

Summer 1-1-2017

# Elemental trauma: A case study of living with contaminated water near sites of Marcellus Shale gas extraction

Christopher John McCann

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ELEMENTAL TRAUMA:  
A CASE STUDY OF LIVING WITH CONTAMINATED WATER NEAR SITES OF  
MARCELLUS SHALE GAS EXTRACTION

A Dissertation

Submitted to the McAnulty College and Graduate School of Liberal Arts

Duquesne University

In partial fulfillment of the requirements for  
the degree of Doctor of Philosophy

By

Christopher J. McCann

August 2017

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Approved May 15th, 2017

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ABSTRACT

ELEMENTAL TRAUMA:  
A CASE STUDY OF LIVING WITH CONTAMINATED WATER NEAR SITES OF  
MARCELLUS SHALE GAS EXTRACTION

By

Christopher J. McCann

August 2017

Dissertation supervised by Eva Simms, Ph.D.

This qualitative research study examines the experiences of individuals living with contaminated water near sites of unconventional Marcellus Shale extraction (commonly called “fracking”) in western Pennsylvania. Five individuals across three households were recruited following IRB approval. Fieldwork was completed in a small town in western Pennsylvania from July of 2013 to April of 2014. This project examines how participant’s relationship to the materiality of water undergoes a drastic transformation. Water is explored as a dynamic, elemental substance that creates the conditions for both life and disease and death for participant-households. Water becomes a re-animated character in participant lives that restructures their attention towards valuing and conserving water as it becomes finite and irreversibly contaminated. Forms of embodiment are then explored, as they are forced into highly precarious and hazardous

conditions. Participant-households describe ways that boundaries between their own bodies and their eco-contexts dissolve. The location of water contamination becomes the body and the blood. The emotional impact of water contamination on the participants and their social network are described as they relate to the social and ecological violence of the fracking process, such as community conflict, social strife, and personal and collective grief. Finally, the role of technology as it mediates survivability of the participants is examined. Industrial technology, in relation to the expansion of fracking in participant-household lives, can neither be characterized as good or bad, but must be instrumentally deployed in order to attempt to reduce the ecologically catastrophic aspects of energy production. Additionally, technology will be explored in relation to the human body as it clashes with obstacles to transparent medical care due to legislation. Demand for energy to power the planet and support immense population growth is in overdrive. Energy production and consumption is the central pursuit of the current epoch. This has come with immense cost. Energy production has created the worst environmental disasters currently known on the planet. Of the various causalities of these events, elemental substances are continually damaged. The concept of elemental trauma is defined as a way of thinking catastrophic change due to large-scale industrial processes of energy production.

## DEDICATION

To the memory of my mother and father

## ACKNOWLEDGEMENT

I would first like to express my gratitude to the residents of Travesty, PA, and the participants of this study, without whom this dissertation would not exist. It has been an honor to become acquainted with their lives, families, homes, and struggles. Each participant offered themselves to this project with trust and courage amidst risky and unstable conditions.

I would also like to thank my dissertation chair, Dr. Eva Simms, and my two dissertation readers, Dr. Suzanne Barnard and Dr. Jessie Goicoechea. Dr. Simms provided enthusiasm for this project from the very start, and her encouragement greatly assisted me in developing my fieldwork into a proposal, and that proposal into this dissertation. Dr. Barnard and Dr. Goicoechea provided valuable editorial suggestions as well as thought-provoking questions. I could not have asked for a more supportive dissertation committee.

Thank you to Dr. Hector Adames, Dr. Drake Spaeth, and Dr. Sandra Siegel of The Chicago School of Professional Psychology. Together they provided the mentorship and launching point for my wish to pursue graduate studies at Duquesne University.

Thank you to departmental colleagues and alumni Dr. Teal Fitzpatrick and Dr. Jonathan Yahalhom for laughter, mischief-making, and professional guidance.

I also want to express gratitude to my son Mose Timothy McCann, two years old at the time of writing this. He has helped me learn and re-learn the eight fingers of play: this moment, togetherness, pretend, patience, waiting, making, stillness, and sleep. This helped me approach this project with a tone of lightness, experimentation, and respect.

Thank you to Benjamin Grand, longtime brother and book lover, for all the conversations, musings on food, and the practice of the wild.

Lastly, thank you to Sadie Leon Grossman, endless source of aliveness and love, for at once bringing me home and setting a shining path to come. Her support during the critical final phases of this project has been spiritually nourishing and helped ground me firmly in the heart of things.

## TABLE OF CONTENTS

**Introduction / 1**

**Catastrophe / 8**

**Trauma / 18**

**Question / 28**

**Methodology / 29**

**Results I: Materiality / 38**

**Results II: Embodiment / 50**

**Results III: Affect / 61**

**Results IV: Technology / 75**

**Discussion / 80**

**Conclusion / 91**

**Elemental trauma:  
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extraction**

“The tradition of the oppressed teaches us that the ‘state of emergency’ in which we live is not the exception but the rule.”

--Walter Benjamin, *Theses on the Philosophy of History*

*Metamorphosis*, or Mutabilitie. *Omnia mutantur*. Mutation everywhere. *The Book of Changes*.

--Norman O. Brown, *Apocalypse and/or Metamorphosis*

**Introduction**

It was close to 11:00 at night when Les<sup>1</sup> called me on my drive back to Pittsburgh. We had spent the night driving around looking at all the fracking wells. That night Les fancied himself a sort of tour guide, wiping the plastic donut packages (“I’m a sweets freak, man”), motor oil canisters, and empty water bottles off the passenger seat of his truck and inviting me to drive around with him. Les lived to drive—trucks, cars, bikes, quads, anything—and was a mad devotee of the miracle of the modern combustion engine. I liked to drive with him. During the previous summer, I had been elected to be his official “pit crew” for local stock car races. We drove through the darkened valleys and cold quiet farmlands, past the huge towering well pads, close on the tails of semi-trucks moving the extracted natural gas to storage tanks. Les talked fast and hard the whole time about how “the gassers” were destroying this little part of the world, occasionally pausing to light another cigarette and once smashing down the accelerator as we sped past a house and rasping “That’s a state policeman’s house. I like to piss him off!” Needless to say, I loved to hang with Les.

*Do you feel it, man?* Les asked. *Do you feel it there in the back of your throat?*

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<sup>1</sup> All names and identifying information has been changed in order to protect participants’ anonymity.

At first I didn't know what Les was talking about. *Feel what?*

*My whole fucking mouth tastes like metal, man. And my throat's all sore. Do you feel it?* Les coughed.

I swallowed a couple times—and yes, there it was, the sting in the back of my throat. I had felt it most of the night and just attributed it to Les's chain smoking, the frigid winter air, the strong smell of motor oil in the cab of the truck. But now Les was suggesting something different.

*We get that when they gas up here, man,* Les said. He was referring to a part of the hydraulic fracturing process he called “flaring”, where flames several hundred feet high would blow out the top of the wells and release foul-smelling fumes.

I made a mental note to write this all down when I returned home, as I thought it was a telling moment in my fieldwork in Travesty, PA. During that winter of 2013 I had been doing interviews with Les and his wife Phyllis and three other people up in Travesty, asking them about how the unconventional natural gas extraction boom—commonly called “fracking”—was changing their way of life, most notably their access to clean water. “Travesty, PA” is the name given to the site of my fieldwork. This name is provided to protect the anonymity of participants and the town as the former would be easily recognizable if the actual name of the town was disclosed, due to the small population size. “Travesty” was inspired from a participant interview with Phyllis, who said, *If you look in the dictionary under ‘disaster’, you will find [the name of the town]. If you look under the word ‘travesty’, on how we are being victimized, you will find [the name of the town].* “Travesty” has a tragic ring to it, but it fits very true to participant

accounts of how their small town, which they have all resided in for decades, is changing due to these events.

After Les and I hung up I spent the rest of the drive back to Pittsburgh contemplating the sting in the back of my throat. I was pleased that he called me. It took nearly a whole prior summer of hanging out with Les and Phyllis before they signed the informed consent forms (I had given them the approved IRB forms to look over for a few weeks before, and then reviewed it with them before they signed) and agreed to be a part of my study, telling me that he (and other people in the community) “thought I was a plant from the gas companies”. By all accounts, I had no business hanging with Les or anyone else in Travesty, but I was just too compelled by their stories about how fracking was changing the region that I hung in and rolled with all the shakes of the head “no” and hard stares I received at the water bank when I would ask people questions. Outsiders like me were suspect. As that summer turned into fall, and the leaves on the valley trees began to change color on my weekly or biweekly drives north to Travesty, the residents who came to the water bank began to see me as a familiar face. I told them that I was from Duquesne University, and that I wanted to do a project that, hopefully, would not allow their stories and experiences to be forgotten as the natural gas craze rolled on and left the region forever changed. I told them I could offer them confidentiality, and this helped, and described the IRB process that I had received approval on several months earlier. That winter Les and Phyllis signed on, and three more participants (in two different houses) after that.

I first heard about Travesty residents living with contaminated water near sites of unconventional Marcellus Shale gas extraction shortly after moving to Pittsburgh from

Chicago. I missed Chicago badly, and I thought if I could get involved in local issues I might feel more connected to this new city. I soon found the grassroots activist organization Marcellus Outreach Butler (MOB) and after meeting with some representatives was invited to a “clean energy” fair and rally at a Butler county park that summer. I remember one of the activists at the fair pointing Les out across a crowd of people and saying in my ear “that’s one of the affected residents” before introducing me. I immediately liked Les because of his hard-nosed, straight-talking attitude which was paired with a wily and friendly demeanor. He invited me to come to volunteer at the water bank the following week. After that, I didn’t see him for a while, but when I did—as he toiled up the highway and pulled into the parking lot in his pickup truck—he got to telling me about Travesty and the “frackers” finally shouting *I want to see them perish! I want them to get buried underneath a pile of their own lies!* I knew then that Les and Phyllis and other residents of Travesty who had noticed changes in their water that correlated with the increase in fracking surrounding Travesty on all sides—changes in color, odor, taste, sometimes dramatically so—were experiencing something that needed investigation. Something that, by all accounts, had profound psychological and social implications.

And so I set up shop for this project at the water bank, a local community organization run by volunteers out of a church storage room who would gather donations and buy water to give people from over 35 homes in Travesty who were no longer drinking, bathing, cleaning, or doing laundry with their personal water supplies. The people from these homes were living out of the gallon water jugs we were loading into the backs of their vehicles every week. Furthermore, the reports I heard from them of

being ignored by local county commissioners and completely railroaded by the gas companies as to their complaints that the fracking in the area had contaminated their water, were too much to ignore. Every week I heard stories. Stories from people that—for reasons I didn't clearly understand then—refused to be quoted or sign informed consent forms. Stories that I can't recount here. But I will say that I heard stories that were about the complete erosion of a traditional way of life and of the cohesion of a community. I heard stories about what it feels like when people's sense of home and belonging to a given place are ruptured by forces that are out of their control. I also heard stories about the disintegration of the basic safety that people felt when they'd turn on their kitchen faucet, fill a glass with water, and drink.

As my fieldwork continued, I began to wonder about how the situation in Travesty might be a single manifestation of a larger historical pattern. *What does this say about our unique moment in time?* Then one December morning, I was sitting in my kitchen drinking coffee like any other day, and I shivered from the cold draft coming from the old windows of my house. I walked to the thermostat and turned up the heat a few degrees. A simple moment that would otherwise go unnoticed. I had done this an untold number of times before without a second thought. I heard the whoosh and the click of the furnace turning on in the basement, and the flow of gas ignited. But then this comfortable world of home collided with fieldwork memories from Travesty. *I remembered Les squinting into the rearview mirror of his truck, cigarette dangling from his lips, gritting his teeth and muttering that “the gassers” were following us. I remember turning around in my seat and looking out the rear cab window at an unidentified sedan that turned a corner several minutes later. I remembered wondering what was happening*

*in Les's community where he would identify an unknown car as a threat.* I walked back into the kitchen and felt the warm air coming out of the vents, and realized that the narratives I was collecting in Travesty had something to do with the cost of energy, and that the participants in the study were intimately connected to my ordinary and comfortable need for natural gas. And not only my need—but also that of my neighbors, my fellow citizens, that of the larger society as well. At that point I began to think about the situation in Travesty as an instance in the “human impact” pattern of energy extraction.

In Sovacool's (2008) inventory of accidents related to energy extraction ranging from 1907-2007, the events from the early 20<sup>th</sup> century were of a particular scale and measure. Listed descriptions like “mineshaft completely collapses” [1908], “natural gas explosion destroys entire high school” [1937], and “smoke from fire suffocates miners” [1945] typified the beginning of the 20<sup>th</sup> century (Sovacool, pp.1810-1811, 2008). These accidents were sudden and involved hundreds of people tragically dying in the immediate aftermath. Compared to later events, the environmental impact was more containable: fires could be extinguished and collapsed mineshafts could be rebuilt. The type of energy involved in those accidents was usually fossil fuels like coal and natural gas (Sovacool, 2008). As the 20<sup>th</sup> century progressed, the scope of the accidents changed: “Shimatan Dam fails and releases 15,738 billion tons of water causing widespread flooding that destroys 18 villages, 1500 homes, and induces disease and epidemics” [1975], “a leak at the PEMEX LPG Terminal in San Juan Ixhuatepec causes a flammable gas cloud to ignite, destroying five city blocks and forcing the evacuation of more than 200,000 residents” [1984] (Sovacool, pp.1813-1816, 2008). These catastrophes no doubt took

more and more human and non-human lives (lives as defined by biological vitality) and destroyed wider areas of the environment. Along with increasing demand in the latter part of the 20<sup>th</sup> century, methods of energy production became technologically sophisticated beyond previous measure—which also diversified the characteristics of the resulting accidents (Sovacool, 2008). In addition to the increased environmental impact of energy catastrophes we find an increase in the overall number of catastrophes, even though the number of direct fatalities seems to decrease. Instead of the direct fatalities typical of the beginning of the 20<sup>th</sup> century, the “human impact” spreads into more far-reaching and subtle forms—like the water contamination in Travesty (and the catastrophes reviewed in the following section). Descriptions from the later part of the 20<sup>th</sup> century such as “the *Torrey Canyon* supertanker strikes Pollard’s Rock and discharges 120,000 tons of oil into the English Channel” [1967], “equipment failures and operator error contribute to loss of coolant and partial core meltdown at Three Mile Island nuclear reactor” [1979], and “the Exxon oil tanker *Valdez* runs aground and spills 250,000 barrels into Prince William Sound” [1989] are typical of this period (Sovacool, pp.1811-1816, 2008). The immediate, direct fatalities of these catastrophes don’t exceed a single person. But these catastrophes—more spatially and temporally expansive, more inclusive of the ecological spaces between bodies instead of within separable individual lives—are characteristic of the pervasive, indirect, and lethal environmental catastrophes in the present historical moment.

As my fieldwork in Travesty continued I began to think of the participant’s experiences as a kind of case study. Then it became possible to place the participant’s lives in the larger context of energy catastrophes and in the lineage with those who had

been impacted as a result of present pressures for energy production. By reviewing other case studies of the “human impact” of energy production, the participants in Travesty can be represented as a single case in a much larger narrative of the “human impact” of energy production. Nor is the evolving structure of the catastrophe that so deeply shapes their lives an isolated incident. Additionally, this review of energy catastrophes also provides the means for a preliminary discussion of the themes that form the overall research questions which guide this dissertation.

### **Catastrophe (1.)**

**April 26, 1986.** Everything began with a routine systems test. The number four reactor at the Chernobyl Nuclear Power Plant exploded, lighting up the town of Pripyat (est. pop. 5,000) with a terrible heat and glow. Sand-dropping helicopters tried to extinguish the reactor blaze from above. The meltdown released radiation into the air, water, food sources, adults, children. Pripyat underwent evacuation, and surrounding areas of Belarus, Ukraine, and the former Soviet Union were contaminated with radiation. The overall fallout was 400 times that released during the bombing of Hiroshima; a third of a million people were displaced from their homes (Stone, 2006). Radioactive clouds drifted over Europe on unpredictable wind patterns. Photographer Gerd Ludwig, on assignment for *National Geographic*, recalled 20 years later: “A scientist at Chernobyl told me ‘we could erect fences in certain areas here stating ‘Not meant for human habitation for 24,000 years to come’ and that is only the half-life of plutonium 239” (Keefe, para. 15, 2014). The total estimated death toll was 4000, but there is no telling how much damage will be transmitted down generational lines (World

Health Organization, 2005). A woman whose husband was one of the first people to approach the reactor site after the explosion—and who could see the fires burning from their window—described visiting him in the hospital:

“There’s a fragment of some conversation, I’m remembering it. Someone is saying: ‘You have to understand: This is not your husband anymore, not a beloved person, but a radioactive object with a strong density of poisoning....None of the doctors knew I was staying with him at night in the bio-chamber. The nurses let me in. At first they pleaded with me, too: ‘You’re young. Why are you doing this? That’s not a person anymore, that’s a nuclear reaction. You’ll just burn together.’” (Alexievich, pp. 16-17, 2005).

Surfaces held the most contamination: radiation wafted down on roads, fields, roofs, sidewalks. Cows ate the contaminated grass and children drank milk from contaminated cows and contaminated children comprised the largest percentage of thyroid cancer. Birth defects and forced abortions compounded the trauma. “According to the Forum’s report on health, ‘the mental health impact of Chernobyl is the largest public health problem unleashed by the accident to date’” (World Health Organization, para. 27, 2005). The psychological impact yielded the most critical hazard; yet people couldn’t leave their homes completely...the elderly walked back into contaminated zones. They were called ‘the returnees’.

