Rupture: an autobiography in earthquakes

by

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Abstract

Rupture: an autobiography in earthquakes

Master of Fine Art, 2011

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      Rupture is an attempt at building a relationship between a half-remembered childhood and an anonymous set of numbers. *Rupture* consists of three elements: a large display of data collected over the duration of my life; a collection of sixteen photographs; and audio recollections of my life in Jamaica.

With this combination I explore the nature of memory and discovery. In particular I look for a way to bridge the space between memory and recollection.

In my reading I travel from my own experience of cultural and political recollection through a contemplation of the poignancy within a personal snapshot to an examination of the fractured process in which our brains separate and later reassemble our past.

The original impetus for this work was my memory of a night spent under the stars during a small earthquake. For a moment I was unsure if the sky was moving or the earth beneath me.

Dedication

I dedicate this work to the three people who always had confidence that I would succeed and who were there every step of the way: Ron Green, Veronica Wales and Caralee McLellan. My dad, mum and best friend.

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Preface

I remember it so clearly. The boy scout troop I belonged to was on a three day hike in the mountains just north of Kingston, Jamaica. It was the second night of our journey and we had stopped for the day. Since the night was clear and cool we didn't bother with tents and just layed our sleeping bags out in a grassy clearing. Our fire had gone out and the Milky Way was shining in the sky like a big bright neon sign. I lay there, exhausted but unable to sleep. It was a perfectly still, clear tropical night.

During the day we hiked under the hot tropical sun up and down trails and pathways no wider than our feet, across a landscape that looked like a giant had crumpled up a big sheet of paper and didn't properly smooth out all the wrinkles before throwing it into the Caribbean Sea. It was during the seasonal drought caused by the warm, dry, Trade Winds so our path was often dusty and the foliage was a dirty green in colour. By nightfall we had found a small clearing near a little village high up in the Blue Mountains. We got water and some food from a small store in the village and set up camp just as night fell. We wrapped up in blankets to protect ourselves from the 18° chill and chatted and horsed around as only a group of teenaged boys can after a long day climbing.

Which brings me back to lying on my back staring up at the huge star-filled sky. Exhausted, but unable to sleep, surrounded by the quiet sleep-noises of my friends, the loud cries of the crickets and the soft crackle of the dying fire, I watched the sky. Suddenly, the stars seemed to jump and blur and in my exhausted state it took a while for me to realize that it was the Earth below me that was shaking, not the sky above.

Introduction

An installation is a collection of discrete and independent fragments which when viewed together makes up a coherent environment. Each fragment taking up its part of the story, and each fragment contributing to your interaction of and experience in the physical space of the installation and the metaphorical space of the narrative.

Rupture is an installation with three major components. The first major component is a large dynamically constructed two-dimensional representation of a ponderously rotating globe made up of thousands of tiny points of colour and light. The second major component is a more amorphous and intangible: the sound of a voice moving around the space telling small fragments of recalled events. The third major component is the part of the project which the visitor can interact with: images from the life of the artist taken between the years of 1962 and 1978 these dates being important only to him, making up the first 16 years of the artist's life.

What ties these elements together is the relationship between half-remembered fragments of a life and the fleeting traces of the tremors that define the topography of the Earth. With this work I have joined the idea of the mechanisms of memory with the idea of the mechanisms of uplift, stress and fracture of the surface of the world, entities which only leave us with the results and only hint at the processes involved or the exact knowledge of the events in the past.

We construct our memories through dimly perceived images, sounds, smells and the fleeting sensation of touch, not knowing at any time whether these memories are real, or convenient fictions that allow us to make sense of our life as it exists in the continuous now. I yearn to walk amongst the mountains and valleys of the world, catching fleeting glimpses in outcrops of the traces, the stresses, and the forces that built the surface of this planet. By using seismic data collected as part of the World Stress Map Project[1] I create a metaphor for the process with which we dig around in the mountains and valleys of our minds searching for the little outcrops of memory.

Rupture is about the fragments, the traces and the hidden memories that make up an identity. It is also about reaching for, and developing—inventing—a coherent narrative or story to hide the gaps. It is about reclaiming a childhood lost in the confusion of becoming an adult.

on memory
Memory is fragmented and incomplete. We create narratives to bridge the gaps between actual remembered occurrences, and the sometimes long, sometimes dark, spaces between. The narratives manufactured to fill in the gaps can become stronger than the real memory, and instead of merely bridging the distance, our constructions distort and sometimes replace the original memories. They cover over the truths that we knew to be *true,* or at least relatively *true,* according to

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[1] "World Stress Map Project - A Service for Earth System Management" (http://www-wsm.physik.uni-karlsruhe.de/pub/introduction/introduction_frame.html).

our understanding of how events happened. On a national scale, this leads to the creation of myths and fables, a process both creative and destructive. (Said 2002) On a personal level, we build our own stories and what we are left with is a mash of overlapping truth and fiction—and if the truth clashes too much with the shape of the story, then perhaps it is deliberately lost. To use a geological analogy, which I do throughout this project, remnants of memory and fiction become a series of overlapping tectonic plates, constantly moving in slightly different directions, abrading against each other.

Most earthquakes are relatively minor. They occur by the thousands every day [2] and, for the most part, people who are in areas experiencing earthquakes remain unaware of them. Earthquakes are caused by tectonic plates sliding past, colliding, or spreading away from each other, the result of moving continents and oceans jostling for space on the surface of the planet. For the most part, the impacts are unnoticed by anyone but those who monitor seismic data.

My thesis is an attempt to create a parallel between my narrative and geological events, some significant, some barely noticeable. It is rooted in my own personal memory of experiencing an earthquake as a teenager in Jamaica. A quiet night under the stars was disrupted by a small earthquake that seemed to shake the night sky. It was not this event, but the memory of the event that led me to this current project. Earthquakes, which in their most extreme form are experienced

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[2] For an annual chart go to: http://earthquake.usgs.gov/learn/faq/?categoryID=11&faqID=69 which shows approximately 1,440,000 earthquakes per year.

as a rupture of the earth's surface, act as a metaphor for the blanks in my own memory.
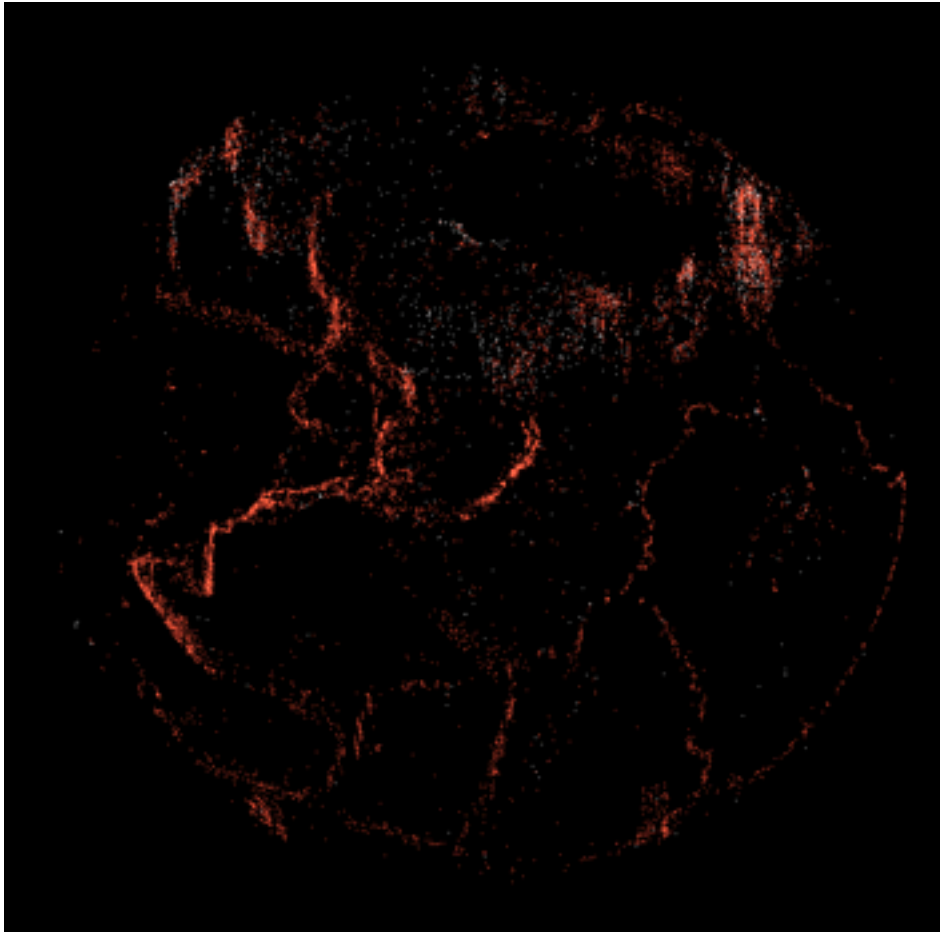
Figure 1. Screen shot of the ponderous globe.

