

PIEQF MFA Thesis
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Title
Parkfield Interventional EQ Fieldwork (PIEQF)



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No guarantees for the future though.""

<http://mfa.allshookup.org>

Parkfield Interventional EQ Fieldwork (PIEQF)

'Part Machine, Part Earthwork, Part Performance'

Abstract

The *Parkfield Interventional EQ Fieldwork* (PIEQF) was a geologically interactive, seismic machine earthwork temporarily installed in the remote township of Parkfield, Central California, USA. During ninety-one days of intervention, between the 18th August and 16th November 2008, the installation reflected 4000-4500 Californian seismic events. PIEQF interfaced with the US Geological Survey seismic monitoring network and was triggered by near real-time reported earthquake waves from magnitude (M) 0.1 and above.

This early 21st century earthwork experimentally merged the micro-seismic resonance of geological time and the autonomous operation of a re-engineered earthquake shake table. The performance action of PIEQF referenced and expanded upon the fields of earth art, media art, earth science, cyberculture, punk, and science fiction.

<http://www.pieqf.net>

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1. Introduction

"Words and rocks contain a language that follows a syntax of splits and ruptures. Look at any word long enough and you will see it open up into a series of faults, into a terrain of particles each containing its own void. This discomforting language of fragmentation offers no gestalt solution; the certainties of didactic discourse are hurled into the erosion of the poetic principle." Robert Smithson, *A Sedimentation of the Mind: Earth Projects*¹

Between the 18th August and 16th November *02008², the Parkfield Interventional EarthQuake Fieldwork (PIEQF) was autonomously triggered by and artificially reflected between 4000 and 4500 seismic events. This art-science, seismic machine earthwork, performance installation was interfaced with the US Geological Survey (USGS)³ earthquake hazards seismic monitoring network of ground motion sensors mapping the state of tectonic California.

Throughout this period of ninety-one days, all digitally recorded seismic ruptures occurring in California were physically reflected through a re-engineered earthquake shake table installed temporarily in the township of Parkfield, Central California. This time-sharing, machine performance merged together the micro-seismic resonance of geological time with the autonomous operation of a ready-made, modified machine creating a science non-fictional, seismic machine earthwork action immersed within a seismically active landscape.

In the scales of time, PIEQF was a microscopic blip on the radar of geological time. By its very nature, the activities and premise behind PIEQF was to create a representation of the NoW⁴ early 21st century age and the imminent collision of human - machine interactions occurring within our NoW technologized geophysical landscapes.

This paper is presented as a geo-poetical 'Slipstream'⁵ styled account of what took place as a descriptive chronicle of events, memories, theory and references accounting for the facts behind the work. This text should be viewed as an example of science non-fictional writing presenting the action of PIEQF as a convergence of earth science and art in the NoW age. The work of PIEQF can be seen as a temporal interface between a machine and digital monitoring networks mapping the dynamic frequent shift, rupture and creep of seismic zones while introducing human time scale to the immense scale of geological time.

PIEQF expanded on the fields of earth art, earth science, cyberculture, social interaction, and science fiction. These entwined layers of activity and ideology were inherently present within the process, application and subsequent no trace references PIEQF placed within geological time and NoW cultural context. This text is a story from NoW which is made up of this week, while slightly haunted by the ghost of last week with a sneak peak into the future.⁶



1

1. README.txt

After acquiring a piece of software, one of the first things a programmer does is glance over the README file. The readme (or read me) is often a file that contains information about other files in a directory or archive and is commonly distributed with software; in this case it is an MFA paper. Considering software and the development of software² played the most crucial role in realizing the action of PIEQF, I feel it is apt that the first thing to follow after the above introduction is a README covering a brief history of the earthquake shake table, how the intervention of PIEQF worked, and why the location of Parkfield was chosen.

PIEQF effectively came about as an extension of the installation 'Seismonitor'³ which was exhibited at Artspace, Sydney, Australia, during early 02002. Seismonitor was the first phase of demonstration presenting the results of re-engineering a ready-made earthquake simulator that was originally housed at the former Earth Exchange Museum, The Rocks, Sydney, which closed in early 01996.

Between 02002 and 02006 four possibilities for future exhibition/installation with the earthquake shake table were investigated which included a permanent installation in Istanbul, Turkey as part of a fire fighting training facility. Two: A site specific and temporary installation in remote Central Australia titled; "A Telematic, Machine Based Earthwork Located in the Region of Maralinga".⁴ Three: A field installation for the region of Meckering,⁵ Western Australia, and Four: A permanent and immersive earthquake experience for Hawkes Bay Museum, Napier, New Zealand.⁶

It was not until late 02007 whilst undertaking the first artist in residence to engage with the US Geological Survey (USGS) in Menlo Park, California that the PIEQF project began to show promise of being realized. During April 02008 the shake table was exported by sea freight to California from Sydney, Australia. This export of equipment cleared US Customs at the Port of Oakland in the East Bay of San Francisco in late May 02008. The shake table was then trucked to the location of Parkfield, Central California, arriving on the 3rd June 02008 and this is where the story of NoW begins.

Historically the region of Parkfield has experienced a Magnitude 6.0 or above earthquake every twenty to thirty years and the ten-mile radius surrounding the township of Parkfield is the most densely monitored and studied seismic region in the world. Geophysicists and seismologists from the USGS and affiliated institutions began the 'Parkfield Earthquake Experiment'⁷ in 1985 with the intention of capturing data from a M6.0 earthquake as close as possible to the epicenter of a seismic event. On September 28th 02004 the predicted M6.0 earthquake occurred; as a result this moderately large earthquake has more data collected about it than any other earthquake ever recorded.

The intervention of PIEQF involved excavating an 8ft x 30ft x 50ft trench and installing the earthquake shake table weighing 8000lbs at the base of this crudely formed construction of dirt in an open field in downtown Parkfield. Custom software triggered the shake table into life by reflecting ALL seismic events from magnitude (M) 0.1 and above which occurred throughout the state of California during the period of installation. The conceptual premise behind this was to bring all seismic events to a hypothetical epicenter, which was the centre of the shake table, and to the surface of the earth.

Surrounding the earthquake shake table and buried within the excavation at north, south, east and west co-ordinate points, an array of vertical motion sensors were installed. These sensors (Geophones) were excited when walked over or jumped upon, causing the shake table to become mechanically active. Visitors to PIEQF engaged interactively with the installation becoming seismic events themselves when interacting with these sensors. Each time an 'actual' seismic event was reported, the horizontal motion (P-Wave) of the earthquake shake table was actuated under full hydraulic power which created a feedback loop with the sensors buried within the site resulting in vertical motion movement (S-Wave) of the shake table. Magnitude determined duration⁸ and the larger the magnitude of reported seismic event, the longer the shake table would function.

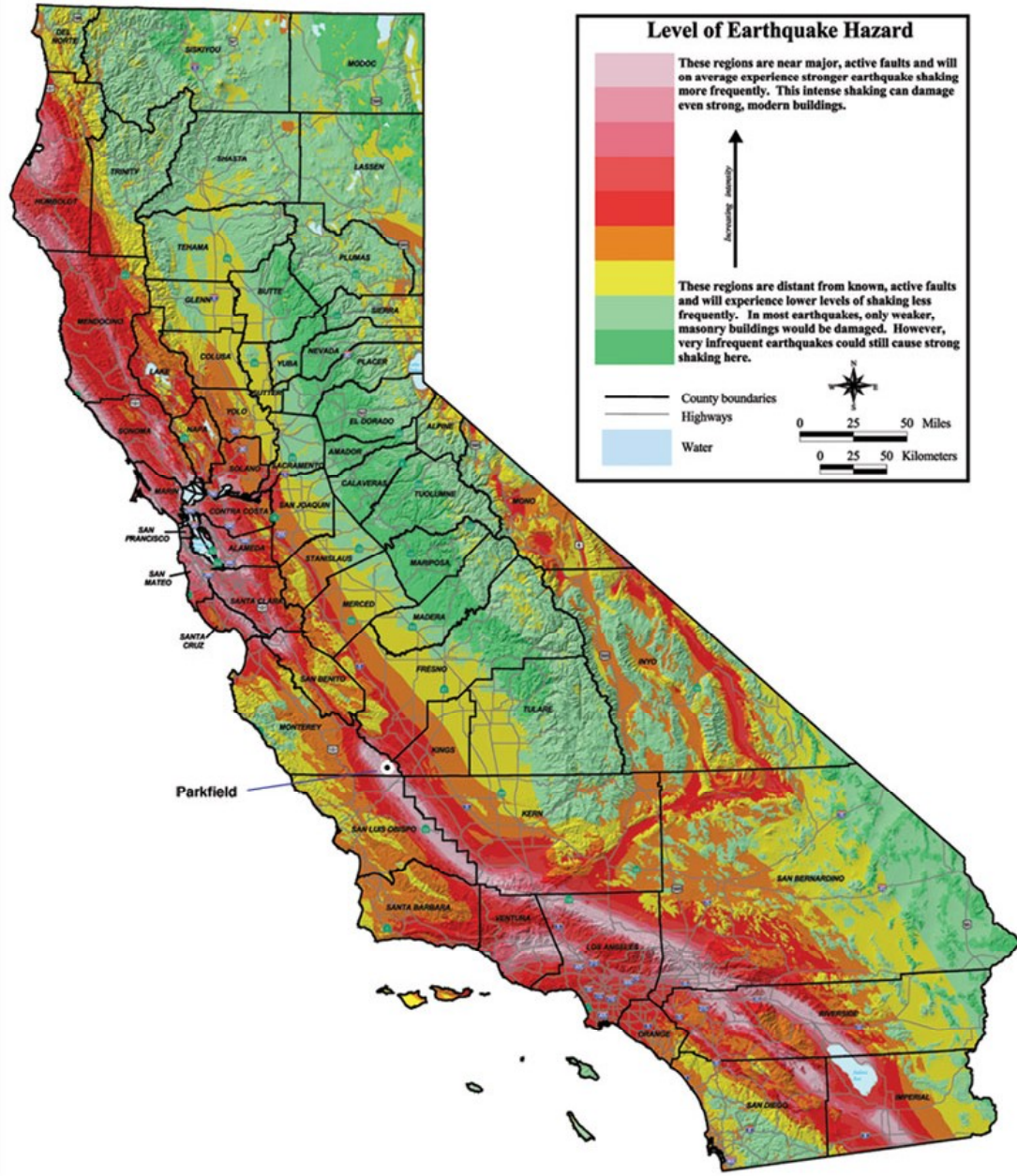
The shake table was installed facing a northwest direction, which represented the direction in which the Pacific Plate creeps and slides along the North American Plate. The Pacific Plate grinds north westward past the North American Plate at a rate of about two inches per year. When the PIEQF shake table was not triggered by real-time reported seismic events or excited by visitors to the installation, the shake table would mechanically creep one and a half inches northwest every fifteen seconds. This control feature represented the landscape in which PIEQF was installed as not a static landscape. It is geologically dynamic and constantly on the move.