**March 24, 1989.** Initially, blame was placed on the drunken captain, rumored to be sleeping off a bender in his bunk at the time of impact. Later it was reported that the Raycas radar system too costly to fix was found to be useless for a year prior to the accident (Palast, 1999). The Exxon Valdez ran aground in Prince William Sound spilling 11 million gallons of crude oil over 1300 miles of coastline. Captain Hazelwood’s (state of) emergency call: “We’ve fetched up, ah, hard aground, north of Goose Island, off Bligh Reef and, ah, evidently leaking some oil....” (Exxon Valdez Oil Spill Trustee

Council, para. 31, 1990)<sup>2</sup>. There have been larger oil spills, but the Exxon Valdez is considered the most deadly from an ecological perspective: 2,800 sea otters, 300 harbor seals, 900 bald eagles, 250,000 sea birds died immediately following the spill (Oceana, date n/a). Photographs from the air show the oily mass spreading through the Sound, the blackness washing up on the rocky, snow-laced shore. Not only ecological damage but 300 million dollars of economic harm to 32,000 commercial fishing livelihoods (Oceana, date n/a). Multi-generational family businesses were destroyed, not to mention the mythologies of life and labor that supported them. “The initial “human impacts” within these communities included high levels of collective trauma, social disruption, economic uncertainty, community conflict, and psychological stress” (Gill, Picou, Richie, p. 6, 2012). There is something in the nature of the spill that is especially panic-inducing: a gaping wound, an unstoppable black blood flow. You can still go to the beach of the sound with a shovel, dig down, watch the bubbling crude fill the hole and cover your shoes. The oil will never completely vanish. Not only were fishing communities severely damaged, but also Alaskan Native villages that survived on subsistence farming. Chief Walter Meganack’s 1989 speech to a conference of local mayors in Valdez, Alaska:

“The Native story is different from the white man’s story because our lives are different. What we value is different, how we see the water and land, the plants and the animals is different. What the white man does for sport and recreation and money, we do for life, for the life of our bodies, for the life of our spirit, for the life of our ancient culture. Fishing and hunting and gathering are the rhythms of our tradition, regular daily lifetime, not vacation time, not employment time.... The oil companies lied about preventing the spill. Now they lie about the cleanup. Our people know what happens on the beaches. Spend one day cleaning one huge rock and the tide comes in and it’s covered with oil again. Spend a week wiping and spraying the surface, but pick up a rock and there is four inches of water underneath....What we see now is death, death not of each other, but of a

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<sup>2</sup> Listen to a recording: <http://www.evostc.state.ak.us/static/mp3/hazelwood.mp3>

source of life, the water. We will need much help, much listening in order to live through the long barren season of dead water, a longer winter than ever before.... We have never lived through this kind of death, but we have lived through lots of other kinds of death. We will learn from the past, we will learn from each other, and we will live. The water is dead, but we are alive, and where there is life there is hope.” (Meganack, para. 1,14,17,18, date N/A).

**January-November, 1991.** One inferno got the nickname The Devil’s Cigarette Lighter. Werner Herzog made a film on the fires, *Lessons of Darkness*, that he began with a pseudo-quote from Blaise Pascal (he later said it was made up): “the collapse of the stellar universe will occur—like creation—in grandiose splendor” (Cronin, p.242, 2003). Black splendor, black earth, terrestrial black rain: nearly 750 fires lit simultaneously in the Kuwaiti desert by retreating Iraqi troops. Scorched earth infernos dotting the landscape, horizons completely full of walls of smoke seen from satellite photos in space like massive charcoal smears across the sand. There was no more sun: almost nothing is more light-absorbing than soot.

“The oil mist can be as deadly as it is ugly. It coats the leaves of palm trees, starving them for sunlight, and so they shrivel. It falls on the surface of the Persian Gulf, already assaulted by oil spills and acid rain, posing a further threat to the phytoplankton that is the base food supply for the region’s abundant fisheries. And it enters the air passages and lungs of all breathing creatures. Kuwaitis who have seen the blackened lungs of slaughtered animals and watched livestock and wildlife sicken and die can only wonder what the effect the ubiquitous mist is having on humans.” (Linden, E., Dorfman, A., para. 6, 1991).

Initially, there were predictions of nuclear winter scenarios. The imagined scenario was that smoke might’ve absorbed solar radiation to the extent that it would decrease the surface temperature of the Earth. This did not turn out to be the case, but visuals of the event itself no doubt inspired these apocalyptic overtones. The roaring fires

were hundreds of feet high; the blazes didn't crackle like fires usually do, the oxygen suck roared like a freight train.

**November 10, 1995.** Ken Saro-Wiwa and the Ogoni Nine, leaders of the Movement for the Survival of the Ogoni People (MOSOP) was executed. That was the wretched crescendo to the previous five years Shell backed and financed Nigerian death squads to stamp out a growing protest movement to kick the multinational oil company out of the Niger delta. Shell first set foot on the delta in the late 1930s as a rampart of British colonialism. In 1958 they fully loaded into the oil rich territory and pulled over 300 billion dollars in oil out of the ground over the next thirty years. There are long lists of environmental abuses: "In 2006, the Niger Delta Natural Resource Damage Assessment and Restoration Project (an independent team of scientists from Nigeria, the U.K, and the U.S) characterized the Niger delta as 'one of the world's most severely impacted petroleum-impacted ecosystems'" (Center for Constitutional Rights, para. 3, date n/a). Shell spilled over 1.5 million tons into the delta throughout their Nigerian tenure, the equivalent of one Exxon Valdez spill annually (Center for Constitutional Rights, date n/a). Paul, a 33-year-old pastor recalls the Shell-backed death squads storming villages each night (these were called wasting operations):

"In June, the 6<sup>th</sup> of June 1994, after Ken Saro-Wiwa was arrested, the churches decided to gather and have a word of prayer. There was this wasting operation in Ogoniland. They [got] into the town, they shoot on sight, burn houses, scatter villages, rape our girls, and loot property....At two in the morning I was sleeping in my room. I heard BOOM BOOM at the door. Because of how the military was terrorizing the place, I didn't used to sleep [well]...I heard my cousin shouting. The children were crying. Students lived with us—five girls. If I put out my head I would be shot dead. I crawled into the gutter. By the time they came into my room I was already hidden in the gutter, the tunnel. There were my brother, there were his wife, all the girls in the yard—they were tortured. My brother's wife in pregnancy was tortured. Beatings. They beat you mercilessly.

They raped the girls. My brother was shot—we did not see his corpse, even today [we have never seen it]. I ran away. My uncle was shot dead. They lit fire to the house. My friend was shot in his bed. They carried him outside and dropped him on the main road. Another family—a boy was shot to death and the whole house was burned down. The dead would have included myself [I had not](sic) escaped through the tunnel. Running in the night—one girl was shot in the breast. Flying bullets. Another girl was shot in the fingers. Her two fingers were cut off.” (brackets in original) (RELUFA, p. 18, date n/a).

In June of 2009, Shell agreed to pay 15.5 million dollars for human rights abuses in the Niger delta to 10 plaintiffs related to the nine Ogoni protest leaders (including the Saro-Wiwa family) and to set up a trust fund for the Ogoni people (Center for Constitutional Rights, 2009). These ‘reparations’ do not repair the damage done. The irreversible environmental degradation remains.

**April 20, 2010.** The Gulf of Mexico oil spill. The BP Deepwater Horizon oil rig 41 miles off the coast of Louisiana exploded into flames, killing 11 people and injuring 17 immediately. *The Macondo Blowout*. 5000 feet below the surface oil began uncontrollably spewing into the ocean, at an unstoppable rate 55,000 barrels a day, until September 19<sup>th</sup>, 2010 when the well was capped and was given an official expiration date. The total spill was the largest in U.S. history: an estimated 185 million to 205 million gallons of crude oil covering close to 4,000 miles of gulf coastline. Local commercial fisheries and tourism industries lost billions of dollars in revenue; entire ways of life threatened fresh in the aftermath of Hurricane Katrina. CNN ran a live infrared feed of the open well cap and the massive black tide of crude erupting out of it while live commentators debated the most tactical shut-off techniques. Day after day this feed played on a small screen in the corner of the frame, day after day the numbness

caused by the disaster set in. Finally the event itself evaporated from the frenetic day to day rush of media coverage.

“...Oil spills are unlike natural disasters and even other technological disasters in that there is no immediate loss of human life and the acute phase of the event usually unfolds over a much long period of time. Nevertheless, oil spills have been found to produce significant impacts to the psychological health and social well-being of residents living in affected communities....Unlike a terrorist act that can occur over a span of seconds or minutes or a natural disaster in which destruction of the natural environment occurs within a matter of minutes, hours, or days, the dispersion of oil itself may occur over a period of weeks and months. This longer duration is more likely to result in a prolonged period of acute stress.” (Palinkas, pp. 204-205, 2012).

Narratives of impact formed and the elegies will continue for a long time by residents of the Gulf area. Peter Cooley (2010) wrote for *Poets for Living Waters*:

“Back behind tomorrow, where we will end,  
hundreds of pelicans are pulled from oil,  
slickered with the black skin they’ve just put on.  
Hosed, preened, they may even survive a time.

Years I have watched the pelicans descend  
over the gulf I’ve come to call my home.  
When they are gone, can I name the light alone?

That arc they make when they dive for a fish—  
how will I remember their bodies descent  
across the air? The arc of a rainbow,  
then the ascent, bill full, then the sunset.

When I imagine, I see them all black.  
Then I see black glide through the black water.”

**March 11, 2011.** Following the earthquake and tsunami, three of the Fukushima Daiichi nuclear cores melted over three days displacing over 100,000 people from their homes. While no immediate deaths were due to radiation sickness, like Chernobyl, large swathes of Japanese prefectures are rendered uninhabitable. The invisible threat of

radiation spread: traces of it were found in Tokyo tapwater, leeks and spinach throughout the food system. Evacuation shelters were flooded with over 20,000 people.

“On a crisp day last November, Kenji Ookubo, wandered through Iitate, a village 40 kilometers northwest of the plant, practising his golf swings in the empty streets. The town had been evacuated after the accident because it lay in the path of the plume of radiation blowing away from the plant. But Ookubo couldn’t stand the temporary housing, where he had started drinking and suffered from stomach aches. After renting a room in Kawamata, he began squatting in his parents’ abandoned home. ‘I came back just to run away from the stress,’ he says. With no job, and no prospects, ‘I can’t see the future’ he says” (Brumfiel, p. 292, 2013).

While the 1,000 expected cancer deaths due to the radiation is much less than Chernobyl (est. 16,000), the psychological consequences of the long-term effects of the radiation (including genetic effects) will be ongoing, especially because of the psycho-radioactive legacy of Hiroshima and Nagasaki (von Hippel, 2011). While initially the tsunami was thought to be the cause of the meltdowns, the Fukushima nuclear accident independent investigation committee officially reported that the event was ‘man-made’; the result of a lack of government oversight of safety measures in a high-risk geographical area and major corporate irresponsibility (McCurry, 2012). This accurately shows the blurring between ‘natural’ and ‘human-caused’ catastrophes.

As my fieldwork continued, I began to think of the participant’s experiences as a sort of case study. Then it became possible to place the participant’s lives in the larger context of energy catastrophes with those who had been impacted as a result of energy production. By reviewing these other cases, the participants in *Travesty* are shown not to be alone in their experiences. Nor is the evolving structure of the catastrophe an isolated incident. Additionally, this review of energy catastrophes also provides the means for a preliminary discussion of the themes that form the overall research questions which guide this dissertation.

These energy catastrophes form the lineage not only for participant's experiences in Travesty, but for all of the people who have been affected by the hydraulic fracturing of the Marcellus Shale and other natural gas deposits in the United States. The common thread that connects participants of this study to residents of Pripyat, Prince William Sound, Kuwait and Iraq, the Niger Delta, the Gulf coast region, and Japan is the catastrophic over-turning of the very foundation of their lives by the present pressures of energy production. This catastrophic over-turning presents a form of disruption that reaches to the depths of what it means to be a person in relation to a larger community; most notably, in relation to life-giving eco-systems, nonhuman creatures and substances, reliable sources of clean air and water, and one's own basic placement as an embodied being in relation to a given place with others (commonly called a home).

In these energy catastrophes, the very materiality of the world; that is, of the sensuous connection to the infinite substances and things which surround and make possible our lives, becomes a site of danger. The materials and substances which are essential to life in nature (such as the elementals of air, water, earth) are transformed into substantial hazards to the place-based persistence of life. These material hazards, like many examples from above, do not have easily defined territories and boundaries; they can spread geographically through entire regions not directly connected to the site of the catastrophe. Once these catastrophic transformations occur to the material basis of a person's place-based lifespan, nothing is quite the same; the world is stricken with unseen areas of risk and the possibility of death is ever present. For this to occur, the spatial spread of this dangerous over-turning of the materiality and substance of the world has to penetrate the soft and porous tissues of the body. The body then becomes equally

saturated with these catastrophic dimensions of energy production. Not only this, but the pressures for energy production include social processes which extend beyond the reach of the individual towards much larger parts of society: industrial ventures, political decision-making, and socio-economically stratified fields of power. Those whose lives become catastrophically disrupted are positioned as the “human impact”, the necessary but unacknowledged cost, to the larger ventures of energy production and the many exercises of power which propel the production processes. This oppression becomes not only evident in the structural subjugations of people who are likely already in precarious social circumstances, but in the expressive affects of the people themselves. The affective dimensions of these energy catastrophes form the awareness of people’s own social position in relation to processes that are out of their control and exceed their individual influence. The rage, fear, paranoia, anxiety, and hurt—these are just the beginnings of rich and varied descriptions of the affective dimensions of these catastrophic over-turnings of life. What seems to be at the core of these terrible disturbances of materiality, embodiment, social position, and affect is no less than death itself; either already present (as a death toll) or coming closer and closer (as a future possibility of death). Energy catastrophes—just as wars, epidemics, “natural” disasters, and collective abuses—all have the capacity to dictate the terms of survivability for those groups of people deemed expendable to the wider intentions of the production processes. In addition, the ultimate question becomes where to draw the line between the production process itself and the subsequent catastrophe. Is there any difference for the people in the regions described above? For the participants of this project in Travesty, the production processes—from

the extraction to the refinement to the transportation of it elsewhere—*is the very catastrophe*.

Thus far, this proposal has been focused on providing a historical context for this project, and has provided a means for thinking of the case of Travesty not as isolated but as an urgent example of the catastrophic elements of this current paradigm. Nonetheless, this project is meant to provide a psychological account of these events, albeit a psychology which does not stop with individualistic approaches to the mind and behavior but is radically inclusive of what are commonly called “psycho-social factors”: political positions, community conditions, and ecologies of place. What is needed then to support this project is a psychological language of catastrophe which can provide the lens in which to think about the unique case of Travesty. This psychological language of catastrophe can best be found in the literature of trauma. What follows is a review of main facets of the concept of trauma as a psychological and social phenomenon.

### **Trauma**

Ways of conceptualizing trauma have been varied and numerous and trauma literature is an industry sweeping across psychology to the social sciences to literary theory. Overall, the purpose of this study is to push the understanding of trauma past the confines of the self and towards the indefinite horizons and territories of the world, both of the world, which is seen, and the world, which is invisible. In this manner, the locus of the conceptualization of the trauma will no longer be located within the person, but will broaden to include social and political contexts, collectivities and cultural formations, and spatial and temporal configurations which exceed individuality.

**Parts Inside The Machine.**

When surveying the ways that trauma has been conceptualized, initially the phenomenon of trauma was squarely placed *inside* the person as a complex reaction to external events. In these formulations, there are traumatic stressors and then the psychological aftermath that extends beyond that initial flash point, diagnostically known as post-traumatic stress disorder (van der Kolk & McFarlane, 1996). The key is that “after exposure to a trauma, most people become preoccupied with the event; having involuntary intrusive memories is a normal way of responding to dreadful experiences” (van der Kolk & McFarlane, p. 5, 1996). During this aftermath, the experience of the traumatic stressor itself cannot be fully symbolized and integrated into the overall functioning of the personality, which in turn triggers the repetition of the remnants of the trauma itself (van der Kolk & McFarlane, 1996). People diagnosed with post-traumatic stress disorder often have impaired information processing in six ways:

“(1) They experience persistent intrusions of memories related to the trauma, which interfere with attending to other incoming information; (2) they sometimes compulsively expose themselves to situations reminiscent of the trauma; (3) they actively attempt to avoid specific triggers of trauma-related emotions, and experience a generalized numbing of responsiveness; (4) they lose the ability to modulate their physiological responses to stress in general, which leads to a decreased capacity to utilize bodily signals as guides for action; (5) they suffer from generalized problems with attention, distractibility, and stimulus discrimination; and (6) they have alterations in their psychological defense mechanisms and in personal identity.” (van der Kolk & McFarlane, p. 9, 1996).

In this model, the traumatic residues of everyday experience are localized *within* the person as distortions or deficiencies of essential aspects of mind, behavior, and perception. The memory of the trauma attacks the person from *within* the recesses of their mind, which in turn mobilizes defenses against these memories. In ways typical of this

area of trauma conceptualization, the notion of the world is considered solely as the traumatic stressor itself, which is curiously never present at the site at which the trauma is known (the present) but in the past. Matters of attention, distractibility, and stimulus discrimination become the faculties of mind which then unhinge the person's placement in the world, and are also conceptualized within the framework of cognition and psychological (in)capacities (van der Kolk & McFarlane, 1996). Needless to say, this model of trauma is the most highly relevant within the clinical setting, where considerations of psychopathology and treatment closely follow.

### **Political Contexts, Social Supports.**

Judith Herman (1992) makes an influential argument for the inherently political nature of discussions of trauma, which moves away from individual and essentialist thinking towards the social field:

“Three times over the past century, a particular form of psychological trauma has surfaced into public consciousness. Each time, the investigation of that that trauma has flourished in affiliation with a political movement. The first to emerge was hysteria, the archetypal psychological disorder of women. Its study grew out of the republican, anticlerical political movement of the late nineteenth century in France. The second was shell shock or combat neurosis. Its study began in England and the United States after the First World War and reached a peak after the Vietnam War. Its political context was the collapse of a cult of war and the growth of an antiwar movement. The last and most recent trauma to come into awareness is sexual and domestic violence. Its political context is the feminist movement in Western Europe and North America. Our contemporary understanding of psychological trauma is built upon a synthesis of three separate lines of investigation” (p. 9).

This study of trauma not only grows *out of* a political context but the forces and forms of that which is deemed and as traumatic *is* political. War, sexual assault, domestic violence are equally political actions as they are individually experienced, interpersonal

forms of violence. The political dimension of these actions not only surrounds or discursively captures them, but lands at the very surface of the event itself, no matter if it is articulated or not.

