

Spring 5-7-2014

Environmental Disasters and Policy: Fear Prompts Awareness

Ashley K. Dunn

Fordham University, adunn7@fordham.edu

Follow this and additional works at: https://fordham.bepress.com/environ_2014

Part of the [Environmental Sciences Commons](#)

Recommended Citation

Dunn, Ashley K., "Environmental Disasters and Policy: Fear Prompts Awareness" (2014). *2014 Student Theses*. 6.
https://fordham.bepress.com/environ_2014/6

This is brought to you for free and open access by the Environmental Studies at DigitalResearch@Fordham. It has been accepted for inclusion in 2014 Student Theses by an authorized administrator of DigitalResearch@Fordham. For more information, please contact considine@fordham.edu.

Environmental Disasters and Policy: Fear Prompts Awareness

Ashley Dunn
Fordham University

Abstract

The affect that environmental disasters have on public attitudes directly affects policy-making. This paper explores the implications and results of disasters on environmental policy-making. Various disciplines shed light as to why a disaster can spur awareness. One finding is that disasters directly threaten individuals' lifestyles and possibly lives, which promotes higher public involvement.¹ The use of environmental psychology explains why people tend to ignore environmental problems until they become imminent and personal. Environmental history sheds light upon particular instances of environmental disasters. The three major environmental disasters covered are the *Exxon Valdez* Oil Spill in Prince William Sound, Alaska, the Love Canal in Niagara Falls, and Hurricane Katrina in New Orleans. An exploration of environmental policy, and environmental public opinion, reveals the importance of understanding the way people view environmental issues. Finally, a discussion of environmental education criteria and policies is used to support the view that a reevaluation of environmental education is needed. A conclusion is reached that better environmental policies and education are of prime importance.

¹ Skanavis, Constantina, George Koumouris, and Vassiliki Petreniti. 2005. "Public Participation Mechanisms in Environmental Disasters." *Environmental Management* 35, no. 6: 821-837. *Environment Complete*, EBSCOhost

Table of Contents

Introduction	4
1. Environmental Stupor: Waiting on Disasters to Spur Awareness	5
2. Environmental Psychology: Blindness Regarding the Environment	14
3. Environmental History: Disasters and Reactions	25
The Love Canal	26
The Exxon Valdez Oil Spill.....	29
Hurricane Katrina	33
4. Environmental Policy, Public Opinion, and Education	38
Environmental Policy and Public Opinion.....	38
Environmental Education	40
5. Conclusion: Educate Society Awake.....	50
Bibliography.....	55

Introduction

Environmental disasters have a way of influencing environmental policy-making. Environmental policy-making is also strongly influenced by public participation. Public participation becomes more apparent in particular major environmental disasters. The lack of any disastrous events tends to leave a gap in any policy promotion. Disasters directly threaten individuals' lifestyles and possibly lives, which promotes higher public involvement.² It takes this direct hit at home to shock awareness into people and take notice of what is going on around them. To illustrate this, major environmental disasters such as the Exxon Valdez Oil Spill in Prince William Sound, Alaska, the Love Canal in Niagara Falls, and Hurricane Katrina in New Orleans are discussed. In these cases people's lives were threatened and so they acted, albeit in different ways, to prevent it from occurring again. The disciplines of environmental psychology, environmental history, environmental policy, and environmental education are used to further analyze the disasters and the reactions that followed.

The basic issue this paper is evaluating is that individuals need a shocking factor such as environmental disasters to make them aware. The psychological perspective is of prime importance in order to understand what it is that motivates individuals in caring or not caring about the environment. People have a way of only placing importance on what they feel affects their lives while considering everything else to be another person's concern. It also plays a major role as to why people choose to ignore environmental

² Constantina Skanavis, George Koumouris, and Vassiliki Petreniti. 2005. "Public Participation Mechanisms in Environmental Disasters." *Environmental Management* 35, no. 6: 821-837. *Environment Complete*, EBSCOhost

problems until it knocks on their front door. Why is it that no one pays attention until it is his or her way of life being ripped apart?

The history behind environmental disasters will help establish how disasters shake individuals awake and push them into an environmental activism phase. Environmental disasters have shock value that force people to be aware of what is happening around them. It also makes them consider a way to fix the problem and hopefully prevent it from happening in the future. In this scenario, individuals tend to work together to form new ideas and promote new legislation to aid their cause. This history directly ties into the legal framework of not only individual policies, but also any preventative measures taken before and after a disaster has occurred. It serves to explore evident responses that occurred after disasters.

In considering past environmental disasters and the effects on society, particularly their environmental awareness and activism, it is important to discuss public opinion. The opinion and perspective of the public is highly affected by events that occur in their neighborhoods or nearby. Along with public opinion, it is necessary to evaluate policies that are in place or should be formulated. It is of equal importance to note environmental education. One of our strongest weapons against environmental degradation is to educate society and help them become aware of the environment they live in; with proper education it may be possible that society will not need disasters to shake away their blindness.

Chapter 1. Environmental Stupor: Waiting on Disasters to Spur Awareness

Every day individuals make decisions without realizing they are affecting the environment. From getting ready for work, to buying dinner at the grocery store, people

make an irreversible impact. They tend to ignore this impact as they make decisions on how to go about their daily lives. Even when scientific data offers evidence of human activities causing detrimental environmental issues, many people choose to believe nothing is happening. It is imperative to motivate the public to not only learn, but also understand, how their lifestyle is completely intertwined with the environment.³

Individuals have a way of living however they want. In the face of any complications, they have no problem reasoning with themselves that “someone else is taking care of it” or that there is no problem to be considered. When it comes to the environment and its many resources people tend to get tangled in a web known as the tragedy of the commons. The tragedy of the commons is an economic theory that was developed by Garrett Hardin.⁴ This theory is that individuals act in their own self-interest against an entire group’s interest by depleting a common resource. Common resources include resources such as the earth’s atmosphere, oceans, parks, and fish stocks.

Contemplate a group of fishermen catching fish in the same area of the ocean. If all of the fishermen overharvest this area, the amount of available fish will soon decline and possibly disappear. If this happens, consumers would then suffer from lower amounts of fish, if there are any fish left. It is therefore in the common interest of consumers to not overharvest the fish supply. If there is a lack of regulation and/or regulation enforcement, consumers of a particular resource do not consider what is best overall. Instead, they consider what is best for them and figure they need to catch as many fish as possible. In their own minds they must gather as many fish as possible otherwise someone else will

³ "Environmental Literacy Knowledge for a Healthier Public," *Environmental Health Perspectives*, 115, no. 10 (2007): A494-A499

⁴ Hardin, Garrett. "The Tragedy of the Commons." *Science* 162: 1243-1248. (accessed April 28, 2014).

do the same thing. This type of self-preservationist rationale leads to the behavior of people trying to harvest before another person. This is done regardless of the impending depletion of a resource.⁵ It also means that people are too busy being concerned with themselves and their own success that they fail to see the depletion of resources throughout the environment. They would rather take more than they need before someone else might do the same thing. Individuals become more important than a community as a whole. People believe that it is more important to gather resources for themselves than to ensure a supply of resources for society as a whole or for generations to come.

An example of the failure to notice depleting resources is the case of the Northern Spotted Owl. These owls make their homes in the old growth forests of the Pacific Northwest. These old growth forests are largely used for logging purposes. Loggers in this area depleted the old growth forests to a level in which the Northern Spotted Owl became a threatened species.⁶ This happened because the owl only builds its homes within these forests. At a basic level, the case of the Northern Spotted Owl became an argument between jobs and the environment. The survival of a species was hanging in the air as groups debated over whether it is more important to protect the world's species or regional economies.⁷ The issue people failed to see, however, is that they had already taken such a large amount of trees from the area that species could no longer survive. Loggers claimed they were utilizing sustainable practices because they

⁵ Jared Diamond, *Collapse: How Societies Choose to Fail or Succeed*, (New York: Penguin Group, 2011), chap. 14.

⁶ Clark, Darren A., Robert G. Anthony, and Lawrence S. Andrews. "Relationship between wildfire, salvage logging, and occupancy of nesting territories by northern spotted owls." *Journal Of Wildlife Management* 77, no. 4 (May 2013): 672-688. *GreenFILE*, EBSCOhost

⁷ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 7.

also planted new trees, but the issue was that it would take years for these trees to reach the heights of the old-growth forest. The focus was too heavily placed on the issue of how people would make money instead of the fact that they were destroying the ecosystem of the old growth forest. Individuals were more concerned with making a living by logging than with the effect they were having on the area around them. They were blind to the fact that they were harming the very ecosystem that provided them trees to make their money. Perhaps if there was more knowledge amongst the community who fought to continue their logging practices, there would not have been an issue of survival. The loggers were narrow-sighted in trying to maintain economic stability without attempting to incorporate the survival of the owl species. Their opinion of the environment around them was solely resource-based.

An important influence on the attitudes individuals have regarding the environment is objective environmental conditions. For example, it has been found that people who live in cleaner areas express weaker environmental concerns than those individuals who are living in highly polluted areas.⁸ When living in a clean area, people choose to believe that everyone lives in such conditions. There are also people who simply are not concerned with the conditions other people are living in. In fact, they often claim that living in bad environmental conditions is a choice of those people. It is a failure on their behalf for not trying harder to a) live in a cleaner area or b) take better care of the area. Additionally, when issues appear to be threatening they are viewed as

⁸ Martin Johnson, Paul Brace, and Kevin Arceneaux, "Public Opinion and Dynamic Representation in the American States: The Case of Environmental Attitudes," *Social Science Quarterly (Wiley-Blackwell)*, 86, no. 1 (2005): 87-108

“morally, physically, socially, economically, religiously, and otherwise unacceptable”⁹ to individuals.

Research has found that when their way of life has been threatened, citizens will voluntarily participate in a community activity. This is because many people seem to view the environment as being “way over there” and far displaced from their everyday lives. People hear about some issue displaced from their everyday lives and shrug it off because they do not consider it to be of importance to their survival. When they feel as though the environment may be threatening their safe way of life, they decide something needs to be done – something must be very wrong if there is a problem where they live. This relates to the fact that people fail to realize how intertwined their lives are with the environment. It is relatively easy to hear about environmental problems in a faraway place and disregard them. When it becomes their own town, city, or state and there is a chance that their loved ones may be in danger, people choose to take notice. If, however, the problem can be disregarded in any capacity, many people still choose to act as though everything is fine. It is too stressful for an individual to worry about what might be happening in the environment if he or she cannot be sure that the sources they follow are correct.