At night the PIEQF shake table slept between 9.30pm and 6.30am. The PIEQF computer control system kept polling and collected seismic events, which occurred overnight, replaying them at dawn every morning. Following this morning replay sequence, PIEQF switched to assumed 'live' mode and was triggered by all near-real-time, Californian only, reported earthquake waves. These were digitally disseminated via the Quake Data Distribution System (QDDS)⁹ direct from USGS field sources which triggered the shake table from anywhere between thirty seconds to three minutes after actual seismic events occurred.

PIEQF was an interactive earthwork; connecting, mapping and creating a mark, a temporary scar and a reference point within a seismic landscape. After ninety-one days of seismic connectivity the shake table machine was removed from the excavated trench, which was then filled in with the same dirt that was temporarily displaced from the site of intervention leaving no physical trace that the action of PIEQF actually took place.

Earthquake Shaking Potential for California

This map shows the relative intensity of ground shaking and damage in California from anticipated future earthquakes.



Earthquake Shaking Potential for California Map Courtesy of the California Seismic Safety Commission, the California Geological Survey, the Governor's Office of Emergency Services, and the US Geological Survey, 02003.

2. A Mechanical Transformation of Site as Tele Action

It is the morning of 9th June 02008. Visualize and imagine you are standing and waiting in line with time. Deposits of adobe alluvial earth make up the dry and parched field in which you stand. The sky is clear. A filter of blue quenches the air. Later in the day the mercury reads 110F. The sound of dogs barking can be heard nearby. Last night wild coyotes claimed the aural wave spectrum surrounding this shifting place. This is remote central California, and you are standing at the center of the Google image map below.



On this field in which you stand, layers of geological sedimentation make up a crudely marked out canvas on the earth in front of you. This conceptual displacement epicenter measures twenty by fourteen feet.¹ Roughly placed in rectangular form are four ornamental like iron ore off-cuts marking the spot. At 8.30am, the first excavation machine arrives. This internal combustion powered D4 Bulldozer is metaphorically dressed in faded jeans, boots and Stetson like hat.² This is cowboy country and the mechanically induced rupture planned for this marked footprint in a seismic landscape is about to begin.

Where you are is almost thirty-five miles from the nearest point of civilization.³ Blazing in white Helvetica styled typeset letters the road sign entering this place near where you stand reads 'Pop 18'. Caught in time, you are positioned in the town of Parkfield, once a rustling community of around one thousand miners and homesteaders early last century. Today, farmers, ranchers, earth scientists and a micro economy based on earthquake tourism wait for the next seismic wave to pass. Like horologists working with the measurement of time, Parkfield is locked in perpetual geological time, creeping slowly towards the next imminent seismic event.



27th December 02008

Photo by Nina Alter

Los Angeles Times writer, David L Ulin writes; "*Parkfield is a town caught out of time. Or perhaps it would be more honest to say that it exists within its own time, a time both geologic and human, in which the minutes are marked primarily in terms of waiting, waiting for the earthquake that never comes*".⁴ Ulin passed through Parkfield in 02002 before the much hyped and predicted magnitude 6.0 earthquake occurred in 02004.⁵

By NoW the John Deere excavator has arrived and is dismounted from a big-rig towed low rider. Traversing this marked site, micro-mechanical ruptures begin to displace this once upon a time riverbed. The bulldozer and excavator begin to mechanically scar the land. Machine cowboy joystick operators are working with their hands. The art of prime moving, this temporary surface scar, a microscopic window frame of time and space disruption between human, machine and seismic landscape has begun.

Like sand in the hourglass of time, alluvial grains of adobe earth begin to fall through the Allosaurus styled teeth of the excavator's shovel bucket. Like seismic waves traveling away from the hypocenter of tectonic rupture, the dozer traverses and sweeps aside scoops of earth as the excavator extracts layers of memorial sedimentation from this site of NoW temporal transformation. This theatre of landscape inscription becomes a constructional deconstruction using the power of amplified human force, and for seven hours of QuickTime landscape fracture, these track propelled machines terra-form this site and place, opening up the field between the Parkfield Cafe and the Parkfield Fire Station, creating what became known as the PIEQF trench.



9th June 02008

'PIEQF Excavation'

Photo by D.V. Rogers

A live video stream transmits across the internet, telecasting this unearthing event.⁶ This un-archived dissemination of bits and bytes of video data traveled as electronic light into the internet ether and is lost forever.⁷ The eye of electronic distribution broadcasted this primitive action of mechanical landscape displacement onto display monitors elsewhere via web browsers as a mediated visual stream.

This tele non-fiction, mediated experience via the agency of distant web cam introduced a perceptual reproductive truth to the remote viewer's experience.⁸ The broadcast of the PIEQF excavation via web based tele-presence tools produced a live tele-action, viewed at remote terminal display devices via satellite communication protocols and pipes. Like soil worms burrowing through the earth, this remote landscape action was transmitted through copper and carbon silicon connected conduits. Digital wireless waves traveled like flocking birds in migration to laptops and work stations in distant places to be witnessed by very few.⁹ The broadcasted video stream of the PIEQF excavation was not recorded to hard disk or tape. Like a micro seismic wave propagating through the earth, this real-time video broadcast dissipated across the Internet leaving No trace.

The excavation performance was reproduced as it happened via video web stream but now assumes a simulacrum of only mental images and words within the memories of recollection for one cannot point to an electronic archive of images in public archival space; they do not exist. Walter Benjamin¹⁰ discusses how the 'aura' is attached to the presence and there can be no replica of it. This unrecorded and irreproducible mediated stream was a moment in physical time and place disseminated live across digital ether. This disseminated tele-action of earth rupture and displacement is NoW lost forever.

This was day one of implementing PIEQF and the 'art' in the NoW age of digital dissemination continued broadcasting .jpg¹¹ frames onto a remote server elsewhere every three minutes until the satellite internet connection was disconnected. To view PIEQF from a distance via web browser when the installation was operational, metaphorically suggested an immense action was taking place somewhere in a remote field and the last .jpg frame disseminated from the site of PIEQF is what you are viewing below.



24th November 02008

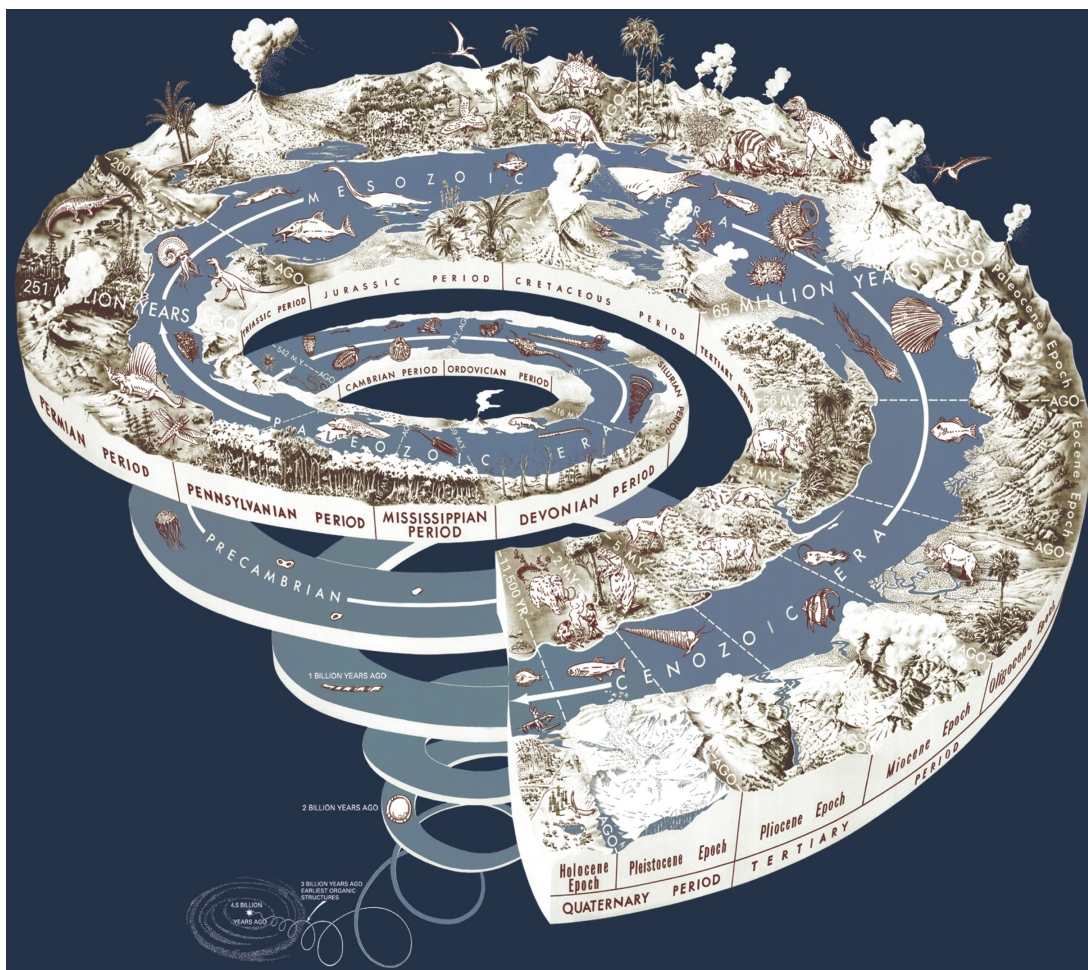
PIEQF System CCTV Image

"The authenticity of a thing is the essence of all that is transmissible from its beginning, ranging from its substantive duration to its testimony to the history which it has experienced."
Walter Benjamin, *The Work of Art in the Age of Mechanical Reproduction*.¹²

3. Assemblage Systems in the NoW Expanded Field

The earth resembles a dynamic machine system driven by internal heat and consequently is in a constant state of renewal. The crust of the earth is made up of lithospheric plates. Where these plates join they slide and scrape against each other producing earthquakes, creating uplift and the deformation of the earth's surface. This thin, eggshell-like crust of the earth equates to only 0.5 percent of the earth's mass¹ but contains nearly all of our earth's history, a cemetery of dead cells and skeletons stuck in the sedimentation of geological memory, constantly heaving and rupturing while revealing a burial ground of the earth's young surface crust.

