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Cognizing Crisis: Environmental Disasters and The Social Creation of Risk and  
Vulnerability

A Thesis submitted in partial satisfaction of the requirements for the degree Master of  
Arts

in

Anthropology

by

Taciana Pontes Durrant

Committee in charge:

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2017

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University of California, San Diego

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## ABSTRACT OF THE THESIS

Cognizing Crisis: Environmental Disasters and The Social Creation of Risk and Vulnerability

by

Taciana Pontes Durrant

Master of Arts in Anthropology

University of California, San Diego, 2017

Professor Steven M. Parish

In the process of adapting to - and expanding within - our environment, we develop complex social structures which are maintained at measurable costs. Current modes of production and development negatively affect the very same environment we depend upon for survival, fostering the creation of a system in which the adaptation and growth of one group is inversely proportional to that of another, as well as ultimately proving deleterious to itself. This system generates vulnerabilities experienced as slow-onset crisis at risk of developing into full-blown disasters. In this thesis, I analyze

environmental disasters using a political ecology framework which posits that pre-existing socially created conditions of vulnerability represent the core causes of disasters. Although identifying human agency in what is considered “natural” disaster is a great step towards a communal call to action, I argue that, ultimately, the social creation of vulnerability that leads to disaster is generated by the ways individuals and societies deal with risk based on their perceptions of the future. Thus, a more holistic approach to the field moves us beyond vulnerability as the core cause of disasters, towards a psychocultural approach that investigates the complex motivations and interpretations involved in the collective creation of risk and vulnerability.

## METHODOLOGICAL APPROACH

Ethnographic analysis of the social creation and acceptance of risk and vulnerability as causes of disaster serves as a heuristic for the possible circumvention and reduction of the impacts of natural hazards that trigger disasters. For this purpose, I focus this work upon the analysis of three ethnographic accounts that involve environmental disasters related to water issues. The first part deals with events preceding Hurricane Katrina, outlining how a series of unwise measures contributed to the number of deaths and the amount of overall destruction which followed the storm surge into New Orleans. In the second ethnographic analysis, I discuss how both the local people and the government of the state of Ceará in Brazil deal with a century-long drought. The third ethnography is an account of a technological disaster involving two oil spills on the coast of Great Britain, in which I analyze how media coverage of disasters affect people's perception of its causation.

My theoretical framework and consequent ethnographic analysis draw heavily from the works of Suzanna Hoffman and Anthony Oliver-Smith, whose research is based upon the role of social institutions in creating conditions of vulnerability that set the stage for the occurrence of disasters. After detailing the events in depth and following a psychocultural approach, I rely upon alternative views which suggest that risk perception is a core cause of disaster. First, I discuss Robert Paine's notion that playing down threats and denial of risk can be understood as coping mechanisms in the face of danger. Paine refers to this as his *no-risk* thesis. Secondly, building on Sally Gillespie's view that imagination is an integral part of future world building, I argue that, when dealing with disasters, different levels of tolerance for situations of vulnerability and risk acceptance



are derived from the ways individuals and societies conceptualize the future. Consideration of cognitive predispositions in relation to environmental issues is imperative when attempting to develop effective actions and policies for disaster management. Thus, a more expansive, teleological approach which includes analysis of psychological motivations and their relationship to concepts of the future is necessary for integration into forthcoming disaster studies.

## INTRODUCTION

### *The Nature of Events, Agency, and Placement of Cause*

Speculation regarding the nature of events and their causes has always abounded, often attributing agency to occurrences that were not fully understood. From an evolutionary standpoint, the imposition of intentional agency upon external happenings was advantageous: it may have proved deadly for our ancestors to dismiss unexplained sounds originating from the forest. Thus, a hyperactive sense of perception in such settings necessitated an investigation into causation as well as speculations leading to agency attribution. Interestingly, this exact scenario has been proffered as an explanation for the origin of religion (Guthrie 1995).

Furthermore, the process of generating agency attribution is exacerbated when attempts are made to explain the nature of unfortunate events. Different cultures developed a variety of cognitive approaches to the apprehension of disastrous occurrences. For example, among the Azande of the upper Nile, when a man sustains injuries by an elephant during a hunt, witchcraft is to blame. This does not mean that the Azande are ignorant of the fact that the elephant caused injury to that man; they acknowledge that elephants are much larger and stronger than humans, and during an encounter, injury to humans is inevitable. The issue emphasized, however, is that despite the many opportunities previously available to sustain injuries while hunting, during this particular time, this particular elephant harmed this particular man, and that is witchcraft. Anthropologist E.E. Evans-Pritchard explains that the Azande focus on the rarity of a happening, and from an estimation of that occurrence, they determine the cause which carries the greatest social and moral relevance to them as the primary source of the event

(Evans-Pritchard 1937). Thus, their emphasis is on the particular, not the general; the secondary cause, not the immediate one.

The example of the Azande demonstrates how the perception of the causation of ill-fated events is both layered and superimposed with agency attribution, exhibiting a cognitive trait existent since the beginning of recorded history. Most often, during catastrophic events, cultures have placed agency upon divine and supernatural beings. Such is the case in the story of the flood in the Bible, in which God produced a flood as a means of punishing humanity. This approach served to moralize agency, as well as locate it within a particular point in space. Attributions of this nature are ubiquitous in many parts of the world today. For example, not long ago, many claimed that Hurricane Katrina was sent by God as a means to punish New Orleans for its “sinful” ways (Chrisafis 2005).

Historically, systematic research into the causes of what are considered natural disasters has been approached from many different angles. Often, focus has been upon causes that are deemed objectively measurable, such as biological and geophysical events. This is the approach taken by the hard sciences and disaster management (Haque and Etkin 2007). However, in the 1970s, researchers in the social sciences began questioning the “naturalness” of natural disasters (O’Keefe et al. 1976; Quarantelli and Dynes 1977), giving rise to different attitudes toward the subject, such as the political ecology approach to disaster.