To follow Herman's line of thinking, the political context that this study of trauma extends from is the collective awareness of the irreversible impact of the totality of the global human population on the planet that is at the very heart of this historical moment. This collective awareness is not typical of those described above. For one, it is not merely concentrated in episodic interludes such as war or combat, which gather political momentum and then disperse into larger social debates regarding destruction and the exercise of power. Instead, this form of political awareness contains a unique temporal formation that is a slower boil which gathers the future into the very present. Discussions of climate change, for example, roll towards a potentially catastrophic future that is created in the present-tense and cannot disperse after the ending of the event itself because there is no end to climate change like there can be to a war. Secondly, this political awareness is not bound merely within human form, or more so, within ideas of the human mind, personality, or psychic capacity. The expression of hysteria, socially constructed within the diagnostic thinking of early psychoanalysis, was the business of making statements as to what constitutes trauma *within* a person's mind-body, specifically in the recesses of their memory and the sensations (or lack thereof) in their genitals. The political awareness from which this project grows is not only regarding the nature of the self, as much as the self is theorized as the singular expression of some-*one*. Political statements regarding say, species extinction (including our own for that matter), have nothing to do with the self as such, not even with the relation of the self to the other.

The political awareness of the destruction of certain species is inherently a radical re-visioning of this ‘self’, and may suggest a radical inclusion of what was previously denied ontological status. This re-visioning also includes the rethinking of the nature of the embodiment, and places the process of traumatized squarely outside that of monadic interiority. Thirdly, the political awareness from which this project grows is not only about the identity formation of a group, or the liberation of that formation of identity from larger field of power and oppression. Ultra public awareness of dependence on fossil fuels is not a national affair, nor is it contained in the relational field of power and subjection between one and another; rather it inhabits territories under, beneath, surrounding, supporting, within, and *through* subjectivity.

Political contexts and social fields are also given emphasis when it comes to recovery from traumatic events as well. “During acute trauma, the social environment tends to respond with generosity; from tribal mourning ceremonies to Red Cross disaster relief, every society seems to have evolved social and religious structures that are geared to helping acutely distressed people until they can resume looking after themselves” (McFarlane & van der Kolk, p. 25, 1996). In this account by McFarlane and van der Kolk (1996), the social environment is understood as a network of support that is useful insofar as it guides the individual back to being a productive member of society. This social environment is not necessarily named as a source point for the traumatic interludes or traumatic landscapes of an individual’s life. The traumatic event is seen as an aberration or a disruptive perversion to the stable and ongoing normalcy of social life. More so, “one core function of human societies is to provide their members with traditions, institutions, and value systems that can protect them against becoming overwhelmed by

stressful experiences” (McFarlane & van der Kolk, p. 25, 1996). The social environment is basically benign, structurally sound, and largely conceptualized as an extension of the safety net of the family system. Of course, what is lacking in an account such as this as the inherent potential for the social field, throughout expressions and stratification of power that are both structurally assigned and reinforced through the daily wash of both micro-interactions and cataclysmic events, to be the traumatizing landscape of the individual or group.

### **Collectivities, Constructions.**

Collective trauma is a broad term that best describes how people experience large-scale events that break down predictable patterns of social organization and exceed their own individual lives and personal histories. Collective trauma is discussed often in regards to experiences of people within wars and conflict zones (as both soldiers and civilians), social upheavals like revolutions and violent re-orderings of society, genocides and their intergenerational passage, marginalization of minority groups and their positioning in fields of power, and disastrous ecological events.

Broader ways of conceptualizing trauma are also inclusive of forms of what can be broadly called “social constructionism”. Alexander (2004) provides an understanding of trauma that moves away from individual processes towards the socio-cultural dimensions of collective identity: “cultural trauma occurs when members of a collectivity feel they have been subjected to a horrendous event that leaves indelible marks upon their group consciousness, marking their memories forever and changing their future identity” (p. 1). This definition may be thought of as a working baseline formulation for broader

ways of thinking trauma and while it takes a distinctively macro-approach to considering trauma it loses what might be thought of as an existential groundedness in everyday life. Alexander (2004) states that trauma must not be only understood as group suffering alone but as a constructivist process of trauma creation which bears both shattering and redemptive characteristics, as something that isn't naturally existing but something that undergoes construction. According to what Alexander (2004) calls naturalistic fallacy of "lay trauma theory", trauma is unreflexively understood as an expected reaction to overwhelming change by rational people who ultimately seek progressive responses to the event itself (enlightenment thinking), or as undergoing group repression which requires the backward retrospection of memory recovery and collective symbolization and therefore working through (psychoanalytic thinking). Alexander's (2004) approach is altogether different, and begins with a critical look at the events deemed traumatic as a starting point: "Events are not inherently traumatic. Trauma is a socially mediated attribution. The attribution may be made in real time, as an event unfolds; it may also be made before the event occurs, as an adumbration, or after the event has concluded, as a post-hoc reconstruction" (p.8). This process of trauma creation includes five elements: First, symbolic broadcasts must be made concerning claims of injury (claim-making); second, a social sector must designate itself as a carrier groups that is making these claims (carrier groups); third, an audience must be selected as the target of the symbolized claim (audience and situation); fourth, a new master narrative of trauma is composed regarding the pain, victim, relation of victim to audience, and responsibility; and fifth, the collectivity undergoes a revision of identity as the trauma narrative becomes routinized and made available for social incorporation by other groups (Alexander, p. 10-

23, 2004). Alexander's theory of trauma creation has ultimate applicability when attempting to formulate an understanding of traumatized groups in regards to how those narratives are constructed, held, and ultimately offered to others in the name of attributing responsibility to the perpetrator of the injury. The aim of this study aligns itself with this theory of cultural trauma in so far as it works against the naturalistic fallacy of lay trauma theory which posits trauma in relation to a stable definition of human nature as well as the memorialization process. Equally, this study aligns itself with the social construction of trauma in that it examines the discursive elements which underscore certain elements of the participant's lives, yet goes further along the way of re-conceptualizing trauma from a more ecologically oriented political awareness. While Alexander's theory of trauma creation adequately shows the constructed parts of the larger trauma narrative, such as the ecology of trauma, it does not show the *trauma of ecology* that will be examined in this study (among other things). This study seeks to move understandings of collective trauma behind the boundaries of group identification (like an ecology of parts to a whole of any social body) to a conceptualization of trauma as not being captured by the same temporal and spatial boundaries.

**Root Shock.**

An excellent application of the theory of trauma to how it is lived within individual people's lives in the midst of social and political disruption is provided by Mindy Fullilove's (2004) concept of root shock. "Root shock, at the level of the individual, is a profound emotional upheaval that destroys the working model of the world that had existed in one's head....Root shock, at the level of the local community,

be it a neighborhood or something else, ruptures bonds, dispersing people to all directions of the compass” (Fullilove, p. 14, 2004). Fullilove (2004)—by comparing how different cities throughout the country have been affected by ‘urban renewal’ projects that ultimately destroyed poor and disenfranchised neighborhoods that were often populated mostly by African Americans—achieves an intensely creative and inclusive use of the language of traumatology. Based on eight years of in-depth fieldwork in cities like Pittsburgh, Newark, and Roanoke, Virginia, Fullilove (2004) used her expertise in the sociomedical psychiatry to describe impacts that are seamlessly conceptualized across social and political fields. Fullilove’s concept of root shock not only uniquely names the specific forms of traumatic responses people have to the displacement and destruction of their neighborhoods, but also stretches the spatial and temporal dimensions of pre-existing theories of trauma. “Root shock rips emotional connections in one part of the globe, and sets in motion small changes...that spread out across the world, shifting the direction of all interpersonal connections” (Fullilove, p. 17, 2004). Fullilove’s genius comes from her deft ability to thematize people’s lived experiences in a way that stays close to their reported experiences but also widens the conceptual lens to discuss that material in a way that changes the way people think about the nature of psychology, trauma, and the social context that structures these experiences.

This project follows Fullilove’s example by creating a new conceptual basis for trauma. Just as Fullilove (2004) coined the term ‘root shock’ to describe the particular manifestation of personal and collective urban trauma she studied, this project has a similar agenda. Hence, the conceptual term *elemental trauma* is used to define the traumatic phenomenon that is the topic of this research.

Elemental traumas are, in brief, traumas that are experienced in the relationship between human beings and the elements. The elements, as broadly defined here, are described in many archaic contexts across cultures and historical periods as earth, water, fire, and air. These elements are both forms and forces that make the world and connect human beings together with the world by these fundamental substances. This project utilizes these archaic notions of the essential substances of life because they are powerful descriptors that have correspondences between human and nonhuman forms.

For example, water is the element that is the subject of this study. More specifically, the human-water relationship, or matrix. There is a lived correspondence between the human body, which is largely water, the Earth's surface, which is also largely water, and the glass of water sitting on my desk as I write this. Elements are living tissues that connect human beings to the world. These archaic elements are material forms that provide the basis for life and are easily grasped in lived experience. Oxygen is a chemical element that is necessary for life, but it is not easily discerned in the present moment of lived, human experience. Air, on the other hand, is an archaic element which is more easily grasped in awareness, and can be easily seen as a corresponding form that connects me, as a breathing being, to all breathing beings on the planet. Metzner (1999) states that worldviews that embrace these archaic notions of the elements are worldviews that see humans as "nested within the larger world of nature" (p. 29). Therefore, this project revitalizes archaic elements and takes them as the conceptual basis of this project.

### Question

The over-arching research question of this dissertation is *What is the experience of people living with contaminated water in communities with unconventional Marcellus Shale extraction?* This question shaped the fieldwork I did in Travesty and the collection of interview data. However, the conceptualization of this project as a case study of an elemental trauma, which the above literature review laid out, requires a wider social and critical lens for the embeddedness of individuals' experiences in a larger social and environmental context. Therefore my research has a double strategy: to provide a thorough, participant centered phenomenological analysis of the interview data, and then to bring a set of critical questions to bear on the same data. I call these questions "guiding inquiries", and they deal with the lived experience of the materiality of water, the way bodies are situated and framed in relation to fracking, the affective dimension of living with contaminated water, and the possibility of premature, unanticipated mortality due to unsustainable technologies.

This double strategy is supported by two complementary hermeneutic traditions. Ruthellen Josselson (2004) clearly articulates the distinction between the hermeneutics of faith and the hermeneutics of suspicion. The hermeneutics of faith is characterized by the "restoration of meaning addressed to the interpreter in the form of a message" (p. 3) which trusts the symbolic dimension of the message as revelatory in and of itself, as well as culturally viable and communicable (Josselson, 2004). By contrast, the hermeneutics of suspicion intends to "move beyond the materiality of a life to the underlying psychic or social processes that are its foundation" (p. 13), which in turn distrusts communicable narratives as concealing patterns of meaning different from that which is within the

representation itself. Both are methodologically necessary and provide dual functions of trust and skepticism in approaching this project.

### **Methodology**

What follows is a summation of the fieldwork and method of data analysis used in this project.

#### **Fieldwork.**

Fieldwork for this project began in early July of 2013. During this time, I began volunteering 2-3 times per month at the water bank, which as previously mentioned, was started by a group of local residents and run on donations out of a storage room of a local church. At the time of this study, the water bank provided 20-25 gallons of water per week to over 34 affected homes. They supplied individuals and families with clean water entirely on a donation basis, which accrued in small amounts from church parishoners and concerned citizens. Because of the limited resources and lack of a pending resolution to the urgent community problem, the water bank could not supply the amount of water designated by the Red Cross as necessary for people in a state of emergency (2 gallons per person per day) . Participants were recruited on a face-to-face basis, often after several months of becoming a familiar face in the community and gaining the trust of Travesty residents before a level of social comfortability allowed me to freely discuss this project with them. Following their verbal agreements to participate in the project, I arranged a time over telephone to visit their home. When visiting, I reviewed the aims of the project again and subsequently IRB consent forms were signed and the interview

process began. A total of 5 individuals in 3 homes were interviewed two times each. The purpose of interviewing the participants together at once—what I am calling *participant-households*—was to change the unit of data collect from a purely individual unit of a “person” to a more social, collective entity of a “household” or a “home”. This choice also reflects the “in-between” or relational facet of the phenomenon at hand; that is, how the event of water contamination cannot be conceptualized “within” a person but in the substantial fundaments of their everyday survival.

*Selection:* Participant’s were selected based on the criteria that they had noticed a change in their water following dense periods of unconventional natural gas extraction in the surrounding areas around Travesty. Additionally, participants had to be adult residents of Travesty, Pennsylvania. Participants also had to be willing to speak freely (or as freely as they chose) to me regarding their experiences. This selection criterion cannot be underestimated. Roughly 50 percent of the individuals approached declined to participate in the study for various reasons, including wanting to fiercely protect their identities despite ensured confidentiality, distrust of individuals (myself) from different social contexts, and residual feelings of resentment and exploitation by outside individuals who merely report the events disrupting the community without actually contributing in a socially viable way.

*Confidentiality/Anonymity:* While the informed consent process offers all participant’s confidentiality by omission of identifying information, additional demographic information must be omitted in order to accommodate participant wishes. During interviews, it was conveyed to me by participants that they had begun the process of filing a multiple household lawsuit against the gas companies who are thought to be

responsible drilling around Travesty and subsequent water well contamination. Before agreeing to interviews, participants informed me they had been advised by their lawyers to avoid speaking to outside parties that might cast them in a negative light or place their narratives of these events into public view. While these participant's understood the nature of our confidential interviews, they requested that any demographic information such as details of their personal biographical history, activities within the community, and details of their residential history be omitted as well. Therefore, this study will omit these additional details and display transcribed interview data only.

### **The Place of Experience.**

This project strikes a phenomenological tone in that it finds a place for verbal data reported directly from participants during the interview process and is grounded in a hermeneutics of faith. Van Manen (1997) states: "the aim of phenomenology is to transform lived experience into a textual expression of its essence—in such a way that the text is at once a reflexive re-living and a reflective appropriation of something meaningful...." (p.36). This project utilized this 'reflective appropriation' of meaning beginning with the first-round of participant interviews. During this stage, open-ended questions---such as "*When did you first notice a change in your water?*"--- were used in order to glean direct descriptions from participants of experiential value. As an invited researcher, I attempted to position myself in a way that recognized that I was a guest in their homes and properties. This position attempted, on the surface, to allow the participants to "take the lead" in their reports. Simple enough. The aim of the interviews was *towards* the participants, both as imperfect sense-makers of their situation and as

accomplished field-workers of their own lives. Yet, because I attempted an encouraging, curious tone during the interviews which projected that *I believed them and would take their narratives seriously* on another level I conveyed that *I agreed that they had been wronged, and that this experience needed witnessing and investigation, and that this was the purpose of me being there*. Hence, my fieldwork began by making a place for the experiential value of participant reports, and simultaneously co-constructed these descriptions out of the sheer concrete fact of my presence sitting in their living room, walking thru their land, not fully belonging in their community.

Van Manen (1997) states: “an authentic speaker must be a true listener, able to attune to the deep tonalities of language that normally fall out of our accustomed range of hearing, able to listen to the way the things of the world speak to us” (p. 111). Van Manen’s nod towards authenticity is an attempt to position oneself receptively to the world makes for a reflexive vitality that includes identifications with the ‘things’ as they speak. This project attunes to the ‘things of the world’ quite literally, seeking to articulate the human-element matrix—a fragile connection under considerable duress—as well as the personification of the element water itself.

Van Manen’s take on phenomenology also has value because it recognizes the inevitable departure from the world of ‘lived experience’ into the iterative process of textual labor. Drawing upon Merleau-Ponty’s definition of essences van Manen (1997) says “[essences are a] linguistic description that is holistic and analytical, evocative and precise, unique and universal, powerful and sensitive” (p. 39). Because all descriptive efforts are already interpretations from the outset--in the form of the participant’s narrative, not to mention the very presence and elaborative utterances of the researcher--

the phenomenological project aims “to construct a possible interpretation of the nature of a certain human experience” (p.41). The place of experience in this project is a necessary touchstone as well as point of departure for other research questions.

### **Textual Labor.**

I began the interpretive process between the first and second interview with each participant-household following a hermeneutics of faith. Indeed, interpretation is the main methodological tool of the project. Peter Titelman (1979), applying Paul Ricoeur’s take on hermeneutics to phenomenological research methods, suggests that the researcher is “concerned with the meaning of lived experience and behavior as encountered within the domain of the hermeneutical field—language as discourse” (p. 183). The textual labor this project requires is a perpetual spiral of sense-making and representation—not only of the complexities of participant’s themselves, but for the underlying structures and processes of their current situation (political stratifications and relations of power, for example).

Between the first and second interviews, I listened to the audio recordings of each and made notes in a small journal under the heading of the participant’s initials. I made selective choices based on the thematic content or intuited affective changes in the participant’s speech. I made notes such as “paying for something we didn’t cause”, “them people: marginalization”, and “unidentifiable substance out of well”. During the second round of interviews, I asked, for example, *Last time I was here you told me about how you are being forced to pay for something you didn’t cause. Can you tell me more about that?* This choice to thematize and ask for elaboration either: 1) encouraged the

participants to elaborate even more on this theme, 2) closely repeat what they previously described without much addition. At the end of the interviews I would ask something like: *Given all that we have talked about, is there anything else you would like to tell me?* Thus, the hermeneutic turn of this process was present within the interviews themselves.

Whether the thematic selections that I made for the second interviews, or the textual labor of interpreting this data to form responses to my research questions, my biases guide this entire project, as they are an essential part of the hermeneutic process. Because of the ethical implications of unconventional Marcellus Shale extraction and the inextricable ways that I am bound to participants by the ways these industries are reshaping our mutual landscape, my own biases have become the beginning point of a co-constructed understanding. Walsh (2012) states “the hermeneutic circle describes a process of projecting oneself into a phenomenon in order to understand it, initially on the basis of one’s presuppositions and then listening for the friction between those presuppositions and contradictory feedback from the object of inquiry” (p.2). Thus, there is an obvious resonance between my questions and my presuppositions and pre-understandings. My research question leads into the phenomenon with the intent of producing certain themes, yet I am also attempting to leave open ground for participant’s experiences to inform the discussions of the questions themselves. The spatial and temporal spread of the other energy catastrophes reviewed and supporting literature on collective trauma (especially ‘root shock’) indicate that these cases do not have clearly defined limits. They are not contained by easily defined geographical boundaries. Because of my dependence on natural gas is inextricably linked to the extraction of it from the Marcellus Shale far beneath the surface area municipally labeled “Travesty” I

cannot take myself out of this situation. Rather, the guiding inquiries which grow out of my conceptualization of this project as an elemental trauma are a result of this inseparable linkage between myself as a researcher (and citizen living above the Marcellus Shale) and the participants of this project.