Virilio, in *The Aesthetics of Disappearance*, (Virilio, 1991) wrote about picnolepsy, short spans of time when there is a certain loss of awareness, a period when consciousness is not lost, but any trace of experience disappears. Narrative is constructed to reach from remembered experience to remembered experience, forming a bridge that reaches over the nonexistent areas of memory. This bridge is all we have with which to try to glean evidence of the reality that is missing.

Earthquakes work both as an analogy for a loss that cannot be fully repaired, and as a metaphor for an act of violent destruction. When it comes to memory, this destruction is a kind of self-destruction; a loss that is self-imposed, whether through neglect or action.

Figure 2. Me and my sister on my 5th birthday.

In some ways, the fictional constructions that replace the trace of real events interest me as much as the gaps. Susan Sontag, in *On Photography* (Sontag 1990) wrote about how photographs replace real memories with constructed memories. Events are not remembered as they occurred, but as images whose

staging is something that is culturally predetermined. Many families have a photograph of children gathered around a birthday cake with lit candles; a perfect "Kodak Moment" remarkable, not for its uniqueness, but for its replication from family to family: a cultural artifact that imposes its own structure on an event—at least for the fraction of a second it takes to snap the picture.

Moments that are not considered milestones, and not worthy of fixing in memory as images (as photographs), follow less of a predetermined pattern, and thus are more difficult to spot as constructions. They exist not as cultural artifacts, but as personal narratives that can evolve and grow with the passage of time. They are fluid events which are constructed, refined, and reconstructed over time. It is this editing process which obscures both traces of original events, and disguises the lack of any trace; some are memories which have been entirely constructed to cover an initial gap.

Research Questions

Large data sets are everywhere. Designers and programmers have been putting a great deal of effort into discovering, and parsing data sets as they are released or made public by various corporate and government agencies around the world. I have been following with fairly keen interest this movement, because the presented data gives insights into the areas studied, that may not otherwise be apparent to anyone who is not an expert in the relevant field. I too have experimented with visualizing different kinds of data and with different kinds of visualization methods.

Through this experimentation I became very interested in the possibility of conceptually and aesthetically incorporating some of these data sets into my own work. How can a massive amount of data, relating to the seismic movements of the Earth over a 48 year period be represented in a tangible and aesthetic manner?

I am interested in developing frameworks through which to personalize and transform this data to make the data meaningful within an artistic context.

How does the parsing of objective data with subjective narrative affect our understanding of both?

I asked myself: Can the data be experienced in an installation or gallery context in a way that allows for personal interaction and reflection?

Previous Work and its influence on the current project

Memory has always had a key place in my artwork. Growing up in Jamaica during the 70s, national identity was a central issue. In the aftermath of colonialism Jamaica was struggling to be defined as a sovereign country rather than as an outpost of Great Britain. There was a major effort to define a unique Jamaican identity, a Jamaican history, and Jamaican culture. In 1978 Rex Nettleford, one of the main forces behind this attempt to create a national identity, released a monograph entitled *Caribbean cultural identity: the case of Jamaica* (Nettleford 1978) in which he outlined the strategies that he and his colleagues would use to create our new cultural past. To do this, as suggested by Edward Said in his article "Invention, Memory, and Place" we had to rediscover, or invent as needed, the memory of our nation, I take up this concept later in my literature review. This was an identity crisis which translated into a vibrant, cultural flowering. One of my fondest memories from growing up in Jamaica was a radio broadcast at noon every day by Louise Bennett who would tell a story based on West African mythology with Jamaican overtones. A concerted effort was made to establish the colloquial speech as a legitimate and unique language. Books were written and plays were performed in this language. And, of course, the significant contribution to this redefinition of Jamaican identity was made by Bob Marley, who brought the Jamaican language together with a particularly Jamaican rhythm and exported it throughout the world.

Twenty years later in the late 1990s I began to do work in an attempt to redefine my own identity, based on the memories I had of events and relationships left behind so many years ago when I emigrated from Jamaica to Canada. What makes the past more poignant for an immigrant is the sense not only that you yourself have changed, but that the very country you came from has changed in a way which radically distances you from it. Jamaica has changed very much since I left in the 1970s—a time when the country was at a crisis point when things appeared to only be changing for the worse.

home ... (1997)
It was the murder of a friend that was the trigger for my first major exhibition. It was entitled *home...* and was my initial exploration into memory and narrative.

This was an installation which consisted of two large scale light-boxes, a number of hand-bound books on kraft paper, an audio conversation piece on headphones and the smell of coffee. The light-boxes had photographs of my grandmother's land, now abandoned and overgrown, taken when I last went to Jamaica—this time as a tourist.

Another component of the piece was a set of snippets of recollections of my life in Jamaica that were handwritten and bound into books. There were hundreds of these little snippets pulled together and combined on the page with clippings from newspaper from Jamaica and small photographs of parts of my apartment in Halifax, tying my past to my present.

Figure 3. Detail view of page from Home...

Among the components of this piece was a recording of a conversation between a high school friend, Roger, and myself. In this conversation we started out by reminiscing about a mutual friend, Mark, who had just been murdered.

We spoke about the political situation on the island in the seventies as we had understood it when we were teenagers, and as it was at the time we had this conversation in 1997. In our way we were mourning this loss of our friend and trying to understand how Jamaica had become a place where it could happen. By combining our narratives we constructed new memories of the past, built both consciously and unconsciously to help us to understand a tragedy.

Figure. 4 Installation view of home ...

It was with this piece that I begin a serious and systematic examination of the idea of memory and its importance in constructing identity. I became obsessed with trying to recover the memories of life spent in another country in another era; one that has no real tangible connection to my current state. I felt at the time like an amnesiac struggling to reconstruct my past via the traces and marks left behind.

home ... (book) (1998)
When this exhibition came down I reread the notes that I had written while I was conducting my research and reviewed the conversations I had with those connected to my past in Jamaica. I started to put together a book entitled *home ... (book)* based on all of these things. The first exhibition was mostly about Mark, my friend who had died, but with the book I started to incorporate family snapshots and general memories about my own life in Jamaica and that of my family. It was in this phase that I began to incorporate the ideas of memory and the triggers of memory discussed by Roland Barthes in his work *Camera Lucida* in particular. I was interested in his notion of the *punctum*, that part of a photograph that triggers a strong response (in his case usually a nostalgic or painful memory) in that of the viewer.