### *The Political Ecology Framework*

Initially, when attempting to pinpoint causes of disasters, it is necessary to deconstruct what is meant by the concept “disaster.” Historically, due to diverse fields of study approaching the subject differently, it was difficult to find consensus regarding the term in question (Quarantelli 1985). Borrowing concepts from ecology and political economy, the political ecology approach posits that, in the ultimate analysis, disasters are less a consequence of specific triggering events, such as floods and hurricanes, and more a result of previously existing social conditions of vulnerability. Therefore, the definition of disaster that I will be utilizing throughout this thesis is that espoused by Suzanna Hoffman and Anthony Oliver-Smith in which disaster is defined as:

a process/event combining a potentially destructive agent/force from the natural, modified, or built environment and a population in a socially and economically produced condition of vulnerability, resulting in a perceived disruption of the customary relative satisfactions of individual and social needs for physical survival, social order, and meaning (2002, 4).

As is noted above, disaster is not considered a “natural event,” but rather a socially created process that can be mitigated in the presence of the appropriate social, structural, and economic conditions that provide societies the tools to ameliorate and circumvent those triggering events. Now, it is apparent how this definition changes the way the subject is approached.

If events such as hurricanes and floods are not considered *disasters* per se, what are they, exactly? According to Hoffman and Oliver-Smith, they are *hazards*, defined as “the forces, conditions, or technologies that carry a potential for social, infrastructural, or environmental damage. A hazard can be a hurricane, earthquake, or avalanche; it can also be a nuclear facility or socioeconomic practice, such as using pesticides” (2002, 4). A

disaster can develop only if a hazardous situation is triggered amongst a vulnerable condition, place, or population. As such, “without people, there can be no disaster;” thus, disaster is “the interface between extreme physical events and a vulnerable human population.” (Susman et al. 1983, 264).

One positive aspect of placing humans at the center of what is defined as a disaster is that such a placement renders humanity accountable for its role in shaping the place it occupies. Nonetheless, it may be argued that such a placement is too anthropocentric because it excludes naturally hazardous events that do not involve humans. For example, if an area that is uninhabited by humans is affected by a volcanic eruption which kills neighboring plants and wildlife, how will the event be defined? Is not the loss of wildlife on such a large scale something that should also be classified as disastrous? Deep ecology issues, such as the inherent worth of all beings, may be worth considering within the political ecology approach, however, such a framework is not its main focus.

The political ecology framework places heavy emphasis upon vulnerability due to having been built upon the political economy model, which itself identifies having limited access to power, structures, and resources, as well as certain political and economic ideologies, as the root causes leading to disaster (Oliver-Smith 2009, 15). Rapid urbanization and population change, pollution, and deforestation are just a few examples of processes which place excessive pressure upon such systems. Once unsafe conditions, such as low-income levels, unprotected infrastructure, and lack of disaster preparedness, are established, any hazardous condition (drought, flooding, hurricane) has

the potential to culminate in disaster (Wisner et al. 2003). Thus, the *political economy* model states that:

$$R = H \times V \quad (\text{Risk} = \text{Hazard} \times \text{Vulnerability})^1$$

As is noted above, the political economy model focuses on vulnerability from a generalized view of “risk.” What political ecologists have done is replace “risk” with a more specific concept of “disaster,” suggesting that disasters are akin to slow-onset crisis of risk that have yet to be triggered by a hazardous event. The concept of risk is inherent within disaster and will be discussed further in a later chapter. Nonetheless, the formula above, when expressed in a *political ecology model* as theorized by Hoffman and Oliver-Smith, can be stated as:

$$D = H \times V \quad (\text{Disaster} = \text{Hazard} \times \text{Vulnerability})$$

Similar to that of the cognition of the Azande of the Upper Nile, the political ecology approach views the root cause of disaster as not the immediate event that triggers it, but the process of vulnerability that precedes it. Therein lies a displacement of agency away from the forces of nature, as is emphasized in the hard sciences, and towards human actions. There is an acknowledgment of a multiplicity of causes, as well as a multiplicity of agents that are external to the triggering event itself in which the causes are located. It is for this reason that I choose to apply the political ecology framework in the analysis of the ethnographies presented hereafter. This model offers a sufficient foundation for understanding a dynamic process that is not simply a sudden disruptive event, but a man-made, slow-onset crisis. The following ethnographies described in this work will detail

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<sup>1</sup> (Jones and Murphy 2009, 15)

situations in which vulnerability was socially constructed through a series of self-serving, neglectful, or unwise choices.

### *Vulnerability, Precarity, and Resilience*

Now that vulnerability has been identified as a focal point in the study of disaster, it is important to understand what is meant by it. In this work, I will follow the definition brought forth by Paul Susman et al., in which vulnerability is defined as:

the degree to which different classes in society are differentially at risk, both in terms of the probability of occurrence of an extreme physical event and the degree to which the community absorbs the effects of extreme physical events and helps different classes to recover (1983, 264).

The definition above defines vulnerability in terms of differing degrees of risk, linking it with the concept of *resilience*, which itself is defined as “the measure of a system’s capacity to absorb and recover from the occurrence of a hazardous event” (Timmerman 1981, 21). In anthropology, much has been written about vulnerability and precarity, leading to the question of what, exactly, is the difference between these two terms. According to Judith Butler, precarity “designates that politically induced condition in which certain populations suffer from failing social and economic networks of support and become differentially exposed to injury, violence, and death. Such populations are at heightened risk of disease, poverty, starvation, displacement, and of exposure to violence without protection” (2009, 25).