This earth is 4.6 billion years old, which equates to 4600 million years, and one million years is a frequent event within the assemblage of time. Our complex earth works in scales of time and space removed from and beyond that of human experience. The earth is a dense, self-organizational, resonating machine system and to understand how the earth works one must 'imagine' geologic immensity, and to do this one must visualize the idea of telescoping time. Time is a field suspended and stretched between the past, the present and the future simultaneously. A natural topographic map of glaciers receding, volcanoes erupting, and monumental seismic displacements terra form this planet while NoW urban cities appear in the fields where once rivers flowed.



Geologic Time Spiral, Image by Graham, Joseph, Newman, William, Stacy and John, 02008.
Image Courtesy of the US Geological Survey.

Though hardly an agreement among scientists, the assemblage of our complex earth system could have formed in close conjunction with a Supernova event creating the solar system in which molecular gas and tiny particles of defunct stars collapsed on itself forming the Sun. This field, known as the solar nebula, collapsed again with solid particles freezing from swirling gas as it cooled forming planets, including our spinning planet earth. James Lovelock suggests that nuclear reactors have existed long before the arrival of mankind and that the surface of this earth is littered with fallout from a vast nuclear explosion from eons ago. Lovelock also suggests that the human body is in fact a mini nuclear reactor: *"Within our bodies, no less than 500,000 atoms are rendered unstable and erupt every minute, releasing a tiny fraction of the energy stored from that fierce fire of long ago."*²

By NoW I was burning off atoms at extraordinary speed. The initial skeletal assemblage of the shake table machine took place in adverse weather conditions, and became an endurance theatre of fatigue and delay well before the PIEQF event horizon went 'live'.³ This metaphorical hard labor camp of endeavor, complete with sunstroke, served with callused hands from toiling upon the land like Mexicans today,⁴ who have escaped north of Tijuana chasing the American dream. Blood was lost, tears were shed, and my body was almost at point of fracture. The temperature consistently hovered around 100F, sometimes 10 degrees more at the base of the trench in this machine-ruptured field. *'When the artist goes to the desert he enriches his absence and burns off the water (paint) on his brain. The slush of the city evaporates from the artist's mind as they install their art'*, wrote Robert Smithson in 01969.⁵

Struggling like a Neanderthal from millennia ago, a temporary shade shelter was fashioned outside and away from the excavated trench. The machine was assembled until the shake table resembled an extension⁶ of technological man, a repetitive structural form of clean straight lines derived from carboniferous extractions of raw earth bolted together representing the fragility of our post industrial age and its anti-aesthetic stance against the radial and organic curves of nature. It was not until the 29th June *02008 that this ready made Duchampian beast was lifted with the Allosaurus excavator into the trench in one complete anti-sculptural move.

In her essay 'Sculpture in the Expanded Field', Rosalind Krauss⁷ examined the late 1960s and early 1970s rupture of conceptual practice within the field of sculpture. Seminal artists like Robert Smithson, Michael Heizer, and Walter De Maria began working in opposition to the 'modernist' cultural condition as they began experimenting with new materials and language. Rather than building works for the ages, their earthworks and landscape actions were against the ages in direct opposition to the art gallery/museum as they pushed ideas of landscape versus not-landscape. A language of universal geometrics, inverse logic, structural transformation, all lost in categorical no-man's land caught within the didactic of universal terms.

Conceptual artists of the Vietnam War era took to the deserts like flies take to decomposing animal carcasses and were criticized for scarring the west coast USA landscape in their attempt to negate the white walled fields of the gallery system. Ironically the immense and permanent works like Spiral Jetty, Double Negative and the Lightning Field⁸ were dependent on the engines of cultural representation and financial support to be realized. These constructive Soho cowboys shunned the frameworks of the museum, only to return to their dealers with documents of their fieldworks which were experienced first hand by very few and were, until the 1990s, known in most instances via the aura of photographic reproductions in coffee table books and tourist⁹ souvenirs. The Internet archives of FlickrR and Google image searches are the non-site postcards of today.

The inter-disciplinary logic of PIEQF drew reference from but also expanded on the pioneering land art - earth art movement of the late 1960s. The multi-layered ideology of PIEQF explored the temporal dimension of space, which dissolved from view once the field of information data transmission had been disconnected. Consider PIEQF as a Do It Yourself (DIY) punk-like performance, incorporating the activities of man working for the machine until it was set free and became 'live' and immersed in nature via a digitally networked and real-time mapped seismic landscape. The action of PIEQF intersected the fields of nature, culture and earth science producing a no trace, and early example of our 21st century contemporary cultural condition.



02008

PIEQF Postcard by D.V. Rogers

4. A Site for Non-Sites

"The Non-Site is a three dimensional logical picture that is abstract, yet it represents an actual site.... It is by this dimensional metaphor that one site can represent another site which does not resemble it - this The Non-Site. To understand this language of sites is to appreciate the metaphor between the syntactical construct and the complex of ideas, letting the former function as a three dimensional picture which doesn't look like a picture.... Between the actual site and The Non-Site itself exists a space of metaphoric significance." Robert Smithson, A Provisional Theory Of Non-Sites¹

In our spatio-temporal world and the dynamic interplay between presence and absence a digitized cartographic logic of landscape has emerged. Finally, sites and non-sites are where the action is.² In the essence of Smithson's formulation of Site vs Non-Site, the rationale was metaphorical yet his actions were simple; A Site was the place of a work located in a specific outdoor location, and a Non-Site was a work which could be displayed in any presentable space which was more often that not within the framed white walls of museum and galleries. Smithson worked in both conventional exhibition venues and remote far-flung locations chasing institutional critique while addressing the geographical and cultural limitations and fractured values within the museum and gallery construct. Smithson's notion of non-site, which was exemplified in his gallery works, as he conceptually re-located a 'site' into a 'non-site' position, often using photographs of location, maps and sometimes the displacement of earth itself. Smithson outlines the differences between sites and non-sites in the following chart;

Sites	Nonsites
1. Open limits	Closed Limits
2. A series of points	An array of matter
3. Outer coordinates	Inner coordinates
4. Subtraction	Addition
5. Indeterminate certainty	Determinate uncertainty
6. Scattered information	Contained information
7. Reflection	Mirror
8. Edge	Center
9. Some place (physical)	No place (abstract)
10. Many	One

3

Data is real and capable of actualization within our landscape in the NOW age of Generation Flash,⁴ and abstract data machines. The core conceptual premise of PIEQF addressed the dynamic interplay between presence and absence,⁵ site and non-site. Each time a seismic event occurred triggering the shake table, a non-site temporal disruption of time and space occurred, at the hypocenter of the PIEQF site effectively creating a non-site simulation of geological disruption occurring in 'other' remote sites of actual seismic displacement. The 'real' data driven actuation of the shake table triggered by seismic activity from 'other' places created a feedback loop between the PIEQF site and thousands of non-sites where seismic activity occurred. Brett Staulbum of the former C5 Corp correctly suggests that, *"Data is the actual expression of our ability to model the planet as a system"*.⁶ Data can be viewed today as a form of control of our landscape as an interrelated component in our complex adaptive system, Earth. To be clear; every seismic event occurring in the state of California during the ninety one days of intervention created a non-site within the site and location of PIEQF.

Real time is a metaphor for representation of real space and new media artists might like to think they have set the paradigm for non-sites. One could speak of a webpage as a site distributed across many networks believing it is also a non-site in some instances, informed with the knowledge that distance is irrelevant in our interconnected world of nodes and peer-to-peer information systems. *"Had Robert Smithson foreseen an interconnected digital world, I wonder, would he ever have entered the gallery?"*, writes John Haber.⁷

One of the most important concepts Smithson promoted was that of the "site", and the site that Smithson refers to is a place in the world where art is inseparable from its context. The heart of all land art experiences lies more in the journey and process of implementation in which the work of PIEQF was highlighted by two distinct problems: access and dissemination.

Parkfield is known as the place 'Where Earthquakes and Cowboys Meet' and 'Be Here When It Happens', nestled in the heart and focal point of Republican California. Geographically, Parkfield is located in the county of Monterey, centrally positioned between the urban centers of Los Angeles and San Francisco.

PIEQF created non-sites of sub-monumental rupture within the site and location of Parkfield as a real-time reflective action of seismic events and can be seen as performance theatre addressing the notion of place-specific and assumed identity. Yes, I wore a cowboy hat, and yes I fired guns, both metaphorically and in real-time, receiving powder burns to boot.



16th September 02008

Photo of D.V. Rogers by Dr Geo Homsy

"All of the fellows working in and with the earth would enact a rough "outlaw" sensibility that violated the art world custom of making work that is portable and accessible."

Suzaan Boettger, *Earthworks, Art and the Landscape of the Sixties*.⁸

5. The Geopoetics of Technique Versus Nature

In a departure from the freeway crash of Western civilization, Kenneth White¹ suggests that Geopoetics is not the exclusive domain of poets and thinkers, it is a field where science and various disciplines converge together creating a climate of reciprocal inspiration towards developing a language which poetically articulates how the earth works. John McPhee² wrote, *'Geopoetry is where gaps exist among the facts of geology, where the space in between is often filled with things 'geopoetical'.* David L Ulin suggests that *'the ultimate piece of geopoetry is to imagine a system in which earthquakes can be read or reckoned with, in which there is a human logic to geologic immensity'.*³

Is it possible to consider that a machine is capable of creating the 'geopoetry' that McPhee and Ulin speak of? To do this, one must view the PIEQF as a physically reactive or responsive earthwork, creating a real-time sequence of non-sites, producing a temporal series of mechanically abstract geological maps. Ella Mudie writes about the spectacle of mediated performative techniques that engage with seismic phenomena as data-driven machines, and as actions of psychological response that represent our current condition of environmental and cultural crisis.⁴

The artificial simulation system of the PIEQF brought to the surface and reflected the frequent resonance of micro seismic activity to create a mechanical narrative depicting the parallel zones and fragmentations of geological time. It can be seen as a telematic performance action, symbolically producing real-time geographical topography animated by the context of chance in the scale of geological events.

Telematic art explores our experience and conceptions of presence and absence and challenges the traditional relationship between active viewing subjects and passive art objects. It creates interactive or responsive aesthetic encounters using computer mediated telecommunication networks as the medium. Telerobotics is the field of robotics concerned with the remote distance control of robots using wireless connections, tethered connections, or internet connectivity via human input. Ken Goldberg, a pioneer of telerobotic art and his collaborative installation, "Memento Mori",⁵ can be seen as the first telepresent, internet-based earthwork controlled by minute movements of the Hayward Fault in California, and transmitted continuously as a seismic data stream to an embedded audio visual display.