Another issue when it comes to environmental problems is that people may be aware or afraid of certain problems, but have an extreme lack of understanding. This is a problem of disinformation and “diseducation”. An example of an environmental problem often misunderstood is that of climate change. The greenhouse effect is actually a natural

⁹ Constantina Skanavis, George A. Koumouris, and Vassiliki Petreniti, "Public Participation Mechanisms in Environmental Disasters," *Environmental Management*, 35, no. 6 (2005): 821-837, 10.1007/s00267-004-0120-z

process of the environment. The Sun emits energy to the Earth in the form of light rays such as Ultra Violet (UV). Most of this light passes through the atmosphere with around half being absorbed at the Earth's surface. The rest of the light is reflected back toward the sun or absorbed by the earth's atmosphere. The heat that is in the atmosphere helps to warm the surface. This trapping of heat is the reason that life is able to thrive on this planet. Without the warmer temperatures of the Earth, water would not be available and life would not exist. The issue concerning greenhouse gases is that they are adding more heat to the greenhouse effect than the Earth needs to maintain temperatures that allow life to exist. Three major greenhouse gases (GHGs) involved in the greenhouse effect are carbon dioxide, methane, and ozone. These greenhouse gases absorb sunlight and trap excess heat in the atmosphere leading to global warming.¹⁰ The process of greenhouse effect is not the problem. The real issue is the rate at which heat is being trapped within the greenhouse in comparison to how much heat is being released; there is too much heat being maintained while there is not enough being released. As a result of an overly hot greenhouse, the Earth is becoming warmer than it has in the past and we are experiencing higher global temperature averages. This is mainly occurring due to an increase in human activities that emit such gases. The issue with people understanding the problem is that they are misinformed and led to believe that the greenhouse gas effect is a natural process and scientists are merely exaggerating the effects.

Considering that this issue of global climate change has become one of the most prominent environmental issues across the world, it is extremely important to evaluate

¹⁰ Jared Diamond, *Collapse: How Societies Choose to Fail or Succeed*, (New York: Penguin Group, 2011), chap. 16.

and understand how citizens feel about the issue.¹¹ The National Survey of American Public Opinion on Climate Change (NSAPOCC) found in 2008 and 2009 that while a majority of Americans are concerned about the impacts of climate change, the public's understanding of the issue is less developed.¹² It is a positive note that public opinion research in the United States seems to indicate a general acknowledgement of global temperature increase. The obvious misconceptions related to the issue, however, present the problem that while fear has pushed people to be aware of climate change, they still lack the proper understanding of the issue and will most likely not take preventative measures. A major aspect of this misinformation is a global campaign that has been supported by fossil-fuel companies.¹³ This campaign has not been made from a small effort; it has been very well-funded and very successful. The main reason behind the campaign has been to discredit the scientific claims made in regards to climate change. By doing so, the goal has been to create doubt and unsurety in the face of climate change. Major companies such as ExxonMobil, an international oil and gas company, and Koch Industries, a multi-national group of companies involved in trading, gas, energy and other related resources, have funded climate change denial. This process of offering stories of science discretization is a phony act of desperation. It is because of the many millions of dollars companies have poured into this misinformation frenzy that most people do not have the proper information to conclude that climate change is real. People continue to

¹¹ Christopher P. Borick, "American Public Opinion and Climate Change," chap. 2 in *Greenhouse Governance Addressing Climate Change in America*, ed. Barry G. Rabe

¹² Christopher P. Borick, "American Public Opinion and Climate Change," chap. 2 in *Greenhouse Governance Addressing Climate Change in America*, ed. Barry G. Rabe (Washington, D.C.: Brookings Institution Press, 2010).

¹³ Hewitt, William. "Do You Accept the Science of Climate Change [Excerpt]." *Scientific American*, December 14, 2012.

think that the scientific community has failed to reach a consensus regarding the issue of climate change because of the fact that these companies harp on scientific uncertainty.

This uncertainty, however, is the room that all science leaves for the fact that science is never one hundred percent certain. Despite the fact that scientists have spoken out regarding climate change for many years, outwardly stating that they have evidence, those who are in denial continue to speak of climate change as an ongoing debate.

William Hewitt quotes a Princeton University scientist, Michael Oppenheimer, as saying that those fighting against the idea of climate change have leveled the scientific understanding of climate change to that of political opinion.¹⁴ In doing so, it makes it that ‘everybody’s opinion is equally valid. There are no facts...there is no extra validity to action on environmental problems that not acting.’¹⁵ This is interesting because it means that these large companies have managed to discredit scientists and turn a major environmental issue into a simple matter of opinion. Doing so increases the likelihood that individuals choose to believe in climate change based on their personal experience. They live their day-to-day lives, experience more cold weather, and wonder how anyone could think global warming or climate change is possible. They fail to realize that climate change is a gradual process over time and not as evident in day-to-day weather.

McCright and Dunlap note that the American conservative movement has played a primary role in the countermovement against environmentalism and climate change in

¹⁴ Hewitt, William. "Do You Accept the Science of Climate Change [Excerpt]." *Scientific American*, December 14, 2012.

¹⁵ Hewitt, William. "Do You Accept the Science of Climate Change [Excerpt]." *Scientific American*, December 14, 2012.

particular.¹⁶ They also argue that conservative think tanks are the “most influential anti-environmental countermovement organizations at the national level.”¹⁷ These think tanks have been an important player in the movement since the late 1970’s and have been able to alter policies concerning the environment. This influence has extended to the issue of climate change because it views government enacted environmental protection as a threat to economic libertarianism.¹⁸ More importantly, the concept of climate change challenges the way of life in America. Proposed government action such as an international treaty to decrease harmful emissions is a threatening idea for the conservative movement. This type of regulation would threaten economic growth and the free market and so they tend to put much of their support behind three major claims against climate change: One, the evidence offered to support the existence of climate change is not enough, or completely wrong, two, if it ever occurred, the net effect of global warming would be beneficial, and three, the proposed regulations for counteracting global warming are more harmful than beneficial. This movement has turned the issue of climate change into a social problem of large proportions that is not worthwhile to act against.

The many efforts to change the public’s opinion on environmental issues and question the reliability of scientific claims are a large part of why environmental disasters are key motivators behind environmental involvement. Disasters force individuals to look

¹⁶ McCright, Aaron M., and Riley E. Dunlap. "Defeating Kyoto: The Conservative Movement's Impact on U.S. Climate Change Policy." *Social Problems* 50: 348-373. (accessed May 2, 2014).

¹⁷ McCright, Aaron M., and Riley E. Dunlap. "Defeating Kyoto: The Conservative Movement's Impact on U.S. Climate Change Policy." *Social Problems* 50: 348-373. (accessed May 2, 2014).

¹⁸ McCright, Aaron M., and Riley E. Dunlap. "Defeating Kyoto: The Conservative Movement's Impact on U.S. Climate Change Policy." *Social Problems* 50: 348-373. (accessed May 2, 2014).

at what is actually happening around them and consider the impacts of the environment. They do not, logically, have the luxury of ignoring the effect they have on nature if a hurricane tears through their town. There are many factors to consider when making a decision on certain proposed issues and it is generally easy to place ideas of doubt in public views of environmental issues. The way that anti-climate change efforts have been able to propose the question of, if climate change is real instead of what should be done about climate change, is an important example.

Chapter 2. Environmental Psychology: Blindness Regarding the Environment

The interdisciplinary field of environmental psychology explores how “physical spaces influence the way people feel, think, and interact with the world and vice versa.”¹⁹ Professionals who work in this field study architecture, wildlife, climate change, and many other things to try and understand the ways in which various environments influence human behavior. As a result of doing so, they begin to recognize relationships as well as new methods for things such as identifying stressful designs and the effects of being outdoors versus inside on children and their development. This field started in the 1960s as a response to the general feeling that human environments had not been planned, designed, or built in the optimal way for humans.²⁰ Researchers in disciplines such as architecture and sociology responded to claims but psychologists were reluctant. Individuals such as William Ittelson, Leanne Rivlin, and Harold Proshanky decided to make a response and formed an environmental psychology program at the City

¹⁹ Sussex Publishers, LLC. "Environmental Psychology." *Psychology Today: Health, Help, Happiness + Find a Therapist*.

<http://www.psychologytoday.com/basics/environmental-psychology>

²⁰ Gärling, Tommy. "Past and present environmental psychology." *European Psychologist* 19, no. 2 (2014): 127-131. *PsycARTICLES*, EBSCOhost

University of New York. There were also other pioneers, but during this time the effects human behavior had on the environment were not well known.

The discipline of environmental psychology applies to my proposed issue in multiple ways. One such way is exploring how people are blind towards environmental issues. Why is it that people need things to hit home in order to care about it? An example of a problem related to this blindness is psychological denial. “If something you perceive arouses... a painful emotion, you may... deny your perception... to avoid the unbearable pain, even though the practical results of your perception may prove ultimately disastrous” (Diamond, 435). The painful emotions tend to be terror, grief, and anxiety. People utilize psychological denial through the repression of a frightening experience and in avoiding issues that are easy to push away and dissociate from a person’s self. One way in which individuals use this denial when it comes to the environment is when they read or hear about potential environmental problems. Imagine news reports and pictures about starving children in Africa or other related issues. People can hardly deal with hearing about such issues because they prefer to pretend it is not happening. They would rather push the information aside as though it is a mere exaggeration or it is too far away for them to waste precious time caring about someone else’s problems. They may also believe that their effort would not make a difference. Besides, they have their own problems and the starving children in a faraway place are not worried about helping them. The issue does not resonate on a personal basis.