### **Guiding Inquiries.**

Lastly, I will outline the “guiding inquiries” of the dissertation which will allow for a broadly conceived discussion of this case study of an elemental trauma. I formed each of these guiding inquiries from: a) themes already implicitly and explicitly expressed in participant interviews, b) themes drawn from the previous discussion of energy catastrophes and the literature of trauma. These guiding inquiries are phenomenologically participant centered in that they are an iterative extension of the hermeneutic process begun during the interviews. The previous discussion of energy catastrophes suggests that what is most affected by these traumatizing scenarios is people’s connections to the places and materiality of the world, the body under duress of hazardous environmental conditions, the emotional/affective dimensions that follow the destructive re-shaping of a “home”, and the closeness of death these catastrophes bring. Likewise, the literature on collective trauma is supportive of this wide lens of inquiry which includes social and political factors as aspects of people’s traumatic experience. Traumatic experience then becomes not the impairment of aspects of a person’s mind or personality, but expanded into collective processes of sense-making which is place-based and ecological in nature.

Each of these guiding inquiries may therefore be considered what I *drew out of the data and the existing literature*; they were not questions I asked directly of participants but that arose during the interviews. I also formed these guiding inquiries by utilizing the double strategy of extending my original, broad research question into a structure that will fit my intention of conceptualizing this project as a case study of an elemental trauma.

Each part of the dissertation will include a guiding inquiry (listed below) and: 1) participant narratives selected from the interview transcripts, 2) interpretive discussions of the selected participant narratives which draw on the two methods of data analysis, 3) Theoretical discussions regarding a new theoretical model of trauma. These modes of inquiry help structure the complex psychological and social data gathered during the extensive interviews and offer a format for the presentation of the final results of this research project.

### **Part I**

1- How are participant's experiences of the materiality of water affected by the event of contamination? How does the water itself become animistically evoked as a substantial character within the participants' lives?

### **Part II**

2- In what ways are participants subjected to precarious forms of embodiment?

**Part III**

3- What articulated emotions characterize participant's awareness of their social position and their inhabited fields of power? How do these vocal emotional valences trace the contours of the unique forms violence that characterize participants' current situation?

**Part IV**

4- How do the developments of energy technology mediate the overall survivability of participants? How does water as a contaminated substance disrupt the assumed capacity for life to persist?

**Participants**

Summations of the participants will be provided here while still maintaining confidentiality prior to reporting the results of this study. Information will be kept very general and vague, as the situation in Travesty is unique and therefore participants risk being easily identifiable. Nevertheless, certain statements can be made that are true across all three participant-households. Each participant-household has resided in the community for more than ten years, all fall within low socio-economic statuses, all have unemployed or underemployed members, all are multi-generational homes. All participants are adults over the age of 35, all participants are diagnosed with various general medical conditions. All participants were known for several weeks or months prior to signing on to participate in this project. As far as I know, all participants still currently live in Travesty.

### **Results I: Materiality**

The event of contamination changed the way that each participant regarded *water as an elemental substance*. This section, and the sections that follow, take a similar format. First, direct quotes from the interview transcripts are excerpted. Next, each quote is unpacked in an interpretive manner which distills and elucidates experiential meanings. Finally, a thematic insight is explored. Water as a material that is an ecological element of the common landscape is the topic of this section.

#### **Rupture.**

Each participant's relationship with the substance of water underwent a catastrophic rupture. Water was forced into awareness. The human-water relation was shattered and water became an animating force of both sustenance and distress.

Les and Phyllis told the story. This was the first moment they realized something was wrong. This night was the beginning of 777 days without water for their family. Soon other neighbors began telling similar stories. Les and Phyllis drove through the community and saw water pumps and tanks and lines thrown away in front of neighbor's houses. Phyllis said, *They were popping up like mushrooms*. Water was previously invisible. You could turn on the tap and drink the cold clear liquid, thinking it was safe. That was the pre-reflective state of water. Turn on the tap and there it was in infinite and refreshing supply.

It was a Sunday family dinner night. *Everybody was here for dinner. It's a ritual*. The night began with normalcy and routine. *They would all come over. That's our meeting time. Our family time*. All their grown children and grandchildren came over.

Their son and daughter brought water jugs to fill up from the well to take back to their home that ran on city water. They grew up accustomed to water from the fresh spring and this was the water they preferred. Everybody ate and laughed and bickered and talked. It was just like any other Sunday night. Phyllis's daughter filled up water jugs to bring home with her and her children.

*Little one was just nine months old. Maybe younger. I got a phone call at two o'clock in the morning. 'Oh my God mom, she's shooting diarrhea down her legs and vomiting!' I thought, she must have the flu. I'm like, don't give her formula, give her water. By the next morning we all had puke and diarrhea. It was horrible. Then it was Wednesday or Thursday, and we are still doing it. We were only keeping little sips of water down and trying to make it on that. Well, my son calls me Thursday and he's all 'We're sick!' I said to him: 'We all got it, we got it, we got what yinz got. This must be the flu!' Phyllis told me how the days stretched on, one into the next. They kept drinking the water. They didn't know something was going terribly wrong. By the next Saturday, we would beg each other, 'When you get up, could you please get me a little bit of cold water?' We kept doing this to the point where we were just so sick and dehydrated. Les, he was getting up to go to the bathroom, and he took my cup out to the sink. He come out to the kitchen and turn the spigot and nothing come out but purple foam.*

*He's like 'Oh my God!'*

*'I know what's wrong now!'*

Les added, *We were delirious.*

*Well, he turned on the bathroom sink and lo and behold it was coming out of the bathroom sink too. He went to the bathtub, he swung around, and there was purple foam coming out of the toilet too. The foam was bubbling out of the toilet.*

*Les said, I said, 'No, no Phyllis! This is what is making us sick! We need to stop drinking this!*

Les and Phyllis described how everybody that drank the water that night got ill. After they stopped drinking the water their symptoms went away in a few days. That was the night of the initial rupture. Water burst into the foreground of awareness in a drastic and dangerous way. This was the beginning of their life with contaminated water. Family life for Les and Phyllis was never the same. *Since all this happened I could probably count on one hand how many time we have had them over.* Phyllis longed to see her new granddaughter, born in the midst of the ongoing event of contamination. *I've probably held her four times. That's not me. I'm very close with my grandkids. We can't just turn the hose on and let the kids play outside. It's broken my family, is what it's done.*

Each participant-household had a story about the initial rupture. Les and Phyllis's story spoke to the shock of that episode. It also showed how quickly life turned upside down. The initial rupture was the start of a long chain of events that could not be reversed. It went directly to the very marrow of their lives. It occurred amidst the intimacy and ritual of family life. The rupture shifted what was taken for granted and created a sudden rift. Appearances were no longer familiar. Water was now purple foam, bubbling everywhere. That which nourished and quenched quickly became the source of illness and poison.

Water became an animating force. It was no longer inert and consumable matter. The rupture made water come alive in a different way. The rupture broke the continuity and ease of the human-water relation. It occurred with violence and sudden, panic-stricken feeling. The rupture quickly restructured all of life around the importance of water. Where to get it and how to get it and how much each participant-household used ordered awareness and daily activity.

### **Openness.**

Once water was ruptured into the foreground of daily life it spoke certain messages that were previously unrecognized. Bill and Tonya talked of a realization of vulnerability caused by openness to water, an element that surrounds and penetrates the body. *That's what a lot of people tell you. 'Just move'. I own my place outright. I shouldn't have to go anywhere. I own my shit. I've took care of it for years. On top of the headaches—and we all got headaches—you are standing there wondering if you are poisoning yourself while you are letting the water hit you in the face to wash the soap out of your hair. I worry every time I jump in that shower.* Bill described an intense sense of fear engendered by openness to water. He and Tonya both described how human beings are open and hence vulnerable to contaminated water. *I still brush my teeth with it,* Tonya said. *I don't know why you do,* Bill replied, *That's the worst thing you are doing to yourself, letting that water into your mouth. Your gums are just absorbing that shit.* Tonya then spoke about the guilt that arose from using what little water they had. *I feel bad,* she said, *because we need the water for other stuff.*

Tonya and Bill's descriptions illustrated how porous the senses and body were to the material of the world. They spoke to the fear that came when they realized they could not seal themselves off from water. The openness of the mouth and eyes were points of contact with the world that could not be closed off. Tonya and Bill also described how the daily activities of life continued under the event of contamination. Yet these daily events now had a different meaning. What was previously the routine of life became the event of contamination within the home and within the body.

Water was now a form without bounds or limits. Water itself was exposed to harm and destructive influence. Likewise the openness of the face and skin and body moved into the foreground of awareness. The boundaries between where the contamination began and ended were no longer discernible. The contamination was no longer at a distance but could be felt in the eyes and mouth and on the skin. Each participant-household suddenly realized the inseparability of themselves with the environment. There was no difference between the contamination of the sink and the hands that washed in it. Water could not become extractable from each person just as each person could not extract themselves from water. Therefore each contact with water was a moment of fear and anxiety.

Richard also described this. *If I take a shower, and I got a bad nasty cut, I don't want to worry about some impurity getting in there. There is a risk every time you turn it on. I got my hot water heater up as high as it will go, so hopefully it will burn it out. I don't know if everything gets boiled out or not. I'm not a chemist. I don't know if it intensifies it or kills it.* Richard spoke of a similar realization of the openness of the human-water relation. The material of water was now to be protected against. At the time

of this interview Richard, along with Tonya and Bill, were still bathing in their contaminated water. They did this out of necessity as they could not afford otherwise and did not have a water buffalo donated to them from the water bank like Les and Phyllis had.

Openness to water implied many things for each participant-household. It came to mean open to both life and death. This openness represented vulnerability to sickness and health. Nothing was more important to the persistence of life than water. Nothing was a greater threat to life as well. Openness to water shattered a comfortable illusion that each participant was separable from the environment. This belief undergirds notions of individuality and a mistaken sense of autonomy in relation to elemental materials like water that make life possible to begin with.

### **Giver and Destroyer.**

Water also became extremely powerful under the event of contamination. Bill and Tonya described the gravity their lives then held. *My water's bad, so it's contaminating all my water lines. Like I said, me and her got involved. She moved up here, and her parents and family is like 'Move the hell out of there! You are killing yourself! Yeah, I guess in a way you are.* Bill and Tonya discussed the beginning of their relationship shortly before their water became contaminated. *Now I have fear of water,* Tonya said. *I get petrified. It takes all that I have to psych myself up to get into the shower. I'm thinking, 'Oh my God, please.'* Tonya visibly shook as she said this, wringing her hands in front of her chest.

Bill and Tonya's conversation showed how powerful water became as a material in their lives. It came to inspire thoughts of death and illness on a daily basis. Water became a power to determine life and death. Tonya's family was pleading with her to save her own life. Bill was determined to stand his ground in his own house. Tonya was as well. This was an ongoing point of family contention and therefore conflict between the two of them.

Water was not typically beheld in such a way. It was regarded as a negligible background facet of life and as an element of the seemingly inexhaustible 'natural resources'. Participant-households entered into a different relationship with water as their pre-reflective delusion of self-enclosure to the world decreased and the power of water increased. Water was brought to a primary position in life, and one wonders if this was not a restoration to its proper place. In a truly horrifying way it took the event of contamination to produce this realization. Inert and inexhaustible elements that were seen as infinite in supply had no power to determine life or death. Finite and alive elemental substances now had this animate power.

### **Place-Maker.**

Les and Bill, during two separate interviews, described the place-making capacity of water. *We've been poisoned*, Les said. *The ground has been poisoned. The water has been poisoned. It's never going to come back. Never. Ever. There's no doing it. They destroyed it. Totally.* Les bitterly stated his disgust for the irreversible damage caused by the gas companies while pacing back and forth in his kitchen. Bill echoed this during a separate interview. *We're not supposed to be doing nothing with it. What the fuck? My*

*water is no good, my property is no good. No one wants a piece of property if they can't have the water. No one is gonna move anywhere if there ain't water.* Bill ground a cigarette into the ashtray that sat on the desk beside him and reached for another. He had been rolling them all night and on the desk was a pile of dry brown tobacco.

Les and Bill described the ways that water was linked to the lifespan of places. Property and property value were intertwined with the health of the water. What commonly is called a 'place' is hospitable to life only through the presence of useable water. Once that water was destroyed the places that grew around them were destroyed also. The value of water was linked to the value of a place. Les spoke to the ways that places are inseparable from those that live there and therefore from water. If one became poisoned, they all did. Bill spoke to the dimension of value as it pertained to the place-making power of water. Both these participants described a sense of worthlessness and loss of viable identity through the ruination of their respective places. Water now determined the lifespan not only of inhabitants of places but of places themselves.

Civilizations have been drawn to sources of water. Water and air are ecological elements which transform spaces into habitable places. Once the water is ruined the places can no longer exist. Each participant-household experienced water coming alive as a place-making power that determined the present and the future. Under the event of contamination places themselves become unable to support life. Instead they became territories of hazard and danger. Places are also territories of private property. Once the ecological elements that make a place possible are no longer viable the financial value of a place is also destroyed.

Displacement became possible once water became a power of place-making.

Richard spoke to the feared sense of forced migration. *If they come in and take it, we're screwed. I don't have anywhere to go. You get forced out, that's what they are hoping. That that will happen. That people are just gonna start walking away.* Richard imagined conquest and take-over in regard to the intentions of the gas companies. He described a position of powerlessness at the hands of a large industrial apparatus. Forced displacement would not come from drought, it would come from being forced to abandon places and the identities each participant-household had in relation to their homes.

### **Sentience.**

Richard began to interpret water as having a particular character and intentionality. *Here is another thing to think of, does it become airborne? Anything that dries up becomes airborne. You see the little dust floaties in the sunlight. Does it become that? I don't know. If the steam got on the mirror, does it turn into a dust particle and become a floaty in the air? Does it go into your lungs? Is it activated or dead? I don't know.* Richard saw water become not only powerful and alive but also sentient. Water became capable of feeling and direction and action. It took on particular features and tendencies. *Water is the laziest force on earth. It is also the most devastating. Look at fire. You have a fire and the next spring everything will be green. Not from water. It pushes all that topsoil away and it takes years for that to come back. But it is also the laziest damn thing on earth. It takes the easiest ways to where it has to go. That is why I wish for rain. It will suck all that stuff into the ground and push all that crap away.* His perception of water changed not only into something more powerful and more alive but more dynamic too.

Water became a shape shifting form that appeared and vanished. Water was both elusive and pervasive. It became the connective tissue of a place and the elemental power that determined the quality of life. Water also took on mystery and potential. It became a material that could be activated to enter the body. It also took on the power of hope. It could be wished for and prayed for to come and take the poison away. Each participant-household attuned to the mysterious and mercurial form of water. It became capable of changing form according to its own intention. Participant-households regarded water as a living form capable of intentionality.

**Value.**

Water also took on a value it did not have before. *I just want to go to my faucet and know that I ain't gonna get sicker from it, and that I ain't gonna lose the animals from it. I got grandkids and kids and a wife that love me dearly. I'm the richest man in the world. I don't care what I live in, as long as it is warm and dry. Give me water I'm not afraid to use and I will be happy.* Richard described how the changing condition of water shifted changed how he valued all things in his life. Water was now enough. Water was now of such value that it reoriented him toward what he saw as truly important. It moved his value system towards the elemental necessities that supported the persistence of life.

Each participant-household began to restrain their consumption of water once it became a different kind of material. When elemental essentials for life are taken for granted they can be consumed more and more. When water grew in significance it became a material to be conserved and valued for the finite necessity that it is. Yet the

value of water changed in the capitalist society that commodified it. Water now long was an accessible common element available to all. The participant-households lost access to water their perception of its value simultaneously increased. When water changed in value it became a social variable that stratified the population into those who had access to clean water and those who did not.

### **Time.**

Once water changed from being an inexhaustible resource of the commons into a finite form, it brought the process of consumption into focus. Les and Phyllis conversed about the way they came to concentrate on how much water they were consuming in the present. *It's so frustrating living out of a jug, Phyllis said. That jug is your life. We ration. When are we going to be able to collect more water? That is our first thought once we get up in the morning, and the last thought before we go to bed at night.* Les added, *We still think about it, to this day. Every time I get into that shower back there. 'Are we going to make it?' I'm so sick of jugs. Oh, I'm so sick of jugs.* They discussed the ways that finite access to water focused them on how much they were consuming at any given time. Les alluded to 'making it' to their next water delivery. After 777 days without water they received a donated water buffalo from the water bank. Phyllis continued, *People really don't think, and I didn't either, of the value of water because it never ran out. So it was like water was just candy. You could always get more. Turn the faucet off for a little while and it will come right back. But now, it's off. It ain't coming back.* Phyllis had a profound realization here about the nature of consumption.

When access to water was unlimited, the present moment in time bore the illusion of seemingly unlimited consumption. When access to water was limited the future must be lived with in a different way. The future had to be considered instead of ignored. It transformed into a moment of time made only possible by the availability of future water. Similarly when the water didn't come back out of the faucet the future was called into question. Les might have well been asking, will we survive into the future?

Participant-households understood the present and the future in changed ways. The present was now a crisis characterized by conservation of something precious and limited. The future became uncertain. Participant-households came to realize the necessity of saving resources for the future to be possible. This was the household-size process of conservation of resources at work.

Richard made a final point. *People don't realize the amount of water they use until they start carrying it. They don't realize how much water they consume in a day or in a week until they carry it. It puts a whammy on every damn thing you do. Everything changes.* His ideas about water consumption changed when he started to haul it. Richard made the connection between the laborious process of obtaining water and the process of consumption. When water or any resource was labored for it increased in value. Then the ways of consuming it also changed. Easy and unlimited access made for irresponsible consumption.