In this NoW time of accelerated industrialism and automation coupled with economic collapse, Scott Bukatman advocates that electronic interconnectedness and the synthetic nature of data is, *"Conceived as both receiver and distributor, as the space of both reception and operations, the control screen and terminal which as such may be endowed with telematic power - that is, with the capability of regulating everything from a distance."*⁶

Was PIEQF telerobotic? Did PIEQF act? Was PIEQF an extension of man? My definitive answer is no. PIEQF was conceptual and abstract machine tele-geology, a reactive telematic artwork controlled by computer algorithms and activated by real-time reported seismic activity. A generative and responsive tele-action with no human input or control, was governed only by the dynamic frequency of seismic rupture in 'other' remote and distant environments. The installation geopoetically questioned our human fragility in the landscape and our mediated experiences of understanding the immense scales of geological time.

Technique as art is the creation of artificial systems, and some argue that technique is opposed to nature. Jacques Ellul's premise is that artificial and technological means of creation destroys, eliminates, and subverts the natural world, and that artificial systems are unable to enter a symbiotic relationship with nature.⁷ Catherine Wilson correctly notes that machinery is not quite at home in the garden as robots and life represent opposing values.⁸ The ideology behind PIEQF was to create a fixed order installation system that would become at one with seismic resonance and geological time. PIEQF was a responsive and reflective, real-time synthetic abstraction of nature. The temporal length of seventy seven days before PIEQF went 'live', which incorporated the excavation, machine assemblage and software development could be seen to assault nature directly, because up until the point of electronic interconnectedness with a seismic landscape the intervention was a stable earth displacement, an un-natural rupture in a desolate, remotely located, sun scorched and barren field.

Focusing solely on tasks related only to the realization of PIEQF during this window of seventy-seven days I made the decision to discard our NoW social perspective of short-term deadlines and demand. While not one to employ the short-sighted perspective of market-driven economics which is the antithesis of nature, I later went on to declare bankruptcy in Australia, in part an ideological political act, but also one of economic necessity.⁹ Our worldview of short-term thinking is un-sustainable and with this, long-term thinking in the Long NoW model is, if not slowly beginning to resonate. In this case it was time to slow down, practice patience and introduce response-ability to my working process while assembling the installation of PIEQF and thereby deflect the 21st century condition of multi-tasking and coping with financial constraint. Finally on the 18th August *02008 the Parkfield Interventional EQ Fieldwork went 'live' and without fanfare.¹⁰



25th August 02008

Photo by D.V. Rogers

For ninety-one continuous days PIEQF became at one with the complexities of nature, a temporary, perceptive time management system reflecting the seismic resonance of geological time. This mechanical simulation of naturally occurring earthquakes employed the tools and techniques of telematic culture, which in essence was driven by the automata of natural data, this unnatural language of ones and zeros, disseminated and controlled via bits and bytes. We understand how the earth itself is built on sedimentation and disruption. This earth machine, in fact any information system, when dense and rigorous enough, takes on a kind of self organizational coherence that resonates with other systems of complexity. The American mathematician Norbert Wiener¹¹ first gave common use to the word 'cybernetics' to describe a branch of study which is concerned with self-regulating systems of communication and control within living organisms and machines. Even everyday machines, from electric toasters to hybrid powered motor vehicles, can be analyzed logically as self-regulating systems based on physical transitions of inputs which determine their function as output or in the case with PIEQF, a reactive self organizing system reflecting seismic activity.

5.1 Visualization of Landscape and Seismic Data

Before the 1970s, seismologists determined the locations of seismic events by analyzing analog records of paper seismographic charts; this was often an error prone and time-consuming task. As our world became interconnected and went digital in the 1970s, computer software was developed to allow much quicker, and automatic, determination and dissemination of seismic hypocenters. Essentially earthquakes cause the earth to ring like a bell. The velocity of seismic waves are measured at various depths providing an X-ray like image of the earth's interior. From the location where seismic rupture occurs, earthquakes travel as acoustic sound waves through the earth, and these sub-terranean shock waves have markedly different properties: P-Waves depart first from the hypocenter, and S-Waves¹² occur as a result of the primary waves refracting within the architectural strata of our inner earth.

Applied earth science techniques, including the mapping and monitoring of seismic waves have revealed the anatomy of our earth's inner composition producing a clear inner picture of our dynamic natural planet. As a result, the surveillance of earthquakes has created an almost hyperbolic electronic archive of natural data,¹³ in which a naming protocol assigns a unique identification name for every seismic event that occurs. The last seismic event reflected through the PIEQF system was as follows;

**pieqf-htrigger.py: Triggered at Nov 16 2008 - 09:38:05 PST ->
Event NC:51211342 M 1.3 D 11.4 s at Nov 16 2008 - 17:36:24 UTC**

To represent the interconnectivity of information and true nature of data, the system of PIEQF stepped off the edge into another world as a multidimensional representation of connection between multiple entities. PIEQF was not only physically immersed within the landscape of nature it also reactively engaged within the nature of the immense spectrum of digital data. Conclusively, (while others may suggest metaphorically) a master program or centralized computer did not control the intervention; the installation was triggered into action by disturbances of seismic rupture within the vista of 'other' remote environments.

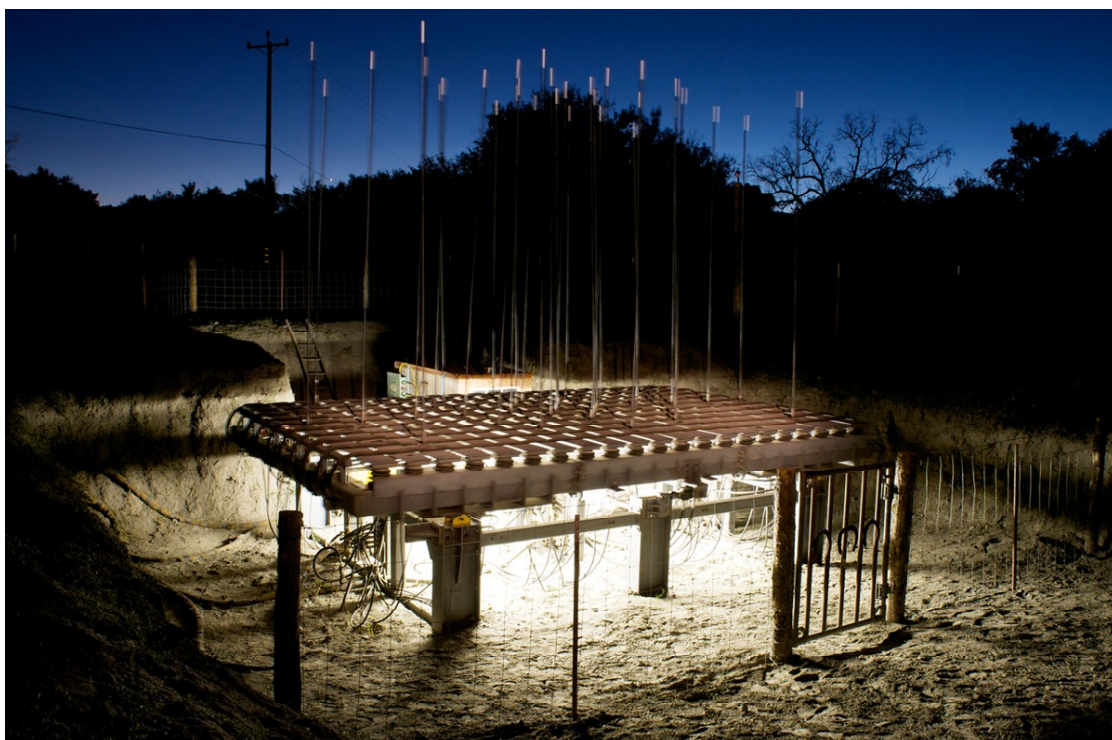
Science and art are fundamentally alike as they both use modes of enquiry seeking to discover the 'other', and Jean Baudrillard discusses how the computer has enabled scientists to create visualizations and simulations to 'see' what human senses cannot experience or see like the movement of geological plates.¹⁴

Visualizations depicting the essence of nature defined and shaped by culture date back to cave paintings from around 32,000 years ago. NoW, invented and re-invented representations of nature such as maps, photographs, engineering plans and three dimensional computer models are shaped and based on the phenomenology of human habitation of our planet.

The visualization of data by media artists mapping the terrain of seismic phenomena is still an emerging field. 'Semiconductor', the British based collaboration of Ruth Jarman and Joseph Gerhardt, produced the seminal video work, *'All the Time in the World'* in 2005.¹⁵ The investigation of GIS (Geographic Information Systems) by the US based 'C5 Landscape Initiative'¹⁶ examines the changing conception of landscape as artists move from the aesthetics of representation to those of information visualization and interface.

Referencing the field of 'Kinetic Art' and stirred from equilibrium by direct interference from reported seismic activity, thirty-one 5/16 inch steel rods standing 10 ft¹⁷ in height attached to the PIEQF shake table continually resonated during the operational hours of the installation.

The asymmetric and irregular oscillations of these steel rods were constant and the mechanical vibration of these rods never static, visually representing and depicting the dynamic landscape in which the intervention was located. The happenstance interference as random events of seismic rupture created the oscillation and resonance of these steel rods via direct mechanical displacement of the shake table. This kinetic articulation of these earth extension rods represented a dissipation of energy, metaphorically simulating a reactive measurement of disorder and randomness, which is the irreversibility of entropy.¹⁸



29th September 02008

Photo by Scott Haefner – US Geological Survey



9th November 02008

Photo by Scott Haefner – US Geological Survey

6. The Science and Non-Fiction of NoW

The date is the 2nd November, 02008 and on cue the autumn cellular mechanism blocking the abscission zone was forcing the leaves to drop. At night one had to be careful walking about, as packs of Russian pigs would scavenge for precious acorns of gold falling from the deciduous Blue Oak trees. A good thing the machine was fenced in. Those marauding feral tusks would make a mess of the thermal hydraulic feed lines powering the shake table machine. A trashy Pace Arrow trailer was DVR's temporary home, and had been for the past three months. This once mobile but now static Hilton Hotel of sorts was hidden away behind the Parkfield Inn, one hundred and fifty yards from the PIEQF site. Sometimes breakfast was complimentary but most times not, at least coffee was constantly on the brew and each day began with a fresh cup before dawn so as not to miss the dawn rise of a waking machine.

A binary clock was set for a 6.30 am start. Like an immortal time keeping device checking in for work, the machine would wake on the dot. With winter beginning to set, the chill factor was dropping causing the hydraulic power pack to scrounge for extra milliseconds allowing the coil windings to find the desired speed before the heat flow would rise and the logic gates would switch allowing the viscous liquid to traverse through this thermal system enabling a sequence of overnight seismic events to be mechanically recalled. This morning was unique, the machine ran continuously till 8.15am, aggregating an overnight archive of geological ruptures before assuming real-time control mode. An earthquake cluster swarm had occurred last night in the Octillo Wells region, 400 miles to the south.