In the case that potential environmental issues seem too frightening to consider, people will pretend it is not or cannot be happening. People often do not understand what is happening or refuse to believe that it is possible. One reason this happens is because

individuals do not understand the scientific backing behind claims of issues such as environmental degradation. Instead, they choose to believe that scientists are simply never a hundred percent correct. As observed by the APA, and discussed below, there are many psychological barriers that prevent people from taking action.²¹

A prime example of questioning the validity behind scientist's claims is the case of climate change, an issue that attracted attention in 1988.²² A National Aeronautics and Space Agency (NASA) scientist, James Hansen, reported to Congress that he was ninety-nine percent positive the greenhouse effect was changing the earth's climate. This statement led to the formation of the Intergovernmental Panel on Climate Change (IPCC). Since then, the IPCC has reported multiple times, each time being more certain, that the GHG emissions from human activities are causing detrimental changes in global climate.²³ By the early 1980s, scientists were clearly stating their concern regarding global warming. In 1983, the Environmental Protection Agency (EPA) released a report that such climate change will cause issues for environmental, economic, and political systems.²⁴ Even with such reports being released throughout the 1970s and 1980s, there was little response from the United States. A few weather incidents were what alerted the public to the idea of climate change. The result of this attention was political support for participating in UN-sponsored studies to understand climate change and what may come

²¹ The American Psychological Association Task Force on the Interface Between Psychology and Global Climate Change, "American Psychological Association." <http://www.apa.org/science/about/publications/climate-change-booklet.pdf>.

²² Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 10.

²³ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 10.

²⁴ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 10.

of it. As scientific understanding of the issue increased, the mobilization of powerful interests opposed to climate change also increased. The opposition used their influence to guide the public's attention towards the uncertainty of scientific findings, as well as emphasize the economic consequences of enacting climate change policies.

The efforts of powerful opponents of climate change policy effectively undermined any support for climate change policies as it increased the public's wariness towards the reliability of scientific claims.²⁵ As a result, more people began to question whether or not climate change is actually an issue to be concerned about. It also did not help that large opponents of climate change policies proposed the idea that if global warming was real in any way, it was nowhere near as serious as scientists stated. The more this happened, the more individuals questioned their understanding of climate change and placed their focus on the threat of economic collapse. This shows how, in order to draw the public's attention, the public needs to be positive that they can trust what they are being told and a compelling story needs to accompany the issue. People need an interesting reason to focus on an issue and they need to trust that they are being told correct information. Otherwise, they simply chalk it up to something that does not concern them or something that their action would have no influence on.

A report by the American Psychological Association (APA) used the issue of global climate change as a way to study how people address a multifaceted issue along with a varying set of challenges. They used the issue of addressing climate change because it is a pressing task that humanity is facing. The main purpose of the report is to engage the psychological community with the issue. The researchers explore the

²⁵ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 10.

contributions of psychology to the issue by evaluating multiple questions: One, how do people understand the risks imposed by climate change? Two, what are the human behavioral contributions to climate change and the drivers of these contributions? Three, what are the psychological impacts of climate change? Four, how do people adapt to and cope with perceived threat and unfolding impacts of climate change? Five, which psychological barriers limit climate change action? And six, how can psychologists assist in limiting climate change?²⁶ These questions are ones that can be easily applied to all issues of the environment and their corresponding psychological aspects.

In regards to environmental issues such as climate change, concern in the United States averages at a low number. This is mostly because things tend to be evaluated based on personal experience. It is not until an event occurs in a person's recent memory that they contemplate the possible risks.²⁷ The APA found that many people believe climate change risks to be uncertain and distant, both in time and location. These observations lead people to disregard any concern they may have had and not consider the risks. This finding also applies to other environmental issues. Emotionally, reactions to climate change influence risk perception, but the natural aspect of climate change tends to lead to conflicted emotions. People tend to feel as though any natural process like climate change is beyond their control. These feelings apply to various issues regarding the environment such as environmental disasters.

²⁶ The American Psychological Association Task Force on the Interface Between Psychology and Global Climate Change, "American Psychological Association." <http://www.apa.org/science/about/publications/climate-change-booklet.pdf>.

²⁷ The American Psychological Association Task Force on the Interface Between Psychology and Global Climate Change, "American Psychological Association." <http://www.apa.org/science/about/publications/climate-change-booklet.pdf>.

Actions that affect climate change, as well as the environment in general, include the demands of the public to accommodate population growth. The benefit of psychologists here is that they can assist in understanding predictors of such driving forces.²⁸ They can also evaluate which behaviors contribute to various issues. In regards to psychosocial impacts of issues such as climate change, studies need to be done for different circumstances. Then there is the issue of how people adapt and cope in regards to perceived threats and existing impacts of environmental issues. As with climate change, adapting and coping are ongoing processes. Some psychological processes include “sense making; causal and responsibility attributions for adverse... impacts; appraisals of impacts, resources, ... possible coping responses; affective responses; and motivational processes.”²⁹ These processes are also influenced by a variety of other inputs such as the way media represents an issue and the discussion that takes place amongst social groups. Additionally, the influence of individual, as well as cultural, variation influences these various aspects. Such influences provide new context and values amongst other things.

In answering which psychological barriers limit action for climate change, the APA found that many barriers, psychological and social, block action that would assist in limiting climate change progression. While there are many people who take action, there are also many people who do not know of the problem. Then there are others who are not clear on the facts, do not trust experts, think the problem is occurring somewhere else, or

²⁸ The American Psychological Association Task Force on the Interface Between Psychology and Global Climate Change, "American Psychological Association." <http://www.apa.org/science/about/publications/climate-change-booklet.pdf>.

²⁹ The American Psychological Association Task Force on the Interface Between Psychology and Global Climate Change, "American Psychological Association." <http://www.apa.org/science/about/publications/climate-change-booklet.pdf>.

believe that they cannot change anything. There are other beliefs, but they all also apply to other environmental problems. They do not only apply to climate change.

Psychologists are able to study and work on further understanding of the reasons psychological barriers are put up in prevention of acting against environmental issues. Another finding is how psychologists may assist in limiting climate change and other issues. The discipline of psychology can help understand behaviors that drive issues through different ways such as empirical analyses and offering a deeper understanding of behavior.³⁰ An important aspect of psychology is being able to study and understand action at the individual level. For example, it helps evaluate why people do or do not respond to particular messages, information, and incentives.

Ordinary individuals tend to rely on readily available processing in comparison to scientists who study events based on analytic processing. If society's perceptions of risk were instead driven by means of analytic considerations, their decisions would be based on different information. Instead, reports regarding instances such as mad cow disease are much more affective at attracting attention than reports of Creutzfeld-Jacob disease, which is a more scientific label for the exact same disease.³¹ This may be because the term "mad cow disease" is something that people feel they can understand. "Mad cow" is obviously something to be avoided and it must mean that this disease is harmful. It is also a catchy name that would prompt people to read more about the possible issue.

³⁰ The American Psychological Association Task Force on the Interface Between Psychology and Global Climate Change, "American Psychological Association." <http://www.apa.org/science/about/publications/climate-change-booklet.pdf>.

³¹ The American Psychological Association Task Force on the Interface Between Psychology and Global Climate Change, "American Psychological Association." <http://www.apa.org/science/about/publications/climate-change-booklet.pdf>.

Creutzfeld-Jacob disease, on the other hand, may appear too difficult to comprehend and individuals may choose to ignore any relevant information.

The most effective way to raise risk perception throughout society is to find a balanced interaction involving analytically accessing problems, along with a degree of emotion and care. This means that while it may still be more effective to utilize terms such as “mad-cow disease”, the public should be able to interpret relevant information and not simply ignore news of a problem because it seems too difficult for them to comprehend. This would eliminate the barrier of not comprehending the issues at hand. It may also lift the barrier that individuals’ actions cannot have an effect on things or that the problems are only far away. Individuals should exhibit an emotional reaction to scientific reports. It should affect individuals when they read that the world is experiencing detrimental changes such as climate change and a high rate of biodiversity loss. Their initial reaction should not be to ignore it or deny reality. Instead, they should be educated enough to understand the true results of such issues. Also, society should at least have a basic understanding of the importance of various ecosystems and resources for human existence. Thus, in order to interpret relevant information regarding the environment, the way information is processed needs to be changed. This can be done through education.

Emotional reactions are an important factor when it comes to risk and risk perception. As mentioned, an individual’s perceived ability or inability to do something about an issue is also important.³² There are many reasons as to why people choose to

³² Linda Steg, and Charles Vlek, "Encouraging pro-environmental behaviour: An integrative review and research agenda," *Journal of Environmental Psychology*, 29 (2009): 309-317

ignore particular facts while they become highly frightened by others. For example, individuals tend to turn a blind eye towards the future and anything remote. This is why environmental disasters on the “home front” tend to drive individuals into action.

Psychologically, whether or not people feel threatened by an event is a key motivator in whether or not they spring to action.³³ A severe emotional experience is often accompanied by multiple bodily changes.³⁴ Also, elements of surprise and mystery come with any strong emotional feeling. An example is when a person experiences fear. In this case, multiple feelings mix within that person and it is not surprising for them to consider or participate in desperate acts such as those of violence.³⁵ Fear is usually provoked when a person is in the presence of danger or perceives him/her to be threatened. In response to this emotion, people react by feeling the need to run away (flight) or to stay (fight). Thus, a person may run or become aggressive and have the impulse to attack. This is related to the law of self-preservation where certain internal changes make us stronger and more capable in times of peril.³⁶ In the face of danger, it is a natural and primitive response to plant our feet and fight against whatever is threatening to hurt us. It makes sense then that a disaster would motivate individuals to respond and take preventative action against such events occurring again.

³³ The American Psychological Association Task Force on the Interface Between Psychology and Global Climate Change, "American Psychological Association." <http://www.apa.org/science/about/publications/climate-change-booklet.pdf>.

³⁴ Walter B. Cannon. "What Strong Emotions Do to Us." In *Readings in general psychology*, 146-157. New York, NY US: Prentice-Hall, Inc, 1949. *PsycINFO*, EBSCOhost.

³⁵ Walter B. Cannon. "What Strong Emotions Do to Us." In *Readings in general psychology*, 146-157. New York, NY US: Prentice-Hall, Inc, 1949. *PsycINFO*, EBSCOhost.

³⁶ Walter B. Cannon. "What Strong Emotions Do to Us." In *Readings in general psychology*, 146-157. New York, NY US: Prentice-Hall, Inc, 1949. *PsycINFO*, EBSCOhost.

Another aspect of blindness is people's tendency to avoid nature and pretend it is simply something "way out there." This type of behavior is known as biophobia and is becoming more apparent among individuals raised with a high presence of things such as television and video games. Malls, freeways, and settings where nature is merely used as decorations are another factor.³⁷ More often people prefer to be in man-made environments opposed to nature. Nature is being seen as something that is simply uncomfortable, inconvenient and scary. This is mostly because it cannot be controlled. The real issue is that people have a higher desire to spend time inside with technology instead of outside in nature.