I also conducted extensive research into the history of Jamaica in general, and specifically of that period just after independence between 1962 to 1978; a period that began in the year of my birth and ended when my family emigrated to

Canada. Some texts were written by the protagonists: Michael Manley's *Up the Down Escalator; development and the international economy: a Jamaican case study* (Manley 1987); Nettleford's *Cultural Action & Social Change* (Nettleford 1979); and personal memoirs such as Rachel Manley's *Drumblair: memories of a Jamaican childhood* (Manley 1996). This last book a very important reference for me, covering as it does a similar time period and subjects that reflect my own concerns. The *home … (book)* work was a transitional piece. It tied together the ideas that I began exploring in the first installation and started to expand them both outwards towards an element of the geopolitical realities of the time and inwards in an attempt to try to understand where I fit in the space that I occupied.

a memory box (1998)
The work that followed on from this book was another installation, this one entitled *a memory box*. In the gallery were hundreds of fragments of family snapshots transferred onto ceramic tiles. One side of each tile had a fragment of an image, the other side the impression of the cerebral cortex.

These were suspended by long strings from a very high ceiling. They shifted and moved as people moved through the gallery in the same way that my own memories are fragmentary, hard to see, and difficult to grasp. Projected through the tiles were slides of me walking along the Nova Scotia coast. On the facing wall were projections of the names of people I had known in Jamaica. With the

fragmentation of my family photos I presented viewers with *punctums* denuded of the context necessary for anyone else to understand them.

A memory box was an immersive environment. All the many different elements of this piece came together to form a single work. Unlike my first installation, where there were two groups of elements and a tension between them. This installation was an attempt to harmonize all the different conflicting elements or fragments of my memory.

Figure. 5 Installation view of a memory box *(1998) through tiles*

Work that influenced this project

One of the biggest inspirations to me for this work is Christian Boltanski whose

early work consisted largely of a writing and rewriting of his own past, each time

with a different combination of fact and fiction, almost as if he was trying to write

the perfect past. Stylistically, the pieces that most impressed me were his later,

larger installations in which he played with light and form and space but

conceptually it's his early work, the work in which he photographed himself

playing the parts of various people and events in his life. His ambiguity and

playfulness in his reconstruction of his childhood, particularly in works such as

Recherche et présentation de tout ce qui reste de mon enfance, 1944-1950 (1969)

and his work entitled *Saynètes Comiques* (1974)(Pompidou) were particularly

Figure 6. Saynètes comiques, 1974
Le mariage des parents (Parents' wedding)

important in forming my ideas about the construction, and reclamation of a

childhood, while remaining ambiguous about the veracity of the memories.

Another important influence is the work of the Lebanese artist Mona Hatoum in

particular her video installation entitled *Measures of Distance* (Tate 2002) which

was completed in 1988. In this work she combines very personal letters from her

mother during a separation due to exile, with videos in which she takes a very

personal, very painful event and constructs a powerful statement on the effects of

geopolitical and personal traumas. Hatoum expresses these events in then

layered and nuanced space. *Measures of Distance* takes the flat surface of letters

written on flimsy air mail letter paper containing her mother's neat precise

Figure 7. Measures of Distance, Mona Hatoum (1988)

handwriting (in Arabic) and places them as a screen between our eyes and the

video image of her mother caught in the intimate act of having a shower. The

space is completed by a voice (presumably Hatoum's) reading what is assumed to

be an English translation of the letters we're seeing. Her work resonates a with

me in part because of the strength of the narrative and the obvious yearning for

an unreachable, happier past.

Robert Hodgin, an artist and programmer who produces his work under the

label FLIGHT 404, was a great influence to me. I was particularly interested in his

seemingly constant sense of experimentation and exploration of different data
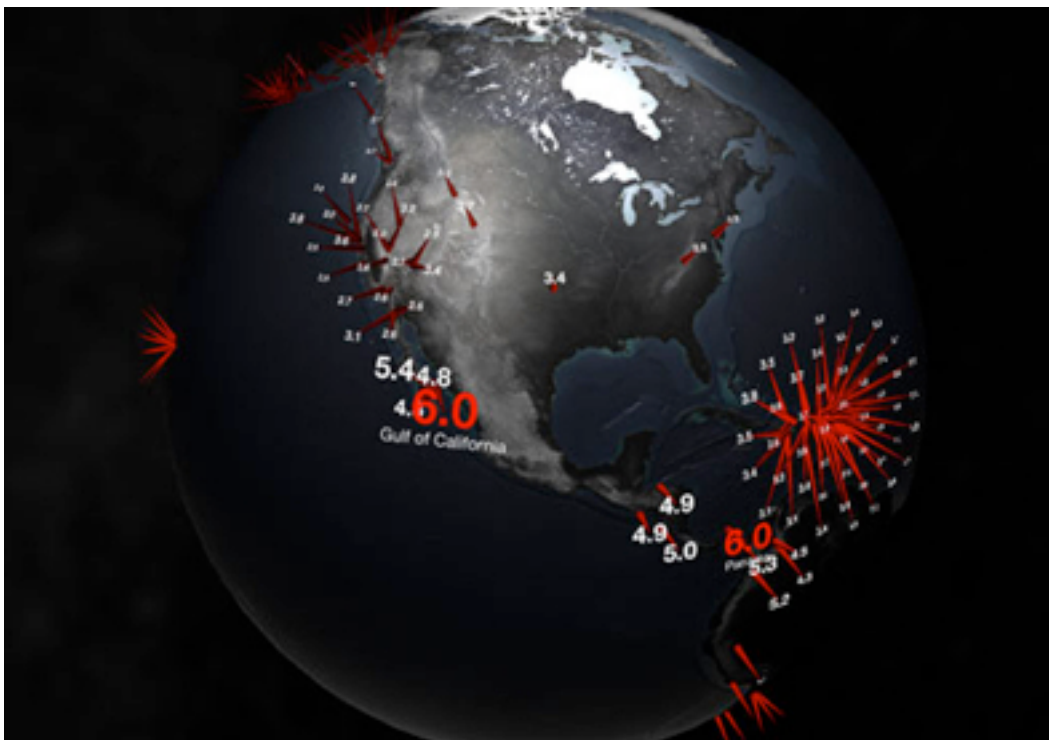
Figure 8. Robert Hodgin, from a blogpost entitled "Climbing back down".
http://www.flight404.com/blog/?p=325

visualization techniques. Hodgin's experiments with displaying interesting data

sets inspired me, most particularly a number of pieces on using data from the US

geological survey on earthquakes around the world. (Hodgin 2009) The

recollection of my experience of an earthquake, combined with my interest in creating interesting visual spaces found some resonance with his work.

The main influences of *Rupture*, are the investigation into the nature of separation, exile and memory in Mona Hatoum's work; the very playful and constructed narrative of his past by Christian Boltanski; and the very interesting and beautiful representations of geologic data by Robert Hodgin. There are many other artists who have inspired me in my work but these three are the most important for this thesis.

Literature Review

Where can we locate the interplay between the mnemonic function of an object, place or image and the tensions and reconciliations between public and private constructions of memory? A discussion of memory always brings me back to Walter Benjamin, particularly his essay entitled "The Image of Proust" in *Illuminations*. (Benjamin and Arendt 1986)

Benjamin, in his writings on Proust, divides memory into two kinds: voluntary and involuntary memory. These are terms which could be read in relation to the cultural and the natural. If we are to look at memory in the context of the image in Roland Barthes' terms, we would call these the *studium,* which in Barthes usage is about the image that arouses a studious, slightly distanced interest; and *punctum,* (Barthes 1981) which is that feature of an image that pierces the distanced interest with an personally emotional interest.