I find that, in many cases, both definitions are addressing the same phenomena, albeit Susman’s description is much more succinct. Yet, it may be beneficial to consider

precarity exactly as Butler does, as a politically induced *condition* that sets the stage for the *different degrees of risk* known as vulnerability. A situation can be precarious, such as a hurricane in a coastal city that is below sea level, but only individuals can be in a state of vulnerability. However, those in a city that awaits a hurricane will not share the same risks. Those with sufficient social and economic capital are more likely to evacuate; thus, they have the capacity to avoid or ameliorate risk. On the other hand, those who do not have the same social and economic resources are a population at higher risk because they do not have the means to mitigate precarity. In other words, precarity and vulnerability overlap in the discussion of external conditions, but vulnerability is also an internalized, existential state. The degree to which people can remove themselves from a precarious situation is what determines their level of vulnerability.

A study of disaster focused upon vulnerability highlights the social context that creates it. Physical explanations for events that interpret forces of nature as being generating causes are set aside in favor of a more responsible approach in which social matters are primary. This approach is particularly important in the study of environmental disaster in today's Anthropocene, as the earth has been altered to such a degree that entire populations have been placed at risk of suffering the consequences of human-induced climatic change. However, not all populations are equally exposed, and the degree to which a population is vulnerable is what a political ecology approach to disaster seeks to expose.

It is important, however, that when speaking of actions that affect us globally, we draw examples from the local, because although we may be putting ourselves in a precarious



situation as a whole, some populations will be more at risk than others (Liverman 1990). Current modes of production and development that negatively affect the environment are fostering the creation of a system in which the adaptation and growth of one group is detrimental to another. Through ethnographical analysis of vulnerability as a cause of disaster, we might demonstrate how to reduce the impact of those man-made actions, as well as the impact of natural hazards such as hurricanes, droughts, and floods. Thus, I focus this work on the analysis of three ethnographic accounts that indicate how unwise measures, systematic social inequality, and carefully crafted social narratives of risk contribute to states of vulnerability that can lead to environmental disasters.

## TOO MUCH WATER

In August of 2005, the city of New Orleans in the state of Louisiana was hit by what became known as Hurricane Katrina. Much of the immediate devastation caused by the hurricane was documented by news agencies, and, as usual, the focus was placed upon the destructive forces of nature. However, upon examination of the many factors that were present before the hurricane hit, decisions that contributed to the state of vulnerability of the city and its inhabitants become readily apparent.

Before proceeding, it is necessary to relate useful information regarding New Orleans' history and geography, both of which are well detailed in the book *Catastrophe in the Making* by William Freudenburg et al. (2012). In his work, Freudenburg relates that Katrina was not the first hurricane to make landfall in Louisiana. In fact, there were 172 hurricanes in the area between 1559 and 2012; however, only 38 arrived in New Orleans (15). A notable case occurred in 1892 in which the state's island of Cheniere Caminada was hit by a major storm, resulting in more than half of its 1500 inhabitants being killed. Only a year later, during what became known as the Great October Storm, the area was hit again by a hurricane that killed the remaining population. In the end, over a thousand people lost their lives in the southern region of Louisiana during the hurricane of 1893 (16).

In September of 1965, through modern meteorological systems, Louisiana residents were alerted to Hurricane Betsy. Soon after, the entire city of New Orleans was prepared for the hurricane: levees were sandbagged, and both city officials and the federal government were on standby, prepared to feed and offer medical services to

thousands of residents. Oil companies withdrew workers from oil rigs, the military pulled their aircraft from their bases, and residents from low-lying areas evacuated to New Orleans' hotels. It was reported that the precautions taken during Betsy were the "largest single evacuation project in the region's history." It allowed half of a million people located in the lower area of New Orleans to seek refuge in the higher neighborhoods (Colten et al. 2009, 358). Yet, at the time, despite impressive organization on the parts of local residents, local officials, and the federal government, Hurricane Betsy was considered one of the most destructive hurricanes in the United States. During its onslaught, 75 people lost their lives and an estimated \$1.42 billion in damages occurred (Sugg 1996, 183).

Immediately after Betsy, the Army Corps of Engineers established "The Hurricane Protection Program" in New Orleans. This program oversaw the construction of new, taller, and stronger levees and floodwalls made to withstand hurricanes with the same intensity as Betsy (Freudenburg et al. 2012, 108). Thus, it would be assumed that, due to its history of being hit by devastating hurricanes, and especially after some of the improvements made after Betsy, the city would be better prepared to deal with future hurricanes. Unfortunately, that was not the case. For two decades prior to Hurricane Katrina, it was widely known that New Orleans was not prepared to face anything beyond a category 2 storm; yet, nothing was done to remedy the situation (Adams 2013, 24).

From its inception, New Orleans' geography necessitated careful planning and strategic development by its inhabitants. Geologically speaking, the entirety of Southern

Louisiana is a marshland formed by many layers of silt deposited by the Mississippi River over thousands of years - a process that occurs to this day as silt is deposited, building natural levees. These levees constitute ridges of raised land along the riverbank. Concurrently with silt build up, a continuous process of erosion occurs in which silt that is deposited either erodes or is compressed. Historically, the process of silt build up proceeded faster than the process of erosion, generating the entirety of Southern Louisiana which exists today. Half a million tons of sediment a day are still deposited by the Mississippi River, although this load has been changed over time due to the construction of dams. The natural balance between deposit and erosion has been upset; consequently, today, the area is not receiving the same amount of silt as it used to, and current deposits are compressing under their own weight (Freudenburg et al. 2012, 31-33). Thus, New Orleans is sinking at a rate as high as 1.6 inches per year in major industrial areas. In fact, much of the city sits below sea level in a concave shape (Jones et al. 2016).

As the city was being built with a complex system of channels, levees, and canals, many of the swamps were converted into urban neighborhoods. Yet, despite filling in previously built canals which run across the area, the canals were left in place and walls were built to protect against rising water. For the most part, the city was completely dependent upon pumps to drain water out in the event of a flood (Freudenburg et al. 2012, 95)

Freudenburg reminds us that, despite having an important port for the Mississippi River, New Orleans is not a coastal city. It is located 120 river miles inland from

Southwest Pass, the river's main outlet (31). Hence, many waterways were built for the passage of merchant ships, greatly contributing to the disappearance of wetlands separating the city from the ocean, as well as stripping the city of natural protections in the event of a major storm (120). A study conducted by the Army Corps of Engineers just a few months prior to Katrina calculated that the area's north bank canal eroded at a rate of 35 feet per year due to ship traffic. This led to a "direct loss of approximately 100 acres of shoreline brackish marsh every year and additional losses of interior wetlands and shallow ponds" (121).