Biophobia can also include individuals who choose to see nature merely as a resource to be used for human purposes.³⁸ Opposite of biophobia is biophilia: an urge to interact with other life forms.³⁹ Earlier civilization did not have a choice other than interacting with nature; their orientation was naturally biophilia. This is not the case today. Instead, people today need to make a choice between biophobia and biophilia. One reason humans have lost touch with nature is because technologies, as well as science, have given us the power to destroy anything blocking development. They have also disengaged us from knowing the damages that result from such destruction.⁴⁰ In this way, we have been able to separate nature from our technologically filled lives and pretend as though it is only there for our own use. Thus, part of the reason fear is needed to promote

³⁷ David W. Orr, *Earth in Mind On Education, Environment, and the Human Prospect*, (Washington: Island Press, 1994), chap. 20.

³⁸ David W. Orr, *Earth in Mind On Education, Environment, and the Human Prospect*, (Washington: Island Press, 1994), chap. 20.

³⁹ David W. Orr, *Earth in Mind On Education, Environment, and the Human Prospect*, (Washington: Island Press, 1994), chap. 20.

⁴⁰ David W. Orr, *Earth in Mind On Education, Environment, and the Human Prospect*, (Washington: Island Press, 1994), chap. 20.

awareness in society is that individuals are otherwise psychologically blocked from seeing serious problems in the world. A disaster temporarily pulls people out from a technology bubble into reality where society is taking advantage of the environment.

Tommy Gärling offers commentary and explanation on multiple papers concerning environmental psychology and the idea of changing the environment to increase the well-being of humans versus changing people and their behavior for the good of the environment. He argues that there has been a change from promoting the change of the environment to changing human behavior because of more recent concerns of the destruction of the environment. Most of environmental psychology focuses on changing people and their behavior rather than changing the environment. In earlier research concerning this field, researchers felt that the best way to change behavior is to change the environment. Gärling ponders four questions. One of those questions is what is the relation between changing behavior and changing people and another is what is rational.⁴¹ These questions are important in studying the reaction people have to threatening cases of environmental disasters. It also confronts the question of why people only respond to particular things.

Everyone has a different way of relating to the environment around them; they have different intensities and different bonds.⁴² Thus, some people value different areas and parts of nature than others; they love what they know. In order to aid the environment, we need to ensure that individuals develop a deeper attachment beyond their immediate surroundings. There should be no reason for denial as everyone should

⁴¹ Gärling, Tommy. "Past and present environmental psychology." *European Psychologist* 19, no. 2 (2014): 127-131. *PsycARTICLES*, EBSCOhost

⁴² David W. Orr, *Earth in Mind On Education, Environment, and the Human Prospect*, (Washington: Island Press, 1994), chap. 20.

be fully aware of what is happening in the world. Society needs to love the environment enough that they are willing to save it from themselves.

Chapter 3. Environmental History: Disasters and Reactions

The disciplines of environmental history concern the study of human interaction with the natural world over time. It is different from other historical aspects because it is largely concerned with the way humans shape the environment and how the environment shapes them. This discipline can incorporate multiple views and findings from other disciplines such as science and economics in order to further analyze its subject.⁴³ As a whole, the discipline incorporates these other views to produce a more comprehensive history of environmental issues in history. In this paper, it is being applied to specifically look at the history of past environmental disasters in the United States and how they shook members of society awake.

Events that hit home and make people aware of the risks that are facing them are powerful motivators for change. Many of these events are environmental disasters. These disasters “can be caused by either natural or human forces...[and] have important impacts on the welfare of human societies, and substantial resources are commonly devoted to promptly counteract their effects.”⁴⁴ The environmental disasters of Exxon-Valdez, the Love Canal, and Hurricane Katrina are a few disasters that spurred strong reactions from the public. It is important to note the particular case of each disaster including when and where it occurred along with the damage incurred as a result. The public’s reaction to

⁴³ Atkinson, James. "Environmental History." *Environmental History Review* 16, no. 1: 5-8.

⁴⁴ Carmelo J. Leon, and Jorge E. Arana, "The Dynamics of Preference Elicitation after an Environmental Disaster: Stability and Emotional Load," *Land Economics*, 88, no. 2 (2012): 362-381,

each disaster along with whether or not it affected environmental policy is an indicator of the affects disasters have on environmental history.

The Love Canal. The environmental disaster of Love Canal occurred in Niagara Falls, New York and is associated with a large increase in pro-environmental votes.⁴⁵ The story truly began in the late 19th century. During this time, the New York State Legislature gave permission to William T. Love to build a canal in order to divert the Niagara River away from the falls.⁴⁶ The canal fell through and in 1920 it was sold at a public auction. In 1942, the Niagara Power and Development Corporation granted the Hooker Chemical and Plastics Corporation permission to dispose wastes in the canal. Then in 1947 the canal, along with surrounding land, was sold to Hooker. In the ten-year period between 1942 and 1952, 21,000 tons of toxic chemicals were dumped at the site. By then, it was nearly full and they covered the dumpsite with clay and earth. In 1953, the land was transferred to the Board of Education to build a school. Then by the 1970s, the area around the canal had become a full working-class neighborhood. Throughout the 1950s and 1960s, the residents complained to government about weird odors and afflictions, but no action was taken.

Love Canal became a national story in the 1970's as it caused disagreement and separation between citizens and their city, state, and country.⁴⁷ Addressing possible health hazards of the Love Canal, the area posed a threat to the economy and the city's

⁴⁵ Kahn, Matthew. 2007. "Environmental disasters as risk regulation catalysts? The role of Bhopal, Chernobyl, Exxon Valdez, Love Canal, and Three Mile Island in shaping U.S. environmental law." *Journal Of Risk & Uncertainty* 35, no. 1: 17-43. *Environment Complete*, EBSCOhost.

⁴⁶ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 7.

⁴⁷ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 7.

image. This event also shaped public attitudes in regards to abandoned toxic dumpsites, their risks, and the government's responsibility in cleaning the sites. Elected officials only responded when the media began to pay attention to the issue. This case is a prime example of the role of both science and scientific experts in controversies concerning public health. The way in which experts focus on objectivity can result in the alienation of any public who has felt threatened. This happens because the public perceives risks differently than experts. While experts focus on statistical analysis of events, the public incorporates many more aspects in their risk perception. Generally, the public's risk perception is based on general rules that appear to be common sense and more resistant to change regardless of scientific evidence.⁴⁸ A major motivator behind public awareness of the Love Canal was Lois Gibbs, a resident of the neighborhood. Gibbs' son had developed epilepsy after attending kindergarten in the school built over the dumpsite. She soon began going door to door with a petition to demand that the city do something about the danger of the school. She then developed the Love Canal Homeowners Association (LCHA) and it soon became the most visible citizen group of the time. Gibbs devoted herself to promoting the story of Love Canal; Hooker Chemical and Plastics Corporation dumped toxic chemicals that made people ill. She also spent her time pushing for the solution she thought was best: "evacuation and compensation for all the families in the area."⁴⁹

This disaster did not only affect the Love Canal residents. It also affected national politics because it created an open opportunity for new federal policy. It is a prime

⁴⁸ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 7.

⁴⁹ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 3.

example of how a relatively isolated event can cause a national response. Additionally, the Love Canal became the facilitator behind the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, commonly known as the Superfund Act,⁵⁰ which has been a great regulatory program. CERCLA established a system for identifying and neutralizing hazardous dumpsites.⁵¹ The development of this act definitively displays the importance of Love Canal in promoting attention towards hazardous waste dumps. Under this act, the EPA also received the ability to respond to hazardous emergencies and clean up leaking dumpsites if those responsible failed to take action. The act also responded to issues of corporate responsibility. It instituted “retroactive, strict, joint and several liability.”⁵² This means that any company that dumped hazardous waste became responsible for cleanup. Also, one company may be held responsible for an entire cleanup regardless of how much of the waste they dropped. This new approach to hazardous waste disposal placed responsibility onto those who polluted rather than the citizens stuck with hazardous waste sites. It also created an incentive for companies to consider alternative ways of dumping waste or at least dump less to avoid future costs. Surprisingly, Congress had passed CERCLA by a large majority.⁵³ The reason for this is motivation from the strong evidence of human health effects from toxic waste exposure. More importantly, they were strongly motivated by the

⁵⁰ Kahn, Matthew. 2007. "Environmental disasters as risk regulation catalysts? The role of Bhopal, Chernobyl, Exxon Valdez, Love Canal, and Three Mile Island in shaping U.S. environmental law." *Journal Of Risk & Uncertainty* 35, no. 1: 17-43. *Environment Complete*, EBSCOhost.

⁵¹ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 3.

⁵² Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 3.

⁵³ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 3.

strong public fear of toxic exposure effects. In the case of Love Canal and hazardous waste disposal sites, public interest in the matter had a major affect. Until this point, the government largely avoided the topic of regulating large industries. Citizens also avoided the possible effects of living near hazardous dumpsites in trusting that they would not be allowed to live there if it was unsafe. To enact CERCLA, Congress also went against the wishes of Chemical Manufacturers Association who of course opposed cleanup legislation.

The Exxon Valdez Oil Spill. The *Exxon Valdez* oil spill served as a pivotal event in the controversy over whether or not to drill for oil on the Coastal Plain of Alaska's Arctic National Wildlife Refuge (ANWAR). This particular debate is between those who want to look for oil in the refuge and those who want it to be off-limits to any and all development. It began after the Alaska National Interest Lands Conservation Act (ANILCA) was passed in 1980. The case is an argument between support for natural resource extraction and support for wilderness preservation. The interesting part of this case is the fact that not drilling in the area is the status quo and it tends to be easier to block policy change than pass new policies.⁵⁴

Not long after Congress passed ANILCA, two coalitions formed. One coalition supported the refuge being deemed wilderness and the other supported oil and gas development. Both sides presented the problem in ways consistent with their values.⁵⁵ Arguments from both sides had an impact on legislation. For example, environmentalists were able to nationalize the issue and enable non-Alaskan legislators to claim credit for

⁵⁴ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 5.

⁵⁵ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 5.

protecting the refuge. On the other hand, supporters of development insisted that opening the refuge would provide needed benefits through jobs and cheap oil. Those who supported protection of the refuge had an upper hand for three reasons: not drilling is the status quo, ANWR is under the jurisdiction of more than one Congressional committee, and the obscurity of energy policy makes it unappealing to those legislators who prefer to avoid opposition. Then in 1987, Congress began to discuss the merits of developing in the ANWR refuge. In 1989, such discussions were interrupted as attention was grabbed by the Exxon Valdez oil spill.