If we accept voluntary memory as the result of a process of construction which consists partly of an implicit cultural filtering, partly of a process of editing, then involuntary memory is of course the opposite: the unedited, unfiltered recollection that perhaps works less on the level of language (the supreme cultural tool) than on that of sensory experience. This sensory experience is quite important to me in the context of this work. Memory is often made up of smells, tastes, sounds and the feel of the textures of the world around us, any one of which, when experienced again could trigger an intense, involuntary

recollection of the original. In my installation work I always engage more than one of the viewer's senses. By using each sense to reenforce the others I build up a complex, engaging and immersive environment which transforms the viewer into a participant of the narrative space of the installation.

In *Rupture* the large slowly rotating globe, along with the title of the piece: *Rupture: an autobiography in earthquakes,* begins to make a connection between the points of flickering light on the wall and the lit table placed just in front of it containing the photographs. The visible rough texture in the photographs invite the user to touch this tangible relic of memory which triggers a voice that fills the room with a recollection that in turn transforms the user's perception of the snapshot. As each image is touched, the viewer discovers more about the figures beneath their fingers. With sight, sound and touch I hope to take the viewer's engagement with the images from that of the distant curiosity (*studium*) through to a more emotional connection with the image (*punctum*).

Benjamin makes the argument that our processing, or shaping, of events into recollection is a protective action. We make memories to protect us from the shock of unfiltered, real events. Real experience, comes to us in the form of trauma. It is only by processing events into memory that we can make sense of these events.

That analogy, between memory and trauma or shock, provides the perfect connection between memory, or the process of memory, and geological

disturbances. An earthquake is the traumatic disturbance of the earth. Memory is the traumatic disturbance of the psyche.

Or, perhaps it would be more accurate to state that I am interested in those fissures that make apparent the process of construction, and what role time and distance play in reducing involuntary memory to the less immediate (and therefore less disruptive) domain of voluntary memory.

History can be situated as type of voluntary memory on a mass scale, subjected to a constant process of revision and editing. In his article "Invention, Memory, and Place" which is contained in *Landscape and Power* (Said 1994) Edward Said explores the use of language and narrative as tools of a colonizing power. He examines the notion of memory and personal narrative as fluid and flexible entities. He states "Memory and its representations touch very significantly upon questions of identity, of nationalism, of power and authority." (*ibid*, pp 242)

The role of tradition is also discussed within the context of mutable and in some cases invented memories: "In other words, the invention of tradition was a practice very much used by authorities as an instrument of rule in mass societies when the bonds of small social units […] were dissolving". His article discusses the notion that memory is not something that "sits inertly" (*ibid*, pp 245) but something that is used and exploited to various ends.

Said's thesis matches up perfectly with my own experience growing up in the 70s in a country that was at the center of a great political struggle. There was a major effort to define a unique Jamaican identity, a Jamaican history, and the Jamaican culture, through the invention of history and tradition.

With Said's notions of the power of the reinvented nation and the reinvented self in mind, I considered the role of forgetting in the relationship I have with my own memories. I began to investigate the process of the absence of memory. In my research I came across a small monograph by Paul Virilio entitled *The Aesthetics of Disappearance* (Virilio 1991) in which he discusses those moments in our perception that are missing from our consciousness. For Virilio, light is a shadow of time, it is not possible to see time itself, but we may observe it through the shadow it casts. The forms projected by that shadow make up our reality—the imagination creates a version of reality that becomes memory, which in time is indistinguishable from the real. The covering up of the disappearance of reality is made real by the action of memory.

Virlio quotes Descartes: "The mind is a thing that thinks", to which Bergson responds: "The mind is a thing that lasts". Suggesting that they are both correct, Virilio continues: "It's our duration that thinks, the first product of consciousness would be its own speed in its distance of time, speed would be the cause of ideas the idea before the idea." (Virilio, 1991, pp. 22) We cannot see into the future however we constantly anticipate it. Nor can we really ever be aware of the

present. Two tenses (the future and the present) are anticipatory ones. We anticipate and construct the nature of the future and the present with our imagination. The present, as experienced by us, is really the recent past held fresh and lightly structured in our memory. By retaining, by living in the continuous recent past, we change an instant into a memory.

Both Virilio and Said talk about manufactured memories. In the first instance, the memory is consciously manufactured, sometimes on a personal level and sometimes on a national level. In Virilio's case he is talking about what could be thought of as a need or a desire to fill in the blanks, or, in my understanding, to try to create a seamless whole from what are really fragmented experiences. What draws me to Virilio is the notion that there are parts of our experience that we cannot know but that we collect in any case. We are no longer able to distinguish between a real memory and one which we subconsciously invented to smooth over a gap. Reading Virilio I became interested in the physical processes at work in the brain. I turned to a book by a neurologist *The Accidental Mind* (Linden 2007) in order to understand as well as I could the current understanding of how the brain processes memories.

David Linden is a researcher in the field of neuroscience and has recently put together a monograph (Linden, 2007) discussing, outlining and explaining current research on the brain and how it forms and structures our identity; how we think, remember and perceive the world around us. He goes into as much detail

as is necessary, using research in the chemical and physical structures of the brain.

Linden confirms much of what I had already come to understand about the way we experience the past. That is, the mechanism within our brains by which we remember is not exactly clear. It is in no way analogous to the way a computer stores data. Our memories are highly processed, distributed and sometimes lost. The act of recollection is one of collecting image, smell, touch and any other sensations including emotion that make up what we think of as a memory. That our memories are fragmented even within our own minds speaks very strongly to the work that I've been doing. To find out more about how memory works and how events are stored and then recalled, I turned to the work of two cognitive psychologists, Christopher Chabris and Daniel Simons, whose book recounts experimental results of testing various types of memory and perception. *The invisible gorilla* (Chabris and Simons 2010) is a work that discusses how our senses and intuitions deceive us on a regular basis.

I'm most interested in chapter 2 of this book which covers what they call the "illusion of memory" which they describe as "the disconnect between how we think memory works and how it actually works." (*ibid*, pp 46) Much of my work for this project, at least the portion of the project that explores memory, is based on the idea that memory is slippery and can often be incorrect. I make a

distinction between memory that is consciously constructed and memory that is equally constructed, but unconsciously so.

It's very hard to accept that our memories can be wrong even when we've been shown otherwise. For instance, my Dad tells me about the time, July 20, 1969, that he tried to sit me down to listen to the moon landing on the radio. He's told me about this a number of times, and to this day I cannot be certain if I remember him trying to get me to sit still or if that memory has been built out of the number of occasions that he told me about it. Chabris and Simons state that "memory depends both on what actually happened and on how we made sense of what happened".

Research Methodology and Working Process Outlined

My working methodology is process oriented. I begin with an idea—a working hypothesis, which develops as part of the process of experimentation, self-reflection, and research.

My working processes have evolved and refined themselves over the last 15 years of my art practice. My work begins with an idea, or a vision, or a feeling which pushes me towards a certain process, or certain materials which then sends me along to research other artwork and other critical frameworks. This is a very fluid and reflective process. I spend a great deal of time thinking and reading and sketching. The sketches often take the form of photographs, short computer programs, little electronic tests, and notes from my reading. I live with the work, the processes, and the visualizations while thinking about how what I'm trying to say changes with my research and experiments. My intention for the work is reflected in the physical expression of that work.

My research methodology is summed up quite well by some of the processes described in the book *Reflexive Methodology; new vistas for qualitative research*. (Alvesson and Sköldberg 2000) The authors posit a critical framework based on the more interpretive and rhetorical nature of research particularly in the social sciences. I have adapted their methodology to my work in the fine arts.

In chapter 3 "Hermeneutics: interpretation and insight" they explore the mechanisms inherent in work and reflection and the insights gained into

important critical frameworks surrounding the work. The various aspects of hermeneutic processes resonates quite strongly with my own processes. I am especially interested in their notion of textuality and how texts can be read and interpreted in context. Alvesson and Sköldberg say that "what is interpreted is not 'facts' or 'data', but text." They go on to state that "facts emerge from the text via a process of interpretation. They are results, not points of departure." (*ibid,* pp. 61) Meaning that an investigation of a work includes a dialogue with the work as text; a key process in my own artistic practice.

