity about nature of time and its affect on our lives. By graying borders which have previously been thought to be absolute, such as that of technology and culture, as well as those of

different interpretations of time, a curiosity may be sparked about the interplay of time within modern culture. It is within our culture that we experience time, and it is that experience which is worthy of study.

2. LITERATURE REVIEW

2.1 Introduction

Time is an intertwined element in modern society, an invisible cornerstone upon which our culture is built. It is with time that we have built everything from the history of our world to our day to day routine. It is a hidden quantity, which must be carefully excavated and studied to see the dynamics of this key element in our culture. We may look at the basic, fundamental elements of time, different approaches to the problem of time, as well as the ways in which we think and teach time. With this solid basis we may progress onto more revealing analyses of time.

The most basic elements of time are obvious to us, just as they have been obvious for most of our conscious lives. Time is something we experience, something we live in. One of the first elements we encounter of time is the rhythm of life. Everything follows a pattern, of eating, sleeping, even the tempo at which we walk, and this helps us understand the abstract idea of time. From this rhythm comes a speed, where we understand it takes time to move somewhere. As we mature, this speed increases from crawling to walking, and later, from running and driving. This speed helps us understand the mutability of time, and the flexibility we have within it. There is also a social element, where time is instilled in us, so that we might communicate more smoothly among each other. Children are taught the concept of a larger time initially through the fairytale preamble, "Once upon a time…". Lastly, time is the basis for the most simple of philosophic debates, as well as religious constructions. The "time before birth" and "time after death" are the greatest mysteries in the world, and have encouraged questioning for years (Elton 1978)

2.2 History of the Clock

After the natural development of time in our life, we seek a method in which to trap it. Time is two things at once, both an instant and an interval. A clock only serves to measure intervals of seconds, minutes, and hours. For a clock to denote the instant, it must be calibrated off another known instant, a highly unreliable system. The divisions of the clock itself were a natural development, fractioning off an average solar day and marking it off with the most advanced clock available.

The development of the clock itself shows one of the most constant problems of humanity, to accurately describe time. In 1600 B.C., the height of Egyptian technology was water, oil and sand clocks, which would slowly dribble down material to tick away time. This method was refined, and finally made a large improvement in the 13th century with the development of escapement gear movements, which made timekeeping now a mechanical procedure. This was far from perfect, and was improved again in 1581 by Galileo with the discovery of the constant period of the pendulum.

While the pendulum was much more accurate than the gear escapement, it was ineffective for moving ships, spurring the British crown to offer a hefty reward for anyone to create a clock accurate to within three seconds a day which could operate consistently even under constant motion. This was used to advance the science of navigation, because with a clock this accurate, one could determine their longitude to within one half of a degree. This challenge was met in 1714 with the chronometer. The next great leap of technology came in 1843 with the world's first electric clock. However, since then, most of these great advances have been taken for granted, and eclipsed by quartz crystal movement and atomic cesium clocks. Time is now consistent to less than one second every 3000 years, and contained within a wristwatch (Elton 1978)

2.3 Meta-Time

However, the time marked off by a clock is far from the only form of time in human life. Edward Hall recognized "Einstein's time", as simply what the face of the clock reads. However, he establishes that by participating in many people's lives, an individual participates in all of their personal times. He saw time in general as a much more diverse pattern, one which could only be denoted by a diamond mandala, centered on "meta time".

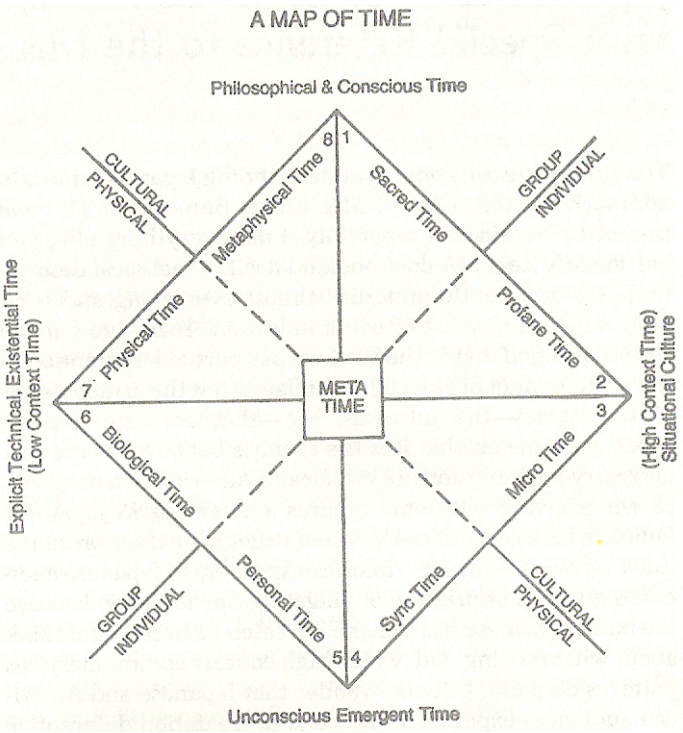


Figure 1: Hall's Map of Time

This mandala denoted eight major divisions of time. Physical time, defined most explicitly by the motion of the sun, and the solstices on earth, is Newton's most absolute form of time. When combined with biological time, a category of natural living rhythms like circadian rhythms, we form Explicit Time, one of four quadrants of the mandala. Conscious, Philosophic Time is the next quadrant, and is comprised of metaphysical time (that of extrasensory experiences and déjà vu), and sacred time (that of story time, magic, and daydreams). Very near

by in the diamond is profane time, the hours, minutes, and seconds which define our lives, and micro time, the divisions enforced by culture, which together form Situational, Cultural Time. The last quadrant is that of Unconscious, Emergent Time, formed of personal time (the subjective descriptions, that time may "fly" or "stand still") and sync time (the synchronicity with the world). This mandala representation helps to broaden our view of time beyond just that of the twelve-hour clock (Hall 1984).