The *Exxon Valdez* oil spill occurred on March 27, 1989 when the *Exxon Valdez* supertanker ran aground in Alaska's Prince William Sound. The supertankers filled the Sound with close to 11 million gallons of oil.⁵⁶ The spill offered environmentalists an opportunity to make public the impact of the oil spill especially with news coverage of oil-soaked wildlife (see Figure 3.1 below).⁵⁷ Oil spills such as the *Exxon Valdez* are considered to be "one of the most highly visible and emotion-causing forms of ocean pollution."⁵⁸ It is hard for people to ignore the images associated with oil spills. Images of oil wildlife washing ashore and workers spending their time trying to clean what can be removed from a spill spread worldwide. In the case of *Exxon Valdez*, the news was filled with black, oily, otters and birds. Images also depicted the Alaskan environment, normally a bright and unsoiled white, covered in spilled oil from a tanker. These images served as evidence to the public of corporate incompetence and the dangers of having oil

⁵⁶ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 5.

⁵⁷ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 5.

⁵⁸ Thomas A. Birkland, "Wake of the Exxon Valdez: How Environmental Disasters Influence Policy," *Environment*, 40, no. 7 (1998): (1-9, 27-32)

tanks travel in these areas. The symbolic and emotional effect of these images show the public that something must be wrong and someone needs to do something about it so that it does not happen again.

Due to the spill and the emotions that came along with it, the debate over development in ANWR was pushed aside. Prior to the *Exxon Valdez* spill, oil spill laws were deadlocked over the lines between federal law and state law. Many years passed without any decisions being made. Also, once the Superfund Act was passed in response to the Love Canal, the problem of oil spills became less prominent in the public's minds. The oil spill policy that was in place was haphazard and ineffective. The two main statutes in place were the Ports and Waterways Safety Act of 1972 and the Federal Water Pollution Control Act of 1973 (FWPCA).⁵⁹ The Ports and Waterways Safety Act of 1972 authorized federal agencies to control vessels. This was to be done similar to how they control air traffic. It also remained a part of the Port and Tanker Safety Act of 1978 in response to the *Argo Merchant* spill in 1976 offshore of Nantucket.⁶⁰ Then, the main feature of FWPCA was spiller's liability for restoration and cleanup. Under a section of the act, the federal government monitors any cleanup necessary when the spiller cannot or will not take responsibility or if the spill is considered to be an act of God.⁶¹ This idea was kept when developing the Oil Pollution Act of 1990 (OPA 90), but the government was allowed to begin aggressive cleanup and then force the spiller to pay for the cleanup.

⁵⁹ Thomas A. Birkland, "Wake of the Exxon Valdez: How Environmental Disasters Influence Policy," *Environment*, 40, no. 7 (1998): (1-9, 27-32)

⁶⁰ Thomas A. Birkland, "Wake of the Exxon Valdez: How Environmental Disasters Influence Policy," *Environment*, 40, no. 7 (1998): (1-9, 27-32)

⁶¹ Thomas A. Birkland, "Wake of the Exxon Valdez: How Environmental Disasters Influence Policy," *Environment*, 40, no. 7 (1998): (1-9, 27-32)

The size and location of the *Exxon Valdez* spill is what led to the enactment of the federal Oil Pollution Act of 1990. It displayed that the policies in place had failed to prevent such disasters and provided an incentive for more strict oil spill policies. Regulation was enacted with the goal of giving oil shipping companies an incentive to put forth more precautionary spending and reduce the likelihood of future spills.⁶² The Oil Pollution Act was enacted eighteen months after the spill. This act ended a fourteen yearlong deadlock over how to improve oil pollution laws. OPA 90 consists of stricter penalties and liability for the parties who spill oil. It also allocates more resources for the cleaning of, and dealing with, any oil spills. Additionally, it places a higher level of responsibility on the executive branch to take action in cleaning an oil spill. Another aspect of the act is that it took three smaller funds and combined them to create a spill cleanup along with a \$1 billion Oil Spill Liability Trust Fund to aid the costs of cleaning spills.

Beyond new legislation, oil companies also began to utilize important lessons from previous spills in their handling and shipping operations. Many companies improved their way of loading and unloading oil and improved employee training along with other things. It may not be enough to prevent all of the spills that occur and pollute water, but it is better than before the *Exxon Valdez* spill. The way in which an oil spill was able to break policy deadlock and cause widespread display is a prime example of how a particular event can draw a large amount of attention to problems and lead to

⁶² Kahn, Matthew. 2007. "Environmental disasters as risk regulation catalysts? The role of Bhopal, Chernobyl, Exxon Valdez, Love Canal, and Three Mile Island in shaping U.S. environmental law." *Journal Of Risk & Uncertainty* 35, no. 1: 17-43. *Environment Complete*, EBSCOhost.

policy change. Environmental disasters, while harmful and frightening, can lead to more successful policy-making in the United States and across the world.⁶³

Hurricane Katrina. Hurricane Katrina made landfall in southeastern Louisiana at 6:00 a.m. on Monday, August 29, 2005. It caused horrible damage along the Gulf Coast for eight hours. Within twenty-four hours, eighty percent of New Orleans was underwater. According to Judith A. Layzer (2012), it caused more damage than any natural disaster in U.S. history. The story of Katrina is a prime example of how society is able to recover after a disaster and become more resilient. The horrible aftermath of this storm also displayed the many risks that Americans are facing (see Figure 3.2).⁶⁴

Hurricane Katrina ended up causing around 1,464 Louisiana deaths and at least 135 people went missing. Throughout the Gulf of Mexico, damages were estimated to be over \$81 billion with overall economic losses to be around \$200 billion.⁶⁵ On Gulf Coast recovery alone, the government spent \$142 billion. For five years after Katrina hit, reconstruction was mostly haphazard. Many of the residents pushed for their parts of the city to be rebuilt. They came together to form committees and organize local data to help drive for reconstruction and aid. Still, they faced many problems in trying to rebuild and it was only harder for the poorest residents who mostly did not return at all. It makes sense for them to go elsewhere because when it came to issues of being able to pay for things to be done, they had nothing to offer.

⁶³ Thomas A. Birkland, "Wake of the Exxon Valdez: How Environmental Disasters Influence Policy," *Environment*, 40, no. 7 (1998): (1-9, 27-32)

⁶⁴ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 17.

⁶⁵ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 17.

Katrina did, however, spur a more vibrant civic life among the remaining 343,829 people.⁶⁶ For example, it was found that New Orleanians became more likely to attend public meetings than any other Americans. They also had newly formed civic organizations that were able to push for change and make a difference. One such change involved establishing a single property assessor instead of having seven. This was extremely important in the area because the previous assessors failed to update valuations or cut deals with particular homeowners. Additionally, the city adopted a master plan that involved an experiment in education. The experiment resulted in twice as many children attending a public school that met state standards than before Katrina. Another key aspect is that with the help from the U.S. Department of Health and Human Services in the amount of \$100 million, the Louisiana Department of Health and Hospitals was able to create a group of twenty-five neighborhood health care providers that ran close to ninety clinics throughout the city.⁶⁷ In some neighborhoods, there were also efforts to rebuild more sustainably. The most recognized area is the Lower Ninth Ward whose city master plan was passed by city council in 2010, but had already begun to build sustainably through the help of groups such as the Make it Right Foundation.⁶⁸ There was also work done on the structural aspects of the hurricane-protection plan. By August of 2010, the Hurricane and Storm Damage Risk Reduction System had already been improved. One way it was improved was by toughening floodwalls with clay. Another way was by reinforcing soil with concrete.

⁶⁶ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 17.

⁶⁷ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 17.

⁶⁸ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 17.

Hurricane Katrina definitely had a local effect on the people of New Orleans. It forced them to take a look around and rethink the way things were built. The result became plans for better cities and reinforced storm protection systems. Hopefully, these improvements would serve to help mitigate the results of any future storms. The disaster also displays how easy it is for the world to ignore catastrophes that do not hit them at home. Coastal areas such New Orleans naturally presents the danger of hurricanes, earthquakes, and tsunamis. The National Oceanic and Atmospheric Administration (NOAA) estimates that more than half of the U.S. population lives in 673 coastal counties.⁶⁹ These areas are naturally prone to processes such as erosion and the additional stresses of urban areas raise the hazard levels. Considering predictions that rising global temperatures will be accompanied by rising sea levels and worse storms, these areas are in more danger than ever.

Layzer (2012) quotes Paul Farmer as saying that the government's approach to disaster is basically 'we will help you build where you shouldn't...rescue you when things go wrong, and then we'll help you rebuild again in the same place.' This statement could be proven right just by evaluating what happened after Hurricane Katrina. Such support only exacerbates the problem of people moving into dangerous zones and raises the potential of lives being lost. The danger of living in coastal areas is even worse in that the way development has taken place is unsafe. People, despite warning, have chosen to move into these disaster-prone areas and pretend that nature can be controlled enough to make these locations safe. In doing so, they put themselves at a higher risk of danger. A major reason they were willing to do so is that government decided to support rather than

⁶⁹ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 17.

distinguish these new settlements. They did so through subsidized flood insurance, wildlife suppression, and federal relief payments. After Katrina, there was a plethora of media displaying the horrible damage left behind, but it did not stop coastal construction in the United States. It did not even slow it down. In fact, construction continued to boom and Congress let it happen.⁷⁰ Congress did not make any reforms to the National Flood Insurance Program; they only allowed short-term extensions, but no adjustments. In the case where settlement is not being prevented, it has to be a priority to prepare for such disasters. Storms like Hurricane Katrina that wreaked havoc should serve as a warning sign to all coastal areas, but it has been pushed aside as though it will not happen again.

Focusing events such as these are extremely important. This is because they are “rare, sudden, and harmful.”⁷¹ Whether they are directly or indirectly, they also affect many people. Since these disasters tend to upset society’s normal sense of natural order, problems are made more obvious to groups. These problems then serve as a platform for people to focus their energy. Also, the bigger the disaster is the more attention it grabs. People’s attention is focused on these events much more easily than events that require interpretation of data to understand the issue. Obvious displays of imminent problems such as environmental disasters are loud and clear. Because of this, they tend to provoke emergency responses. Such responses are important in policy promotion, but it is also important to try and use these disasters to help prevent any similar events. The shocking aspect of certain events is important when it comes to politics. Both the public and government hear of disasters at the same time. Groups that do not have political

⁷⁰ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 17.