I look at both my theoretical research, and my materials research as explorations into texts that are related to the idea and the narrative that I wish to create. Alvesson and Sköldberg go on to state that as part of the framework of hermeneutical interpretation, the researchers "use the procedure of asking questions to the text, and listening to it" (*ibid,* pp. 61) and in that way, we may come to a deeper understanding of the text and its place in the critical space of research.

In this case, I began with the idea of creating a visual representation of the geographical location of earthquakes, as they occurred over time. Earthquakes are detected and recorded using instruments called "seismometers" that measure the waves created by earthquakes.

To use this data in my project I have to process that data to extract useful information with which I will create my images. I use the date/time, latitude,

longitude, magnitude and depth of the earthquakes. With the aid of some mathematical transformations, I use the data to define the position, size and colour of the pixels that make up the larger images. I define the parameters and construct the algorithms that will produce these images.

As a starting point, I created a Flash version of a program in which earthquakes are represented as animated points of light. They appear one by one, slowly creating an index not only of earthquakes, but eventually tracing out a map of the tectonic edges of the world.

I began to research earthquakes in order to understand their geological causes. At the same time, I began to experiment with the way my earthquake program would visually represent earthquakes, by varying the colour, size, and animation rate.

I was able to find a "live" source for earthquake data, an online database maintained by the U.S. Geological Survey with information that was constantly updated as earthquakes occurred around the world. Using this, I was able to make my "earthquake map" update in close to real-time. I also began to consider the idea of the "map"—and how the way we represent the earth is to a certain extent, culturally determined. Maps published in Asia give Asia a more central location—maps published in North America/Europe represent a more American/ Eurocentric point of view. Maps have a long history of being more than a record

of places and the distances between them—I think of medieval maps shaped like lions, of the unrecorded edges labeled "there be dragons".

What had begun as an experiment in visualizing data, began to take on more meaning, as I began to think of connecting the span of time depicted in the map to my own lifespan. Identity, autobiography, narrative and memory have always been at the centre of my work and now earthquakes began to seem like an appropriate metaphor for gaps in memory and the disjointed narratives of my own life.

In this way, a piece that began as a visualization of scientific data expanded to include research on memory, fictional narratives, and the postcolonial process of creating identity. This was a back and forth process. Reading Benjamin, Said, and Virilio gave me ideas about how I could create a more layered work, and informed the process of development when I began to work on the program again.

The idea of a layered piece fits in well with the central analogy. It also brought me back to a piece I had started a short time before. I had been creating small clay tablets with fragments of personal anecdotes. I began to integrate the idea of personal narrative, of memory gaps and the fictionalized narratives that replace actual memories, into the piece on earthquakes. Each point of light represented not only an earthquake occurring at a specific time, with specific coordinates, but a fragment of personal narrative as well.

The process is really about play. Farley Mowat wrote about the North in "*Never Cry Wolf*" (Mowat, 2000) and he spent a chapter talking about the importance of play and how it was not trivial, it is about how you make discoveries. That play is a very ernest mechanism that incorporates being actively curious. Through play we learn things about ourselves, our material world and about how things connect with other things. It is a way of working that allows experimentation without major consequences. That notion of play is central to my process and I actually like to live dangerously in a way, because I insist on working with materials and processes, which lie outside of my expertise. I experiment and try a lot of things: I continuously revise my work. I think of my work as attaining a series of plateaus. For example for this project, I continued my experiments until just before the piece was installed. I included elements that had been ready for some time, as well as elements that were created (in response to seeing the work in the room) just the night before. The moment of completion is one I take very seriously. The installation contains everything I believe necessary to answer the questions I asked when I set out on this journey—and nothing that is not necessary.

Conclusion

In making *Rupture* I was able to synthesize my interest in diverse art-making practices and my keen interest in my research into memory and identity. With this project I covered what was for me, a great deal of new ground. Most notable were the almost invisible mechanisms generating opportunities for interaction, as combined with my more traditional art practice. By combining hand made electronic sensors with my own photographic presentation, responsive video and audio with real-time generation of a large semi-abstract data-based animation, I was able to connect almost all of my physical and virtual modes of practice.

One of my major goals for this thesis was to see if it would be possible to take a large anonymous data set (in this case a large curated set of data about earthquakes which coincidentally and purely by accident happened to cover the period from my birth until now) and somehow turn it into an intimate component of a search into my own half-remembered past. It was a long and difficult undertaking, incorporating a fair amount of research into the presentation of large amounts of data. Part of this process was gaining the skill set required to display the data the way that I needed, to be able to incorporate it into my own personal vision. I believe that I was successful in this endeavor. Presenting the information so that the very presence of this projection triggers something physical in the viewer was important to the piece. By combining the visuals with sound and images based on my own life, a connection was made

between the photographs, the sounds and the text, and this large ponderously rotating globe, made up only of earthquake events.

The problem of encouraging the user to interact with the work was a difficult one. Throughout the building process I focussed on using only elements found commonly in the domestic space. The presentation of the images impressed upon common ceramic tiles if nothing else suggested that the images themselves were not fragile. In future presentations of this work I plan to improve the interactive potential of this work in a number of ways. The first is to put a small sensor in the table that will cause it to be illuminated when a viewer moves within arm's reach. This will, I believe call attention to the display and that, coupled with the rough texture (visual and tactile) of the images will encourage the viewer to physically interact with the work. The other modification I envision is that when a tile is touched, small lights embedded in the table will illuminate that particular tile indicating that the sounds being heard are tied to particular images inlayed in the table top.

Taking my small intimate memories and snapshots and placing them in the scale of a room-sized installation, and at the same time incorporating a three-dimensional visualization of the earthquake information, and juxtaposing its large scale to my small, intimate family snapshots, created a tension in the relationship between the scale of the world's seismic history and my intimate past. In this space and at the end of the day bringing the intimate things together with the

vast impersonal dataset creates a poignant incongruity. I discovered that it is possible to take this data into an installation context, and through careful construction of the visual and aural experience, I was able to bring the impersonal into the realm of the personal.

By connecting objective, scientific data with my own struggles to remember the minutiae of my life in another time and place, I was able to create a new contextual understanding of both.

Recommendations for Future Research

It has become clear while working on this project that it would be a fairly simple thing to modify the piece in order to present in a way that is suitable for mobile computing devices. I am interested in devices with which the user already has an intimate relationship and can therefore create affordances within the work.

I would like to extend my research based on the results of this project and to remediate *Rupture* in a way that it could take advantage of this intimacy. With a mobile device the person experiencing this artwork will have a much more intimate relationship with the piece and would be able to take advantage of the GPS capabilities of the device. This would take advantage of the fact that the device itself knows physically where it is in the world and can retrieve in almost real-time any earthquake events, for instance, those that occur in their region, but also, anywhere in the world.

The challenge here will be somehow to find a way to let go of my control over the content of the narrative and open up this artwork to the contributions of viewers all around the world. For instance, I would like to see how their personal memories could be integrated into this application. I would not have suspected when I started working on a way of visualizing earthquake data and connecting it to personal narrative, that a very real tragedy would occur in the shape of a 7.0 earthquake which would devastate parts of Haiti and, more recently the 9.0 earthquake in northern Japan that occurred the evening prior to my thesis

defense. Most earthquakes are relatively minor. They occur by the thousands every day and, for the most part, people who are in areas experiencing earthquakes remain unaware of them. Their impacts are unnoticed by anyone but those who monitor seismic data. It is important to me that this new work be able, through careful interface/interaction design, create a space for a shared experience in the case of a barely felt tremor through to an earthquake that registers on a national scale.