## Results II: Embodiment

The event of water contamination pushed participants into different forms of embodiment. Bodies were forced into highly precarious positions. Sickness and injury and death haunted the body. Bodies as living and open organisms became the site of water contamination. They were rendered opaque and unstable. Bodies of animals, of human participants, and the multiple bodies of earth were equally affected. This section provides direct quotes, experiential meanings, and insight themes about embodiment under the event of water contamination.

### Animal.

Each participant household was filled with animals. Audio recording of the interviews filled with the sound of barking dogs and scratching ears and puppy talk. Les and Phyllis cautioned me not to pet their dog because they had just given it flea treatment. Tonya and Bill hollered their dogs off the couches. Richard and his family raised rabbits for meat and show. Les and Phyllis lost many animals.

They told the story about their dog. *He was feeling okay in the morning when I left here, and I had gone to the doctor, got back, and he was laying on the floor. I was like 'What's the matter? Mee-maw is home!!'* Phyllis called herself Mee-maw, a term of endearment for grandmother. Her tone became desperate and surprised and she yelled *Blllllllaaaaaaahhhhhh*. The dog began to vomit. *There were gobs and gobs of blood. Blood and blood clots. And then it came out the other end. Blot clots. He just passed away. Within two hours he was dead.* That was just the first dog of that died. Les bent over and nuzzled the pitbull laying at his feet and said *I've lost three dogs and two cats. I*

*had a husky that stayed out there the whole time. He was a husky wolf. Stayed out there the whole time. He was the first one to go. Then Stash, then Lucy. And they were all big dogs. But he was the first one.* Phyllis slouched in her recliner and said *He just conked over.* Les pointed his finger in the direction of the window. *Yep. All that crap they were putting in the air and everything. He was out there all the time. That killed him pretty much instantly.* Les glanced at the pitbull at his feet with a pained expression on his face. Phyllis told the story about the second dog that died, a Labrador. *He would drink drink drink drink drink. He kept drinking the water up. That's just the way he was. Well he just kept getting sicker as we were getting sicker. I would have my son-in-law and daughter come over and pick him up in a sheet to take him out to go to the bathroom. And then the other one she lost her hair. All of her hair fell out.* Phyllis whispered and held back tears. *Looking back, 'take them out of harms way'. I would never put myself in harms way let alone them.* Les said, *We did it without knowing it.* Phyllis continued. *Oh he was my boy. I've began having seizures since all this started. And the dog would tell Les, 'She's having a seizure!' For the longest time after he was gone I was scared. Who is gonna tell Les if I have a seizure? I lived every day fearing that. And her, the other dog. She started getting better and then we got attacked again. We got attacked again.* Les leaned towards me and said, *We had purple foam and all that crap. They fracked another well.* I reached down the scratched the velvet ears of the pitbull at our feet.

Animal bodies were inhabited by disease and death. They became sick simultaneously with other family members, sometimes before. Richard said his dog refused to drink tap water before he himself knew something was wrong. Just like the re-animation of the material of water, animal bodies underwent drastic and sudden

distortions. The animals collapsed into sickness and death in a matter of hours. They were the family members who first began to bleed and show signs of physical death. Phyllis watched her other dog's hair fall out. That was an alien and bizarre change. The sickness and death of the animal bodies foreshadowed the sickness and death of other human bodies to come. Animal bodies were also protectors of the homes and the other family members. When the animals began dying participants lost their guardians and friends. Les described the outside of their home as so toxic due to air contamination that no life could persist in midst of the fumes. *He stayed out there the whole time.*

The dying animal bodies joined with other human family members in the biological continuum of life. The animal and human bodies were kinfolk in the co-habitation of their homes and communities. The event of water contamination had an equalizing effect on the whole spectrum of life forms. All bodies became precarious and moved towards death. Animals are closer to the elements and closer to wilds. They are also the first to receive the impact of contamination.

Richard told another story. *We lost a couple of the litters of rabbits that year. We were wondering why. The mama wasn't drinking enough water to produce milk.* The dependence of all life forms on clean water was evident. Without water continuation of life was impossible. The dying litters of rabbits spoke this basic condition. Under the event of water contamination all forms become kinfolk subject to the drying up and dying of life itself.

**Human.**

I sat on Bill and Tonya's couch. He jokingly offered me a glass of water. He was yelling. *I'm going to get all diseased up over this shit. I'm going to die. Nothing's going to come of it.* Tonya said, *We are just going to keep getting sick and sicker.* Bill looked at her. *Nothing's going to be done about it. And it ain't our fault. We aren't doing nothing. Go one with the life you got. It's gonna be done. It's gonna be over.* Along with the animals the human bodies of participants were placed in a precarious balance between life and death. Each participant-household said something visceral about this.

*I have leukemia, Phyllis said. I was diagnosed. I had the seizure, then renal failure. So it's like boom boom boom all these things happening right after the other. The same thing happened to that man, oh geez, the same thing happened to that man. But they're dead! So that weighs on your mind. But I will tell you what? I quit drinking this water, I went into remission. Funny, huh? They told me I could drink my water again. I started drinking it again because I thought it was safe. Guess what? Within two weeks I was out of remission.* Phyllis immediately drew the connection between diseased water and disease of her body. Les walked back into the living room from the kitchen. Hamburgers for dinner sizzled in a cast iron pan. *I just felt like I was in a trance,* he said, *like I was being poisoned, which I was. Anybody with any kind of immune system that isn't right, you are getting sick. Anything that is wrong with you is going to come right out. Me, it was the bloody nose.* Les described stinging, surging bloody noses. *And for Phyllis it was the blood. Young people having heart attacks. And dying! These people are dead. They are not here no more.* Les and Phyllis talked about all the sick people that lived around them. The room filled with an atmosphere of dread.

Phyllis slouched in her recliner again. Her eyes were grey with exhaustion. *This started three years ago, when they started gassing. I had a seizure driving down the road. Then I went into renal failure. Looking back at when these things happened, things were going on here. Like they found out they had insufficient casing. Connect the dots. Honest to God, this guy across the street from us went to have knee surgery. He's dead now. Les said, He's dead. He died. Phyllis never broke eye contact with me. He died on the table. They opened him up, he had leukemia. They opened him up and he never made it out of the hospital. He died.* Phyllis described hearing reports of illness and signs of bodily damage cropping up in the neighborhood rumor mill.

*Then the other guy, Phyllis said. He was sick. He said, "I have a rash. I have a rash all over me." So he went to the doctor. They told him, You're blood work is coming back all messed up and you need to find an oncologist. He said to me, Do you know anyone? I recommended mine. He made an appointment and he never made it to the appointment.* Les started to steam. Phyllis continued. *The other side of the neighborhood, up there. Heart attacks. They are dropping left and right up there. Les couldn't take it anymore. His eyes narrowed. You're gonna die. They are poisoning everything. You're gonna die.* He got up from the couch to go cool off outside. The dog followed.

Les and Phyllis and Tonya and Bill all spoke of a looming sense of doom that surrounded their lives. Their bodies had become the location of the contamination. Persistence of life was no longer guaranteed. The conditions for illness and death heightened to an intolerable degree. The human body became utterly opaque and mysterious. Illnesses and injuries arose in connection to the fracking but it was difficult to see an evident connection. *Connect the dots,* Phyllis said. She witnessed the boundary

between her body and water dissolve under the event of water contamination. She and other participants understood how water became a diseased and suffering elemental material. Phyllis spoke about how the blood became the gauge that registered the hazard of fracking. The blood itself was the data for contamination and the poisoning could be read in the intimacy of bodily tissues. Especially visceral is her description of her neighbor who went under the knife for knee surgery. The contamination unfolded in the opaque yet ultra vivid mysteries of the organs and blood and viscera.

Death moved ever closer. This was one of the most drastic and hazardous changes that happened. Death quickened into life with an accelerated pace not known before. Everybody gets sick and dies eventually. But now death hung in the air and poured out of the faucet and bubbled up from the toilet. Death was an invader and seeped into the participant homes in even microscopic ways. Recall Richard's fear of water turning to steam and the contaminate in the air. *The little floaties*, he called them. Death took on a multitude of shadowy forms. Lastly it was clear that people believed they would die for nothing. *Nothing is going to come of it*, Bill said. Lives lay wasted in the name of energy production without witness and without voice.

Yet there is another side to this. Precarious embodiment is a condition of not being able to discern the cause of your illness and injury and death. It is opaque. It does not allow transparent connections to be drawn between cause and effect. Bodies suffer without reason or recognized cause. Richard clued into this complex facet of the position of the human body under contamination. *Prove it*, he said. *Prove it beyond the shadow of a doubt that the water did that*. Richard adjusted his baseball cap. His grandson, still in diapers, eyed my audio recorder that rested on the arm of the chair. *I can say the water*

*brought my diabetes out. Diabetes runs hot and heavy in my family. I know the water didn't do that. Other illnesses? I don't know. Prove it was the water. A Christmas tree stood in the corner, dripping with silver tinsel.*

An important issue came to light in Richard's description. The suffering of human bodies must be registered in the legal domain. It must be proven in a court of law. *Beyond the shadow of a doubt*, Richard kept saying. *The burden of proof is on us*. To be shouldered with the responsibility of proving the connection between the event of contamination and the illness and death of participant-households and their neighbors is definitely a burden. All participant-households experienced this lack of public accountability. It was left to them, inherently precarious and powerless, to establish legally viable purchase on their own truthful experience.

Each participant-household thematized the precarious nature of embodiment. Human bodies absorbed the impact of the fracking just as the bodies of the animals and just as the bodies of the earth. To be precarious is to lack stability and grounding. It is to experience intense vulnerability and to no longer see the line between life and death. Death could occur at any time and come from anywhere. This precarious position was also characterized by lack of witness. Each participant-household experienced this terrifying condition of embodiment without recognition or intervention from social institutions . To be precariously positioned was to have a body that could house contamination without any agency or power intervening. Their precarious embodiment inherently included powerlessness and went on without testimony. It was a cause to be abandoned by social and political organizations with the power to stop further harm from happening. Precarious embodiment was also a position of dire uncertainty. It was

impossible to know clear causal connections between the illness of the body and the source of suffering. This was also defined in the legislation of ACT 13. Among other things this law prohibited medical professional from disclosing the chemical compounds responsible for the contamination. That would violate patent laws regarding trade secrets of the chemical formulas used to frack. This aspect of ACT 13 was later ruled unconstitutional. Participant-households experience of precarious embodiment rendered the body opaque on many different levels.

### **Earth.**

Earth bodies also suffered under the event of contamination. The term bodies is used in the plural to denote the infinite variety of bodies that constitute the planet. The groundwater is a body and atmosphere is a body. Ground is a body with an infinite variety of microscopic bodies within it. Bodies themselves are collectivities and formations that organize into complex ecological systems. They function organismically and are cohesive and differentiated from each other. For example, fish are bodies that swim in the body of an ocean or the body of a river. Yet all the earth bodies overlap and fold into one another. Similarly earth is not capitalized to indicate not a reified whole (as in *the* Earth) but the multiple entanglements of planetary forms across human and non-human species. The term bodies is also used here to imply living and breathing forms of sentience. Earth bodies also received the shock of the fracking in literal ways.

*BAAAAAWWWHOOOOOM.* Phyllis shook in her chair. *And then the explosions.* Les said, *35 in one weekend from them fracking. That's when the air starts smelling really bad. I thought the trailer was coming off the blocks a few times. The neighbor's*

*foundations have collapsed. They have big sink holes in their yards.* He demonstrated how he jacked their trailer back up on the blocks. Tonya also reported these rumblings of the earth bodies. *Our foundation is cracking because of the banging. Sometimes our house shakes when they are drilling. The house glows orange. The floors shake.* Bill nodded in agreement. He wiped his eye that had been watering, he said, since the fracking began.

These descriptions attested to the violence of fracking on the multitude of earth bodies. Participants described their community as a war zone under siege. *Gas zones*, Phyllis called them. Earth bodies were now concussing under the impact of fracking. The ground shook under fire. Phyllis pointed to the pictures on the walls and recalled straightening them after the explosions. The atmosphere of the neighborhood became eerie. *The house glows orange*, Tonya said. Places were coming off the hinges and control lost. Nothing minimized human stature in the face of fracking like the ground quaking. Security and stability and safety were no more.

Richard seized on a most poetic image. *What happens when that vein opens up and dries? You got a void in the Earth. What happens years down the road? What's gonna happen? I know what's going to happen. Sink holes. Now you got a thousand foot sink hole. And you are looking down and you can't see the bottom. That's what man is going to do to the Earth. He is going to have it fall in on itself, onto its core.* He raised and dropped his hands, showing how the bottom was falling out. Richard's description was of total system collapse. He foreshadowed immense destruction and an implosion of all earth bodies into themselves. Richard took on apocalyptic undertones. He spoke about the veins of earth bodies and reinvigorated metaphors of human embodiment. Veins of

methane deep in the shale all consumed and human beings falling into the hot molten core. Dried up land and no more water. All earth bodies gone forever. Chasms of consequence so deep you cannot see the end of them.

*I'm in moving water, Richard said. His tone was brighter. I'm getting fresh water from that is not contaminated. Sooner or later it might be all diluted up. Yahoo. Then I ain't got no sweat. But if you got another well fracking there goes my water again. It starts all over. Sooner or later fresh water is coming. You got underground creeks, underground streams, underground rivers. It's constantly moving. You are going to have fresh water coming in diluting the crap, providing it ain't coming from a crappy area. If it is, it's just going to make things worse. But if it is good water, it's going to dilute it more and more until the crap ain't there. And then you got good water. It might take a while. You are gonna have rain. You are gonna have snow. And if you don't have neither one, it ain't gonna move. It's gonna sit.* Richard struggled here with hope and optimism. On the one hand he imagined water constantly moving and renewing itself. Fresh hope brought fresh water and fresh water was a continued chance for life to persist. Yet on the other hand his description of the earth bodies was trapped in the image of elements as ever replenishing resources. The description of apocalyptic images and the description of renewed and refreshed waters stood in contrast with one another. They were two competing visions of the future. One described a total loss of planetary survival. The other regressed back to the pre-contaminated state of boundless resources in endless supply. Richard was stuck squarely between them. He was caught between moving water and voids in earth.

Participant-households all described the precarious position of earth bodies. They deeply struggled to grasp the irreversible changes taking place. This was evident in their images of earth bodies under the event of contamination. Precarity of earth bodies took on a massive scale and shrunk the human and animal bodies by comparison. Extinction and elimination of conditions of life were just as evident in the bodies of the earth as the other two. The precarious position of earth bodies dwarfed that of human and animal lives. It also destroyed the future. Ultimately earth bodies carry the scent of the future much more so than individual lives. Earth bodies are thought to endure while human and animal bodies die. It is assumed that the planet will continue living after you die. Yet the event of contamination calls into question the futurity of the entire multitude of life forms. Participant-households drew this inevitable conclusion once precarity in all three spheres was fully beheld. Life would not continue. The future was lost. There would be no renewal. And yet, in the present, life wore on.

### Results III: Affect

Participant-households experienced various affective intensities in relation to water contamination. Affect is defined here as sensations of felt experience expressed in tone of voice, modes of embodiment, and expressive language during the interviews. They are not necessarily consciously articulated. They were evident in the interpersonal encounter of the interview and co-constructed within the interview dialogue. Specifically this means that participant-households were not defining and labeling their emotions as such. Rather, they were speaking from a *moment of intensity* that was animated by levels of arousal and stress. These levels constitute valences. Valences are defined here as the overall tone of expressive speech. For example, speech can be said to have a rageful valence when it has a biting, caustic tone and is spoken from a tense and highly aroused state of embodiment. Thus the affective valences of the participant-households were markers of arousal and were thematic in nature.

The affective valences of the speech of participant-households were also the experiential indicators of the violence of water contamination. Water contamination is clearly experienced as violence. This violence is central of the fracking process and the event of water contamination. It is the way in which participant-households experience the injury to their water and the massive disruption of their lives. The affective valences explored here were the thematic emotional tones of intensity of that violence.

#### **This is a war.**

Bill's voice got louder and louder. He hunkered in his seat. Tonya stared at the television blaring in the background with fists clenched in her lap. *That's another thing*

*about the goddam gas company. It's like any war. That's the only way that you can put it. This is a war. And I mean that in all my heart. It's a war of us against them. The rest of the people who think that they are okay? They are gonna find out. They are not okay. Because this just isn't getting us. You might live in town. You are getting a dose of it too. If you are polluting this air the way you are, everybody is getting it. It moves. Air moves constantly.* He cracked open a beer. The dog roamed around the room with leaking eyes sniffing the carpet. It circled its bed and laid down with a groan.

*These fucking people have ruined the way I lived, Bill screamed. They just didn't ruin the way I live, they are taking my life from me. They are taking my life. One way or another they are getting everything they want, and we are coming out with the worst. And the worst is, you are gonna die over this shit. Simple as that. You are gonna die over this shit. You're fucking bathing in toxins. You're breathing in this shit. Just move? Fuck you! Fuck you. I bought this place. I have been building this place since day one. Now I got some rich company coming in here telling me I just have to deal with it? No way. I'm not letting it happen. You disturbed my property. You ruined the way I live. You are destroying my life and my health. I'm not just laying down. I'm not doing it. I'm not running. I'm not going nowhere. I will stay here until I die. And that's the way it is.* I was floored. Bill waved his arm in the air and pointed his finger. Tonya nodded but stayed silent.