⁷¹ Thomas A. Birkland, "Wake of the Exxon Valdez: How Environmental Disasters Influence Policy," *Environment*, 40, no. 7 (1998): (1-9, 27-32)

advantages receive a short opportunity to be heard. They use this chance to promote intense efforts to help mitigate environmental damage. These situations leave groups who are usually more powerful with less time to form a response. The chance of making a more lasting impact on public opinion is higher in these cases. This is why such disasters are important as the fear accompanying them prompts a higher rate of awareness.

Figure 3.1



Source:http://www.boston.com/business/articles/2009/06/16/exxon_owes_interest_on_valdez_award/

Figure 3.2



Source: <http://www.lbl.gov/Science-Articles/Archive/ESD-Katrina-phylochip.html>

Chapter 4. Environmental Policy, Public Opinion, and Education

Environmental Policy and Public Opinion. Environmental politics itself is concerned with the way humanity organizes itself in relation to nature. Although human life is dependent on nature, many disputes occur regarding the environment and various hazards. Debates are prominent enough to be in the same category as other traditional policy concerns such as economic and foreign concerns.⁷² Layzer (2012) argues that environmental policy conflicts tend to concern fundamental value differences and that the way problems are defined play a very important role in how values are translated into policies.⁷³

⁷² Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 1.

⁷³ Judith A. Layzer, *The Environment Case: Translating Values Into Policy*, (Washington: CQ Press, 2012), chap. 1.

The relationship between public opinion and any form of policy-making is extremely important. “At its core, democracy is a mechanism to translate the wants of citizens into public policy.”⁷⁴ Other factors also affect the decisions and actions of government but “there is little debate that the public’s preferences should play the preeminent role in determining the behavior of government institutions.”⁷⁵ Thus, as environmental issues, such as climate change, become a prominent challenge facing policy-makers in the United States, it is increasingly important to interpret and understand the beliefs that the public has regarding such issues.

It follows that central to democracy is the ability of the government to respond to the public’s opinions and preferences. In evaluating the effect of mass public opinion on policy-making, there are some scholars who find that there is a strong and prevalent impact and others argue the public does not hold consistent views. There are also some who find that the choices government makes are what strongly influence which opinions and beliefs the public chooses to express.⁷⁶ All of the points are partially true. Public opinion does remain strong, but there are events that help to change their opinions. One of the most advantageous traits of people is the ability to interpret new information and change their opinion to better incorporate what they have learned. It also stands that many individuals choose to trust the government and the news that they release to the

⁷⁴ Christopher P. Borick, "American Public Opinion and Climate Change," chap. 2 in *Greenhouse Governance Addressing Climate Change in America*, ed. Barry G. Rabe (Washington, D.C.: Brookings Institution Press, 2010).

⁷⁵ Christopher P. Borick, "American Public Opinion and Climate Change," chap. 2 in *Greenhouse Governance Addressing Climate Change in America*, ed. Barry G. Rabe (Washington, D.C.: Brookings Institution Press, 2010).

⁷⁶ Martin Johnson, Paul Brace, and Kevin Arceneaux, "Public Opinion and Dynamic Representation in the American States: The Case of Environmental Attitudes," *Social Science Quarterly* (Wiley-Blackwell), 86, no. 1 (2005): 87-108

public. The government, however, stands to please society; if society does not support the decisions they make, they will not remain in power as long as they would like. A major aspect of the decisions that government makes is whether or not it is what the public is advocating. Due to this the reasoning behind why the public feels particular ways is especially important for policy-makers.

Environmental Education. Considering the importance of public opinion, environmental education is of key importance in forming and promoting better policies. Environmental education increased the public's awareness and knowledge regarding environmental issues. Then, with an increased level of knowledge, the public has the correct set of skills to make informed decisions and determine what actions, if any, they should take.

According to the United States Environmental Protection Agency (EPA) there are five components of environmental education.⁷⁷ One component is awareness of and sensitivity towards the environment. A second component is knowledge and understanding of the environment. Third is a concerned and motivated attitude toward the environment and maintaining its quality. A fourth component is the skills to notice environmental issues and help work to solve them. The fifth component is to also participate in resolving environmental issues. The goal of such an education is not to push a particular view on people, but to provide individuals with the proper information to make their own well-informed decisions. The *Exxon-Valdez* disaster and the enactment of OPA 90 is a great example of society's ability to learn from incidents and apply that

⁷⁷ EPA United States Environmental Protection Agency. "What is Environmental Education?." What is Environmental Education?. <http://www2.epa.gov/education/what-environmental-education> (accessed May 7, 2014).

knowledge to help prevent the recurrence of any similar issues. If education can help individuals learn before a disaster occurs, then we may be able to have higher participation in environmental protection.

Environmental education and its respective legislation began because of a grassroots movement. As were claims such as those by Lois Gibbs, regarding the Love Canal, the early claims of environmentalists were attacked and put down on personal levels. Today many claims are still attacked but the reasoning has shifted to economic-based arguments.⁷⁸ Due to the constant conflict, Daniel T. Blumstein and Charlie Saylan argue that the environmental community has been forced into a type of defense mode. By this they mean that they spend their time on self-protection. As a result of this evaluation they offer the opinion that environmental education needs to be reevaluated. They believe in utilizing evidence-based approach and teaching difficult lessons.⁷⁹ The curriculum in the United States from kindergarten through 12th grade includes some environmental education and educators in the private sector that offer programs to learn more about the environment. Blumstein and Saylan observe that the money put towards these things is a waste because people still fail to connect themselves to the environment; they do not consider the effect they have on the environment. The education being implemented does not work. They also note that while some studies find an increase in scientific literacy only twenty percent is considered to be scientifically literate. Taking these findings into consideration it is said that environmental education methods need to place more focus on changing consumption patterns. To reach this goal they propose seven measures to

⁷⁸ Blumstein, Daniel T, and Charlie Saylan. "The Failure Of Environmental Education (and How We Can Fix It)." *PLoS Biology* 5, no 5. (2007): e120. (accessed May 5, 2014).

⁷⁹ Blumstein, Daniel T, and Charlie Saylan. "The Failure Of Environmental Education (and How We Can Fix It)." *PLoS Biology* 5, no 5. (2007): e120. (accessed May 5, 2014).

implement from kindergarten through 12th grade environmental education.⁸⁰ One of these measures is to design programs that can be evaluated in order to be reassessed and changed if necessary. A program can only be effective if it is shown to work and evaluating a program helps ensure that money being spent is being used wisely. A second measure is to teach the conservation of consumable products. One way to do this may be to start by teaching where resources come from and how they are accessed and made available to society. A third idea is to promote and teach a worldview. Doing so would ideally aid in the appreciation of diversity and interconnectedness throughout the world. A fourth idea is to teach individuals how governments work. Once they understand how the government system works they have the knowledge necessary promote change. Another measure is to reach the process of critical thinking. In having the ability to think critically individuals will be able to process complex information before making decisions. If people cannot ask proper questions and make reasonable, well-informed decisions, there is no point in relying on their opinions. These suggested measures are insightful and make sense in the effort to create a more informed and capable society. If environmental education were to implement them it would be, at the least, a great start towards making a real difference and increasing awareness. If awareness were to be increased then shock value would be less necessary to promote environmental policy.

In addition to decreasing the need for shock value education may also be useful in helping to avoid further development of biophobia. It can be used to instead develop a sense of biophilia. As recommended by David Orr (1994), education needs to be reshaped to foster biophilia, as well as the skills necessary to take life seriously. Society

⁸⁰ Blumstein, Daniel T, and Charlie Saylan. "The Failure Of Environmental Education (and How We Can Fix It)." *PLoS Biology* 5, no 5. (2007): e120. (accessed May 5, 2014).

needs a good education and tools of action in order to develop any feel for the land around them. The goal cannot be only literacy because we also need ecological literacy.⁸¹ In our basic education system, literacy is not a process that ends. Literacy is something that is constantly being worked on and developed. In the same way, environmental literacy can never stop. It has to be promoted and encouraged through all parts of society until everyone is environmentally literate.

As already discussed through proposals by Blumstein and Saylan, there are issues that needed to be confronted in regards to our education and the environment. Orr (1994) notes that while education is not usually regarded as a problem, the lack of it is. Traditionally, the belief is that all education is good and the more, the better.⁸² He argues, however, that one must address the problems of education, as opposed to the problems in education, to produce a deeper change. In teaching about the natural world, our educational system emphasizes theories, abstraction, strict answers, and technical efficiency. According to Orr, this is a problem and only education of a certain kind can save humanity: education should place importance on values, consciousness, questions, and conscience.⁸³ He also explains six myths that account for what went wrong with education. One myth is that we can solve ignorance; the assumption being that ignorance is a problem to be solved. In reality, ignorance is merely part of being human. Without such ignorance, there would not be room for knowledge to grow. A second is that we will be able to control Earth once our technologies advance to a higher level. The issue here is

⁸¹ David W. Orr, *Earth in Mind On Education, Environment, and the Human Prospect*, (Washington: Island Press, 1994), chap. 20.

⁸² David W. Orr, *Earth in Mind On Education, Environment, and the Human Prospect*, (Washington: Island Press, 1994).