Another site for further exploration is the realm of existing social networking protocols such as Twitter. I plan to study the implications of integrating Twitter into this work. I think the Twitter stream should be composed of the user's memories, observations, thoughts about earthquakes, the visualization and the overall piece itself, rather than simply be an update of the latest earthquake somewhere. It is by making the Twitter stream perhaps a shared and collaborative narrative that I may integrate social networking into my piece. This is an intriguing project and I will have to devise a way to integrate short form narratives from a wide and diverse audience integrated into both the proposed iPhone application and future installations of *Rupture*.

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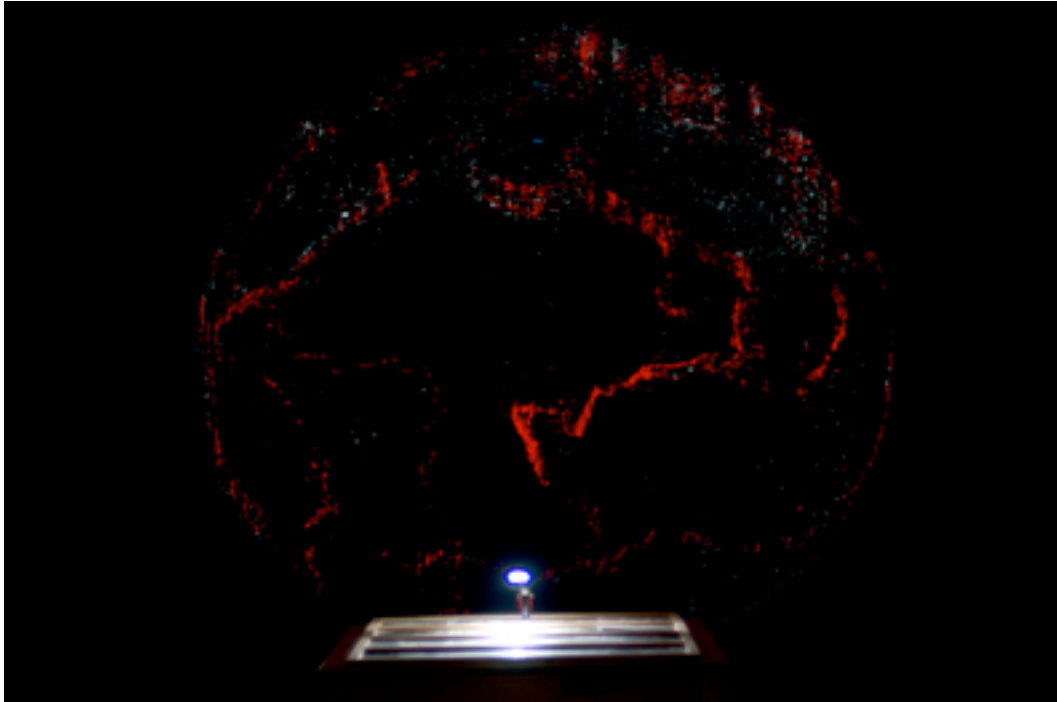
Appendix A: Description of work as presented

Figure 9. Installation view of Rupture

Rupture: *an autobiography in earthquakes* was installed in the Experimental Media

Room at OCAD University for my defense on March 11, 2011. This installation

consisted of a large wall-sized projection with a small kitchen table placed in

front of it. The large wall was covered with black velvet, on which was projected

the wall-sized data visualization of all of the world's earthquakes since 1962,

mapped to a ponderously revolving 3D globe.

The room was darkened with the only two sources of illumination being a small

lamp on the table and light from the projection itself. Beneath the table there was

a glow caused by small indicator lights attached to an array of sensors. The

sensors below the table were placed beneath a corresponding image on the

surface of the table. The Images on the surface of the table were created by

printing snapshots from my life in Jamaica and transferring them to six inch

square white ceramic tiles.

Figure 10. Installation view of Rupture *with lights on showing table with images.*

When each tile was touched an audio file began to play. There were a total of 16 images, each with a corresponding sensor and audio file. The audio files were attached to videos, but only the audio was heard.

The audio consisted of sixteen separate short instances from my life in Jamaica. The audio ranged in length from 10 seconds to 62 seconds. Each of the audio files are contained on the accompanying DVD.

When you first entered the room you would have noticed two things. The small table roughly in the centre of the space, and behind it, a very large animation made up of small points of light. It would have become fairly apparent that these small points of light were in fact points arranged on a sphere. It was my hope that by knowing the title of the work, which contains the word earthquakes, the viewer will make the association between those points and earthquakes. The points that make up the animation were created based on four parameters. For each of the roughly 14,000 earthquakes I took the latitude, longitude, depth and year. The earthquakes that occurred during my life in Jamaica are white while those that have occurred since then are red. It is not important to me that the viewer knows that about the animation, but it is my hope that they would begin to think about the possible significance of the colour while they hear and interact with the rest of the piece.

On the table in front the viewer will notice what are clearly snapshots. If the viewer is of a certain age, they will even be able to recognize roughly what period in time these snapshots encompass.

In order to encourage interaction, I used common household materials. The table was a simple kitchen table from IKEA, the images were placed on ceramic tiles such as those used in kitchens and bathrooms, and the light was a small reading lamp designed to be clipped onto books. The images were transferred onto the tiles in such a way as to be textured both visually and to the touch. When a viewer touched a tile, an audio file began to play. The sound seemed to surround the user because speakers were arranged in all four corners of the room.
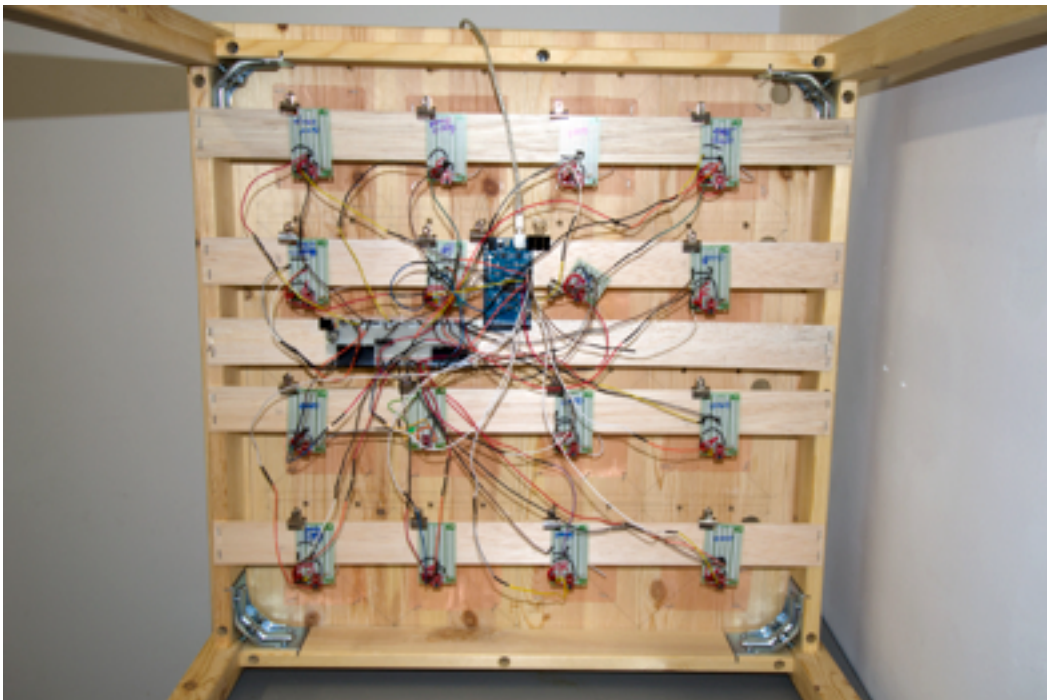

Figure 11: Capacitance sensor array beneath the small table with the Arduino micro-controller.