In today's age of the electronic field and interconnected interaction occurring within 'Terminal Space'¹ of significance within the techno-surrealism of PIEQF was my assumed and at times 'real' low-life² identity as an individual working in a remote isolated field with a 'machine' action controlled by seismic data, challenging traditional cultural representation of our high-tech world. The distributed digital world in which we live is dominated by science and technology, yet the individual is becoming increasingly isolated from meaningful social interactions by virtue of less real world physical engagement with other people. I liken my embed in the town of Parkfield for six months as a quasi cultural tour of duty and the resulting isolation from friends, family and peers endured was at times a testing condition of social weakness, and damned if I was going to remain mute,³ risking the potential of creating a fictional event. A standard view in philosophy is that the real world and the fictional world are logically isolated, yet we live in a world ruled by fictions of every kind and yes, agreed, it is possible that the Twitter feed⁴ scribed and posted from within the PIEQF bunker could have been fictional truths.

The isolated do it yourself process of PIEQF could have come straight from the pages of a middle class authored Cyberpunk fictional novel set without the thrills and spills of neon electrified suburbia. When and finally the PIEQF system went live and continued for ninety-one days the whole earth work ethic, machine theory and sub-cultural context of PIEQF fittingly could have been ripped from a 01990s Postcyberpunk text. By definition, classic Cyberpunk characters were often marginalized, alienated loners living on the edge of society where daily life was impacted by rapid technological change. In contrast, for want of a better term, Postcyberpunk fictionalized role players are frequently characterized as integrated members of society (i.e. have jobs) who do not necessarily reside in dystopic playgrounds and more often than not are instilled with optimistic values ranging from exuberant to cautious, which today is aligned with the ethics of early 21st century protagonists addressing the issues of Moores Law, climate change and ecological sustainability.

*As a label, "cyberpunk" is perfection. It suggests the apotheosis of postmodernism. On the one hand, pure negation: of manners, history, philosophy, politics, body, will, affect, anything mediated by cultural memory; on the other, pure attitude: all is power, and "subculture," and the grace of Hip negotiating the splatter of consciousness as it slams against the hard tech future, the techno-future of artificial immanence, where all that was once nature is simulated and elaborated by technical means, a future world construct that is as remote from the "lessons of history" as the present mix-up is from the pitiful science fiction fantasies of the past that tried to imagine us. Istvan Csicsery-Ronay, Jr, 'Cyberpunk and Neuromanticism'*⁵

To consider Robert Smithson as Cyberpunk may sound like an avatar fantasy to some, but certainly possible had he not tragically passed away in a plane crash in 1973.⁶ I make reference to Smithson in the chapter, "A Site for Non-Sites", in context of the internet as a home for non-sites informed by the imploded hyperbolic language inherent in the field of cyberspace which William Gibson addressed and can be applied to the 'new monuments', which was of Smithson's concern. The NoW exploded mimesis of spectacle and simulation discussed by the likes of Gibson, with his Postcyberpunk fiction and theorist Jean Baudrillard's philosophical meanderings around the subject of hyperbolic language, address our obsession with the 'present' and NoW times.

The work of British Science Fiction writer J.G. Ballard can be seen as a significant influence on Smithson's late career earthworks, in particular Ballard's short story 'The Voices of Time', which can be directly linked to Smithson's seminal work, 'Spiral Jetty'. The story ends with the scientist Powers building a cement mandala or "gigantic cipher" in the dried-up bed of a salt lake in a place that feels, by description, to be on the very borders of civilization: a cosmic clock counting down our human time.⁷ Like Smithson, and his interest in post-industrial landscapes I was particularly interested in creating a temporal landscape action which was affected by the intervention of man and a machine which represented our very own undoing, not entirely by catastrophic natural disasters or forces, but the undoing of the landscape with our very own hands.

Gilles A. Tiberghien⁸ suggests we should consider artist theories as fictions particularly when science is a direct influence on a work or action, creating a form of science fiction. The action of PIEQF can be seen as an expanded science fiction of the spectacle, driven by science (Seismology) resulting in an early 21st century performance based, science non-fiction action which became one of endurance for an individual living with and becoming in tune with a 'machine' for ninety-one continuous days. PIEQF was a living, breathing, metaphysical,⁹ real-time, real world, non-fiction action.

Traditionally, Postcyberpunk texts have been portrayed as fiction in book form or cinematic film-noir movie experience depicting the imminence of near future times of our present condition. Civilized society interfaces with the edges of technology for and against the human subject. The ideology behind the action of PIEQF can be seen as an example of art imitating life, converging fiction into fact creating a non-fictional event, which could have been presented as 'fiction' in the form of text.

If William Gibson were to have penned a scene in 'Neuromancer', where punks, makers, scientists, renegades and a generic mixed bag motley crew were to dance with a machine, they would have danced to the 'Sounds of Seismic' in Parkfield on the night of 15th November, 2008.¹⁰



15th November 02008

PIEQF -'Sounds of Seismic', System CCTV Image

Like most, if not all time based performances and installations, the resulting video and photographic documents produced of PIEQF, offer only a visual account of what took place. To truly experience a work one must physically be there; to feel the emotive forces of a 'live' work one must be present. A case in point is experiencing a Survival Research Laboratories¹¹ performance. If one is to see an SRL show you watch a DVD or Youtube clip. If you want to experience the smell and sound of an SRL performance, you must be present in the NOW. Not that the work of PIEQF shared any physical explosion on the senses that an SRL show gives, but inherently the attitude of the action was the same.

The most indelible and memorable moment for me with PIEQF was an epiphany-like experience on the night of 2nd November, 02008. This was the evening of the morning described at the beginning of this chapter when earthquake swarms were triggering the PIEQF shake table. Light rain was drizzling over the site awash in a No moon light of darkness. The fluorescent lights mounted under the shake table were designed for 50Hz Australian AC power and radiated a glow of an almost 'other world' like brightness as the 60Hz cycle of US power pulsated through these fluoro tubes emitting a bright grey of white light.

Standing in front of 8000lbs of machine I experienced the power of our dynamic earth system as the shake table operating under full power reflected seismic event after event as another seismic swarm was triggering the shake table, again occurring in the Octillo Wells region. This was my theatre of spectacle and my experience alone of a synthetically created, science non-fiction of NoW.



2nd November 02008

Photo by D.V. Rogers



19th November 02009

Photo by D.V. Rogers

7. The Work of PIEQF in the Age of Digital Reproduction

In today's age of satellite imaging and Google Earth the aerial or topographical view has come to be the primary visual representation of earthworks.¹ The bird's eye view of aerial photography carries the viewer out and away from the site allowing us to see it all. Smithsonian describes the "world seen from the air as abstract and illusive",² in which the elevated point of view creates a perspective and experience of scale that is not present when one is standing on terra firma. To experience at ground level an earthwork like Michael Heizer's monumental 'Double Negative', as Henry M Sayre puts it, *"One is to enter, as it were, into a scar or wound"*.³

Significantly the series of aerial photographs captured by Scott Haefner⁴ using kite aerial photography (KAP) produced images similar to the perspective experienced by birds in flight. Of particular interest to me in the process of creating KAP photographs is that they are performances unto themselves. Flying a kite at low altitude with a servo-driven camera attached to a fixed line is part biomechanical action and part random interaction with the natural elements. The aerial photographs of PIEQF have NoW become an integral part of the 'package' including this text, videos, and other photographs. Without these birds-eye photographs the 'package' would seem incomplete.⁵



29th September 02008

PIEQF Kite Aerial Photography by Scott Haefner – USGS

The KAP photographs of PIEQF are representational truths, capturing and freezing a moment in time of a machine installed in a remote place. The apparatus of the camera plane and optical magnification power of photography penetrates deeply into reality producing unlimited reproducible forms of aura in digital form. Walter Benjamin put forward the notion that reproductions of art are designed to be reproduced knowing the apperception of a thing or place will be known more via mediated experience in contrast to the immediate and direct experience of a place or thing. Today, more people have perceptually experienced Smithsonian's Spiral Jetty via the aura of photographic reproductions published on web pages than actually physically experiencing the jetty where it actually happens to be. Conceptually and from the outset the documents produced of PIEQF were intended to be viewed as 'secondary' experiences of the work, for nothing lasts with the scales of time. In western civilization, the premise that everything stands to end as a photograph remains true. It is only fitting to note that the amount of individual IP traffic to the blog account of PIEQF continues to grow.⁶ In the NoW digital age, society and landscape is defined more by a system of electronic representations in which the image is a matrix of pixels stored as digital bits and bytes residing in data clouds built around an infinite stack of hyper-real statistics and abstractions controlled by computational code.

"Every day the urge grows stronger to get hold of an object at very close range by way of its likeness, its DIGITAL reproduction." Walter Benjamin, Digital Remix⁷

The explosion of the NoW rapidly expanding information age has resulted in the mechanical age of reproduction being surpassed. Those very few who today take photographs using the analog silver gelatin technology of negative film are seen as almost 'magician' like in character. Ironically the photographers who shoot negative film today end up creating digital scans for dissemination and framed reproductions. In our NoW digital age there is no distinction between "original" and "reproduction" of any medium whether it be film, literature, music, electronics, software, whatever. The notion of "master" and "copy" is so entwined with each other that it is impossible to say where one begins and the other ends, on which Douglas Davis writes, *"The proclamation of doom descending on the aura of 'originality' authored by Walter Benjamin early in last century is confirmed"*.⁸ Metaphorically speaking in this NoW digital age, the sacred 'aura' of the original is dead. In the following paragraphs I discuss the documents produced of PIEQF and the potential for additional digital reproductions to be produced expanding on Benjamin's notion of 'aura' in the digital age.

A series of LIDAR (Light Detection and Ranging) high-resolution point cloud data scans were captured of PIEQF by USGS geologist Gerald Bawden.⁹ Traditionally LIDAR imaging technology is used for creating three-dimensional topographical maps and surveys of geographical regions employing digital sensing imaging that measures properties of scattered laser light to find range and information of a distant target. Hypothetically the point cloud data captured of PIEQF could be used to model a virtual real-time controlled reproduction of the NoW no trace intervention.¹⁰ This digital model could be triggered by the same seismic data feed that actuated the PIEQF shake table, creating in essence a mediated and 'alive' representation of the work that could infinitely continue life within the framework of a web or smart phone browser.