⁸³ David W. Orr, *Earth in Mind On Education, Environment, and the Human Prospect*, (Washington: Island Press, 1994).

that higher education has taught individuals to extend human control as far as possible. In a world where there is so much unknown to us, it would seem to make sense that we should instead rethink the way that we do things rather than try to reshape the natural processes of the world. A third myth is that knowledge is increasing. This is because while there is a lot of emphasis placed on particular findings (increasing the research done in the area) many fields of knowledge are being pushed aside and forgotten about. There is also the issue of people knowing less and less about the land and ecosystems that surround them. A fourth is related to higher education in that after learning about the world in separate and distant disciplines, we will be able to understand how they all relate. As a result of the way education has been split up, people tend to be left with a lot of pieces, but no instructions on how they fit together. There is no appreciation for unity and interconnectivity. Fifth is that the only reason to educate is to allow people to move upward and be successful. This presents a problem because the world needs an influx of people who can live peacefully in their surrounding area instead of only be concerned with their success. The sixth and final myth is that the culture we have is top -notch human achievement. The argument here is that our culture is not as good as possible because it is dissects the world's connectivity and has failed society in many aspects.⁸⁴

In rethinking education Orr suggests six principles that follow previous findings in regards to environmental awareness. One is that all education is environmental education. This makes sense in that all aspects of a person's education and life experiences affect their views and decision-making. The way a student is taught affects whether or not they believe nature to be an important part of their lives or something to

⁸⁴ David W. Orr, *Earth in Mind On Education, Environment, and the Human Prospect*, (Washington: Island Press, 1994).

stay away from. A second is that the purpose of an education is not to have a person fully understand one subject matter, but to fully develop him or herself. Third is that having knowledge is a responsibility. A large issue in terms of tragedies and responsibility is that when things go wrong, there is not someone held ultimately responsible.⁸⁵ There are many things known, but there is not always the correct level of responsibility associated with the knowledge. It begs the question of who is responsible for disasters like the Love Canal and the Exxon Valdez oil spill. Fourth is that it cannot be stated that something is known unless the effects of it on people and communities is known. This is extremely interesting as it gives education and knowledge both inter- and intra-personal qualifications. The fifth principle is to lead by example and remember that actions speak louder than words. It does students no good to learn about being environmentally responsible if they attend a university that does practice environmentally sound methods. Often, the issue is that while being taught about the environment, they are also taught to feel as though they cannot make a difference. His final principle is that the way learning takes place needs to be considered in the same way as the content of a course.

These myths and principles fit well with the idea that environmental education cannot just be something that is added on to a curriculum as an afterthought.⁸⁶ It needs be considered seriously. For this to happen, society needs more people who are trained to teach environmental education. This cannot happen without more emphasis on the environment and its importance. In this way, environmental literacy cannot only be aimed

⁸⁵ David W. Orr, *Earth in Mind On Education, Environment, and the Human Prospect*, (Washington: Island Press, 1994).

⁸⁶ Ron Chepesiuk, "Environmental Literacy: Knowledge for a Healthier Public," *Environmental Health Perspectives*, 115, no. 10 (2007): A494-A499

towards children. It has to involve the teachers, parents, and students, but also leaders in the community and the workplace.⁸⁷

When it comes to children, it is crucial for them to have direct experiences with nature to develop a bond.⁸⁸ This is believed to be so because children who are close with the environment view it as something special. Humans have a natural inclination to interact with the environment, but it has been stifled by the way we are living and their environmental literacy has suffered. In an effort to assess environmental literacy in middle-school students, survey research guided by two questions was used to find the level of literacy of sixth grade students and eight grade students in the United States.⁸⁹ The survey used, the Middle School Environmental Literacy Survey (MSELS), was based on the Middle School Environmental Literacy Instrument and included other items as well. It aimed to measure the environmental literacy components of ecological knowledge, verbal and actual commitment, environmental sensitivity, general feelings toward the environment, issue identification and analysis, and action planning.⁹⁰ The project resulted in a total of 2,004 usable responses from 1,042 sixth graders and 963 eighth graders. The results showed that as a group the children were moderate to high in their ecological understanding and moderately positive towards the environment. They

⁸⁷ Ron Chepesiuk, "Environmental Literacy: Knowledge for a Healthier Public," *Environmental Health Perspectives*, 115, no. 10 (2007): A494-A499,

⁸⁸ Yannis Hadzigeorgiou, and Michael Skoumios, "The development of environmental awareness through school science: Problems and possibilities," *International Journal of Environmental & Science Education*, 8 (2013): 405-426, 10.12973/ijese.2013.212a

⁸⁹ McBeth, William, and Trudi L. Volk. "The National Environmental Literacy Project: A Baseline Study of Middle Grade Students in the United States." *Journal Of Environmental Education* 41, no. 1 (January 2010): 55-67. *GreenFILE*, EBSCOhost

⁹⁰ McBeth, William, and Trudi L. Volk. "The National Environmental Literacy Project: A Baseline Study of Middle Grade Students in the United States." *Journal Of Environmental Education* 41, no. 1 (January 2010): 55-67. *GreenFILE*, EBSCOhost

also showed the eighth graders to have more cognitive skill and knowledge while the sixth graders showed more positive feelings toward the environment with a high level of willingness to participate in pro-environmental actions. The responses they reported for performing actual positive environmental behaviors, however, did not meet their verbal and written commitments or feelings. Additionally, their critical thinking and decision-making skills were low.⁹¹ This finding shows that they are lacking in the ability to think critically and notice environmental issues and it is important to rethink the way environmental education is being implemented, if at all.

As the study shows, environmental education is not strong enough in the United States. This finding suggests that the National Environmental Education Act of 1990 that is in place in the U.S. is not enough. Although Congress enacted it to promote environmental education, not enough has been done to ensure that citizens are learning the proper things in order to become environmentally aware citizens that are capable of making informed, reasonable decisions regarding the environment. In most traditional kindergarten to twelfth grade curriculums any environmental education is offered as an elective subject if it is offered in any means. Some public schools that receive proper funding get the opportunity to integrate such education but this is not always the case. It is not until students reach the undergraduate or graduate level of schooling that environmental education tends to be offered as its own subject. If this is the way environmental education continues to be implemented it will extremely difficult to properly educate individuals about the environment and the world will have to rely on

⁹¹ McBeth, William, and Trudi L. Volk. "The National Environmental Literacy Project: A Baseline Study of Middle Grade Students in the United States." *Journal Of Environmental Education* 41, no. 1 (January 2010): 55-67. *GreenFILE*, EBSCOhost

shock factors of disasters to promote any real awareness. More needs to be done in the United States concerning environmental education, within and outside the classroom.

Although indirect learning about the environment is not the same as being outside in nature, environmental education is still a great way to develop awareness. Students learn multiple things, directly or indirectly, and are often assessed on that information. There is a difference, however, between what information students can present to you and what they truly understand and are aware of. Awareness here can be defined as “one’s ability to notice things, as a state of being fully conscious of what one knows or what one has learned.”⁹² In a person’s everyday lives, there is not much that really makes a deep impression other than those particular moments that really catch their attention. Environmental disasters are one of these events that serve as a “shock of awareness” (Hadzigeorgiou and Skoumios, 2013) and make people notice things. It is in these situations that people truly become aware of the things they have learned and connect their various aspects of knowledge.⁹³

Studying the environment is not all about understanding science as there are many aspects to it. The environment has to be studied in multiple ways in order for a person to truly take any position in regards to it. Educating society on the environment in this multifaceted manner would highly boost awareness. Promoting environmental awareness

⁹² Yannis Hadzigeorgiou, and Michael Skoumios, "The development of environmental awareness through school science: Problems and possibilities," *International Journal of Environmental & Science Education*, 8 (2013): 405-426, 10.12973/ijese.2013.212a

⁹³ Yannis Hadzigeorgiou, and Michael Skoumios, "The development of environmental awareness through school science: Problems and possibilities," *International Journal of Environmental & Science Education*, 8 (2013): 405-426, 10.12973/ijese.2013.212a

is crucial for the interdependence between humankind and the natural world.⁹⁴ In becoming more aware of the environment, people will feel a deeper attachment and devotion towards the environment. By being aware, people do not need extreme measures such as environmental disasters to shock them; with proper environmental education the shock factor of environmental issues would be less. Awareness may push citizens to constantly be working towards and promoting environmental protection instead of only temporarily being scared.

Environmental protection is a controversial and emotional area of policy-making. Environmentalists and other who favor environmental policies along with elected officials and works have to claim their view on what degree of environmental protection they support. People's perceptions of the environment as it is related to the economy are a very important aspect of policy-making. This is especially true for encouraging leaders, as a major motivation behind policy change is whether or not the majority of society would favor a leader for driving change. For society to support change and display enough concern over the environment, their perceptions need to be shaped in such a way as to see how the environment is truly being treated. One of the most effective ways of doing so is through the occurrence of environmental disasters such as oil spills. Large spills are effective because they are used to symbolize environmental problems and the issues we are facing by placing the economy and industry above the health of the environment.

⁹⁴ Yannis Hadzigeorgiou, and Michael Skoumios, "The development of environmental awareness through school science: Problems and possibilities," *International Journal of Environmental & Science Education*, 8 (2013): 405-426, 10.12973/ijese.2013.212a

Empowering individuals with necessary skills through education is important to assist them in making decisions regarding the environment during these times. If more citizens in the United States and across the world actively participated in environmental issues then it is possible that we would experience fewer environmental accidents such as Exxon-Valdez.⁹⁵ On the other hand, without major environmental disasters, we may not have the set policies that we do now.

Chapter 5. Conclusion: Educate Society Awake

This paper has looked at various disciplines along with the history and reactions of three environmental disasters to study how fear can promote awareness in regards to environmental problems. The Love Canal, the *Exxon Valdez Spill* and Hurricane Katrina all caused widespread public attention. The shock of these three events is seen through the response from society. Both the Love Canal and *Exxon Valdez* disasters promoted environmental policy change in resulting in new policies: The Superfund Act and the Oil Pollution Act of 1990, respectively.

The basic issue behind what it takes to encourage society to promote environmental policy is that they must be shocked and scared into paying attention. Considering the psychological aspect behind individuals' decision-making and the way they view the environment is of prime importance. This perspective helps understand what motivates people and why it takes certain extremes to catch their attention. For example, since people tend to ignore any future issues and focus only on the here and now, it is worthwhile to focus on and explain policies in terms of the present. In looking

⁹⁵ Constantina Skanavis, George A. Koumouris, and Vassiliki Petreniti, "Public Participation Mechanisms in Environmental Disasters," *Environmental Management*, 35, no. 6 (2005): 821-837, 10.1007/s00267-004-0120-z

at the history of some environmental disasters, it can be seen that events that wreak havoc on people's lives and threaten them, motivate them to take a stance concerning the environment. It is important to consider how such events change public opinion regarding the environment and what role education plays here.

I am promoting educational based policies in order to more strongly enforce environmental education throughout school years. In this way, the hope is that it will not take devastating natural disasters to awaken society. When teaching society about the environment and possible environmental effects of human actions, it is important to not only focus on future effects of what we do today, but also to learn from the effects we bear today due to past actions. In understanding how our environment has changed today from the past, it may be easier for individuals to see the drastic changes we can have on the environment. Then, it may not be necessary to promote policies to the public by focusing only on the present and how it affects their lives now.