The natural time referenced by Hall in the Explicit Time quadrant is a very solid, physical quantity. Ages and patterns are very real, definable units. The age of the earth is a very classic question, a question which was assumed answered by the Bible by a great number of people for centuries. When Newton's calculations of the age of the earth based on universal physical constraints challenged the word of the Bible, Newton was dismissed. Since then, science has escaped that level of persecution, and made greater discoveries over the development of earthly time. For example, by analyzing samples of coral from the Devonian period (400 million years ago), it is believed that the days and lunar months are becoming shorter, due to tidal friction between the moon and the earth. Because energy is expended in each of the twice-daily tides, the earth's momentum is slowly being transferred to the moon, which results in a larger moon orbit, and hence a longer lunar month. From the coral samples, years were hypothesized to have been divided into 400 days in 13 lunar months, versus the modern 365 days in approximately twelve lunar years (Elton 1978).

2.4 Time Scales

Time takes on an even larger characteristic when the scope of investigation is expanded beyond our planet out into the universe. By looking at astronomical phenomena, we have the ability to effectively "look back in time". The process is a simple one; since light has a finite

maximum speed, it takes a considerable amount of time for light to travel from an astral body far away back to our observatories. From our sun, the light we see was created eight minutes in the past on the surface of the sun. From the next closest star, Alpha Centauri, it takes more than four years for light to travel to earth. As observatories become more powerful, we can look farther and farther into the past. Hubble's research into this field of time dilation led to theories on the age of the universe, placing it on the order of 18,000 million years (Elton 1978).

Time scales such as this one are inconceivable to the human mind. Intervals of time can be transmuted onto a more understandable scale, such as a single year. If we fixed the age of the earth at one "year", we would suddenly realize that the dinosaurs only came into existence in the beginning of "December", and that mammals only evolved around "Christmas". Humans have only been around for about a "day", and we can compress all of our recorded history of the world into the last few "seconds" (Elton 1978). While this helps us put certain large time intervals into perspective, it shrinks others to the degree of being useless.

2.5 Learning Time

To come to a more useful understanding of time, we may look at the direction of time, and our natural interpretation of it. By compartmentalizing time into units via the clock, we restrict natural understanding of time.

We have a natural understanding that of the concept of entropy, or order, in the world. If something is destroyed, it the process cannot be reversed. If a stone falls, it cannot return to it's original state without outside help. In chemistry, this is know as the second law of thermodynamics, that anything which begins in order will degrade to disorder over time. This progression of entropy gives us an abstract sense of time as a direction, not as a space. We can tell what the order of events from the level of disorder in them, but we cannot say the spacing of

these events without more information (Elton 1978). A full understanding of this "source" of time is useful in understanding the implication of time in the human experience of the world.

The idea of entropy is one grasped by children at an early age. It is used an early test perceive time; they are shown liquid being poured from one container to another, and are asked to draw the levels of liquid at different times. Through interpretation, they learn to understand velocity, as the speed at which the liquid is poured. From this, they learn duration, the amount of time it takes a liquid to be poured. Time is only understood through these, as distance divided by the speed. Other researchers have noted the relationships between musical divisions and time divisions. Early exposure to music, then, may speed children along the path of understanding time.

The adult mind contextualizes time somewhat differently. An element of timelessness is learned through age, which causes many of the signs of maturity. Since adults are not presented which as constant a flow of new information as infants, time speeds up. The unconscious mind also develops, with an ability to expect the future, sometimes to uncanny accuracy. Words also take on a certain timeless quality. As an example, the ancient language Sanskrit never distinguished between "to become" and "to exist", as everything was simply part of absolute time (Elton 85-109). There are infinite ways to "count" time, all of which is ignored by the modern clock.

Maturity also brings a greater understanding of communication. One dimension of that is the mastery of sending messages between one another. This introduced the idea of "high" and "low" context messages. In essence, every message requires a certain amount of information. This can be either transmitted information, through words, documents, or any other means, but it can also be stored information, which both parties share. A "high" context message requires a

great deal of stored information between the two parties in order to be successful; one example is that of a marriage, where a couple does not need words to convey emotions. The opposite end of the spectrum is the low context message, which transmits all necessary information, supposing none of the other party. An example of this kind of message is computer code, where nothing is supposed of the other computer beyond the ability to execute the code.

This balance of high and low context messages requires skill and mastery. If too much information is supplied in a message, the speaker is seen to be "talking down" to the recipient, who often becomes insulted. Alternately, if too little imformation is transmitted, relying upon mutual context of the subject, the message mystifies, or goes "over their head". Every culture has an specific spot at which it prefers to operate in the so-called "message velocity spectrum." This information speed dictates how much information can be communicated within a given time. By recognizing this element of cross-cultural interaction, we see the beginnings of the wide variety of global understandings of time.

2.6 Monochronic and Polychronic Time

One element that is often overlooked is cultural analysis is the very different formulations of time used around the world. The major division is between monochronic and polychronic time. Monochronic, or "M-time", is the idea that only one thing may be done at a time, focusing all of one's energies on it. It focuses on tangible time, which can be spent, saved, or wasted, and creates a fetish out of management of the precious quantity of time. Polychronic, or "P-time", in comparison, focuses on relationships and involvement, putting context and reason over schedules. It does not support the idea of lines or appointments, only the idea of public interactions over common issues. These two ideas of time definition cause many disagreements, due to their very separate natures.

Those who subscribe to the pattern of monochronic time often hold their schedule in higher regard that what is scheduled. More specifically, they are willing to overlook personal needs or requests, finishing a meeting which has yet to reach its goal, simply because it has exhausted its time slot. These organizations and people have a tendency to become very rigid and lose sight of any larger goals. Polychronic time supports stronger human interactions. While it is dependent on individuals to be gifted in self-management, it allows for stronger progression towards goals.

This comparison of types of time may even be extended to the metaphorical "battle of the sexes". Monochronic time is stereotypically more masculine, for its formal assignments and task oriented nature. Polychronic time is then more feminine, for its focus on human interactions, such as raising of children and care of a household, all more result oriented. As the American society is almost entirely based on monochronic time, it is a possible cause of the high percentage of women diagnosed with depression, due to the non-natural schedule for them.

Different cultures incorporate combinations of monochronic and polychronic styles of time. The United States uses an almost purely monochronic time system, while countries like Arabia exist in almost total polychronic time. Other nations blend the two. For example, the Japanese rely on a monochronic system for dealing with the outside world and for business, but they convert to polychronic time for families and philosophy. The French also mix ideas of time, using monochronic time for intellectual endeavors, but building their personalities on polychronic time. Because of these different modalities of time, individuals often find it difficult to transition from one culture to another comfortably (Hall 44-58).