6th October 02008

PIEQF LIDAR Image by Gerald Bawden US Geological Survey

I discussed in a previous chapter, 'The Geopoetics of Technique Versus Nature', how a unique name is given to each seismic event that occurs. The USGS estimates that millions of earthquakes occur throughout the world each year¹¹ of which more than 8,000 stations monitor the globe rapidly reporting seismic activity via electronic mail, Internet and satellite. With the amount of data these seismic events create it is not surprising to note that of all the sciences, earth science uses more computing power and data storage than any of the other sciences. On average the landscape of California experiences 15,000 to 20,000 earthquakes every year in which during the ninety one days of PIEQF action the shake table was triggered by somewhere between 4000 and 4500 seismic events. These events are archived in the following hyperlinked text file:

<http://mfa.allshookup.org/pieqf-seis-log-02008.txt>

We understand that photography is still based on the here and NoW and that the art of reproduction is in fact the art of the trace. We also understand that photographs have replaced inaccessible and impermanent artworks, and it is here that I put forward my premise that the 'primary' document recording the work PIEQF, is in fact the pieqf-seis-log-02008.txt file that lists every seismic event and identification number that was reflected through the shake table during the intervention.

The 'aura' of PIEQF is NoW kept and stored on USGS servers and effectively this log file of PIEQF seismic events can be used to recall wave form data of every event that occurred during the intervention, and the shake table itself could be installed elsewhere at another time replaying the sequence of events that occurred in the NoW past. Like the photograph, seismic events can be metaphorically reproduced an infinite amount of times in mechanical and digital form.

'The real is produced from miniaturized units from matrices memory banks and command models and with these it can be reproduced an indefinite number of times'
Jean Baudrillard, *'Simulacra and Simulations'* ¹²

The simulacrum of PIEQF NoW exists as encoded, mapped, and inventoried bits of data in numerous forms in which Jean Baudrillard would likely suggest that these are not copies of the real, they are hyperreal truths that can be recalled at any time. The very few who observed the time coded .jpg frames disseminated 'live' via web cam from the site of PIEQF were experiencing a mediated likeness of seismic events that were reflected through a mechanical device simulating geologic rupture. During the ninety-one days of PIEQF action, four camera sources switched randomly broadcasting a new frame every three minutes creating an archive of 43,000¹³ images.

When a viewer observed the PIEQF web cam stream 'live' they were actually viewing a mediated simulacrum of events that had already occurred and the NoW subsequent archive of 25,782¹⁴ edited .jpg frames can be shortened or expanded with time compression techniques producing an unlimited and infinite number of permutations. Three abstractions of these broadcasted PIEQF frames can be found on Youtube,¹⁵ and one should consider these as telefictive, optical reconstructions of PIEQF which can be recalled and viewed at anytime via a net connection and web browser.

PIEQF was a temporary and situational work installed and documented for a fleeting moment of time in which the digital documents produced expand on Benjamin's premise that the 'aura' withers in the age of mechanical reproduction as the 'aura' is tied to the presence. That there can be no replica of it is still inherently true. But our NoW digital age has created a different nature of semblance because infinitely multiplying points of view are producing new framings of the image calculated by effects of data fragmentation, creating a new order of 'aura' as the digitized agency of nature's tableau continues to grow.

"We look: we consider what we see; we create - not find, not discover, but create - a portrait of what we have seen. It is not the truth, but a truth, one that is neither the thing described nor its false facsimile. It is real - we have made it. It distills our experience, "intenser than any actual life." We grasp for knowledge that enables us to describe, for in description we seek and sometimes find revelation." Thomas Levenson, Measure for Measure, A Musical History of Science¹

[illegible]

Photo by D.V. Rogers

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Nothing compares with the power of nature to humble and stifle the capacity for reason. On the 6th July 02008, a 'Dust Devil' formed upon the PIEQF site.⁴ This random natural event, not of the seismic kind, was of my own unintentional making as a result of the excavated trench. In conditions of stifling heat, hot air near the surface of the site rose quickly through a pocket of cooler, low-pressure air creating this diminutive catastrophic event.



6th July 02008

'30ft Dust Devil'

PIEQF System CCTV Image

"I like natural disasters and I think that they may be the highest form of art possible to experience" - Walter De Maria⁵

Time and history are recorded as a randomly selected, sequence of irreversible events. We recall the past without influence, while directing the future without seeing ahead. Time was integral to the action of PIEQF and during ninety-one days of reflecting seismic events the incidental history of events continued to play out: Barrack Obama became the first black American president of the United States; Ursain Bolt ran down one hundred meters in record time at the Beijing Olympics while the rest of the world watched on as the largest economic collapse since the great depression of the 1930s began.⁶ Society is a function of time recorded as a sequence of historical events.

"Time is a telluric compression of the history of humanity, the scope of which registers on no seismograph, inspite of the ecologists; the compression of that cataclysm in which everything is telescoped, crashes into everything else at every moment, in which all distances are reduced to nothing, smashed by the accident of real time interactivity; a quaking of the whole Earth, where events are no longer anything but simultaneous, untimely accidents on the surface of an excessively compressed celestial object, and where gravity and atmospheric pressure are further reinforced by the instantaneous synchronization of exchanges." Paul Virilio, Unknown Quantity.⁷

On the 17th November 02008, I began the process of systematically removing every nut and bolt of the shake table with the same toiled hands that assembled the machine many months ago. Memories of a machine, which reflected inscriptions of geological time, which once floated at the base of an excavated trench next to the San Andreas Fault is NoW a sea of new grass reversing in time, returning to nature where once a river flowed. Memorial waves of reflection and revelation are my simulacrum memories for NoW recalling the closing of PIEQF as a non-fiction funeral for time, which left no trace. A series of indelible memories remain buried within the sedimentation of time and that's where land art is today, still struggling to be framed within the white walls of the institutional box. As I close this compendium of what took place I revisit one of my many flashback memories watching a 20ft orange box, back on a truck heading out of town, to be located elsewhere, its future uncertain and unknown.⁸



17th November 02008

Photo by D.V. Rogers

9. Endnotes.

Introduction

Smithson, Robert. 1968. *A Sedimentation of the Mind: Earth Projects*. In *Robert Smithson : The Collected Writings*, ed. Jack Flam. 107. University of California Press. 1996.

² This thesis adopts The Long Now Foundation's use of five digit dates; the extra zero is to solve the deca-millennium bug, which will come into effect in about 8,000 years.
<http://www.longnow.org> (accessed June 20, 2009).

³ Formed in 1879 the United States Geological Survey (USGS) is a scientific agency of the United States government. The scientists of the USGS study the landscape of the United States, its natural resources, and the natural hazards that threaten it. The organization has four major science disciplines, concerning biology, geography, geology, and hydrology.
<http://www.usgs.gov> (accessed June 12, 2009).

⁴ (NoW = Actuality) One of the central themes of this thesis and frequently used is the word 'NoW' highlighting the notion of reality which refers to the present moment as well as the current state of being actual, as in real.

⁵ "Coined by cyberpunk author Bruce Sterling, 'Slipstream' novels are a kind of fantastic or non-realistic fiction that crosses the literature boundaries between science fiction/fantasy and mainstream literary fiction. Larry McCaffery describes how 'these novels typically portrayed individuals awash in a sea of technological change, information overload, and random - but extraordinarily vivid - sensory stimulation, personal confusion, sadness, dread, and philosophical skepticism often appeared mixed with equal measures of euphoria and nostalgia.'" McCaffery, Larry. 1991. *Storming the Reality Studio*. ed. Larry McCaffery, 10. Durham & London: Duke University Press.

⁶ "NoW consists of this week, slightly haunted by the ghost of last week."
Brand, Stuart. 1999. *The Clock Of The Long Now*. 29. Phoenix Paperbacks.

1. Readme.txt

Rogers, D.V., 2008, *Parkfield Interventional Earthquake Fieldwork (PIEQF)*, <http://www.pieqf.allshookup.org> (accessed January 10, 2009).

² PIEQF Software Development Credits
Dr Geo Homsy (USA) - Software Technical Direction
Dr Warren Jasper (USA) - Linux Driver Development
Peter Luka (USA) - Software Development Repository
Dr Andy Michael (USGS) - Scientific Direction
Mr Snow (NZ/AUS) - Video Streaming Development
Stock (NL) - Seismic Data Feed

³ Rogers, D.V., 2002, *Seismonitor Exhibition Catalogue*, Artspace, Sydney, Australia. <http://www.allshookup.org/artspace/> (accessed November 10, 2009).

⁴ Rogers, D.V., 2002, *A Telematic, Machine Based Earthwork Located in the Region of Maralinga, South Australia*. http://www.allshookup.org/dvr_ad02/ewad2002.htm (accessed November 10, 2009).

⁵ Rogers, D.V., 2003, *A Site Specific Intervention for the Region of Meckering, Western Australia*. <http://www.allshookup.org/swsz/swszart.htm> (accessed November 10, 2009).

⁶ Rogers, D.V., 2005, *The 1931 Hawkes Bay Immersive Earthquake Experience*. Napier, New Zealand. <http://www.allshookup.org/napier/> (accessed November 10, 2009).

⁷ The Parkfield Earthquake Experiment is a long-term geo-physical study on the central San Andreas Fault; earth scientists constantly measure the strain in rocks, heat flow, micro-seismicity, and geomagnetism around Parkfield. Scientists hope to better understand the physics of earthquakes and faulting. Information gathered from Parkfield may one day be used towards predicting earthquakes, the quite possibly unattainable holy grail of seismology. <http://www.earthquake.usgs.gov/research/parkfield/index.php> (accessed May 17, 2009).

⁸ Motion vs Magnitude Formula by Andy Michael (USGS) Seconds at 0 distance = $10^{((M+1.05)/2.22)}$ which equates to (10X + 1.05 divide 2.22 to the power of 10). Email correspondence with the author and Dr Andy Michael on October 16, 2007. <http://www.quake.usgs.gov/~michael/> (accessed April 17, 2009).

⁹ Quake Data Distribution System (QDDS) provides a method for distributing earthquake data over the internet developed by scientists at the US Geological Survey. While similar to a classical client-server system it has some important differences and is referred to as a hub-leaf system. Hubs send event information to attached leaves. In addition to receiving information, leaves can originate information and send it to one or more hubs. These hubs then send to their leaves in which PIEQF was one. <ftp://ehzftp.wr.usgs.gov/QDDS/QDDS.html> (accessed August 22, 2009).

2. A Mechanical Transformation of Site as Tele Action

The PIEQF excavation took place on the 9th June, 02009 and measured 50ft long x 30 ft wide x 8ft deep with an extra 10ft x 10ft square utilities footprint excavated at the rear of the trench. The gradient ramp you walked down to the shake table machine declined at 15-20 degrees. Later the ramp was extended by tractor to 75ft. Total Displacement: 150 Cubic Yards.