It could be argued that the geography of Southern Louisiana is an important contributor to its vulnerable state in the face of major storms; yet, the presiding issue is not the geography, but people's relationship with it. Over the years, populations in power have made a series of conscious choices regarding economic development and city design which did not fully account for ecological impacts, and their assessments did not consider past disasters in their projections for the future. Some of those choices concerned how floodwalls and waterways were built and maintained. Much of the destruction brought by Katrina was due to storm surge when sea water was pushed inland by heavy winds. Most of the damage resulted from the systematic failure of floodwalls from three canals, and it was reported that storm surge from twenty to forty feet high toppled the levees. The overall damage caused by Katrina covered 90,000 square miles, roughly an area the same size as the United Kingdom (Freudenburg et al. 2012, 16). Prior to Katrina, a natural land barrier in the Greater New Orleans area was destroyed to give rise to a 1.8-mile channel used to accelerate shipping, which in turn carried the unintended consequence of funneling the storm surge straight into the city (Adams 2013, 22). The environmentally

unsustainable growth of the canals represented yet another significant choice made that ignored the possible risks associated with it.

In her book *Markets of Sorrow, Labors of Faith*, Vincanne Adams detailed the socioeconomic conditions that rendered inhabitants more susceptible to risk during the hurricane. Though it is unknown exactly how many people died during Katrina, it is estimated that nearly half of all the victims were over the age of seventy-four (26). The majority of the residents who did not evacuate were unable to do so because they lacked the means for transportation or were too ill to make the trip. Others were too poor and did not have sufficient social support to leave the city. Adams stresses that the majority of the people left behind, the 50,000 who took refuge in the Superdome and the convention center, were either African American or poor (26). Herein is illustrated the common economic vulnerability that places people in a state of impotence when facing emergencies and impending hazards. Yet, economic vulnerability is built into current modes of production. There is no preventive measure against it, except a complete re-working of entire systems.

Adams relates that many residents carried Hurricane Betsy in their memory, leading residents to believe that they could wait Katrina out like they had done with Betsy (26). Those residents miscalculated the risks involved, basing their estimations upon knowledge of their previous experiences. In the minds of many, their decisions were already made for them: due to lacking a means to evacuate the city, they were left with no choice but to face the hurricane. Overall, risk was interpreted and accepted in a

variety of ways. The Army Corps of Engineers, for example, took a risk by neglecting to fix some of the waterways which had not worked since the time they were built (22).

When applied to the above-mentioned case, a psychocultural approach clarifies the motivations behind environmental risk acceptance. Freudenburg et al. explain that what motivates American society as a whole to move forward in the face of risk is the impetus for unrestrained economic growth. This, in fact, is what is called the “Growth Machine,” which Freudenburg et al define as “a process that is built and set in motion by persons who focus on profit and ‘progress,’ but one that has no internal brakes and no sensors to take note of the damage it is doing as it churns along” (9). Thus, we see the constant drive for “progress” at all costs as an ideology that creates vulnerable situations and populations.

## TOO LITTLE WATER

Ethnographic accounts of droughts provide us with an interesting observation of decision-making strategies in the face of risk, due to their unique position of being a continual hazard. In the article “Weak Winters,” Donald R. Nelson and Timothy J. Finan describe an ongoing drought in the northeastern state of Ceará in Brazil, where locals live in a state of constant reevaluation of risk as a preventive measure against disaster.

Drought is a common feature in the northeast of Brazil. The state of Ceará, in particular, is located in what is known as the Drought Polygon, an area of about 1,000,000 square kilometers that covers nine states. Eighty-six percent of this region is a semi-arid environment known as the *Caatinga* biome, with its variable rainfall, high rates of evaporation, constant temperatures, shrub vegetation and rocky soils that erode easily and do not fully absorb rain. In the rural areas of Ceará, 48% of the workers practice rain-dependent agriculture. That is 31% of the whole state workforce. Wealth is highly concentrated and 75% of the population lives beneath the poverty level (Nelson and Finan 2009, 110-112).

During the 1877-1879 drought, about 500,000 people perished in the northeast from starvation and pestilence. The event was so remarkable that government officials took it upon themselves to solve the drought problem, although their efforts proved to be negligible. Since then, a national debate about how to resolve the issue has been divided into two views. On one side, many people see the issue as a political one and believe it is the government’s responsibility to provide the area with water storage, cloud seeding, climate forecasting, and all sorts of agricultural technological advancements as a way to circumvent the drought. The other view, which is expressed in academic circles,



emphasizes the socioeconomic vulnerability of those involved. They have discussed how the drought problem is related to economics and unequal access to resources (Nelson and Finan 2009,107-108).

Over the years, the government has succeeded in providing enough infrastructure to the point where major droughts no longer result in deaths. However, each new episode of extreme drought has required more governmental expenditure, which demonstrates people's dependency and lack of personal resources to deal with the situation (Nelson and Finan 2009). In 1983, the Brazilian government spent well over \$350 million trying to mitigate the drought in the northeast. During the 1998–1999 drought, this number went up and the government spent \$450 million in disaster relief to the state of Ceará alone (Nelson and Finan 2009, 125). Those who perceive this as a political problem have seen the government efforts to avert disaster through targeted aid as a way of sidestepping the core issue. They see all of that public spending as an ineffective effort that keeps the people affected in a perpetual state of dependency, continuing the cycle of vulnerability (127). No efforts have been made to give the local people the means to better deal with the drought themselves. Poverty is still rampant and access to resources is still limited. That being said, people still have a degree of agency within their situation, and as such, they create strategies to deal with this constant state of existential uncertainty.