2.7 Conflicts in Understanding

These broad assumptions over countries and nationalities often overlook smaller groups, when the study of their experience of time can be exceptionally enlightening. Hall documents his experiences with the Native Americans on a reservation shared by Navajo and Hopi tribes. He noted that there was an intersection of many different "kinds" of time; there was eastern tourist time, banker's time, government time, as well as Navajo and Hopi time. From this sprang a great deal of conflict in interactions between the Native Americans and the U.S. government.

On the reservation, the government was trying to modernize many of the ways of life. They employed the natives to build dams across flood paths, so that land could be irrigated more efficiently, and they proposed plans to make the animal husbandry in the area more productive. However, the government's method and the Indian's methods usually clashed.

As a basis, the government office at the reservation shared the common, Western sense of time, that there was a past, a present, and a future, as well as a physical sense of time, which could "become late", or upon which one could "fall behind." The Navajo's sense of time did not take into effect a long-term "future", so when the government office proposed a plan to reduce the sheep flocks "now" to benefit the "future", the necessity was lost on the Navajo tribe, not due to their lack of understanding, but because of a different understanding.

The other clan on the reservation, the Hopi, had a sense of time with no past, and no future. This was reflected in their language, where the names of seasons were adverbs, not nouns, and time was measured by the dances of the sacred rituals. Because strict time as known in the Western sense did not exist, and because Hopi history was a living, active story which affected their daily actions, time would heal no wounds. Thus, the anger of the Hopi towards the government for driving them onto reservations centuries ago was still as strong as ever when the government returned to try and help them.

The work ethics of the Native American tribes was often contrary to the ideas favored by the government overseers. The Navajo workers would bond to their job and take great pride in it, preferring to work twenty days strait without any sort of respite or "weekend". For the modern American managers, this idea was outlandish, and they were hesitant to work employees that hard. Even when assured that the natives preferred the work schedule, they were still dissatisfied, unhappy with the idea that they might need to work the same twenty days strait.

The Hopi were opposite the ideas of the Navajo; they wanted to share the work among all of the members of their tribe, even if it meant they would each work less than a day on a certain government project. They would also take time every day to ceremoniously plow and tend their fields. As a tribe, they wanted to combine both their duties and the duties put forth by the government, spreading them out among everyone. The government managers were furious over this. If they had a different set of employees every day, there would be no chance for any training to take place, and no skills could be learned by the Native Americans. The insistence on tending their fields also created stress on the reservation, as the Hopi effectively decided their own working hours, and overruled the managers on the site. The Hopi had no reason to rush on a project, or hold onto a proposed timetable. They did not need the "closure" of a finished project; they simply added onto the progress of the tribe, in knowledge and in progress on a project. The government employees, who insisted that the job must be finished, met with great resistance, as the two groups simply did not share the same understanding of time. This kept the governmental office from achieving many of its goals on the reservation, due to misunderstanding in communication between three parties with different backgrounds of time (Hall 1984).

By studying these conflicts between societies' understanding of time, we gain perspective on our own ideas. By providing a basis of contrast, we see simple elements which are often taken for granted, like our need for "closure" or our tendency to bond with a task and forgo others, like tilling fields, as a consequence. These studies provide stark contrast to our own, and encourage thought.

2.8 Experience of Time

After analyzing our basic understanding of time, the history of defining time, as well as different interpretations and aspects of modern time, we can focus upon the experience of time. It is an enveloping element of our life, even if we are oblivious to much of it, the same way ancient cultures were oblivious to the existence of air. Historically, there has been a constant urge to turn time into a physical quantity, since the time when cavemen would track seasons by making tick marks on a rib bone. While the goal of the movement is impossible, as time in a permanently immaterial quantity, the desire still exists. It continued through the Bronze Age, where instead of simply marking seasons, they could predict seasons and eclipses using structures like Stonehenge, although not all were as complex. Even with these advances, time was experienced as days and half days, with no other distinctions apparent.

With the invention of clocks as we know them, time became a variable quantity. With a regular marker with which to make comparisons to, time could now be perceived as speeding or dragging. The clock is considered an *extension* of natural communication, as it is a tool used to ease interactions. While it has served to speed up work, it also separates the work from the worker, as they know they are only "at work from nine to five", in most Western cultures. The clock has become so universal that it is taking over the natural process of keeping track of time,

and replacing the reality. It is this overuse of the extension that causes tension, such as jet lag, or any other conflict between a biological and wall clock.

While variable time allows for time to drag, it is not a universal syndrome across cultures, due to different interpretations to time. Native Americans, for example, will sit patiently for hours, without fidgeting or displaying any change in demeanor, due to their abstract sense of time. This is in blatant contrast to Americans, who will twitch, walk, pace, and fidget, all to pass, or to kill, time. On an international scale, an Arabian might spend an entire day talking to friends without guilt, due to their polychronic perception of time, just as a Parisian may spend the day "people watching" from a café for similar reasons.

Time compression and expansion, however, is a different experience. This aspect of the variability of time is more of a survival mechanism. A remnant of evolution, this sense allows for us to survive crisis by giving ourselves "time to think". One example of this is how one's life may "flash before their eyes" before death, or in a car accident, things suddenly slow down so that the tiniest details are often remembered. This trait can also be triggered by less threatening but still intense scenarios, due to the need for concentration. One classic example is how surgeons involved in arthroscopic surgery can continue for extended sessions, known to be upwards of 24 hours long on occasion.

Time is also variable due to the magnitude and complexity of the task ahead, as well as the age of the observer. If an elementary student is considering a college career, the fifteen years of study ahead of them is daunting, as it is more than twice their lifetime! In the same frame, if a tenured professor is asked to think back to their elementary school years, they probably remember it as one vague lump, as the time spent there is just a tiny fraction of their lifetime. As an individuals ages, given amounts of time mean less and less. This is one theory as to why as

people age, birthdays have less and less significance each year. If the year is not perceived as clearly, there is no reason to celebrate it with such vigor as when one was twelve. Just as elapsed time is not perceived as a constant, neither is durations of time. The perceptual process of time is not inherent, it is taught to children, and modified throughout their life by the context of their culture. This is most easily seen in early understandings of the terms "a while" and "later". These are said to be defined by a "rubber yardstick" (Hall pg145, 1984), and can vary greatly from one family to another. It is possible for an individual to learn to have a very "accurate" internal clock, a phenomenon seen mostly in those for which the clock is of utmost importance, like skiers and car racers. But the experience of time is far from an absolute thing (Hall 1984).