² Ben Tufnell described the likes of Heizer, De Maria and Smithson as "environmentally insensitive, unduly macho and even arrogant, their actions recalling frontier attitudes where the American way of life is imposed upon unyielding landscapes and cultures.... desert, cowboy boots, and stetson hats." He continues, "many critics thought this attitude appeared to be unduly aggressive - even colonial - seemingly proposing the triumph of American culture and technology over nature."

Tufnell, Ben. 2006. *Land Art*. 46. Tate Publishing.

³ In its most widely used definition, the word 'Civilization' is a descriptive term for a relatively complex agricultural and urban culture. The closet point of civilization to Parkfield was the city of El Paso de Robles, 33.4 miles away. Quoting Stuart Brand; "Ten thousand years is the size of civilization thus far.... and cities are where civilization happens".

Brand, Stuart. 1999. *The Clock Of The Long Now*. 30. Phoenix Paperbacks.

⁴ David L Ulin refers to 'The Parkfield Experiment' in which earth scientists predicted that a M6.0 earthquake would occur in the region of Parkfield around 1993. Parkfield waited, and waited. The Parkfield motto is "Be here when it happens." On 28th September, 2004, the M6.0 earthquake eventually struck 11 years later than predicted. The last M6.0 seismic events occurred in the following years of short-term history; 1857 (24yrs), 1881(20yrs), 1901(21yrs), 1922, (12yrs) 1934 (32yrs), 1966 (38yrs), 2004 (38yrs)

Ulin, David, L., 2004. *The Myth Of Solid Ground. Earthquakes, Prediction and the Fault Line Between Reason and Faith*. 219. Penguin Books.

⁵ Author, David L Ulin, was invited to visit PIEQF, correspondence was established though unfortunately the visit never eventuated.

⁶ "The internet is a worldwide, time-zone-spanning optic nerve with electronic eyeballs at its endpoints. Web cameras are those eyeballs".

Mitchell, William, J. 1995. *City of Bits: Space, Place and the Infobahn*. 23. Cambridge MIT Press.

⁷ "Behind every hot new working computer is a trail of bodies of extinct computers, extinct storage media, extinct applications". Brand, Stuart. 1998. *Written on the Wind*.

<http://www.longnow.org/views/essays/articles/writtenonwind.php> (accessed October 12, 2009).

⁸ Much debate in the field of Epistemology has focused on analyzing the nature of knowledge and how it relates to similar notions such as truth, belief, and justification. Professor Ken Goldberg of Berkeley UC notes that knowledge attained via distant and remote participation via the likes of web cams is defined as Telepistemology.

Goldberg, Ken. 2000. *The Robot In The Garden, Telerobotics and Telepistemology in the Age of the Internet*. 2-22. Cambridge: MIT Press.

⁹ "If the 'net and the 'mirror world' of cyberspace is spatially abstract, web cameras can be interpreted as mediating devices - points of contact between the virtual and the real, or spatial 'anchors' in a placeless sea."

Gelernter, David. 1991. *Mirror Worlds*. 27. NY. Oxford University Press.

2. A Mechanical Transformation of Site as Tele Action (References Continued)

¹⁰ Benjamin, Walter. 1969. *The Work of Art in the Age of Mechanical Reproduction*. 217-252. In *Illuminations*. trans, Harry Zohn, ed, Hannah Arendt. New York. Schocken.

¹¹ In computing, JPEG (.jpg) is a commonly used method of compression for photographic images. The degree of compression can be adjusted, allowing a selectable trade-off between storage size and image quality. A .jpg image typically offers little perceptible loss in image quality. The acronym JPEG stands for 'Joint Photographic Experts Group', which developed .jpg compression. <http://www.jpeg.org/> (accessed December 2, 2009).

¹² Benjamin, Walter. 1969. *The Work of Art in the Age of Mechanical Reproduction*. 223. In *Illuminations*. 217-252. trans, Harry Zohn, ed, Hannah Arendt. New York. Schocken.

3. Assemblage Systems in the NoW Expanded Field

¹ Mathez, Edmond A. and James D. Webster, eds. 2004. *The Earth Machine, The Science of a Dynamic Planet*. 23. New York: Columbia University Press.

² Lovelock, James. 1979. *Gaia - A New Look at Life on Earth*. 15. Oxford University Press.

³ After the excavation of trench, assemblage of machine and software testing it was not until the 16th November 2008 that the Parkfield Interventional EQ Fieldwork went 'live'.

⁴ The father and son team of El Fonzo Senior and El Fonzo Junior, Mexicans living in Parkfield contributed with manual labor towards the fine-tuning of the excavated trench. Gracias Amigos!

⁵ Smithson, Robert. 1968. *A Sedimentation of the Mind: Earth Projects*. In *Robert Smithson : The Collected Writings*, ed. Jack Flam. 109. University of California Press. 1996.

⁶ "The manifestations of technology are at times less "extensions" of man (Marshall McLuhan's anthropomorphism), than they are aggregates of elements. Even the most advanced tools and machines are made using the raw matter of the earth. Today's highly refined technological tools are not much different in this respect from those of the caveman." Smithson, Robert. 1968. *A Sedimentation of the Mind: Earth Projects*. In *Robert Smithson : The Collected Writings*, ed. Jack Flam. 101. University of California Press. 1996.

⁷ Krauss, Rosalind. 1979. *Sculpture in the Expanded Field*. 30-44. October. Vol.8. MIT Press.

⁸ As of October 2009 Michael Heizer's 'City', James Turrell's 'Roden Crater' and Charles Ross 'Star Axis', all decades long in the making are still incomplete but actively being pursued until completion. Full reference and locations see *Monumental Land Art of the United States* <http://www.daringdesigns.com/earthworks.htm> (accessed May 9, 2009).

⁹ "Walter de Maria's Lightning Field is meticulously stewarded, but even the expensive overnights cannot pay for its maintenance. James Turrell's Roden Crater is still under construction and is well funded (unlike national parks and monuments); while Charles Ross's more complex Star Axis is still in need of support after some twenty-five years. Eventually, art tourism will keep them all afloat." Lippard, Lucy. 2006. *Peripheral Vision* http://www.nyfa.org/nyfa_current_detail.asp?id=17&fid=1&curid=725 (accessed March 12, 2009).

4. A Site for Non-Sites

¹ Smithson, Robert. 1968. *A Provisional Theory Of Non-Sites*. In *Robert Smithson : The Collected Writings*, ed. Jack Flam. 364. University of California Press. 1996.

² "Nonsite and site-specific art call in question distinctions critical to traditional definitions of art. As so many have insisted, these include the distinctions between process and product, the art object and its destruction, artist and audience, nature and culture, and the gallery as opposed to locations not so uniquely devoted to experiencing or selling art."
Haber, John. 2007. *Nonsite from Smithson to New Media*.
<http://www.haberarts.com/nonsite.htm> (accessed December 20, 2009).

³ Sayre, Henry. M. 1989. *The Object of Performance, The American Avant-Garde since 1970*. 226. University of Chicago Press.

⁴ "Generation Flash looks at the phenomenon of Flash graphics on the Web. Flash aesthetics exemplifies cultural sensibility of a new generation and this generation does not care if their work is called art or design. This generation is no longer is interested in "media critique" which preoccupied media artists of the last two decades; instead it is engaged in software critique".
Manovich, Lev. *Generation Flash*. <http://www.fdcw.unimaas.nl/is/generationflash.htm>
(accessed September 2, 2009).

⁵ "Art is always elsewhere; it is neither in the work, nor in the one-dimensionality of the representation, nor in the mind of the artist or the spectators. It is present amongst us in the form of absence." Tiberghien, Giles. A. 1995. *Land Art*. 259. UK: Art Data.

⁶ Stalbaum, Brett. 2003. The Landscape and Culture, Data as Mediator - Modes of Engagement. <http://www.c5corp.com/research/landscapeculture.shtml> (accessed December 2, 2009).

⁷ Haber, John. 2007. *Nonsite from Smithson to New Media*.
<http://www.haberarts.com/nonsite.htm> (accessed December 20, 2009).

⁸ Boettger, Suzaan. 2002. *Art and the Landscape of the Sixties*. 109. University of California Press.

5. The Geopoetics of Technique Versus Nature

¹ Kenneth White founded the International Institute of Geopoetics in 1989 and "Geopoetics is concerned, fundamentally, with a relationship to the earth and with the opening of a world." <http://www.geopoetique.net/> (accessed September 9, 2009).

² McPhee, John. 1998. *Annals of the Former World*. Farrar, Straus and Giroux, and quoted by David L. Ulin. In *The Myth Of Solid Ground*. Ulin, David. L. 2004. *The Myth Of Solid Ground. Earthquakes, Prediction and the Fault Line Between Reason and Faith*. 10. Penguin Books.

³ Ulin, David. L. 2004. *The Myth Of Solid Ground. Earthquakes, Prediction and the Fault Line Between Reason and Faith*. 10. Penguin Books.

⁴ Mudie, Ella. 2010. *The Spectacle of Seismicity: Making Art from Earthquakes*. 133-139. Leonardo, Vol 43, No.2. <http://www.mitpressjournals.org/doi/abs/10.1162/leon.2010.43.2.133> (accessed July 7, 2010).

⁵ Memento Mori Archive <http://memento.ieor.berkeley.edu/> (accessed June 17, 2009).

⁶ Bukatman, Scott. 1993. Terminal Identity, *The Virtual Subject in Post-Modern Science Fiction*. 181. Duke University Press.

⁷ "The world that is being created by the accumulation of technical means is an artificial world and hence radically different from the natural world. It destroys, eliminates, or subordinates the natural world, and does not allow this world to restore itself or even to enter into a symbiotic relationship with it. The two worlds obey different imperatives, different directives, and different laws, which have nothing in common. Just as hydroelectric installations take waterfalls and lead them into conduits, so the technical milieu absorbs the natural. We are rapidly approaching the time when there will be no longer any natural environment at all. When we succeed in producing artificial aurorae boreales, night will disappear and perpetual day will reign over the planet." Ellul, Jacques. 1964. *The Technological Society*. 79. New York: Vintage.

⁸ "The robot is still, in other words, not quite at home in the garden, but not for the reason that machinery and life representing opposing values, that one represents distance and concealment, the other immediacy and revelation. The problem is rather that we ourselves, with our technological capacities attached to us, are and are not that robot, and we do and do not want to live in a garden" Wilson, Catherine. 2000. *Vicariousness and Authenticity*. 87. In *The Robot In The Garden, Telerobotics and Telepistemology in the Age of the Internet*. ed, Ken Goldberg, Cambridge: MIT Press

⁹ The DIY art of unfunded cultural activities in realizing PIEQF resulted in D.V. Rogers declaring bankruptcy in Australia on the 14th November 2008.