In order to enhance environmental education and develop a new curriculum it is wise to keep a few things in mind. As explained by Blumstein and Saylan (2007) the level of environmental destruction that the planet is experiencing is at the worst it has been throughout history. Our consumption patterns and general disregard for the environment's resources has been detrimental to the Earth's ecosystems. If the world continues at the rate in which it is going we risk the chance of completely altering the very things that make it possible for us to exist. As a result, a major aspect of the new environmental education that I will propose is consumption control. I believe this is an important lesson because we have to change our rate of consumption to save ecosystems, biodiversity, and ourselves from destruction. We need to learn how to save ourselves,

from ourselves. As the old saying goes, we are our own worst enemies. If a new system of environmental education incorporates consumption control lessons along with other suggestions I have we would be able to produce a more environmentally aware society.

Another important aspect is Orr's discussion of myths and principles. We need to take into consideration the myths that he lists and be careful in the lessons being taught to students. They cannot be taught general information in dissected subject matters and be expected to connect it all and become environmentally literate citizens. By the time students are graduating from an institution there should at least be a standard for what these persons need to understand. Orr makes the suggestion that graduates from any educational institution should have a basic knowledge of concepts that include the laws of thermodynamics, limits of technology, environmental ethics, and the basic principles of ecology. He would also want people to know practical things such as using solar energy and building shelter. I agree that in graduating a higher-level institution students should have a basic understanding of many things but I would go further to say that they should have an in-depth understanding of consumption control and resource management. They should also be highly developed in the aspect of critical thinking to have the ability of making reasonable decisions given appropriate information.

I also propose that environmental education focus on interconnectedness throughout the environment. I believe it is of the utmost importance for children to learn how everything is connected at any early age. If students learn this important fundamental lesson early on it will be easier to build on it throughout higher schooling. They need to have the proper education to realize and understand that the well-being of humans, human existence itself, and the environment, are inseparable. McKeon suggests

that environmental education needs to be restructured in order to “re-story” our lives, land, and our relationships with the land. The way she proposed to do so is through incorporating Indigenous worldviews. Doing so would mean using environmental education to truly teach students about their home landscapes and the story behind the land.⁹⁶ Incorporating an Indigenous worldview would involve the lesson that everything and everyone is dependent on everything and everyone. It is a lesson of relationships and the value of understanding what is being taken and what must be returned.⁹⁷ I think that these lessons are extremely important to incorporate throughout schooling from Kindergarten through higher education. In younger years it can be taught as simple lessons but as students advance in their education, so too should the lessons. For example, young kindergarteners may interpret and learn the importance of interconnectedness through the Disney classic, *The Lion King*, and the infamous song, “The Circle of Life”. Then, the older a student gets the more in-depth a curriculum needs to be.

I would also like to reduce the impact of natural disasters by more government promoted protection and evaluation policies. Environmental disasters often lead to policy change, but the problem is how catastrophic the disaster has to be. In regards to oil spill legislation, it took the largest oil spill in the nation to provoke the development of policies to minimize the occurrence of and damage from such events. While the

⁹⁶ McKeon, Margaret. "Two-Eyed Seeing into Environmental Education: Revealing its "Natural" Readiness to Indigenize." *Canadian Journal Of Environmental Education* 17, (February 2012): 131-147. *GreenFILE*, EBSCOhost

⁹⁷ McKeon, Margaret. "Two-Eyed Seeing into Environmental Education: Revealing its "Natural" Readiness to Indigenize." *Canadian Journal Of Environmental Education* 17, (February 2012): 131-147. *GreenFILE*, EBSCOhost

developed policies are important and often effective, it displays a looming problem with policy-making: instead of developing proactive policies to help prevent disasters from occurring, we tend to only deal with the latest and most visible issue. If citizens across the globe are more environmentally educated and able to be actively involved in the decision-making process then it most likely would not be necessary to study environmental disasters in this pretense. It may also be the case that we would not experience as many environmental disasters.

Bibliography

- The American Psychological Association Task Force on the Interface Between Psychology and Global Climate Change, "American Psychological Association." <http://www.apa.org/science/about/publications/climate-change-booklet.pdf>.
- Atkinson, Christopher L., and Alka K. Sapat. "AFTER KATRINA: COMPARISONS OF POST-DISASTER PUBLIC PROCUREMENT APPROACHES AND OUTCOMES IN THE NEW ORLEANS AREA." *Journal Of Public Procurement* 12, no. 3 (2012): 356-385. *Business Source Complete*, EBSCOhost.
- Atkinson, James. "Environmental History." *Environmental History Review* 16, no. 1 (1992): 5-8.
- Birkland, Thomas A. "Wake of the Exxon Valdez: How Environmental Disasters Influence Policy." *Environment*. no. 7 (1998): (1-9, 27-32).
- Blumstein, Daniel T, and Charlie Saylan. "The Failure Of Environmental Education (and How We Can Fix It)." *PLoS Biology* 5, no 5. (2007): e120. (accessed May 5, 2014).
- Borick, Christopher P. *American Public Opinion and Climate Change. Greenhouse Governance Addressing Climate Change in America*. Edited by Barry G. Rabe. Washington, D.C.: Brookings Institution Press, 2010.
- Cannon, Walter B. 1949. "What Strong Emotions Do to Us." In *Readings in general psychology*, 146-157. New York, NY US: Prentice-Hall, Inc., 1949. *PsycINFO*, EBSCOhost (accessed April 5, 2014).
- Ceaser, Donovan. "Our School at Blair Grocery: A Case Study in Promoting Environmental Action Through Critical Environmental Education." *The Journal of Environmental Education* 43: 209-226. (accessed May 1, 2014).
- Chepesiuk, Ron. "Environmental Literacy: Knowledge for a Healthier Public." *Environmental Health Perspectives*. no. 10 (2007): A494-A499.
- Clark, Darren A., Robert G. Anthony, and Lawrence S. Andrews. "Relationship between wildfire, salvage logging, and occupancy of nesting territories by northern spotted owls." *Journal Of Wildlife Management* 77, no. 4 (May 2013): 672-688. *GreenFILE*, EBSCOhost (accessed May 6, 2014).
- Diamond, Jared. *Collapse: How Societies Choose to Fail or Succeed*. New York: Penguin Group, 2011.

- Dunlap, Riley E. "Public Opinion in the 1980s: Clear Consensus, Ambiguous Commitment ." *Environmental Management*. no. 8 (1991): 10-37.
- "Environmental Literacy Knowledge for a Healthier Public." *Environmental Health Perspectives*. no. 10 (2007): A494-A499.
- EPA United States Environmental Protection Agency. "National Environmental Education Act." <http://www2.epa.gov/education/national-environmental-education-act-0> (accessed May 5, 2014).
- EPA United States Environmental Protection Agency. "What is Environmental Education?." <http://www2.epa.gov/education/what-environmental-education> (accessed May 7, 2014).
- Ernst, Andreas, and Urs Wenzel. "Bringing environmental psychology into action: Four steps from science to policy." *European Psychologist* 19, no. 2 (2014): 118-126. *PsycARTICLES*, EBSCOhost (accessed May 4, 2014).
- Gärling, Tommy. "Past and present environmental psychology." *European Psychologist* 19, no. 2 (2014): 127-131. *PsycARTICLES*, EBSCOhost (accessed May 4, 2014).
- Hadzigeorgiou, Yannis, and Michael Skoumios. "The development of environmental awareness through school science: Problems and possibilities." *International Journal of Environmental & Science Education*. (2013): 405-426. 10.12973/ijese.2013.212a
- Hardin, Garrett. "The Tragedy of the Commons." *Science* 162: 1243-1248. (accessed April 28, 2014).
- Hewitt, William. "Do You Accept the Science of Climate Change [Excerpt]." *Scientific American*, December 14, 2012.
- Johnson, Martin, Paul Brace, and Kevin Arceneaux. "Public Opinion and Dynamic Representation in the American States: The Case of Environmental Attitudes." *Social Science Quarterly*(Wiley-Blackwell). no. 1 (2005): 87-108.
- Kahn, Matthew. 2007. "Environmental disasters as risk regulation catalysts? The role of Bhopal, Chernobyl, Exxon Valdez, Love Canal, and Three Mile Island in shaping U.S. environmental law." *Journal Of Risk & Uncertainty* 35, no. 1: 17-43. *Environment Complete*, EBSCOhost.
- Kaiser, Florian G. "Using cutting-edge psychology to advance environmental conservation." *European Psychologist* 19, no. 2 (2014): 81-83. *PsycARTICLES*, EBSCOhost (accessed May 4, 2014).

- Klein, Naomi. "Capitalism vs. the Climate." *The Nation*, November 9, 2011.
- Klyza, Christopher McGrory, and David J. Sousa. 2008. *American Environmental Policy, 1990-2006 : Beyond Gridlock*. Cambridge, Mass: MIT Press, 2008. Print.
- Layzer, Judith A. 2012. *The Environmental Case Translating Values into Policy*. 1, 3, 5, 7, 10, 17. Washington: CQ Press, 2012. Print.
- Leon, Carmelo J., and Jorge E. Arana. "The Dynamics of Preference Elicitation after an Environmental Disaster: Stability and Emotional Load." *Land Economics*. no. 2 (2012): 362-381.
- McBeth, William, and Trudi L. Volk. "The National Environmental Literacy Project: A Baseline Study of Middle Grade Students in the United States." *Journal Of Environmental Education* 41, no. 1 (January 2010): 55-67. *GreenFILE*, EBSCOhost (accessed May 6, 2014).
- McKeon, Margaret. "Two-Eyed Seeing into Environmental Education: Revealing its "Natural" Readiness to Indigenize." *Canadian Journal Of Environmental Education* 17, (February 2012): 131-147. *GreenFILE*, EBSCOhost (accessed May 6, 2014).
- Orr, David W. *Earth in Mind On Education, Environment, and the Human Prospect*. Washington: Island Press, 1994.
- Skanavis, Constantina, George A. Koumouris, and Vassiliki Petreniti. "Public Participation Mechanisms in Environmental Disasters." *Environmental Management*. no. 6 (2005): 821-837. 10.1007/s00267-004-0120-z
- Steg, Linda, and Charles Vlek. "Encouraging pro-environmental behaviour: An integrative review and research agenda." *Journal of Environmental Psychology*. (2009): 309-317.
- Sussex Publishers, LLC. "Environmental Psychology." Psychology Today: Health, Help, Happiness + Find a Therapist. <http://www.psychologytoday.com/basics/environmental-psychology> (accessed May 4, 2014).