Time, therefore, is primarily dependent upon context and situation. It is something variable throughout history, and between cultures, families, and businesses worldwide. It is the common experience of time, limited by the use of the clock, but unlimited by the human mind, which merits study. Elton's "narrow" history of time, and it's physical and constant interpretation is useful as a basis on which to develop and capture the idea of time, and the broad basis of Hall's dimensions of time sparks interest into the living and constantly changing modern experience of time. There is a constant obsession with quantizing time, with the goal of turning it into a material form which can be defined. This could turn the experience of time into a trivial thing, constant among all people.

2.9 Mechanical and Body Time

A more practical and concise way of analyzing the shared of experience of time is to look at it with a dualistic perspective. A very useful comparison is put forth in "Einstein's Dreams" (1993), where time is styled either as a mechanical property or as a function of the rhythms of life and of one's body.

In the analysis of mechanical time, time is epitomized by the action of a swinging pendulum; it is predetermined and absolute. Life is ruled by the schedule, determined by the synchronized watch and clock, and mandated to be always "on time". The body then becomes a scientifically understood entity, with its rhythms defined by the standard system of time to check and regulate the patterns.

Body time expresses the opposite end of the spectrum of understanding. One's heartbeat is their own timekeeping; it's variations are unique and important in the metering of one's life. Time is kept through moods and emotions, not through seasons and years. Time is allowed to be flexible, to slow down during a crisis or to speed up during jolly times. A watch is no more than decoration under this school of thought, lending a certain communicability to the fluid sense of body time.

As Lightman says, "Each time is true, but the truths are not the same" (1993). The methods of understanding the human experience of time are independently correct, but if brought together their differences become the cause of frustration. Those who stay in the middle ground, listening to hand of a stopwatch as well as the tempo of their walk will forever be a little late, a little rushed, forever wanting to "take a break" from their schedule. These two schools of thought form a clear and concise picture of the spectrum of through on the experience of time.

2.10 Conclusions

The final question, pursued through all of the analysis of literature, comes down the ability of technology to interpret time. Can any single technology fulfill our need for expression of the natural quantity of time? Can the clock, the most universal way of quantizing time, meet this challenge? Is it possible to live entirely in Mechanical or in Body time? Or does the world

simply exist in the gray area between the two extremes? Using the tools of portraiture, this will be investigated and presented, with hope of encouraging through within others on this subject.

3. METHOD OF PORTRAITURE

In any research project, the method followed is of central to the project's success. Without a supportable system of research, the findings become lost due to lack of direction. This is especially true for an abstract subject, such as capturing the specifics of cultural experiences of time. To define this process, we must look into the concept of portraiture, the data to be collected to form the portrait, and the medium in which the portrait will be presented.

3.1 Portraiture

Portraiture is an emergent methodology for the study of social elements, which can be applied to different settings and focus points. Pioneered by Sara Lawrence-Lightfoot and Jessica Hoffmann Davis in their book, The Art and Science of Portraiture (1997), it takes an in-depth look at social elements in their natural context. The basic form of a "portrait" is that of a narrative, a story of the interactions between the portraitist and location, a record of sights, sounds, and feelings. However, it takes very strong stances on many key elements, differentiating it from a pure narrative. It is of utmost importance, for example, to both look and listen for the story in any situation, as sometimes the more important story is "written between the lines."

Another point of prime interest in portraiture is the need to look for the good in a story, not the bad. It has become far too common a practice to make thorough studies of schools, businesses, governments, even families, with the goal being to determine the wrongs, or the problems at hand. While this can serve as a tool for growth, it too often simply serves as a reminder of mistakes, and when blame is laid onto an organization in large quantities, no one wishes to step forward as the owner. However, if the study is made to find the good in such an

establishment, everyone tries to take ownership in the "goodness", and it becomes a source of pride. Portraiture is a tool to be used for good, not for evil.

As powerful as the tool of portraiture is, its uses in the past have been primarily humanistic. The previous examples of portraiture have used good high schools and community arts centers as their foci, leaving a large gap between established methodology and what would be necessary for the study of time. In this application, it poses a fundamental question; what element of time is to be the subject of the portrait? Is it the scientific time, defined to the nanosecond via the atomic clock? Is it the cultural time, which may drag, fly by, or be wasted? Is it a historic time, measured by the passing of events, not by regular, periodic means?

3.2 Learning to See Time

In order to achieve the goals of portraiture, we must define the point of the research. It is to explore the cultural experience of time, to make a record of it, and to present it in such as way which provokes the individual to put thought towards the subject. A specific challenge is presented, in the fact that time is an omnipresent element in our world, and as such, it is a universal experience. There are no established "experts" in the field of time, and those which have research into the idea of time may be poorer candidates, for their developed and influenced sense of time. Hence, data collection methods must be carefully chosen to capture an accurate portrait of the cultural experience of time.

Because of the unconscious nature of our opinions on time, some methods of research may be eliminated very early on. Some of the standard methods, especially those of surveys and interviews, will not serve the purpose of finding the common experiences of time. Surveys ask for the knowledge and thoughts of many individuals, to them be analyzed and summarized. Interviews take this farther, diving deep into the subject at hand. Because of the invisibility of

time, and the lack of realization about the experiences which shape our opinions of time, there is little knowledge among individuals which could be of use in the surveys.

The central tool in researching the social experiences of time is direct observation. However, great care must be taken to ensure that the observations are made in natural environments, not fabricated to emphasize any element of time. Any conclusions gathered in a fictitious environment would be entirely useless, as they would be inherently different from the cultural experiences Observation in a natural setting, however, will be of crucial importance. By capturing the feeling of how time is wasted, spent, killed, or rushed, a more complete picture of the effect of time in a culture will be created.

Observation carries it's own challenges, however. If the method was simply to watch people watch the clock, or make observations in a similar time-heavy situation, it would be impossible not to project one's own opinions into the situation. To truly learn from our observations, we must learn to see time as it stands. By being an analytic observer, looking at all of the elements of a location and of the individuals, I was able to see the social side of the time, to see how the mechanical and biological sides of the situation were intertwined.