Bill pinched some loose tobacco on the desk in front of him and sprinkled it onto a rolling paper with two fingers and his thumb. He twisted it and stuck it in the corner of his mouth. *There ain't gonna be a solution. What's money? Money ain't nothing. You already ruined the way that I lived. You are ruining my health. You ruined my property*

*value. You ruined everything. You can't make none of that up. There ain't enough money in the world to make that up. It ain't a money thing with me.* Bill flicked a lighter with his thumb and pulled in some smoke. The cigarette flared. He let it dangle out of his mouth. The lit end bounced up and down as he spoke. *You want to fight? I'm here to fight with you. You fucking took everything from me.*

Phyllis and Les also landed on the motif of war during a different interview. *We were set up, Les said. I call it premeditated. This has all been premeditated. It's definitely amoral, what's going on. Definitely. What they are trying to do is, the first rule of war is to make your opponent fight amongst themselves so you can come in and take whatever you want. And that's what they are doing.* Les paced back and forth and got angrier. *That's the way the gas company works. They are the lowest forms of life. They are the most ruthless people. If you can go over to a foreign country, if you can go to Africa—these gas companies have already done this everywhere else—and go in and kill whole tribes, women, children, men, everybody. Wipe it all out because they wouldn't let them drill. They just killed everybody. That's how ruthless these people are. This is all premeditated murder.*

*As long as they can pit the ones they paid for gas rights against the people that didn't get any gas rights, you are gonna have a fight amongst yourselves, Les said. And once you've got a fight amongst yourselves, we are falling right into their trap. They are gonna come in and take it all. The first rule of war is to get the other side to fight amongst themselves. That's the primary law of war. That's the main thing you want to achieve. This is calculated. They calculated this. They surrounded us on purpose.* Les,

like Bill in the other interview, had a growl to his voice. Their voices rang darkly out of their mouths.

Les turned to Phyllis. *Right now there ain't no future*, he said. Phyllis put her face in her hands. *I can't*, she said. *I can't. I can't look at it. If can't look at it because if I look at it, I'm done. I'll quit. I'll quit. I can't. I'll quit fighting for what I am doing. I'll just quit. I'll just be done.* Les looked back at me. *I will ice skate with the devil before I lower my flag*, he said. *I will ice skate with the devil*, he said. Phyllis straightened in her seat. She took a deep wheezing breath and said, *We're gonna fight.* Les looked back at me and hunched. *You can say one thing about all of us up here. We're some tough sonofabitches. But we're not that tough, you know? I can fight a lot of things but I can't fight being poisoned. It's a direct threat to my life. And then the government stands behind them and lets them do this to me. How you fight that?*

The affective valence of 'war' first thematized the experience of opposition. Bill described 'us against them' scenarios. He described the gas companies on the one side and those affected by water contamination on the other. Yet, as he said, no one is okay. No one is left unharmed. Air, he said, moves constantly. The same was true for water. It was an element which defies socio-economic and municipal boundaries. There might be people who believed they are exempt from contamination. But under their feet they were standing on the same water table as those who were. Ultimately the theme of opposition leaves no one defended. As Les said, the gas companies could go anywhere and take over. The opposition thematized in the affective valence of war was characterized by hostility and destruction. This opposition also differentiated those who had power and those who did not. The gas companies were powerful and calculating. Les read their

actions as premeditated. The affective valence of war caused participants to interpret the opposition of ‘us against them’ as premeditated murder.

This opposition was not only ‘us against them’ but ‘us against us’. Les described how the gas companies had the edge on victory by pitting residents against themselves. There are those who profited from fracking by virtue of leasing their land and those who wound up with contaminated water. Les interpreted this difference as a fog that confused and distracted residents. While residents were busy fighting amongst themselves the true enemy continued to ruin everything.

Secondly the affective valence of war thematized ruination. Bill characterized his way of life and his health as ruined forever. There was no money that could replace these things. No one was spared. The ruination spread into the body. It seeped into the lungs. The ruination was total. Property value, for example, was rendered worthless. The ruination was not only a loss of the present but a loss of the future. Les and Phyllis faced ultimate destruction of their future. The ruination obliterates the present life and future life as well.

The affective valence of war also thematized the experience that *something is being taken*. Les and Phyllis and Bill all spoke of the sense that something was being taken from them. Whether it was their health or way of life or future, something was lost to the intentions of the gas companies. The gas companies were enemies invading their land and destroying their lives. The gas companies were ruthless enemies. They were capable of murder both in the United States and elsewhere. They were an enemy without territorial bounds. They were an enemy that organized itself around the object of their designs. Just as water and air move everywhere, natural gas does too. Participant-

households characterized the gas companies as capable of transcending domestic and international boundaries in pursuit of their goal. Participant-households were the ones forced *to lay down*, as Bill said, for this pursuit.

*It's definitely amoral*, Les said. Fourth, the affective valence of 'war' thematized the moral dimension of water contamination. Participant-households described the experience of moral distress. The event of water contamination was a moral injury. It injured participant-household's worldviews on what is just and unjust. It wounded their sense of what could be allowed to happen to them and what would happen to their voices if they attempted to fight. The gas companies had no conscience. They were entities without capacity to acknowledge wrong-doing and provide compensation and moral accountability.

The affective valence of 'war' also called for a fight. Each participant-household would not lay down and have their lives taken and their futures destroyed. The theme of the fight called upon human dignity, courage, and resilience. The response to the destruction of life and future and the moral injury beset by water contamination was to fight back at whatever cost. Phyllis described how fighting was survival. To surrender to defeat and settle for the destruction of future was unbearable. The affective valence of 'war' thematized the fight that was necessary for psychological and biological survival.

Therefore the affective valence of 'war' became the atmosphere of daily life for participant-households. It thematized opposition, moral injury, the tragic sense of loss, and the will to fight. 'War' pervaded everyday life with high arousal and stress. Anger and rage and loss and intense will to survive galvanized together under this affective

valence. 'War' is the experience of separation from a peaceable and stable life. It turned life into a fragmented conflict zone where death loomed large.

### **Running up against a brick wall.**

Phyllis kept smacking the back of her hand against her palm. *It doesn't matter what we say or how we do it or what we do or how we present it or how we help ourselves, we're just not getting anywhere.* Les replied, *Yes. Exactly. We are running up against a brick wall.* Phyllis continued. *No admission at all. None. And you try to tell people that come in 'that dang DEP won't do a damn thing for me!' and it's like, what can I say to them? They didn't do nothing for them. It just aggravates me because when they were coming in here and testing people were complaining and they said, 'No one has a problem, no one, nobody'. No one has a problem?! No one has a problem?! What happened to the M.'s and the G.'s and the R.'s, the this, the that, what happened to them people?* Phyllis looked at Les and back at me. *You'd think you could go to the DEP and ask them, and they just, they don't, and that's even their job. Instead of coming to your dang door and knocking on your dang door and saying, 'We're here, here to save you, let's test your water, let us help you.'* Les shook his head. His hair fell in his face. *No*, he said. *No*, Phyllis replied. *Ain't happening*, Les said. Phyllis smirked. *No. The laws are allowing them to get away with it.* Les said, *They did it deliberately.* Phyllis then added, *They turned a blind eye is what they did.* She sipped her tea. Gallon jugs of water sat on the floor at our feet.

Les and Phyllis continued to talk about being in a marginalized position and running up against a brick wall. 'Them people', Phyllis said and Les replied, *We are*

*'them people'. We are 'them people in Travesty.' We are not worthy of being real citizens. Phyllis said, We are second... and Les finished her sentence. Second class citizens. Phyllis finished the thought. To this township we are second class citizens.*

During another interview Tonya and Bill also described running up against a brick wall. *They basically think of us as a third world country, she said. They are saying we are basically a third world country. They are looking down on us. And we are just not getting any headway. I even emailed the Governor. I sent an email to the President. I was trying to get help. Bill flicked his ash and said, We wrote to Obama and everything. Tonya continued. I wrote to them and asked for some kind of help or guidance. Bill took a drag. You don't hear nothing. Nothing. Tonya said, I wrote a letter to Obama through the computer. I wrote a letter to Governor Tom Corbett. They never got back to me. Bill snarled and laughed. Now there's a worthless piece of shit. Tonya shook her head and said, They never got back to me.*

'Running up against a brick wall' was another affective valence. This affective valence arose as participant-households sunk deeper into positions of marginalization. First, the 'brick wall' affective valence thematized intense lack of protection. Les and Phyllis discussed vulnerability and lack of protection from the Department of Environmental Protection. There was no governmental institution to provide them cover. They wonder why no one has come to their aid. They expected people with the power to help them to knock on their door. The 'brick wall' valence was one of total social vulnerability and lack of representation. Aggravation and chronic frustration shrouded their attempts to have their voice heard.

Secondly, the ‘brick wall’ affective valence was a response participant-households had to lacking a witness to their experiences of water contamination. This closely connected to the previous theme. Not only are participant-households without protection or representation, they were without witness. This added another layer of suffering. Witness would have been the presence of an institution or agency that deeply validated their experiences. This might have manifested a sense of being seen and heard amidst the destruction of their ways of life and health. But no witness came to call. The affective valence of ‘brick wall’ led Phyllis to say, *They are making victims out of victims*. And Les said, *We are victims being victimized right at this second*. To make a victim out of a victim is to rob them of recognition of their injury. It reinforces their suffering deeper. The affective valence of ‘brick wall’ thematized lack of witness and is the valence of social invisibility.

Third, the affective valence of ‘brick wall’ also thematized loss of voice. Voice of protest, voice of dissent, and voice of injury shriveled and nearly died. To undergo marginalization of that magnitude rendered the potential to cry out for help and for change nearly impossible. Tonya and Bill experienced raising their voices as an exercise in futility. *We wrote to Obama and everything*, Bill said. This act of attempting to raise their voice was met with silence. Yet it also spoke to the lack of access to power indicative of ‘brick wall’ marginalization. One wonders if they expected President Obama to actually receive the email and offer help. The loss of voice theme of the ‘brick wall’ affective valence also includes naiveté. Not only were participant-household voices lost but they did not know where to go or how to raise their dissent at all.

Lastly, a fourth theme of ‘brick wall’ concerned the social experience of inferiority. *They are looking down on us*, Tonya said. *We are not worthy of being real citizens*, Les said. This social experience of inferiority as well as worthlessness was a felt tone of marginalization. The felt tone was the interpretation of self-image against the background of water contamination and the resultant marginalization that ensued. Participant-households lived with the awareness of being seen as second-class collateral damage of the fracking. They lived with the sense of being negligible to those who profited from the enterprise. What did they matter? Money was being made. Energy was being produced. The affective valence of ‘brick wall’ thematized these impoverished self-images.

The affective valence of ‘brick wall’ is the experience of marginalization and disempowerment. Marginalization is the movement of structural violence upon those it subjugates. Disempowerment takes away agency, autonomy, and potential to manifest resistance. The affective valence of ‘brick wall’ thematized lack of protection, lack of witness (invisibility), loss of voice, and social shame. Participant-households were placed in positions that rendered them obsolete collateral damage of fracking. This positioning is a social death. Social death under water contamination illuminated what participant-households lacked in rights, power, and ability to change their situation.

### **Baby water.**

It grew dark outside. The trees outside the house stood in silent and gray evening light. Les slapped turkey in between two slices of bread and took a bite. Phyllis blew steam off her tea cup and said, *I have baby water that sits around in case there is a baby*

*in need. We have babies on our water drive. There's still some that I hand deliver for the shut-ins that can't make it to the water bank. I have a sense of frustration because this is not my job. I didn't start this. I used to sew and play with my grandbabies and take them out to lunch every day. Every day. Every day. Phyllis shook her head and stared at her hands folded in her lap. But now, my grandbabies, if they are here, it's a quick in and out. They can't go outside. I won't let them outside because of the air. Les finished his sandwich in three bites and said, I cut off all the swing sets and threw them away. All the riding horses too. All the stuff for the kids to play on. We had to get rid of it. I didn't want that stuff that's in the air.... Phyllis finished his sentence again, Touching them. Les said, On the toys. You know how kids are, wanting to stick their mouth on everything. Well, I don't want them doing it. I won't even let the dog eat the grass. Phyllis looked devastated. Her shoulders slumped. She said, It's hard on the children too. I don't know what I would do if they were babies. That lady whose husband passed away. She is there to raise them kids with no water. The lady who got her grandkids thrust upon her, and they are two and three years old? Trying to deal with that with no water? Heating water up in a stove so your kids can get a bath? Phyllis shuddered and rubbed her forehead.*

The affective valence of 'baby water' galvanized themes of terrible loss. First, this loss concerned loss of family life. Les and Phyllis described their home as no longer safe for children. The image of cutting down the children's toys described a loss of the presumed innocent playfulness of childhood that pervaded their family home. Loss of family life was cause for grief and mourning. The affective valence of 'baby water' was born of sorrowful tears rather than burning rage. Loss of family life deprived Les and

Phyllis from providing a safe haven for their family. They had to protect their children from their homes saturated in the lethal sting of toxicity.

Secondly, 'baby water' thematized, similar to 'war', loss of the future. Children were representative of future life and continuity. Once the children were gone persistence of life into the future became hard to imagine. Phyllis mourned for the grandparent she used to be. *Every day*, she said twice. She mourned for the loss of being active in their lives. Phyllis no longer could usher her grandbabies into their future lives as she once had. The theme of loss of the future implied a loss of a precious facet of identity in the present. This facet of identity concerned the careful tending of family life into generations to come.

Third, the affective valence of 'baby water' thematized loss of safety. Loss of safety was the ultimate threat to family life. Les worried about his grandchildren putting their mouths on their outside toys. He feared ingestion and incorporation of the contaminates into the vulnerable bodies of children. The theme of loss of safety also spoke to the ultimately fragile attempt to raise children amidst water contamination. Phyllis could not bear to complete her thought of the possibility of heating bath water for children on the stove. Loss of safety not only put participant-household adults in harms way. It also seeped into the lives of those most defenseless.

'Baby water' is an affective valence that thematized loss of family life, loss of future, and loss of safety. It thematized the felt tone of mourning. It was expressed in tears and cries and a rubbing of the temples. 'Baby water' is the affective valence that cried out for the most defenseless against water the contamination. It was the affective valence that surrounded the children that lived in the community. The children of the

community lost their play and safety and future. The affective valence of ‘baby water’ was the cry of the family forced to watch it happen.

**Fading away.**

Richard folded his large tattooed arms over his chest. *I see the generosity of the water bank fading*, he said. *People only do generosity for so long. It’s hard to say but I can see it going away. I can see it fading away. I can see it. And I’m sure people who think like me can see it too. If you look at 911, those firemen standing out there with the boot. It took like eight months for that to fade. Generosity fades.* He took off his baseball cap and ran his palm over his scalp.

The affective valence of ‘fading away’ was the loss of hope for change to come. First, it thematized the pain of being forgotten. Richard described the isolation he expected when donors stopped giving to the water bank. The help he and others received lived on short supply. Compassionate attention to their plight was time limited. ‘Fading away’ is the affective valence of worry and concern for the future. Participant-households were forced to think of what they would do when (not if) the water bank shut down. ‘Fading away’ is the dread that came with the fear of being forgotten.

Secondly, the affective valence of ‘fading away’ thematized the recognition that social connectedness fades. Richard cited donations that followed as immense an event as 911 as not even having staying power. *Generosity fades*, he said. ‘Fading away’ was the valence that acknowledged that time moves constantly forward and the cultural at large only cares for so long. ‘Fading away’ was to be lost. It was to be forgotten in the wash of

whatever pulls attention to the next travesty or distraction. The recognition that social connectedness was time limited was a stance of hopelessness.

Thus, the affective valence of ‘fading away’ became the recognition that the plight of those subject to water contamination was hopeless. They would be forgotten like others who suffered and then faded in other disaster scenarios. Participant-households, given the example of Richard, lived with the sense that they would eventually join the faded community of the forgotten.

### Results IV: Technology

Energy production technology determined the survivability of participant-households living with contaminated water. Technology is defined as the engineering apparatus of industrialized hydraulic fracturing. It is the wealth of complex mechanics that detects and extracts the raw material of natural gas from the Marcellus Shale beneath the ground. It is a massive and profit-driven boom enterprise. This technology creates a series of impingements on participant-household lives. On the one hand it is the medium that supports continued life. On the other it is also the medium of catastrophe and destruction. Technology is the sea in which participant-households swim.

#### **Future doom.**

Bill was back to yelling. *You get these people who say, it's gonna fail down the road. That's just the way it is. It's gonna fail. So, how is this for our air? For our water? They know themselves that eventually it is gonna contaminate while we are living. Fuck our kids and our grandkids. I have to use those words but I'm being me here and I ain't here to hide nothing. They ain't supposed to have a future? Right now is the future, that is the way they are looking. Right now is the future. Let's get this money. If down the road you can't drink your water, you are getting diseases over this shit, is it really worth it right now? No, it's never worth it. Because what we are ruining we can never get back. You can never get it back. Just like that damn oil spill. You don't hear no more about that, but that's still affecting the sea life and water there. Look at Japan's nuclear plant. They are dumping ten billion gallons of water a day into it just to keep it cold. Then it is flushed into the ocean radioactive. It's coming our way, through the water. They keep*

*ruining and ruining and ruining.* Bill ran a rough palm coarsely over his chin beard. He stared at me and I stared back. The air between us thickened. Bill sat at the edge of the seat. His eyes burned. *They knew that they were ruining this area. They knew when they started injecting this shit into the aquifers. They knew what they were doing. They knew that they were gonna destroy it. But they wanted the shit underneath there.*

During another interview, Les said *I don't have to wake up in the middle of the night and worry about a bank call. I own everything. They are taking that from me. They're trying but they are not going to get it. It's gonna resort to some pretty bad things by the time this is all over with. Because they are charging like a bull ahead and just blowing us off as they go along. It's gonna end in catastrophe. Something catastrophic is going to happen before this is going to end. Or at least slow it down.* Les spoke of the event of water contamination like a unstoppable train charging off the tracks.

Les and Bill described the way that catastrophe was woven into their lives. They did this in two different ways. Bill described how the failure of the technology was built into the process of energy production itself. This was also outlined in the introduction to this dissertation through a review of a series of historical instances that situates these events of water contamination in the broader context of energy production. It is not as if catastrophe is what occurs when energy production goes wrong. It is not the result of mistakes or accidents. Catastrophe is the production process itself. It is the way that production pulls the raw material from earth bodies. It is the way that the production process impinges on human and non-human bodies and propels them into crisis. Les took a different angle. He sensed catastrophe waiting at the end of the event. For him

catastrophe was the inevitable outcome forged into the production process from the beginning. In both of these cases technology and catastrophe interpenetrate each other.