¹⁰ From the outset it was originally intended to have the PIEQF system go 'live' on the 28th June 2008. Extreme working conditions, limited physical labor resources and an extended period of software development resulted in extending the 'live' start date to the 18th August 2008. Patience was rewarded.

5.1 Visualization of Landscape and Seismic Data

¹¹ Wiener, Norbert. 1948. *Cybernetics: Or Control and Communication in the Animal and the Machine*. Paris, France. Librairie Hermann & Cie, and Cambridge, MA. MIT Press.

¹² The earthquake shake table used in the Parkfield Interventional EQ Fieldwork mimics the characteristics of P-Waves (Primary) and S-Waves (Secondary). Shake Table Specifications <http://www.allshookup.org/specs/spec2008.htm> (accessed January 2, 2009).

¹³ 'In science, the selection of a research topic and the extraction, accumulation, and processing of data, as well as the interface through which the data are later explored are themselves an integral part of the nature of the data'.
Bukatman, Scott. 1993. Terminal Identity, *The Virtual Subject in Post-Modern Science Fiction*. 181. Duke University Press.

¹⁴ "The computer has given new life to the sciences, to take one example, through visualization, permitting scientists to "see" what human senses cannot: the motion of subatomic particles, the intermingling of gases, the movement of geological plates".
Baudrillard, Jean. 1983. *In the Shadow of Silent Majorities*. 21. trans, Paul Foss, Paul Patton, and John Johnston, eds, Jim Fleming and Sylvere Lotringer. Foreign Agents Series. New York: Semiotext[e].

¹⁵ Semiconductor. *All the Time in the World*. 2005. 04.40 4:3 / Surround Sound.
<http://www.semiconductorfilms.com/root/attitw/ATTITW.htm> (accessed August 12, 2009).

¹⁶ C5 Theory as Product. *The C5 Landscape Initiative*, 2001.
<http://www.c5corp.com/projects/landscape/index.shtml> (accessed August 22, 2009).

¹⁷ It was originally intended to attach 91 steel rods, representing 91 days of autonomous connectivity with a seismic landscape to the PIEQF shake table. Lack of financial resources restricted this from happening. 31 5/16 (16mm) rods were attached to the table standing and 10ft in length, 3ft short of their desired natural resonant length.

¹⁸ Robert Smithson viewed entropy as "A paradoxical model, characterized by inertia, solidification, and crystallization, as well as destruction and annihilation. His idea of time is connected to entropy, perceived as an instantaneous crystallization and internal collapse."
Tiberghien, Giles. A. 1995. *Land Art*. 144. UK: Art Data.

6. The Science and Non-Fiction of NoW

¹ "'Terminal Space' concentrates on the numerous representations of electronic space that provide both conceptual and perceptual metaphors for this crucial, invisible arena of cultural activity. These representations dramatize the cybernetic, electronic, cosmos and thus re-place the human subject at its center."

Bukatman, Scott. 1993. *Terminal Identity, The Virtual Subject in Post-Modern Science Fiction*. 18. Duke University Press.

² "Classic cyberpunk characters were marginalized, alienated loners who lived on the edge of society in generally dystopic futures where daily life was impacted by rapid technological change, an ubiquitous datasphere of computerized information, and invasive modification of the human body."

Person, Lawrence. 1998. *Notes Toward a Postcyberpunk Manifesto*. Nova Express Issue 16. <http://www.slashdot.org/features/99/10/08/2123255.shtml> (accessed October 10, 2009).

³ Rogers, D.V. PIEQF Twitter Archive http://pieqf.allshookup.org/?page_id=523 (accessed January 10, 2009).

⁴ "Science and technology multiply around us. To an increasing extent they dictate the languages in which we speak and think. Either we use those languages, or we remain mute". J.G. Ballard. Introduction to *Crash*. 1993. In *Terminal Identity, The Virtual Subject in Post-Modern Science Fiction*. 31. Scott Bukatman. Duke University Press.

⁵ Csicery-Ronay, Istvan. 1991. *Cyberpunk and Neuromanticism*. 182. In *Storming The Reality Studio*. Ed, Larry McCaffery. Durham & London: Duke University Press.

⁶ On July 20, 1973, Robert Smithson died in a plane crash while surveying sites for his work Amarillo Ramp in Texas. National Transportation Safety Board (NTSB) Record http://www.nts.gov/NTSB/brief.asp?ev_id=85872 (accessed October 17, 2009).

⁷ Dean, Tacita. 2009. *The Cosmic Clock with Ballard at its Core*. The Guardian, April 29. <http://www.guardian.co.uk/books/2009/apr/27/tacita-dean-jg-ballard-art> (accessed April 30, 2009).

⁸ "Artist's theories are fictions. When science originates these theories, as in the case, for example, with Smithson's speculations on entropy, they become a form of science fiction". Tiberghien, Giles. A. 1995. *Land Art*. 18. UK: Art Data.

⁹ "Science fiction is by contrast, grounded in the new "intolerable spaces" of technological culture and the narrative exists to permit that space to exist in a manner now susceptible to human perception, comprehension, and intervention. The genre provides, as Ballard noted, "a philosophical and meta-physical frame."

Bukatman, Scott. 1993. *Terminal Identity, The Virtual Subject in Post-Modern Science Fiction*. 130. Duke University Press.

¹⁰ Sounds of Seismic. 2008. PIEQF Closing Event. November 15-16. <http://www.pieqf.allshookup.org/?p=454> (accessed December 20, 2008).

¹¹ Survival Research Laboratories was conceived and founded by Mark Pauline in 1978. <http://www.srl.org> (accessed December 14, 2008).

7. The Work of PIEQF in the Age of Digital Reproduction

- ¹ Seeley, Don. *Monumental Land Art of the United States*.
<http://www.daringdesigns.com/earthworks.htm> (accessed March 17, 2009).
- ² Smithson, Robert. 1969. *Aerial Art*. 116. In *Robert Smithson : The Collected Writings*. Edited by Jack Flam, University of California Press.
- ³ Sayre, Henry. M. 1989. *The American Avant-Garde Since 1970*. 237. University of Chicago Press.
- ⁴ Haefner, Scott. *KAP and Urban Exploration Photography*. <http://www.scotthaefner.com> (accessed December 2, 2009).
- ⁵ The author of this paper had planned to charter both a light plane and helicopter to produce aerial footage of PIEQF. Unfortunately funds required were not raised.
<http://www.pieqf.allshookup.org/?p=451> (accessed January 12, 2009).
- ⁶ PIEQF web based process (Blog) account <http://pieqf.allshookup.org> (accessed May 12, 2009).
- ⁷ Ambulanz, A.S. 2005. *The Work of Art in the Age of Digital Reproduction*.
<http://www.artliberated.org/?p=features&id=8> (accessed July 8, 2009).
- ⁸ Davis, Douglas. 1995. *The Work of Art in the Age of Digital Reproduction*. Leonardo, Vol. 28, Issue 5. http://cristine.org/borders/Davis_Essay.html (accessed August 18, 2009).
- ⁹ LIDAR scans of PIEQF were captured on the October 6, 2008 by Gerald Bawden of the US Geological Survey. <http://www.youtube.com/watch?v=5Xitlv4wjlw> (accessed December 18, 2009).
- ¹⁰ On the subject of earthwork photographs, Henry M Sayre writes, "They suggest vastly more than they depict. They project a hypothetical experience. It is in this hypothetical territory, in the open spaces of imagination, that earth art has situated itself."
Sayre, Henry. M. 1989. *The Object of Performance, The American Avant-Garde since 1970*. 215. University of Chicago Press.
- ¹¹ US Geological Survey Earthquake Facts and Statistics
<http://www.earthquake.usgs.gov/earthquakes/eqarchives/year/eqstats.php> (accessed November 20, 2009).
- ¹² Baudrillard, Jean. 1988. *Simulacra and Simulations*. In *Selected Writings*. 166-184 ed, Mark Poster, Stanford; Stanford University Press.
- ¹³ 7,862,400 seconds of analogue VCR recording was also captured of PIEQF at the rate of 1 frame per second.
- ¹⁴ The 25,782 frames edited of PIEQF represents the 'live' and operational hours of the shake table machine, which was 6.30am - 9.30pm for 91 days.
- ¹⁵ Three PIEQF Youtube Videos 1. 3'33 2. Geopoetry 3. PIEQF Translation can be found at <http://www.youtube.com/user/dvrogers123> (accessed January 2, 2010).

8. A Funeral For Time

¹ Levenson, Thomas. 1994. *Measure for Measure, A Musical History of Science*. 318. Simon & Schuster.

² "Is time long or is it wide? Asks Laurie Anderson.... Stuart Brand proposes that time can be thought of in terms of everything-happening-now-and-last-week-and-next-week (wide) or as a deep flowing process in which centuries are minor events (long). The wide view sees events as most influenced by history: "Much was decided before we were born." The wide view is disparaged as short-term thinking. The long view is praised as responsible." Brand, Stuart. 1999. *The Clock Of The Long Now*. 107. Phoenix Paperbacks.

³ Robert A Sobieszek writes on Smithson that his writings and artwork abound with, "inverse meanings, reversals and contradictions: fiction is reality; science fiction becomes scientific fact; the centre is found at the circumference; margins are at the centre; mirrors and their reflections change places; ruins are built in reverse; the future is prehistoric; order begets disorder; and negatives can be positive", Tufnell, Ben. 2006. *The Art of Robert Smithson*. 35. In *Land Art*. Tate Publishing.

⁴ Rogers, D.V., 2008. *Dust Devil Hot Spot*. <http://pieqf.allshookup.org/?p=297> (accessed July 29, 2010)

⁵ Young, La Monte and Jackson MacLow. 1963. *On the Importance of Natural Disasters*. In *Anthology*. <http://www.radicalart.info/destruction/NaturalDisasters/index.html> (accessed December 12, 2009).

⁶ The global timeline of events occurring throughout the world between the 18th August and 16th November 2008. <http://mfa.allshookup.org/historical-time-line.txt> (accessed February 2, 2010).

⁷ Virilio, Paul. 2003. *Unknown Quantity*. 87-88. In *Foundation Cartier pour L'Art Contemporain*. Thames and Hudson.

⁸ The shake table arrived in Parkfield on the 3rd of June 2008 and left on the 28th November 2008, 179 Days later. D.V. Rogers left Parkfield for the last time on the 8th December 2008, returning for the first time since closing the PIEQF trench on the 16th November 2009.

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