There are certain locations for observation which can be more informative than others. The large modern airport, for example, is a concentrated location, of people who both rushed and waiting, in a situation ruled firmly by the clock. Other locations of interest may include locations with traditionally long lines, like stores at Christmastime, or locations in which to pass time, such as coffeehouses, libraries, and bookstores.

This type of observation-based research is known as ethnographic studies, as developed in James Spradley's book The Ethnographic Interview. The distinction is made early on that ethnography is not a process of studying people; it is a process of learning from people. This is

especially applicable when studying culture, for no data about people will help us. It is only by learning how individuals react to stresses of time that we may discover the common experience of time. Since there is no way to know what another individual knows, we must instead infer their knowledge from their actions and words. This frames the study of "normal" people with the idea that they share a common knowledge which can be tapped through extended research

3.3 Creating the Portrait

With the research and observations done on the subject of the portrait, the next step is to create the portrait itself. This is a analytic process, along with a creative one, assimilating the information found through ethnographic research into an artistic form. This artistic final product must stand up to two standards, both as a comparison against great art, and against great research. To meet those goals, the portrait must be created in a very purposeful manner, looking critically at the material, the method, the subjects, and the ideas to be conveyed.

3.3.1 Photography

In developing the portrait, selection of a media is crucial. There are unlimited numbers of art forms and styles which can be used, but it is key that it is a familiar medium, as well as being a versatile tool. Since time, or any subject of portraiture, is a radical subject with a novel approach, the tools used to create the portrait must be both strong and flexible, in the hands of the author.

For me, one such media is that of photography. It is a solid form, one which evokes a very solid image of reality. Photography has traditionally been a non-arguable medium; from "photo finishes" at horse races, to the use of photos as trial evidence, there is a belief that a photo will always be real The camera takes whatever is in front of it, and records it chemically. There is no way in which this process may be tampered with.

The absolute validity of photography has been degraded through the usage of digital editing tools. With these, any photograph may be made to look like they came from anywhere, at any time, without any effort by the photographer, only that of the graphic artist. Unless great skill is applied, there are usually signs left that such an image has been altered, even though the original is irrecoverable.

To represent time, the concrete factor of photography must remain, and must be emphasized, for it is a key element of the Western perception of time. Thus, the portrait of time will be expressed through classical film photography. It is a very well respected medium, with great potential with which to "provoke" the audience through powerful presentation of the images.

Imagery has often been used as a medium in which to understand time. One of the classic symbols is a pitcher being emptied, or the level of liquid in a cup being lowered. This is experienced very early in life, and we naturally understand that the process occurs in one distinct direction; milk cannot be "un-spilled", for example. There are other cases in which we can "see time". If one is driving down a highway, and encounters an accident or large backup, they instantly know that this means time will be lost. A large project or complicated problem often translates to a visual picture of time. Anything we see that will be "quick" is already an expression of time. In this essence, time is already a visual element, giving a basis on which the experience of time may be expanded.

Photography also has an inherent ability to explore. Through "macro" photography, the study of normal objects at very high zooms, details may be brought to attention that would otherwise go unnoticed. In general art, this has countless applications, but in the exploration of time, this could used to accentuate a certain event or action, or give insight into a clock's

working. Exploration and study of a subject may also be done through time interaction. Most "snapshots" are taken over an incredibly brief time scale, usually hundredths or thousandths of a second. However, this is not the only manner in which photographs may be made. By expanding the time over which the film is exposed, all the activity of the span is collected and superimposed upon itself. In this way, time may be solidly recorded. There is also the possibility of "strobe" photography, where external equipment is used to repeatedly flash light onto a subject and film is continuously exposed, creating a superposition of many copies of the subject upon a single frame. In this way, a falling or moving object can be frozen at multiple points in its path. It is a very useful extension on time-lapse photography, and lends to the toolset which may be used to overcome the static nature of photographs.

Another dimension in which time can be expressed is through use of a subject which evokes the idea of time. For example, we intuitively know that a rock in midair will continue on a downward path until it meets resistance. Because of this, a photograph of a rock in midair will bring to mind thoughts of the rock falling. This is a concept used on an elementary level in teaching children the basics of time, however it may be used it a much more powerful manner in this application. With this, there is an understanding of photography as purposeful medium for the portrait, one which can meet the demands of the project.

3.3.2 Legality

One major issue that was raised in the observations of the social experiences of time was the central role played by individuals. This was a problem at many of the sites, a resistance to photographing patrons of their establishment. However, it is even more prominent in relation to the final portraits. The most obvious subject matter is an individual in a situation demonstrative

of their involvement with time. However, from this stems an important discussion of the legal issues involved in photographing individuals.

Because of the importance of privacy in our culture, legislation has been passed to insure that it is upheld by photographers and photojournalists. For any photograph contains individuals, a photographer must have a release document signed by those included if the image will be used commercially, if it invades privacy, or if the planned use is defamatory. However, a release is not necessary if the intended purpose is informational.

The worry of invasive photography can be seen from many angles. In many cases, it is the concern that a situation will be shown through a false light, which would reflect poorly off those included. Many also worry about disclosure of private facts, a situation often encountered by photojournalists wishing to investigate a subject beyond the public eye. In the legal sense of intrusion, it is not an invasion of privacy to photograph an individual in a pubic place. (Stim 2004)

For any academic project, it is important to maintain a professional and respectable image, especially when dealing with potentially controversial issues. Towards achieve this goal, it is useful to look at the practices of working professionals. The National Press Photographers Association (NPPA) have published a Code of Ethics to make their members accountable for their work. As such, they are encouraged to take comprehensive photographs, to avoid "staged" pictures, to stay neutral and keep one's opinions out of one's photos. The dignity of one's subjects is paramount, and they must not be disturbed by the work of the photojournalist. The code of ethics also prohibits photojournalists from giving or receiving any gifts, including monetary compensation, to avoid situations involving bribing and misrepresentation.