The sensors under the table were not perfectly attuned to proximity, and while they all responded to individual touches, on occasion some of them became activated in a seemingly random fashion. This is because they were sensitive to changes to the electromagnetic field around them and would sometimes register a touch when none occurred. So while standing there looking at the table or looking at the Globe, it's very likely that the viewer would have heard one of the small recorded narratives that play in response to one of the images being touched. This may lead the viewer to question the exact nature of their interaction with the piece and take a more active role in exploring the the memories placed within each image. Because the sensors actually respond when the user placed their hands near the tiles, it is possible for the user to trigger sounds without actually touching the corresponding image.

Even the large projection encouraged the user to touch it. The material chosen to create the black screen on which to project the animation was a heavy velvet curtain. This velvet served two purposes: 1. the surface cut down on any reflections from the projected image, and 2. it rewarded anyone who touched it with a textured surface.

By selecting only materials for this installation that were designed to be touched or at least look like they had a textured surface, I encouraged the viewer to engage with my work in a tactile fashion. This tactile engagement was then rewarded by the playing of a series of short narrative audio works. This

installation is an environment. The components all contribute to the overall experience.

This work is honestly personal. It is also clearly about memory. The ponderous spinning animation evokes the world, because of the shape, the rotation, and the scale. The photos are clearly from another time so even if you know nothing about me, about Jamaica, or about geology, the viewer should be able to enter the installation and get something tangible: the earth, and the sense of memory that may be shared or evoked.

The earthquakes are important to me because I have only felt two in my life, and I am fascinated by them. The viewer should get a sense and an understanding of what I am trying to convey. It is not about earthquakes, but more about the earth and its natural processes.

In my view, the key was to visualize the data in such a way that it completed the space, rather than as the entirety of the work. The data is a part of the context, the environment which when taken as a whole becomes the work. I believe that with this installation I have shown that data taken from large, impersonal collections (in this case, records of earthquakes around the globe) can be incorporated into a visualization and installed in a space in such a way that they will encourage personal introspection and reflection.

Figure 12: Table with 16 images, small lamp and red glow from capacitance sensors.

Appendix B: Source code for touch sensors
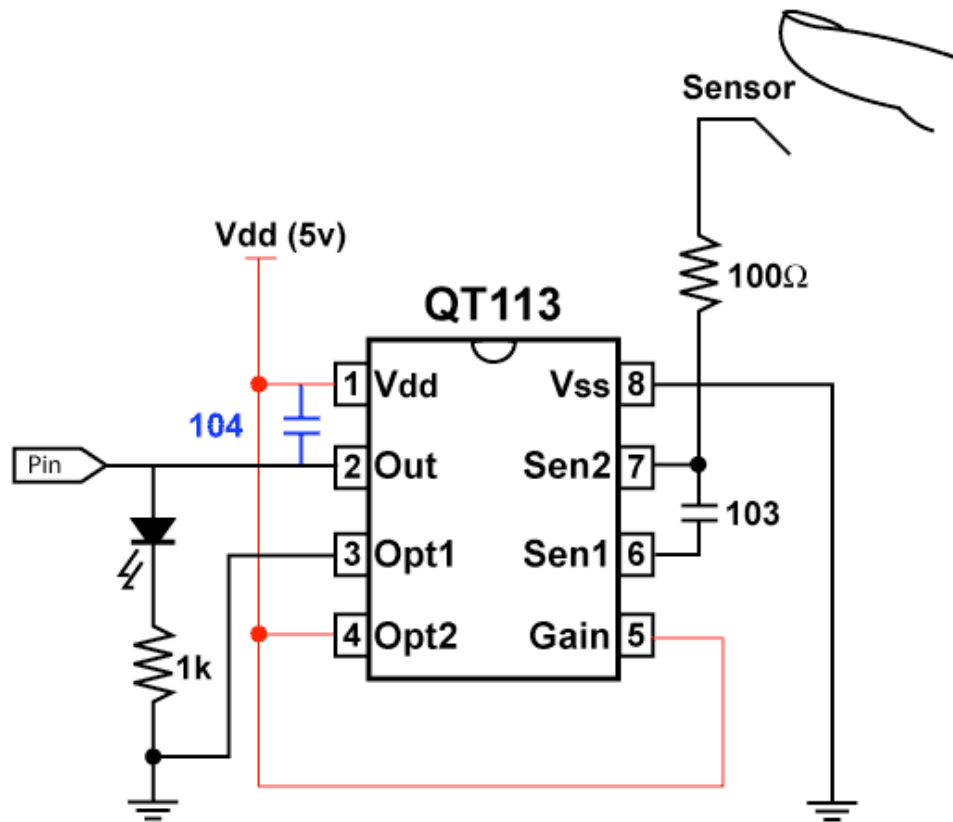
After parallax.com application note QT113

Figure 13: Circuit diagram for the capacitance sensor.

The circuit used to create each sensor is based on a circuit diagram[3] by Steve

Daniels. This circuit was modified with the help of Doug Back to solve a problem

with it being very unreliable. His suggestion was to put the capacitor labelled as

104 above between power (+5v) and ground. That mostly did the trick and made

the sensors more reliable.

3 http://imagearts.ryerson.ca/sdaniels/physcomp/tutorials/tQt113.html

I used sixteen sensors all connected to an Arduino. The Arduino sent data to a

Processing sketch which played a particular audio file based on that input.

Arduino code:

The code polls each of the pins connected to a sensor and when it senses a

touch, it sends the number (1-16) of that sensor to the serial port which is then

collected by the Processing sketch.

```
// the image touched
const int img1 = 2;
const int img2 = 3;
const int img3 = 4;
const int img4 = 5;
const int img5 = 6;
const int img6 = 7;
const int img7 = 8;
const int img8 = 9;
const int img9 = 10;
const int img10 = 11;
const int img11 = 12;
const int img12 = 13;
const int img13 = 14;
const int img14 = 15;
const int img15 = 16;
const int img16 = 17;
int temp;
unsigned long checkSensorTime;
unsigned long levelOutDuration = 500;
unsigned long currDuration;
```

```
// these are to cut down on false positives.
boolean tempImg[17];
boolean tempImg1[17];



void setup() {
  // initialize the image pin as an input:
  pinMode(img1, INPUT);
  pinMode(img2, INPUT);
  pinMode(img3, INPUT);
  pinMode(img4, INPUT);
  pinMode(img5, INPUT);
  pinMode(img6, INPUT);
  pinMode(img7, INPUT);
  pinMode(img8, INPUT);
  pinMode(img9, INPUT);
  pinMode(img10, INPUT);
  pinMode(img11, INPUT);
  pinMode(img12, INPUT);
  pinMode(img13, INPUT);
  pinMode(img14, INPUT);
  pinMode(img15, INPUT);
  pinMode(img16, INPUT);
  checkSensorTime = millis();
  for (int i = 0; i < 17; i++) {
    tempImg[i] = false;
    tempImg1[i] = false;
  }
  Serial.begin(9600);
}

// Every time the loop is run (9,600 times per second)
```

```
// check the current time and then check each sensor
// to see if it is being activated.
void loop(){
  currDuration = millis() - checkSensorTime;

  if (currDuration > levelOutDuration) {
    checkSensors();
    checkSensorTime = millis();
  }
}
void checkSensors() {
  temp = digitalRead(img1);
  smoothSignal(temp, 1);
  temp = digitalRead(img2);
  smoothSignal(temp, 2);
  temp = digitalRead(img3);
  smoothSignal(temp, 3);
  temp = digitalRead(img4);
  smoothSignal(temp, 4);
  temp = digitalRead(img5);
  smoothSignal(temp, 5);
  temp = digitalRead(img6);
  smoothSignal(temp, 6);
  temp = digitalRead(img7);
  smoothSignal(temp, 7);
  temp = digitalRead(img8);
  smoothSignal(temp, 8);
  temp = digitalRead(img9);
  smoothSignal(temp, 9);
  temp = digitalRead(10);
  smoothSignal(temp, 10);
  temp = digitalRead(img11);
```

```
    smoothSignal(temp, 11);
    temp = digitalRead(img12);
    smoothSignal(temp, 12);
    temp = digitalRead(img13);
    smoothSignal(temp, 13);
    temp = digitalRead(img14);
    smoothSignal(temp, 14);
    temp = digitalRead(img15);
    smoothSignal(temp, 15);
    temp = digitalRead(img16);
    smoothSignal(temp, 16);
}
// checks if the sensor is still being activated after
// half a second.
void smoothSignal(int msg, int num) {
  switch(msg) {
  case 0:
      if (tempImg[num] == false) {
         tempImg[num] = true;
      } else if (tempImg1[num] == false) {
         tempImg1[num] = true;
      } else {
         Serial.println(num, DEC);
      }
    break;
  case 1:
    Serial.println(" ");
    tempImg[num] = false;
    tempImg1[num]= false;
    break;
  default:
    break;
```

```
    }
}
```