Nelson and Finan tell us that “the range of human agency in rain-fed agriculture involves decisions of when and where to plant, how much to plant, which seeds to use, how to feed livestock, and how to allocate household labor on and off the farm, including migration” (119). They demonstrate a high level of adaptation to a situation that has no

end in sight. However, neither their strategies nor the government actions, are long-term solutions to the drought problem. A better approach needs to address both “the lack of water, as well as the underlying vulnerabilities of the population” (128).

## WATER AND OIL DO NOT MIX

The ethnographies provided so far have been focused on what is usually referred to as “natural” disaster. The examples given were used to show how such events are socially constructed; however, there is another term we must be familiar with, and that is the concept of “technological” disaster. A technological disaster is defined as “a disaster attributed in part or entirely to human intent, error, negligence, or involving a failure of a man-made system, resulting in significant injuries or deaths” (McGraw-Hill, n.d.). In light of the theoretical framework which was used to analyze the two previous ethnographies, it may be said that the only difference between “natural” and “technological” disasters is the apparent means by which they are triggered; however, this artificial distinction does not capture the complexities involved in the issue. In the case of Katrina, the majority of the destruction was caused by the failure of faulty floodwalls. Economic vulnerability was also a factor, as well as ecological degradation due to urban development. Nevertheless, we do not refer to Katrina as a “technological” disaster precisely because the placement of cause and agency is moved around when people speak about “nature.” Populations become exempt from responsibility as if they have no effect at all on the environment.

Even when technological disasters happen, people still find creative ways of framing them as natural events. In the article *The Negation of Disaster*, Gregory Button discusses this dynamic. In the winter of 1993, a hurricane known as the *Braer* Storm hit the coast of the Shetland Islands in Scotland. Due to a previous storm a week earlier, the American-owned oil tanker *Braer* was aground when the hurricane made landfall (MacCallum and Grahame 1993). During the hurricane, the oil tanker broke into pieces

and spilled 84,413 tons of crude oil into the North Sea. This was almost twice the amount released into the ocean during the *Exxon-Valdez* oil spill in Alaska, a highly publicized disaster at the time. Moreover, twenty million gallons of oil droplets were blown ashore and inhaled by the locals (Button 1999, 117).

Button mentions that, because the media was hoping to find a story larger than the *Exxon-Valdez* spill, six thousand reporters from all over the world rushed to the scene within a few hours. Eventually, the rough seas and winds split the tanker apart, draining the oil out to sea; thus, no visible threat to the islands occurred, yet, when the crisis appeared to have ended, the damage was already done. Seven thousand birds died and three million farm salmon were destroyed, and as many more were condemned. However, not witnessing the spectacle they sought, reporters complained that there were not enough dead animals for their photographs. They arrived with preconceived notions of what a technological disaster should look like, and because they could not immediately see the damage caused by the oil spill, most of them left. The oil spill they were observing did not look like the *Exxon-Valdez*; thus, the media did not bother to give it the due attention and coverage that it warranted (117-119).

Despite being a technological disaster, the media framed the oil spill as an environmental disaster, and, as such, did not consider the impact on the human population, which was the “most distinctive and significant aspect of the disaster.” When a disaster is portrayed as “natural,” it gives people a sense of something completely out of human control and at the mercy of the forces of nature. And, as such, media attention was concentrated on marine life and on the “fury of the North Atlantic,” because this type of

framing provides a narrative that can be photographed, while the same cannot be done with the invisible effects of the chemicals on the locals (119).

Button states that the effects on the human population were various. Twenty million gallons of oil droplets were blown ashore, affecting agricultural land as well as the people who inhaled the oil droplets. In the course of two days, without informing local residents, more than a hundred twenty tons of chemical dispersants were sprayed in the area, despite the strong winds. The population immediately suffered from skin irritation, diarrhea, and headaches, as well as severe asthma attacks. Over time, two hundred and fifty people were experiencing abnormal lung functioning, while others developed renal and liver problems (119-121).

The use of the chemical dispersants was highly controversial because they were never approved to be used around humans, and their composition was unknown even to those using them. It was believed that the chemicals present in the dispersants were having an adverse effect on people's lungs when interacting with the oil droplets that had been inhaled by the residents. A third of the dispersants failed toxicity tests, while one of them, Dispolene 34, was not licensed to be used in the U.K. Initially, local officials hid this knowledge from the public; yet, once the public found out, it took authorities ten days to begin monitoring people for adverse reactions (Button 1999, 118-120).

Three years after the *Braer* spill, just off the coast of Great Britain, the *Sea Empress*, a Liberian oil tanker with a Russian crew, ran aground on Mouth of Milford Haven in Pembrokeshire, Wales. Due to the fact that sea waters were calm during the first forty-eight hours of the incident, the Countyside Council for Wales recommended

that the tanker be towed to sea to avoid a continual oil leak onto the coastline. However, it took six days for the response team to arrive, and by then the tanker had spilled over 90,000 tons of crude oil into the sea. Despite the fact that the *Sea Empress* spill was bigger than the *Braer* and twice as large as *Exxon-Valdez*, the government refused to recognize the event as a “disaster” and officials were not even allowed to use the term in their statements (Button 1999, 121- 122).

Like the *Braer*, the *Sea Empress* spill caused significant environmental and economic damage. Among the areas affected was Pembrokeshire Park, the only national park in Great Britain, as well as three islands that served as ecological reserves. Wales is known for having some of the largest wildlife sanctuaries in Europe, and, due to tourism being the predominant economy in the area, the oil spill cost residents twenty-one million pounds in lost revenue (Button 1999, 123).