Beyond this point, the NPPA encourages their members to uphold high standards. They are urged to remain neutral, and to shy away from political, civil, and business involvements that might compromise their neutrality. It is important to be unobtrusive and humble, and to work to show a unique image with every photograph. These statements help to uphold the legitimacy of the field, and to allow photojournalists to present a unified image. It also assists others in the field by allowing them to share professional standards in their work. (NPPA, 2005)

In practice, it is not feasible to allow hold a professional standard against academic work. As such, compromises must to made in order to create a standard which is mindful of privacy, legality, ethics, and practicability. By holding the IQP to the same ethical standard as professional photojournalism, it will be easier to assert the validity and mindfulness of the project, which will lead to greater ease in attaining subjects for photo-essays. By carefully choosing subjects to avoid a need for a legal release, the method is simplified and the portrait is left to focus more strongly on the subject of time than on individuals.

3.3.3 Creating the Portrait

Having looked into the art of photography, as well as the legal issues involved with subjects for the portrait, the next step is to form the portrait. This is the element which defines the effectiveness of the portrait; with the given medium, how will it be presented? How will the point be put across, and displayed such that it can provoke the viewer?

Just as the choice of artistic medium was important, so was the choice of subjects for the portraits. This was a very open-ended search, as the subjects needed to be investigated through photography to see if they had the impact desired. One purposeful choice in subjects was to eliminate individuals from the images. While this was partially due to the legal issues surrounding the use of people as subjects, it was also done to keep the meaning of the portraits in

the correct place. In society, we understand how we interact with other individuals. Because of this, an image of another person is easily understood, and does not require or provoke a great deal of thought. Isolated subjects, however, do provoke thought, especially on the topic of time.

With an understanding of the subjects to be used, we must then look into how to form and present the photographs. To discover the most dynamic method, research was done into existing photographic works, especially those focusing on unique and different subject matters. In Nina Leen's work, Images of Sound (1997), photography was used to capture sound, noise, silence and solitude. Each image was individually striking, with a unique subject. Of the set, each image was coupled with a poetic quote, to suggest the topic of the image and give insight into the feeling that was being captured.

As another example of photographs exploring an uncommon topic, Uta Barth published an in-depth work entitled "…and of time", focusing on the passage of time in a living room setting (2000). She created diptychs and triptychs which primarily focused on the movement of light through a window, showing the squares of sunlight move across the rug, the wall, and the rest of the surfaces of the room.

From these two examples, I developed the format for my portraits. As I wanted to develop a number of different subjects, I needed a way to separate the images of one from another. However, I did not want to use single images as Leen did, as many of the subjects used in the exploration of time would have required explanation to bring the viewer into the mindset where the image would have meaning. I wanted my portraits to stand alone, so I decided to create a number of "essays", each comprised of multiple images and able to stand individually, but could tell a more complete story when shown next to others. I felt this was the strongest visual representation possible for the difficult subject of social experiences of time.

3.4 Schedule

In order to collect the amount of data needed to create the portraits through ethnographic observation, the progression of the project must be scheduled. In the case of this project, the schedule actively evolved, as the methodology and purpose of the project developed.

The A term schedule was very strait-forward, as it laid the groundwork for the project. Time was spent looking into the literature on the subject, leading into draft work on the initial three chapters (introduction, literarure review, and methods). This provided a structure to find the question of the project, the idea to be explored through the next two terms. It also allowed all three projects in the cohort to begin with a similar footing, which helped to synchronize the projects when we began to follow individual methodologies for our individual projects.

My original schedule for B term focused on making formal observations at places of business and making a log of notes, using both snapshots and written notes. Many establishments were hesitant to grant permission to take pictures in their businesses, and did not relish the idea of their business being used as a research location. Because of this, observations were made more in a more casual manner. Both photographs and written notes were forgone, to be less obtrusive and to allow me to focus more on the situation. I found it was not as important to have a log of my observations as it was to have a feeling for the social effects of time. Observations were not done in specific time slots; it was a constant development of the ideas of time, whenever the situation at hand lent itself to it. This included Thanksgiving travel, arguably the busiest travel day of the year, where the airports were full of lines and rushing individuals. It also took place coffeeshops, in bookstores, in restaurants, at toll booths, everywhere. A walk to the grocery store would be an opportunity to observe and further my understanding of social experiences of time.

Just as B term focused on gathering data, C term focused on the creation of the portraits based off the data. This term was more freeform, as the development of the photographic essays took a great deal of peer review. As I pursued my subjects, I would "draft" the photo-essays, to see if they have the same impact and capability to provoke others as they did for me. This was a key step, as just as I had taught myself to see time in order to find the subjects, I would see farther into the photographs and see more of a story then there sometimes was. There were a number of essays discarded, but with this came a stronger final product. C term also held the simultaneous development of the documentation of the process, which turned out to be a formidable task.

By careful and scheduled methodological approach to the subject of experiential time, I was able to lay out a framework which allowed for the creation of a meaningful portrait. Careful research following methods laid out in past studies, created a feeling for the common experiences of time, from which a portrait can be developed. The final product was in no way pre-determined; it is fully dependent on the information gathered. As such, it is a true result of the process of Portraiture.

4. RESULTS

This portrait of the social experiences of time took the form of four photographic essays, developed as a result of my research and observations. Each is a grouping of multiple frames, each of which captures a specific face of time, and works to evoke different thoughts on time.

4. 1 - Study of a Pocket Watch

The first photo-essay is a macro study of an escapement pocket watch. By drawing on this classic physical technology, a basis in mechanical time is established. The clock is a comfortable subject, as we are used to seeing time in this sense. The simplicity of this portrait emphasizes the reality of the clock as an absolute tool, and lets one look "inside" of the machinery. These images are quiet, yet still moving; the angle of the composition of the frames encourages the viewer to feel the tension of a frozen timepiece. This study forms a starting place for the spectrum of time, forming a solid basis of mechanical time through the focus on the gears and the mechanism of the watch.


Majesti

4. 2 - Study of Alarm Clocks

The second photo-essay is an essay in comparison. The image of a broken, discarded alarm clock is shown in juxtaposition to a series of stills of an alarm clock. The series of stills in the right hand portion draws on the common experience of the brutality and force of time, as everyone shares an understanding of delaying a wakeup with the snooze button over and over again. The broken alarm clock draws on the desire to destroy or stop the alarm clock. With this, the next step in the series of portraits is taken, away from the absolute mechanical time of the pocket watch, and towards the natural, humanistic side seen in the third and fourth photo essays.