Processing code:

This code simply reads the serial input (the data sent from the micro-controller)

and plays the appropriate movie. To keep things simple, I gave each movie the

same name as the data. For example, if the sensor listed above as img1 is

triggered, it will play the corresponding movie, in this case one.mov.

On a side note, there is a bug in Processing while using the built-in video library,

so I used the Java Media Components library by Angus Forbes.[4]

```
import jmcvideo.*;
import processing.opengl.*;
import javax.media.opengl.*;
import processing.serial.*;


int currMovie = 0;
int newMovie = 0;
Serial myPort;  // Create object from Serial class
int val;       // Data received from the serial port
String myString;
int lf = 10; // line feed char
int pvw, pvh;
JMCMovieGL movie;
String[] movies = new String[] {
 "blank.mov", "one.mov", "two.mov", "three.mov",
"four.mov", "five.mov",
 "six.mov", "seven.mov", "eight.mov", "nine.mov",
"ten.mov", "eleven.mov",
```

---

[4] http://www.mat.ucsb.edu/~a.forbes/PROCESSING/jmcvideo/jmcvideo.html

```
   "twelve.mov","thirteen.mov", "fourteen.mov",
"fifteen.mov",'"sixteen.mov"
};
int movieNum = 0;

void setup() {
  size(720, 486, OPENGL);
  background(0);
  movie = movieFromDataPath(movies[movieNum]);
  movie.play();

  String portName = Serial.list()[0];
  myPort = new Serial(this, portName, 9600);
}

void draw() {
  PGraphicsOpenGL pgl = (PGraphicsOpenGL) g;
  GL gl = pgl.beginGL();

  {
    if (pvw!=width || pvh != height) {
      background(0);
      gl.glViewport(0, 0, width, height);
      pvw = width;
      pvh = height;
    }
    movie.centerImage(gl);
  }
  pgl.endGL();
  checkForNewMovie();
}

void checkForNewMovie() {
```

```
 if (myPort.available() > 0) {
  myString = myPort.readStringUntil(lf);
  if (myString != null) {
   newMovie = int(myString.trim());
  }
 }
 if (newMovie != currMovie && newMovie != 0) {
   currMovie = newMovie;
   println(currMovie);
  movie.switchVideo(movies[currMovie]);
  movie.play();
 }
}
JMCMovieGL movieFromDataPath(String filename) {
   return new JMCMovieGL(this, filename, RGB);
}
```

Appendix C: Source code for large image of earthquake data

The code that creates the large animation of 14,000 points positioned on a

slowly spinning globe is printed below.

It is made up of two files. First, I created a class called Earthquake. Instances of

this class contain all the relevant data about each earthquake.

Earthquake

```
class Earthquake {
  float lat; // lat of earthquake
  float lon;  // lon of earthquake
  float magnitude;
  float depth; //depth of earthquake
  String locality;
  String region;
  float yr; // year of earthquake

  Earthquake(float lat_, float lon_, float magnitude_,
      float depth_, String locality_, String region_,
      float yr_) {
    lat = lat_;
    lon = lon_;
    magnitude = magnitude_;
    depth = depth_;
    locality = locality_;
    region = region_;
    yr = yr_;
  }
}
```

The second file is the actual sketch that opens a comma separated datafile

containing all the earthquake information and populates the globe.

EarthquakePoints3Doop

```
// Plotting all the significant earthquakes since
// 1962 upon a sphere

// create an array of earthquakes
Earthquake earthquake[];

// rotation Z var
float rotZ = 0;
float dRotZ = .0001; //Speed of rotation
float r = 300; // radius of globe. Fits a 600x600 sq.
void setup() {
  size(768, 768, P3D);//use P3D for the z axis

// load all the latitude longitude
// coordinates from the file
  String[] eqs = loadStrings
                    ("earthquake_region_year.csv");

  // Set up the earthquake points
  earthquake = new Earthquake[eqs.length];

  for (int j=0; j< eqs.length; j++) {
    String[] points = eqs[j].split(",");
    float lat = Float.parseFloat(points[0]);
    //multiply lon by -1 to properly orient the globe
    // for viewing from the outside.
    float lon = Float.parseFloat(points[1]) * -1;
```

```
    float magnitude = Float.parseFloat(points[2]);

    float depth = Float.parseFloat(points[3]);

    String locality = points[4];

    String region = points[5];

    float yr = Float.parseFloat(points[6]);

    earthquake[j] = new Earthquake(lat, lon,
          magnitude, depth, locality, region, yr);

  }

}

void draw() {

  background(0);

  translate(width/2, height/2); // origin to center

  // rotate the globe so the north pole is up

  rotateX(PI/2);

  rotateZ(rotZ);

  rotZ += dRotZ; //rotate very slightly on the Z axis.

  // the radius of the globe

  // draw the earthquake locations

  for(int i=0; i< earthquake.length; i++) {

    // some vertical exaggeration for the depth

    float tempDpth = earthquake[i].depth * 2;

    // vary the radius by the depth of earthquake

    tempDpth = r - tempDpth;


    // convert degrees to radians

    float ela = radians(earthquake[i].lat);

    float elo = radians(earthquake[i].lon);

    float eld = radians(earthquake[i].depth);

    // convert the eq lat and eq lon

    // to points on a sphere

    float x = r* cos(ela) * cos(elo);

    float y = r * cos(ela) * sin(elo);
```

```
    float z = tempDpth * sin(ela);
    float thisYear = earthquake[i].yr;

    // set the stroke and draw the point
    if(thisYear < 1979) {
      stroke(200, 200, 200);
    }
    else {
      stroke(200, 20, 20);
    }
    point(x, y, z);
  }
}
```

Appendix D: Contents of accompanying DVD

documentation.mov A video of the installation.

A folder called **Processing Files** which contains:

- **Earthquake.pde** an earthquake class

- **EarthquakePoints3Doop.pde** the main Processing sketch

- **Data** a folder which contains **earthquake_region_year.csv**

- **application.windows** a stand alone executable for Windows

- **application.macosx** a stand alone executable for Mac OS X

- **application.linux** a stand alone executable for Linux

A folder called **audio narratives** which contains:

one.mp3	**two.mp3**
three.mp3	**four.mp3**
five.mp3	**six.mp3**
seven.mp3	**eight.mp3**
nine.mp3	**ten.mp3**
eleven.mp3	**twelve.mp3**
thirteen.mp3	**fourteen.mp3**
fifteen.mp3	**sixteen.mp3**

These mp3 files are the audio files that play when the corresponding tile is touched.