Bill described how technology exploded the present. He understood how fracking was a boom and bust industrial enterprise. The profit was to be made in the present. The future was of no consequence at all. The present moment and the money to be made eclipsed the mandate that the future must be protected. Bill also described how the explosion of profit-driven fracking technology in the present creates destructive effects that cannot be undone. Water cannot be cleansed once it is poisoned. The exploding present into consumable form cannot be put back together again once it is ruined.

Les described how fracking technology was out of control. Fracking technology was carried away into multiplying forms with tremendous speed. The technological enterprise speedily replicated itself like a virus. It spread over the landscape and through the community. It broke into the territorial bounds of the home. Les vowed not to let that happen. He refused to lower his flag, lose the fight, and leave.

Participant-households experienced fracking technology as a combustible form of catastrophe either waiting to happen or happening already. Fracking technology replicates at a speed and with a force that cannot be matched by their attempts at resistance. It is a catastrophe in progress. The technology itself is built around its necessary failure and there is no technology without a destructive impact spreading from it. Yet this failure came with an immense cost. It failed at the expense of each participant-household and their future generations, born or unborn. Fracking technology, as an intensely profit-driven venture, had no conscience and no sense of the future. It sought nothing more than to replicate itself endlessly until the 'natural resources' it was designed

to extract were gone or the market was saturated. The future be damned. The future was doom. For participant-households, was it worth the immense costs of catastrophe-production? *No*, Bill said, *it's never worth it*.

### **Trade secrets.**

Tonya was scared. *They are not allowed to tell us, if we go to the doctor, they are not allowed to tell us what is wrong. I don't understand why. Why can't I go to my family doctor and say, I want you to take my blood and test for all this stuff.*

During a separate interview, Les said something similar. *What they did was, here's what our great gas company and officials did, they made doctors sign a thing that if you get sick, like if we got sick, they're not allowed to tell us why we got sick or what we got sick from but they are allowed to treat us. So you gotta figure it out by the treatment of what is actually wrong with you. They had all the doctors sign a paper that they are not allowed to discuss anything, because Heaven forbid, they wouldn't want to give up any of those chemicals in the secret sauce that they are putting down that well to blow that gas out of there.*

ACT 13 was and still is the major legislative and political tool that offered allowance and protection to gas companies drilling the Marcellus Shale. Little protection was offered to affected residents subject to water contamination or other symptoms of catastrophe-production. The most egregious and unconstitutional aspects of this legislation was a gag order places on medical professionals. This order demanded medical professionals of all varieties not disclose the nature of chemical toxins that might cause illness to affected residents. These disclosures were shut down because they may

contain trade secrets of the gas companies. For example, a compound of chemicals used in fracking fluid would not be disclosed because it would become available for the eyes of the competition. This legislation was the legal scaffolding that supported the technological apparatus of fracking.

Both Tonya and Les described how the ACT 13 discourse introduced another layers of opacity into their experience. Tonya was utterly confused as to why she could not know the source of damage to her body. Les described this as well. This legally enforced opacity added another dimension to how technology mediated the survivability of participant-households living with water contamination. It froze investigation and fierce recognition of the catastrophic ‘human impact’ of fracking. It prevented transparency and awareness of the full extent of the crisis. It introduced a dizzying sense of uncertainty into participant-household experiences. Not only did they not know what was exactly causing their illnesses, they were legally bound not to know. Thus, the technology that mediated their survival is both visible and invisible. It was visible in all the ways that fracking changed the appearance of the community. It was seen in the towering well pads, the flaring flames hundreds of feet high. It was smelled in the metallic exhaust felt in the back of the throat. It was read in the distortions of blood. Additionally, it was detected in the invisible but present political and legal discourses which ushered in the Marcellus Shale extraction to Pennsylvania. Technology was also these supporting structures which then occupy specific resource rich geographical zones. The visible forms of technology exist as allowed by the invisible technological means that permit them.

### **Discussion**

This section will combine the results of the previous four sections into a broader conceptual discussion of elemental trauma. This is grounded in the experiential accounts drawn from fieldwork and textual analysis. Concluding remarks and a brief summarization of the limitations of this project will follow.

#### **Materiality.**

Elemental traumas are disruptions to the substances which allow for the flourishing of life in a habitable place. These substances are elemental. Based on archaic descriptions from various time periods and cultural motifs, these substances typically include water, air, fire, and earth. The elemental trauma elucidated in this study is a trauma of water. Elemental traumas occur within the folds of the human-element matrix. This matrix consists of a series of interdependent relationships that embed the elements into human life to such a degree that life cannot exist without them.

Water occupied an invisible dimension of life prior to the onset of trauma. It was lived in a pre-reflective manner. Water was not a part of daily awareness for conscious consideration. It was considered a 'natural resource' to be consumed in endless supply. The availability or purity of water was not questioned. Water was an element situated in this comfortable illusion. This illusion was founded on a false sense of security. It also required water to be perceived as a de-animated substance that existed strictly in the service of those who consumed it.

The elemental trauma shattered this illusion by rupturing the human-element matrix. This rupture drastically transformed water from existing quietly in the

background of life into something alien. Water as an elemental material burst into the foreground of life. Once this occurred, water re-animated. It became an evocative substance capable of aliveness and sentience and could also sicken and kill you. It took on immense value and power and occupied the center of gravity of participant-household lives.

Elemental traumas transform the ways human beings imagine matter. Bachelard (1983) calls this the imagination of matter; this is a form of imagination beyond the descriptive naming of forms that saturates matter and is discernible through sense and the body. Elemental traumas transform the human imagination of matter by introducing wounds to the substances of life. These wounds are what sparks the rupture of the elements from the background of life into the foreground. It is not through harmony but disharmony and disruption that this transformative rupture occurs. Elemental traumas re-animate the substances of life by introducing catastrophic wounds. These wounds are the vehicle for a re-awakened sensibility that perceives substances not as dead, consumable matter but as alive and sentience substances of life. Once seen as thus, these substances can be re-valued and understood not as consumable resources but as powers that can determine the course of entire lifespans. Not only human lifespans, but nonhuman lifespans, the lifespan of habitable places, and the lifespan of the planet.

Elemental traumas introduce wounds into the human-element matrix that radically opens individual awareness to the awareness of other life forms. Humans become more attuned to the other species of the world, of seemingly infinite variety and difference. The wounds of elemental traumas have a connecting quality. It shows human beings that they are not masters and dominators of the planet. It awakens them to more vivid perceptions

of ecological interdependence. Elemental traumas are world wounds. World wounds of this kind extend beyond the psycho-cultural confines of the individual, and extend to the fabric of the world itself (Halifax, 1993). Human beings' material imaginations are thus captivated by the mythos of the world wound. The mythos of the world wound tells a story that all beings on the planet are united by the pain of destruction and ruination of their shared planetary home. This mythos also unites all beings on the planet by awakening the urge to preserve not only human lives but non-human lives.

The world wound which comes by way of elemental trauma carries an ethical dimension. It changes the ways that human beings relate to the world because it uses the shared pain of ecological destruction as a connective tissue between all beings. No species suffer in isolation. No element undergoes a trauma in a vacuum. Elemental traumas introduce wounds which spark connective and unitive urges between species usually defined by rigid boundaries. Human beings are less likely to exploit water when they are forced to grapple with the pain of their lives intertwined with the pain of contaminated water. Endless consumption can be curtailed in the face of the growing power and value of the elemental substances of life. As illustrated by the participant-households in this study, when water is lived pre-reflectively its value is undermined and it becomes subject to waste and rampant consumption. Once water underwent an elemental trauma it could not longer be consumed carelessly in the present but had to be conserved for future survival. Elemental traumas force human beings to refuse the category of 'natural resource' to these substances of life. No longer are they simply at the disposal of human beings and seen as existing solely to fuel human life.

The world wound instantiated by elemental traumas equalizes human relationships with nonhuman forms. This implies that human beings assumed position in relation to the entirety of the planet is minimized. It also implies that other nonhuman forms including the elemental substances are amplified. Under elemental traumas human destruction of nonhuman forms and planetary life cannot continue. Human beings are required into enter into a more dialogue and equalized relationship with other inhabitants and substances of the planet. All the voices within the different ecologies and planetary environment must be heard (Halifax, 1993). For example, participant-households must now hear the voice of water. They must learn to listen and speak to water. They must hear water's plight. They must let water speak. Once these other voices are fully heard they cannot be ignored.

Elemental traumas open up world wounds which are not safe passages to new ways of being. Rather, they are catastrophic ruptures which throw human beings into a liminal zone. In this zone of chaos they must learn to interact differently with elemental substances of life and the nonhuman forms on the planet. This implies the unfortunate acknowledgement that elemental traumas initiate rites of passage which might not be able to be traversed. Once an elemental trauma is created human beings (and other beings) might not make it through to the other side. What is offered if an elemental trauma is crossed is a greater individual and collective realization of the immersive saturation of human life with all other life forms on the planet. This is a possibility that further necessitates ethical actions to preserve life on the planet. But death and injury are realistic outcomes too. The ways that elemental traumas minimize the human position in relation to the environment may necessitate loss of human life. This dissolution of boundaries is

what Macy (1991) characterizes as a positive disintegration of identity. These are opportunities that dissolve prior ways of being and offer the dangerous passage to new ways of being. What is dissolved is not only an understanding of human identity as closed, autonomous dominators and exploiters of 'natural resources'. It is also perceptions of the elemental substances of life into forms with much greater power.

Elemental traumas also change human relations to places. Elemental materials like water are place-making substances. The lifespan of individuals and lifespan of families are intertwined with the lifespan of places. Human beings are called to take greater accountability for the ecological impact of their habitation in places. Places themselves undergo transformations during which they gain depth and gravity. The magic and mystery of a given place arises during a deep encounter with what any individual or collective experiences there (Abrams, 1996). Elemental traumas re-focus human beings to be caretakers of the places of their homes and communities and not simply neutral and passive inhabitants.

Elemental traumas re-animate the elemental substances of the world also by opening human beings to the extended feeling dimension of their relationship to nonhuman forms. Human beings are forced to feel the impact of their actions. It is no longer a matter of individual wounds. Elemental traumas galvanize human and nonhuman lives as well as places and the planet. Elemental traumas offer human beings the painful opportunities to extend their nervous systems beyond the confines of their bodies into the material of the world. If human beings could viscerally feel what they were doing to other forms of life on the planet, would they continue? Elemental traumas push human beings to feel outwards from themselves into the painful sensations rippling outwards from their

destructive actions. Elemental traumas are unbearable and can involve nearly intolerable levels of pain. Hearing other elemental voices and feeling other pain is the unfortunate but required task of elemental trauma. It is the call at the threshold of transformation.

Elemental traumas also reveal how elements and other nonhuman life forms are all fixed in a hyper-capitalist framework. Haraway (2016) calls this massively exploitative relation to the planet the era of the Capitalocene. This way of relating to the planet is characterized by a transformation of all material entities into commodities. These commodities are then thrown into the flux of global market systems. Commodities are unjustly distributed in these systems. Elemental substances turned into commodities are no different. Places with clean and useable water are places of privilege. Places with water that is in an elemental trauma are places subject to what Nixon (2011) calls slow violence. Slow violence (Nixon, 2011) is a kind of violence done to the environment that causes vast spatial and temporal effects, typically in radically disenfranchised places on the planet. Elemental traumas reveal these ways that elemental substances of life are subject to hyper-capitalist stratification. They dissolve the illusions inherent in privileged consumption and undermine how easily humans can ruin substances when they believe there will always be more from where that came from.

Lastly, elemental traumas change human beings collective sense of time. No longer is the present the only focus of daily life. In the case of this project, water must always be conserved for the future. The future becomes a virtual player in the realm of the every day. Elemental traumas in a broader sense open up dimensions of time that are inclusive of future possibilities for survival of both human and nonhuman forms.

**Embodiment.**

Elemental traumas drastically impact conditions of embodiment for a multitude of life forms on the planet. As Abrams (2010) states, the body is open and unfinished, not static and closed. The body cannot be sealed against the world and sensory experience. Therefore elemental traumas pervade and infuse the body. In regards to this elemental trauma, human bodies are nearly 60% water. Multitudes of bodies (human, animal, vegetable, mineral) in endless variation are sites of elemental traumas. All bodies within the planetary bodies endlessly fold into one another and interpenetrate one another. There are no bodies in isolation. To be embodied is to be in relationship with other bodies. Elemental traumas have impacts that spread outwards to infinite horizons because bodies are open to the world and the world is an open body.

Bodies are the very medium of elemental traumas. They become the vehicles for the catastrophic changes triggered by the ongoing trauma. They become mediums which register the traumas and carry the effects of it in injuries, diseases, and death. Taussig (2006) calls this mediumship the bodily unconscious which causes us “to take a world-centered and not a self-centered view of viewing such that the self becomes part of that which is seen, not a sovereign transcendent. To this see ourselves in the midst of the world is to enter into ourselves as an image, to exchange standing above the fray, the God position, for some quite other position that is not really a position at all but something more like swimming, more like nomads adrift in the sea” (p. 31). Bodies as mediums for elemental traumas forces human beings not to gaze upon the trauma from a falsely separate position. Humans cannot look upon the trauma from the outside because it is occurring both within and without human bodies. No further dissolution of boundaries

between self and world can occur. Elemental traumas by way of catastrophic wounding provide human beings opportunities to realize the ways they are viscerally and inescapably interconnected with all else. Haraway (2016) calls this interconnection “thick copresence” (p.4) and states that existence(s) are thickly intertwined in multi-layered processes of “making kin” (p. 2). Elemental traumas have this unitive, kin-making potential by linking various species and multitudes of bodies not only in flourishing life but also in co-dying. Haraway (2016) also speaks of living-with and dying-with as two parallel aspects of kin-making across species. Elemental traumas use bodies as mediums that contain messages about how to enable co-flourishing as well as how to unite with other bodies in death. Elemental trauma are pools of earthly mortality and bodies are the synchronized swimmers. This is not a dreadful image. Elemental traumas transform bodies by rendering all equally compostable. Yet, we are all carrying the fire of generativity and capacity for attunement to other voices of other life forms.

Bodies going through elemental trauma transform into wellsprings of grief. The unitive nearness of death and the prevalence of disease call those involved in the trauma and those near to it into a process of mourning. Bodies suffering under elemental traumas cannot be lost or forgotten but must be intensely grieved for. Butler (2004) describes how certain bodies are utterly dehumanized even before exposure to violence, thus they are deemed not worthy of grieving for once they undergo it. Elemental traumas provide rites of passage through which humans and nonhumans go and through which they cry the pain of living-with and dying-with together. Grief, expressed in this way, is deeply affirming and not diminishing. Prechtel (2015) writes, “praise is grief’s voice and neither ever disappears, because they are the sound of all parts of the world and universe, each

living according to its own nature, each entire in itself, each a willing partíciple in the great prayer of praise singing the world back to life” (p.6). Elemental traumas are embodied wellsprings of grief and also praise. They usher in the world wounds which gift remaining earthling mortals with songs of praise for live once lived and never forgotten.

**Affect.**

Elemental traumas create atmospheres of affective intensities. These intensities thematize the felt experience of catastrophic violence. Elemental trauma constitutes social death for many human beings and extinction death for nonhuman beings. The affective valences engendered by elemental trauma trace the contours of living with social death in midst of life itself. They also provide an entrance into thinking of the human-element matrix as an affective ecology.

It is the affective dimension of elemental trauma (along with the material and embodied dimensions) that provide the experiential means to respond in whatever way possible. This response to the elemental trauma is utterly necessary. Elemental traumas are not to be endlessly suffered but are to be ethically responded to. It is a call asking for a response that can vitalize kin making and co-survival. The affective valences of elemental traumas provide space for this response to form and flower. Elemental traumas engender affective valences, which turn on the potential to realize affective ecologies of co-dependent existence(s) and action. Hustak and Myers (2012) call affective ecology “an ecology inspired by a feminist ethic of ‘response-ability’ in which questions of species difference are always conjugated with attentions to affect, entanglement, and rupture; it is an affective ecology in which creativity and curiosity characterize the

experimental forms of life of all kinds of practitioners, not only the human ones. We will need this model of ecological thinking in order to do more effective work in challenging the status quo of ecological irresponsibility” (p. 106). Elemental traumas provide the opportunity to do just that. Rage as a response to injustice, fear as a response to danger and insecurity, and fighting-back as a response to moral injury are all instances of this response-ability. Elemental traumas provide the means to further and further develop response abilities that can titrate total future world-ending destruction.

### **Technology.**

Elemental traumas always occur by virtue of many layers and levels of technology. Because elemental traumas are the product of energy production, they are technological eruptions. They are instances of the eruptive overflow of destructive technology. Destructive technology can best be defined as technology at the service of the current hyper-capitalist epoch that threatens all planetary life. It is technology put at the behest of profit-driven industries. This is a lethal interplay. When technology, such as the technology of energy production, is intertwined with profit making it begins to replicate with a speed and intensity that becomes viral and out of control. Elemental traumas are phenomenon which are huge viral overflows of energy production technology. It is the technology that mediates the survivability of all bodies and life forms (human and nonhuman) subsumed under energy production.

Elemental trauma also occur when technology explodes the present. To explode the present is to have the current historical moment occupy the focal horizon of growth so completely that the future falls out of orbit. The historical past is also subject to amnesia.

Once considerations of conservations for the future are eclipsed and remembrance of wounds of the past are forgotten, the present is characterized by explosive consumption.

The concept of elemental trauma does not imply a split, good-or-bad stance on technology as a whole. Elemental traumas are certainly moments when technology spirals out of control. Yet elemental traumas are also moments when relationships to technology can become more realistic and less extreme. To have a less extreme relationship to technology is to see it not as a harbinger of apocalypse or as a super-fix to all planetary problems. Instead, technology can be situated not as separate from the world of 'natural' things but as irreversibly embedded within it. Technology can also therefore amplify potentials for flourishing and survival.