SNOOZE
HOUR
MIN
TIME
ALARM

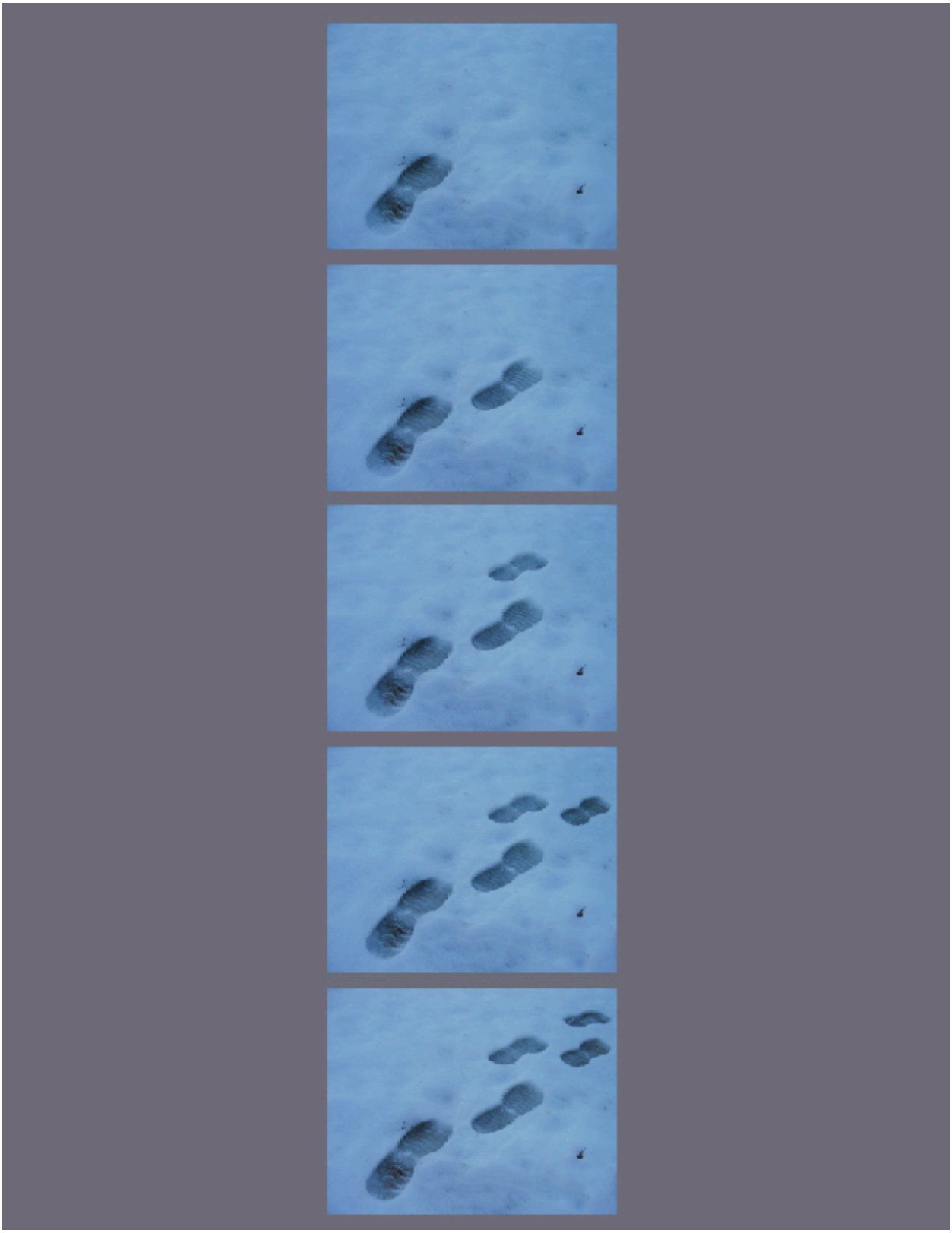

7:50
7:55
8:00
8:05
8:10
8:15
8:20

4. 3 - Study of Swings

The third photo-essay brings the series into the field of biological time. It is a study on a playground swing, progressing though the arc of travel. This draws on the timekeeping abilities of a pendulum, but also draws on the humanistic side of the playground. The swing is empty, encouraging the viewer to project themselves into the scene, to bring out early memories, before one understood the mechanical side of time. The use of the swing on the playground draws in thoughts of the human lifetime, from the child on the swing, to the parent or the grandparents helping the child to play. This series engages the viewer and encourages them to look beyond the clocks of the first two essays in their personal view of time.

4. 4 - Study of Footsteps in Snow

The last photo-essay is the strongest representation of biological time. As a series of footsteps through the snow, it emphasizes the human rhythm of time, not the mechanical division of our day. It is a strong series of images, one step after another, a pattern every individual follows in their day countless times. As such, it is a loud image, contrasting the stillness of the first photo-essay. Footsteps are part of life, and they too are a kind of time. It is in this way that they form the final photographic essay of this portrait.



As a set of four photo-essays, a balanced spectrum of experiences of time is shown. The goal of these images is to spur the viewer to ask themselves, "Where do I belong in this spectrum of time? How do I regard time?" This is accomplished by using everyday objects in such a way that allows the viewer to project themselves into the image, to draw them in to the watch, the alarm clock, the swings and the footsteps. From our extended interactions with individuals, we can quickly understand a situation by the people. However, technology is a more foreign being, open to more interpretations. By composing the essays without anyone in the images, the essays are open-ended, inviting the opinions of the viewer on the photoessays. The common facets of time in our society then serve to bring forth many analyses, thoughts, and ideas about common experiences of time.

5. CONCLUSIONS

This project took a method, adapted it to a different subject, created a question, and answered it using an artistic discipline as the medium to convey its ideas. The rigorous method of Portraiture had to be highly adapted to serve as a useful tool in the study of technology, but it also made the study of the dynamic of time possible by drawing on the ideas of social science. Through thorough review of literature, the problem of capturing the experience of time in society was defined, which was then researched through literature and social observation, and addressed through the artistic method of photographic essays.

It is difficult to challenge preconceived notions in any social field. In time, it is exceptionally difficult, as one's ideas are not conscious; they are part of an implicit understanding of how society works. Thus, the goal of this project was not to change ideas, it was to provoke viewers to realize how they experience time in relation to the possible spectrum.