It is interesting to note that, right after the *Braer* incident, the British government commissioned former Master of the Rolls, Lord Donaldson of Lymington, to conduct a safety inquiry meant to detail the effects of pollution from merchant shipping and suggest safety measures (Horrocks 1995). Button explains that the Donaldson Report contained 103 recommendations for safety procedures, from which only 84 were implemented by the time of the *Sea Empress* incident. The first major recommendation the government failed to follow was in not declaring the affected zone as a marine-high risk area. Residents were simply asked to stay inside to avoid inhaling the oil fumes. Also, despite Milford Haven being one of the largest harbors in the world sporting a multimillion-dollar fishing industry, there was no ban on fishing for more than 30 days after the spill.

Moreover, they failed to have salvage tugboats on standby, the closest one available being miles away in Portugal (122-123).

It is hard to imagine how officials decided to take such risks after the *Braer* spill. They were well aware of the dangers, as well as the safety measures necessary to prevent or minimize a similar event, yet, the degree of risk was deemed acceptable, a decision that proved unwise. Nonetheless, the social creation of vulnerability did not end here. It continued in the way that both incidents were framed by the media. In his article, Button compared media accounts of both events and concluded that previous disaster narratives had an influence on how people conceptualized future disasters.

According to Button, the *Braer* spill was narrated by the international media as a man versus nature struggle. It was reported that the British government did everything in its power to save the affected environment in the Shetland Islands, but that it faced tremendous difficulties due to the sea and the storm. The locals joined forces with the government in their attempted to free the *Braer* from the rocks that it had run aground upon. Thankfully, disaster was averted when mother nature intervened and washed the tanker further out to sea. Eventually many birds and fish died due to the oil that had already been spilled (126). This fictionalized version of the events was an attempt to not only set the government and the oil company in a better light, making it appear as though the response was effective and coordinated, but also served to remove responsibility from those in charge.

Similarly, to the *Braer's* account, the international media also described the *Sea Empress* spill as another casualty in the man versus nature struggle. They reported that

the tanker went aground and, although there existed an immediate threat to the environment, the harm caused was not as dreaded. Rough seas helped in the breakdown of the oil, a fortuitous occurrence that saved the environment from a lot of damage. Button relates that, this time around, the government suffered much more criticism for failing to adhere to the safety measures proposed by the Donaldson Report; thus, they tried to minimize the effects of the situation by keeping important information from the public (126).

What Button points out is that both accounts emphasize how “mother nature” was the agent responsible not only for both disasters but for the avoidance of catastrophe, as well. The danger that mother nature gave, she also took away, thus saving the day (126). Button’s argument details the power the media has to build reality by both constructing and deconstructing meaning through its selective narrative of disastrous events (113, 115). In the examples cited, the media, politicians, and environmentalists debated whether to call the event a *spill* or a *disaster* because they were only taking into consideration the environmental impact of the oil leak, without including the socioeconomic factors and well as the impact upon human health (122, 128).

Button’s argument is that the selective construction of narrative serves to uphold hegemonic forces of society. In this case, the purpose of the narrative is to remove responsibility from governmental agencies as well as the corporate entities, and place it on things said to be outside of human control: nature. This collective narrative is contributing to the construction of reality in which states of vulnerability are constantly perpetuated. This type of social transmission will be further discussed in the next chapter.



## HOW WE COGNIZE RISK AND VULNERABILITY: THE NO-RISK THESIS

The ethnographies presented in this work have been assessed through the lens of the political ecology model as adopted by Hoffman and Oliver-Smith, wherein vulnerability is at the forefront of their research. However, throughout the process, it became clear to me that the social creation of vulnerability is very much tied to risk perception and conceptualizations of the future. Although the political ecology approach to disaster offers a concrete, objective measure of the role of vulnerability in the social creation of disaster, it does not answer the question as to why we collectively construe vulnerability in the form of risk acceptance. Ethnographic accounts based on this framework are useful because they present possible external solutions to social, political, and economic issues that cause or contribute to disaster through the making or sustaining of vulnerability. However, I propose that moving forward, a psychocultural approach to disaster provides a more holistic understanding of its root causes, which ultimately rests upon people's internal motivations and perceptions of risk acceptance.

A psychocultural approach to the way we cognize disasters seeks to understand the psychological mechanisms behind collective behavior. As we noted in the case of the *Braer* incident, carefully crafted narratives become integral parts of how such motivations are transmitted. Thus, examining the stories people tell themselves about the nature of disasters and the many meanings surrounding the subject affords us a better understanding of how people come to act the way they do.

In his article "Danger and the No-Risk Thesis," Robert Paine proposes that we may paradoxically minimize or discount risk altogether as a reaction to a situation of extreme danger, and that when this happens we have three options when confronting risk:

to proceed as originally intended, to proceed in a modified way, or to abort (Paine 2002). Paine discusses the possibility that the choice to minimize a particular risk may be a form of coping mechanism, and societies that actively ignore risk through narratives that play down danger, become “active agents” in their own condition (Paine 2002).

It is important to understand that, like vulnerability, risk is also socially constructed and as such, it is understood and dealt with differently by different individuals and populations (Rück 1993). Paine reminds us that risk is constructed within ourselves in the face of danger and “pertains to probability calculations about danger and, hence, to the ‘cost’ of a projected undertaking (2002, 68).” The way environmental and technological dangers are perceived by individuals affects their choice to either allow or deny the existence of danger in their calculations of risk (Hoffman and Oliver-Smith 2002).

Although it is difficult to infer motivations, especially on such a large scale, Paine’s proposition is a possibility worth considering. On an individual level, denial in the face of such existential crisis can be seen as a way of coping, especially if there is something else to be gained by moving forward as originally intended. In the example of Hurricane Katrina, the Army Corp of Engineers failed the residents of New Orleans by ignoring signs of deterioration along the already existing levees (Adams 2013). Moreover, during discussions regarding whether or not to build newer levees, a choice was made to have floodwalls constructed so that the area could be available for real-estate development. The problem with this decision was that floodwalls do not provide the same degree of protection as do levees, which have a much greater buffer zone due to

being stretched across hundreds of feet. Moreover, the floodwalls were concrete walls constructed upon soft, marshy land, an arrangement that contributed to their failure during the hurricane (Freudenburg et al. 2015). We see how opposition to the construction of new levees due to the desire for real estate development involved a certain degree of cost analysis calculation, in which risk was assessed and deemed minimal or unlikely.