### **Conclusion**

Since the beginning of this project, at least two major catastrophic events have occurred in the human-element matrices. First, the city of Flint, Michigan, underwent a citywide ban on all water after high levels of lead were detected in resident water supplies. This led the city to declare a state of emergency after hundreds of people, many of whom were children, were diagnosed with lead poisoning. To this day, city water has not been restored and residents of Flint live without consumable water and have to live with the long-term effects of lead exposure. This event is a shocking example of elemental trauma, even though it was not linked to energy production. Second, the Standing Rock Sioux reservation residents successfully protested and halted (at least to date) the Dakota Access Pipeline from carrying oil under the waterways of their land. This was a tremendous, powerful example of how a social action can prevent future elemental traumas from occurring. These two instances—along with the fact the residents of Travesty, PA continue to live without consumable water—are mentioned here to illustrate the continued relevance of this project. Furthermore, cases of water contamination are widespread across the globe and have been directly and indirectly linked to the practice of hydraulic fracturing. This Conclusion section will re-trace the steps of the Discussion and Results sections to place these themes in relation to the previous historical examples of energy catastrophes and reviewed literature. Limitations will then be summarized. Finally, the contributions made to the field, as well as practical and methodological considerations will conclude this dissertation.

**Catastrophe (2.)**

The elemental trauma that is the subject of this study falls squarely within a larger historical context. The energy catastrophes reviewed in the Introduction section are indeed elemental traumas. They are also all linked to high impact energy production designed to meet the needs of the exploding population of the planet.

The elemental trauma described here has a similar structure in regards to the impact of the energy production. First, this impact is built into the very structure of the production process itself. The processes are catastrophic not by accident or error, but by their very nature. This impact is not limited to human lives. It encompasses the nonhuman and rips into the fabric and materiality of the world. This elemental trauma also encompasses large spatial and temporal spreads. The water contamination described here is not easily containable. It will remain in the groundwater for the foreseeable future. This elemental trauma is also irreversible. While there can be damage control efforts, the elemental wounding and the consequences for human and nonhuman lives cannot be undone. Profit at the hands of the energy production companies was also a major contributor to this elemental trauma. The rapid increase in fracking technology and the density with which it surrounded Travesty was caused by the Marcellus Shale boom. During this time, state regulations were loosely enforced and gas companies offered piecemeal 'impact fees' to state and county administrations. Elemental traumas all have this political overtone. Were it not for the dictates of the mad rush of capital and profit, and the lack of corporate conscience, elemental traumas would be greatly reduced. Yet, it is not the rapidly consuming social formation of capitalism that is entirely to blame, as

the broader and global need for energy supersedes any given social and economic structures and reaches into the scope of human civilization in relation to the planet.

This elemental trauma, like the other reviewed historical instances, also contained a magnitude that dwarfed the scale of human lives. The entire place of Travesty and the region of western Pennsylvania was utterly changed by this elemental trauma. Elemental traumas are in part caused and enacted by human agency through the excesses of profit-driven energy production. The results of them place human beings as small, diminutive characters in a much larger, unfolding wound that gathers the world around them and all nonhuman lives with it.

Energy catastrophes and elemental traumas are thus two sides of the same unfolding process. While it may be true that elemental traumas are not always linked to energy production, such as the case in Flint, Michigan, they are in the vast majority of cases. Energy catastrophes will likely always include elemental traumas, while elemental traumas might not always be linked to energy catastrophes.

This project provides a structure to these events. This structure is situated within the dimension of psychological experience. This structure is outlined in the four guiding inquiries of this project: the materiality of the world, embodied dimensions of experience, affective valences, and concerns related to technology. Each part of this structure not only in each historical instance reviewed here but in each elemental trauma related to hydraulic fracking.

This four-fold structure of elemental trauma thus provides a lens to understand the psychological dimension of energy catastrophes. Energy catastrophes, as it has been noted, are large-scale disasters that over-turn life in irreversible ways. Because energy

production is among chief concerns of industrialized nations on this planet, energy catastrophes are central to this current planetary epoch. Elemental trauma is thus a framework to apply to understanding how these catastrophes impact both human and nonhuman lives.

### **Trauma Literature.**

Elemental traumas are a novel concept that can be applied to the literature on trauma. The literature reviewed in the Introduction section had three parts. First, the intra-psychic model of trauma was reviewed. This model of trauma examines how traumatic events impact mental processes such as memory, emotion, and executive functioning as well as physiology (van der Kolk & McFarlane, 1996). Secondly, the political contexts of trauma were reviewed. This contributions namely situated discussions of traumatic experiences within historically contingent political contexts, such as wars and gender discriminations. This shift away from merely understanding trauma as intra-psychic and interior to the individual acknowledged that trauma is inherently social and often spawns expansions in political awareness (Herman, 1992). Next, collective frameworks of understanding trauma were reviewed. This dimension of the literature on trauma furthers open the dimensions of traumatic experience to include collective experiences such as genocides, inter-generational violence, and cultural dissolution. This approach to trauma further deconstructs previous essentialist ways of understanding trauma, and examined traumatic experience as a socially constructed phenomenon with communal narratives of recognition and healing (Alexander, 2004). Finally, an example of a model of trauma that is both socially and politically informed and exists not simply within individual and

collective human lives but in series of inter-relations was reviewed. These are the traumatic experiences Mindy Fullilove (2004) deemed root shock, which described the painful disruption of lives caused by destruction of urban environments in the greater name of so-called social progress.

Elemental trauma, being situated in the in-between of the human-water matrices, is clearly not an intrapsychic model of trauma. It does not assume that the content of traumatic experience becomes buried within the recesses of the interior mind. It does not state that the content of the trauma are inaccessible to conscious inquiry. Elemental traumas also do not include the necessity of other psychological ideas—such as repression, catharsis, and executive functioning—in order to be a valid concept of psychological trauma. Elemental traumas does not follow these dictates because the nexus of the trauma is not within the human but within the relationship of human beings to the substances essential to life. Elemental traumas also do not follow the onset and course of intrapsychic models of trauma. Intrapsychic models suppose a sudden point of exposure to a traumatic event and then the grinding after effects of traumatic stress on the interior mind and nervous system of the individual. Elemental traumas take a different course entirely. The traumatic exposure is not sudden but ongoing. The traumatic effects are not experienced after but become the very way of being of those affected. While intrapsychic models of trauma presuppose the individual carries the effects of the trauma within them following the event, elemental traumas create effects which structure the daily life of entire communities or regions of humans and nonhumans. Similarly, the phenomenon of intrusion does not come from within—with preoccupation with intrusive memories of the traumatic event—but from the world. The materiality of the world

becomes intrusive. The unfolding of the elemental traumatic itself as caused by energy production is intrusive. This makes elemental traumas a model of trauma that breaks down the separation of the clinical setting from the world. Intrapsychic models of trauma provide roadmaps for clinical treatment. Elemental traumas are symptoms of planetary suffering and need be approached as larger phenomenon.

Elemental traumas do indeed have political and social dimensions. These political and social dimensions can be broadly described as the creeping awareness of human beings destruction of the planet. It is also the awareness of the “footprint” left by human beings in relation to energy production. Elemental traumas are a phenomenon that can now be named and examined as this dual awareness increases in public consciousness. It is a concept that can provide a vocabulary and structure to a global crisis which is working it’s way into the fabric of ordinary people’s lives, even if in the form of denial. Elemental traumas is a model of trauma that claims this historical moment as an opportunity to examine forms of suffering unique to this epoch and to attempt to formulate interventions in response. The Standing Rock Sioux reservation protest efforts are just that. Thus, an elemental trauma is a model of trauma that is not just born out of social and political dimensions but demands social and political responses. Interventions must include not only clinically relevant responses but may encompass social and political movements. This has been the case in previous theoretical iterations of traumatic experience. For example, the construction of posttraumatic stress disorder can be taken up as a powerful anti-war instrument. PTSD is a living testimony of the horrors of war. Similarly, an elemental trauma is a testimony to the destruction of the planet. This dissertation project can be placed among sociopolitical interventions to elemental trauma

in that it provides narratives of the human experience of elemental trauma in relation to fracking. Discussions of the perils of hydraulic fracking typically fall to one side of a polarity. Investigative projects examine abstract aspects of fracking (such as biological conditions of change) on the one side; on the other, journalistic endeavors attempt to capture the ‘human impact’ of fracking yet tend to be consumed by the public too rapidly and have little lasting effect. This project is an intervention that provides rich and detailed narratives of the ‘human impact’ of fracking that are unpacked and explored for psychological meaning and thematic significance. It is meant to provide, in addition to the exploration of the psychological experience of elemental trauma, a series of oral histories of the participant-households subject to this unique elemental trauma at this historical point in time.

An elemental trauma is a model of trauma that is both individual and collective. The collectivities of elemental traumas are not strictly cultural or generational. They include entire ecosystems and other species. They include multiple generations of various human and nonhuman forms, as well as places and communities. Elemental traumas thus greatly exceed the individual, even the human. The ways of life that are changed are not simply cultural, but the ecological conditions that make cultures possible. Indeed, it is the collective culture that plays a part in the cause of elemental traumas. The collective culture of rampant consumption and destruction of the planet by energy consumption is a cultural moment that contributes to elemental traumas.

**Limitations.**

This project also has several inevitable limitations. It took a course that achieved descriptive depth and complexity of participant's experiences, and utilized an existential-phenomenological qualitative methodology in order to do so. This limited the amount of participants selected to participate, as data analysis was time consuming and detailed. If more participants had selected, perhaps the research questions that guided this project would have been answered differently. Additionally, this would have necessitated the change of the methodology used in this study that would have similarly produced different results.

It is also necessary to recognize my own biases in relation to the topic of this dissertation and the participants. Broadly speaking, I view the high impact energy production of fracking as ecologically and socially destructive. I am one of many who do not believe the benefits of this energy initiative outweigh the immense costs, some of which are examined here. More so, I view the lack of accountability and reparation on behalf of the gas companies to be morally reprehensible. Given these biases, I did not include pro-fracking advocates in this study, nor did I select participants who had somehow benefited from fracking in their communities. Instead, I gave generous amounts of time and attention to participants who undoubtedly shared my own views. In the end, this is not a project that seeks to debate the pros and cons of fracking in relation to the human and non-human communities it pervades. It is a study of a catastrophe already underway and a testimony to those who suffer under it.

It is also necessary to acknowledge that this is not a project aimed towards proving whether or not gas companies are responsible for the water contamination of

participant-households. The methodology used in this project does achieve that aim. It is also not the point. What is the point is the living experience of the selected participants in Travesty who live with contaminated water. This study was not out to prove their descriptions right or wrong. It was about honoring participant's perceptions and interpretations, emotions and embodied sensations; their experience of living with contaminated water as a whole. If somehow in the future other means come available to prove the participant-household water was not a result of fracking practices surrounding Travesty, it does not discount this work at all. Rather, this work will continue to stand as a statement of lived experience to participant-households who ultimately *did not know* what was at the very cause of the disruption in their lives. While throughout the interviews the gas companies were often damned as culprits of the catastrophe, each participant-household ultimately acknowledged the uncertainty at the root of their experience. This uncertainty is part and parcel of elemental traumas as well. Also, while the interview transcriptions here often contain visceral descriptions of the gas companies, it is lastly the human-water relationship that is at the core of this study, not whether or not the gas companies are responsible.

**Contributions.**

Elemental trauma is a new idea. It was born out of a wish to name a complex phenomenon occurring across the globe as well as locally. This phenomenon reaches across biological and ecological realms and comes to rest within the experiential and psychological. It is not strictly in the province of human beings. It is neither strictly in the province of matter, or substance, or materiality. It is a phenomenon that occurs in the

relationships, or matrices, between these two complementary forms. It occurs in the folds of inter-relations that compromise life on this planet. It happens in the in-between.

Little, if anything, has been said in psychology about the ways that human beings relate to the objects of their world, much less substances on which their lives depend. Elemental trauma is a term that both highlights this relationship and provides a portrait of what unfolds when this relationship is wounded. This project contributes an in-depth qualitative understanding of the ways that human beings take up the substances upon which their lives depend. It seeks to answer the call so frequently heard in people's everyday, ordinary lives, a call that haunts our popular and private imaginations: what will we make of life on this planet? What will happen to us, and our planetary home, if we continue to destroy it in these irreversible ways? Elemental trauma is a term given to name these mass, destructive effects.

Because this project links elemental trauma to high impact energy practices it is of utmost relevance for issues related to sustainable living practices. Elemental traumas seem to be happening everywhere, on differing scales. Climate change, for example, is the largest current manifestation of an elemental trauma. Climate change (while still debated by some) is a planetary response to global energy practices of this entire civilization. We are seeing the human-fire matrices undergo a catastrophic wounding process that will change life forever on this planet. Just as the elemental trauma in this project awakened participant's to the animated materiality of way, such is climate change transforming human beings' relationship to the sun. The ball of fire in the sky, source of both heat and light, is re-animating into an apocalyptic solar deity. Such is the scale of elemental traumas. Such is the scale of the rites of passage elemental traumas force

beings into, around, and, perhaps, through. Yet this is not all. The elemental traumas reviewed in the Introduction are but a few major historical examples of this phenomenon. The water contamination in this small pocket of Travesty, PA, is but one center of water contamination caused by fracking. There are more and more and more. It is my estimation that as the population of the earth grows even more, and the corresponding needs to power all those billions of lives with energy also grows, elemental traumas will increase as well. This is only the beginning. This project gives a name, or at least the first iteration of a name, to this unfolding. It contributes to the psychological vocabulary of ecological catastrophes in a novel way.

Similarly, yet on another scale, this project provides an experiential psychological window into people's lives as they live with contaminated water in relation to fracking. The impact of fracking on human lives has been widely covered in different media, such as documentary film or non-fiction, journalistic exposition, but not within an in-depth qualitative psychological study. This project provides a descriptive window into affected residents lives. It can be taken as an example of what occurs in communities that allow fracking into their municipal limits. It is both a warning and a foreshadowing of the development of energy production to come. It is a project that contains an ethical call to action. Fracking, as a highly destructive energy process, is not likely to be effectively regulated without public knowledge of its disastrous side effects. More importantly, the vital importance of the elemental matrices that are essential to life will not be brought into the foreground without a fierce look at their finite, vulnerable qualities. These qualities, and how they entwine with human and nonhuman lives, is the subject matter of this project.

This project provides the discipline of psychology an example of what is possible when the study of what is thought to be interior to human beings (mind, soul, spirit, psyche) is exteriorized into the complex, multi-faceted, shimmering ecologies of the world. This project attempts to dissolve this utterly reified and false interior-exterior boundary, a boundary which ultimately attempts to separate individuals from the world and hence from the pulsating, complexifying, vulnerable life of the planet. Similarly, this project offers the discipline of psychology another reversal. It illustrates what is possible when what is thought of as “out there” and alien to human experience (the world, the planet, elements, substances, even body) are interiorized into the territories of human experience. Ultimately, this situates this project in the lineage of phenomenological psychology, which as a whole has done wonders to make sure that which is thought of as intimately human cannot be taken out of the world. Yet, this project uses other means to follow in this lineage. The human-element matrices and elemental traumas are the means this boundary dissolution between interior and exterior is achieved.

Lastly, this dissertation is also meant to offer a contribution back to the participant-households that made it possible in the first place. Qualitative research with sociopolitical relevance contains an ethical stance towards study participants to not blindly represent their narratives without a larger commitment to lasting relationships or further attempts to benefit their lives. This first iteration of this movement for this project will be to provide each participant-household with a record of their interview transcripts used in this project. These transcripts will be organized into meaningful structures, and commentaries will be provided which thematically explore these transcripts, much in the way this dissertation did. This will provide participant-households with bound, handmade

oral histories of their experiences which they can use as they see fit. Following this, conversations will be hosted with participant-households as well as the Water Bank in order to determine future directions of interventions. These might include public speaking events, political actions such as rallies and protests, or more academic presentations designed to increase awareness of participant-household experiences of this elemental trauma.

### **Practices.**

As stated above, psychology largely (but not totally) continues to suffer under the attempt to define itself as occurring in the private, interior, individual space of the brain and the mind. While these efforts have yielded enormous advances in the understanding of both brain and mind, I would argue this dominant way of doing psychology is unsustainable for our planetary state of emergency. It is the psychologist, both in clinical and research roles, that can provide experiential accounts and meaningful psychological interventions to these shifting, dangerous planetary conditions. The psychologist, unlike other ‘natural’ or ‘social’ scientists, can bring a sensibility of depth and detail to the ways that cognition, emotion, behavior, ethics, and embodiment assemble to form human experience in relation to planetary change. This sensibility is based in an intimate relation to the unfolding, interpretive nature of human experience ‘from the side’ of the persons themselves as opposed to hierarchical relations which exploit representation without ethical imperative or response.

Psychological researchers, of both qualitative and quantitative methods, must come to realize the ways that various assumptions of their field—such that humans can

be studied outside of context and hence outside of ecosystems—are actually ideological notions contributing to the destruction of this planet. If a human being can be studied outside of the eco-context of their lives, the various folds and layers of this context, such as their access to useable drinking water or breathable air, take on a negligible role in the importance of human lives. Tremendous advances have been made integrating cultural context into the study of human lives with still more to go. This rigor, nuance, and robust sensitivity must now be turned towards these eco-contexts lest psychology become yet another re-enactment of destruction the sciences contribute to the planet. Perhaps there was a time where psychology, like other disciplines of science, could afford to make this error. That was a previous planetary epoch. Psychology, if it is truly to be placed at the service of studying of human lives, can no longer afford this error.

Hence, psychological researchers must ultimately grapple with the seen and unseen ethical dimensions of their work. Research methodologies must extend to include not simply human beings, but human beings in relation with the world, with ecologies, with nonhuman beings as well. Methodology must not simply be used to penetrate into what is deemed the essence of inner mechanisms of mind, but grasp for richer understanding of the inter-nets of swarming relationships that *thickly surround* human beings. This powerful widening of the scope of psychological research not only fits the ethical planetary call to action, but the ways that technology has changed human relations as well. It is just as ruthlessly neglectful to attempt to study human lives outside of their eco-contexts, as it is to study human lives outside of their social media spheres. These are just two major ways that all evidence points to the dissolution of the individualistic notions of selfhood formed on false notions of interiority. Psychological researchers

confront entire new horizons of understanding (and lack of understanding!) when allowing these contemporary, planetary shifts into their points of view.

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