The final portrait, comprised of the four photo-essays shown in Chapter 4, is the product of three terms of research and artistic development. It was a learning process, developing my skills in macro photography; laying out the images in such a pattern that they could tell the story I thought they could tell, throwing away images that failed to provoke enough thought.

Each subject in the final photographic essays was chosen to provoke thought, through symbolism and shared social experiences. By choosing not to use individuals in the photographs, the essays turned from being "pictures of an event" to "pictures of an idea". . Everyday subjects were chosen to draw in the viewer, to let them identify with the photographs. With this involvement, thought could be provoked through the careful presentation of images.

Each of the four photo-essays makes a statement about time, and encourages the viewer to interpret that statement through their own experiences. In other words, the pictures ask the

questions; the viewer must answer for themselves. The first study of stopwatches looks closely at mechanical time, shows it as a real, physical quantity. It begs the question, what does the clock mean to me? Do I recognize the clock as the source of the minutes? The second, the study of alarm clocks, looks more at the continuation of time, the onward travel of the mechanical minute. Do I count the minutes going forward? Could that have been my alarm clock, broken and destroyed? The last two, the swings and the footsteps, engage this temporal element through similar series of photos, focusing on childhood and everyday experiences. Did I count the minutes going by when I was a child, playing on the swings? Do I count my footsteps now the same way I count minutes? The timeless nature of still photographs was employed to further provoke thought, through the juxtaposition of movement in a still medium, and tension in individual frames.

This creation for the final portrait created a visible "spectrum" of social experiences of time. While the images form strong points along this spectrum, there is still a large field to be inferred between them. It emphasizes the idea that time does not have a purely dualistic nature, that it instead can be interpreted, and thus experienced, differently by every individual. With the final portrait, every viewer encounters the same images, the same questions about experiences of time. The answers are what vary, and this forms an individual's opinions within the spectrum of time.

This IQP asked the question, "In the study of the social experience of time, where does the intersection between biological and mechanical time lie?" This question defines a journey, bringing the subject out of books and off of the street, and into art, into the final portrait. From literature, the idea of mechanical and body time was introduced as absolute. However, the realm of other sources contributed many other interpretations, from the development of clock which

dominates the understanding of mechanical time, to the idea of monochronic and polychronic explanations of time. With this, a wide basis was formed for the exploration of social ideas of time. Ethnographic observations formed a method to discover subjects which could be used to evoke thought on the common experiences of time. These subjects became the basis for the final portrait, which attempted to answer the question posed.

The final answer is that the common social experience of time lies between the two interpretations, anywhere from extreme to extreme. Neither mechanical or biological interpretations can fully capture the social experience of time, especially in modern culture. As seen in the portraits, the clock is not our only method of experiencing time. We count footsteps, we know time elapses as we grow, and these too build our idea of time. The broadening of our understanding is seen as a spectrum and introduces a tension is the span between mechanical and biological time. This tension encourages the viewer to form an opinion and to interpret their position among the images, to form their own ideas on the spectrum presented.

6. REFLECTIONS

In looking back through the three terms of this IQP, there were many stumbling blocks and points of confusion. However, there was a constant feeling of blazing a new path by restructuring the method of Portraiture to make it possible to create our portraits of technologies. In reflection, there are a lot of lessons learned through the process.

It is very difficult to ignore your own ideas about a subject, especially when dealing with as under-realized an idea as time. I found myself constantly analyzing literature and situations based on my own, western opinions on time, and sometimes distorting the data. This was especially noticeable when analyzing the differences between the Navajo, the Hopi and the government workers on the shared reservation in my literature review. In early drafts, while I was attempting to convey the unique understandings of time by the Indian tribes, the writing I was doing was very much slanted towards the western patterns of thought. My natural understanding of time, along with the natural bias in the source led me to present the tribe's thoughts on time as different and therefore wrong, not as an alternate understanding of the subject. This was also appearant in early methodologies, as I was trying to document where I saw time according to my own experiences. It took a great deal of work before I successfully created a method that let me make observations without bias.

I was very happy with my choice of medium for the portrait of time. Time doesn't lend itself naturally to any single presentation. Dance had been considered as a medium, as I have experience with ballroom dancing, but it was defeated by my choice of photography for the final medium. I felt that a portrait presented as a dance might be trivialized from an artistic point of view, lumping it with the rest of interpretive dance. I wanted a portrait that could be presented in a static manner, so that it could reach a wider audience than I could with a performance or video

of a dance. Photography fulfilled this goal perfectly, as the final product was simple and straightforward, but still encouraged thought.

Photography had its own set of problems to present the experience of time. I might see a perfect representation of time in the ice melting on the pond, for example, but unless the viewer was in the same cognoscente state, the image would be dismissed as irrelevant. Most single images were then discarded, or used only in juxtaposition to another series of images. There were many ideas that I wanted to capture, but couldn't frame into a worthy image, or could not find the proper subject for. One subject that I initially wanted to work with was a sundial. However, the idea of movement was much more difficult to capture; a series of images of a sundial were much more static and didn't tell the same story. The sundial had a statue-esque quality that I could not work past in was also intrigued that on the base of the sundial was a placard titled "Equations of Time", detailing the adjustments based on the date necessary to make an accurate measurement of time. While this seemed to reach towards the junction between time and technology, it was not an image I was able to capture, as the patina on the placard made it nearly illegible. It would have presented a single idea on the subject of time, and would not have provoked thought as I tried to do with the rest of my portraits. In retrospective, the choice of subjects and final series of images demonstrated the experience of time better than many of my initial ideas for the portraits, and I am very satisfied with the results.

It was feedback throughout the project that made the portraits possible, and it was done extremely well through the cohort setup. By arranging weekly meetings with the other students involved in Portraiture, we had a very balanced approach to the writing and to the art, taking suggestions both from our professor and our peers. With the artistic discipline involved, it was a logical and successful setup.

The key point is that this IQP on Technology Portraiture was unique, and different in some ways from the generic IQP. It involved independent development of a methodology, a topic of specific interest to the student, and a open approach which allowed individual work while still benefiting from group feedback. These differences made for an exceptional project experience which actually touched on the intersection of technology and society, meeting the real goal of the WPI IQP.

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