We saw a similar case involving social memory and the playing down of risk with the *Braer* and the *Sea Empress* oil spill accounts. There was a public and conscious effort by the media and the politicians to minimize the impact those events had beyond the obvious case of water pollution. Even their careful consideration to not classify both incidents as “disasters,” and their transmission of this re-created collective memory, served as a means of shaping the way people imagine future events. When people make a risk assessment about the future, they draw upon past events as a reference point for future possibilities. The more such incidents are minimized, the less likely it is for people to imagine a higher degree of risk for the future in relation to disasters.

## THE COUNTRY WHERE DISASTERS DO NOT EXIST

The field of risk management deals with three public policies: risk identification, which involves issues of social representation and individual perceptions, as well as objective evaluations; risk reduction, which is preoccupied with prevention and mitigation; and disaster management, which deals with issues of response and recovery (Cardona 2004, 40). Obviously, risk identification is a necessary step in disaster management. However, in the management of risk, difficulties arise due to the fact that, although we have the means to objectively judge risk in many circumstances, assessment is highly subjective with regards to social representations and individual perceptions. Consequently, it is impossible to correct an issue that is either not acknowledged or is publicly denied within social memory, and this is exactly what is happening in a curious case in Brazil.

Brazilian citizens have a popular belief which holds that “there are no disasters in Brazil.” What is implied in this belief is that the country, as a whole, is devoid of natural disasters such as earthquakes, hurricanes, tornados, and tsunamis. However, in his article “Sobre a invisibilidade dos desastres na antropologia brasileira,” Brazilian anthropologist Renzo Taddei, calls attention to the fact that this popular belief is collectively upheld in people’s imagination despite evidence to the contrary (32). As a clear example, he mentions the fact that Brazil sees an average of a thousand earthquakes per year in the Northeastern region alone, and though they tend to be under 3.0 magnitude on the Richter scale, they are most often large enough to be felt (34). Nonetheless, most Brazilians would be surprised to know these facts.

The most interesting case of collective denial occurred in 2004 when Hurricane Catarina made landfall upon the city of Florianopolis, capital of the state of Santa Catarina. Taddei mentions that, during this event, local scientists suffered what he calls an “epistemic shock,” whereby they argued that the hurricane could not possibly be a hurricane because “there are no hurricanes in Brazil.” He also documented a similar attitude during the years of 2002 and 2003 in the state of Ceará, in which he personally experienced what locals call strong *ventanias* (windy wind) which caused a lot of destruction in the Fortaleza and Apodi region. Although meteorologists and agriculturalists knew for a fact that what they were witnessing was a tornado, they could not openly discuss it for fear of being publicly ridiculed (34).

Taddei tells us that it was only in the year 2005, with the Indaiatuba tornado in the state of São Paulo, that Brazil discovered a “route of tornado in the country.” The most astonishing fact is that according to the Instituto de Geociências at Unicamp (University of Campinas), Brazil has the second highest frequency of tornadoes in the world (34). How can such a fact be ignored in the public landscape and completely escape social memory? Even when Brazilian scientists “discovered” the “route of tornado in the country,” the public’s perception of risk remained the same, and the popular saying regarding disasters not existing in Brazil continues to be perpetuated.

It is difficult to work in the field of risk assessment when risk is not only ignored but actively erased from the public imagination. This constitutes not only a case of denial but an active re-working of one’s perception of reality. This is why Omar Cardona relates that risk is performative, and that what we imagine to be a non-action (ignoring the

danger) is a form of action. Risk, he says, is a form of decision-making, and it is present in the mind, “closely related to personal or collective psychology” (47). To Cardona, “all concepts of risk have a common element: a distinction between reality and possibility” (51). Risk is a possibility, an abstract, and it cannot exist in the present, only in the hard to grasp future (47). It is in relation to what Cardona calls “collective psychology” that the study of risk perception in the anthropological study of disaster is insufficiently addressed if one is to only look through a political ecology perspective. It is precisely because risk is a concept of a possible reality that only exists in our minds that a psychocultural approach is necessary.

## THE DENIAL OF RISK AND THE MYTH OF ORDINARY LIFE

The field of disaster anthropology will deeply benefit from analyzing risk-related cost analyses through an approach that places greater emphasis upon psychocultural perception and imagination in addition to political and economic issues. Paine's no-risk proposition offers a good explication of the suppression of risk being an adaptive form of coping mechanism, constituting a valid justification for why populations collectively make choices that place them in states of vulnerability in relation to their environments. However, when cognizing crisis, we find that other forms of reasoning and assumptions are at play.

The concept "disaster" is often established upon the understanding that a disaster is an event separate from daily living and normalcy. In his book *Interpretations of Calamity*, Kenneth Hewitt contradicts this notion by discussing the myth of ordinary life. According to Hewitt, disaster studies' inadequacy arises out of what it chooses to infer from the relationship between human activity and the environment. "The ongoing conditions that provide the setting for disaster are inferred to be 'stable', 'orderly' and 'predictable', or at least sufficiently so to be called 'managed' and even 'planned' (22). The problem is that instability is the only constant. Regular life is unstable and full of interruptions; thus, disruptions may always be expected. A state of stability is not only out of the norm but is a near impossibility. When confronted with such a realization, it is surprising that we continue to live lives as though disasters were a distant possibility.

Uncertainty regarding future events leads individuals to speculate about future possibilities. The political ecology approach to disaster focuses too heavily upon failures that are due to tangible, material means or institutions. Examples of this are found in the

systematic failings that occurred during Hurricane Katrina, the Cear drought, and the oil spills in the U.K. These are conspicuous examples of failures in infrastructure, city planning, and resource management. However, if we look beyond the issues of vulnerability and begin deconstructing the reasoning behind its acceptance, we see that the predominant issue is related to people’s perception of risk and their speculation about the future.

By accepting that life is ordinarily stable and that disaster is a rupture in that stability, individuals project this imagined, stable present into the future. Despite the fact that we are aware of present risks and vulnerable situations that will continue into the future, this knowledge is not entirely integrated into future predictions. I argue that, with regards to disaster, risk suppression is not just a coping mechanism, but a choice that arises out of ones’ perception of the relationship between present reality and the future. In the end, it is both an ontological, epistemological, and an eschatological matter. Suddenly, risk assessment becomes a quasi-religious, existential exercise.



## CONCLUSION

Like the Azande, I felt it necessary to analyze disaster through its multiplicity of causes. The political ecology approach provided a useful framework to examine vulnerability as the main cause of what is popularly known as “natural disaster,” yet it was not representative of the entire truth. As I was writing this thesis, I determined that I needed to continue deconstructing assumptions and continue peeling back epistemological layers surrounding the issues. The connections may seem tortuous at first, but the concepts here demonstrated are so theoretically intertwined that they ultimately lead to each other. Every time I thought I had found the core problem, I realized I had only turned a corner into a new, but related theoretical consideration.

Disaster → Vulnerability → Risk → Perceptions of the Future

Cardona’s description of risk as something that sits between reality and possibility does segue into the notion that the concept of risk-disaster addresses ontological issues. Different individuals and societies create and maintain particular views about the meaning of the future and what is possible within it. If one imagines the future to be static, thoughts regarding the future will not stimulate considerations of risk or avoidance. Whatever will be, will be. This fatalistic approach represents the exact opposite of resilience. In such a situation, future conditions, as well as calamities, are simply accepted without cognitive resistance. If the future is something we can control, then the possibility of danger becomes less abstract and actions can be taken to circumvent it. This is the view taken by the political ecology school of thought.

When addressing perceptions of the future, there is another issue which requires attention, and that is the question of whose future is being described. In ontological terms, the future is not a shared reality. This becomes clear when we speak of global issues such as climate change. In many cases, when discussing the many negative effects that climate change can have on the planet, we are considering measurable, objective events such as the melting of the glaciers and the rising of the sea. However, the populations who will be the most vulnerable to climate change are not necessarily those who contributed the most to environmental degradation. Those in positions of power will have the means to avoid many of the consequences; thus, they will not be fully present in the negative future they helped to create. This abstract notion is not something that can be currently measured because it is an ontological possibility.

Those who assume the risks associated with unrestrained development are also passing on the costs to others. Their conceptualization of the future does not include risk or even the notion of people at risk. I am not saying that those who are in a position of power and are currently destroying the environment are not aware of what they are doing. What is happening here is that risk in its entirety, and the people who are the most vulnerable to it, are erased from this particular perception of the future. Since the future lives in our minds, we are all simultaneously creating multiple futures that overlap through active social and cultural construction. This ontological conundrum might be the reason why we try to create a sense of normalcy by viewing disaster as rupture in the social fabric. Uncertainty forces us to take positions and create realities that are more agreeable to the way we want to see the world, and that includes denial.

In the article “Climate change imaginings and depth psychology,” Sally Gillespie discusses the role of myths and imagination in environmental change and the world’s future. When we acknowledge existential risks brought about by issues such as climate change awareness, we open ourselves up to face fears about our mortality and impermanence (Gillespie 2016). Due to the fact that environmental risks position us between the reality of existence and the possibility of annihilation, the issue of environmental disaster is also an eschatological matter, and as such, is subject to a variety of metaphysical interpretations. Many religions and spiritual paths have their own rendering of what the future holds and how humanity, or the planet earth, will meet their demise. Depending on the type of message being transmitted, a religiously based perception of the future can serve as the impetus for meaningful change. Future imaginings in which we cognize our mortality can serve as a catalyst for individual and community building (Gillespie 2016).

On the other hand, when we deny our vulnerable position in the cosmos, we hold onto our individually or socially constructed worldview in an attempt to suppress existential risk, in what is called “immortality projects” (Gillespie 2016). This is a part of the no-risk thesis discussed by Paine. In the end, denial is not the only action we take when world building our imagined futures, but only one aspect of it. Another aspect is a more active approach of clinging to “ecologically damaging but self-esteem boosting cultural immortality projects,” in which we paradoxically promote acts that put us in a state of vulnerability as a form of affirmation (Dickinson 2009 in Gillespie 2016). It is an interesting case of denying risk through taking actions that put us at risk, continually reassuring ourselves that we are in control of the future by living on the edge of danger.

Such was the case with the events surrounding Hurricane Katrina and the *Sea Empress* spill, where safety reports and warnings about failing walls were ignored, in a cognitive attempt to stabilize uncertainty through denial.

Political ecology has been of great value in identifying vulnerability as a socially constructed element that can lead to disaster. However, it does not include in its investigation the variety of mental processes involved in risk assessment, especially as it pertains to individual and cultural ontologies of the future. As disaster anthropology moves forward, it is necessary to move beyond the political and socioeconomic aspects, towards a psychocultural approach in which conflicting ontologies might serve as better models to explain the way we approach risk.

One of the benefits of the political ecology approach is that it is focused on institutions and measurable outcomes on a macro scale. Nevertheless, though a psychocultural methodology may give the impression that research is to be focused upon individual micro-analysis, this is not necessarily the case. As stated previously, issues involving risk perception are closely related to collective psychology, and as such, a psychological approach on a larger scale is warranted. Like the approach taken by Paine in the development of his No-Risk thesis, one may use psychological concepts on a macro scale, especially with regards to issues of existential risks. In Paine's case, he analyzed the possible responses that an individual could have when facing risks, and applied them on a collective level. Such applications may or may not work in certain cultural contexts; however, precisely the point of performing such analysis is to

determine the psychological motivations that exist alongside certain sociocultural behaviors.

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