

Storms in the States:

An Ethnographic Investigation in Risk
Perception in Tornado Alley



Master Thesis

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.> Cover photo of red and black clouds during nighttime by Kristóf Sass-Kovan

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Terminology

The following list contains terms I came across in the field and will be terms mentioned throughout the thesis. The definitions come from professional meteorologists and experienced individuals who I have spoken with.

Tornado	<i>a column of air that violently rotates, typically at the base of a thunderstorm</i>
Funnel Cloud	<i>a funnel-shaped cloud that emerges from a thundercloud's base and frequently happens before a tornado forms</i>
Hurricane	<i>a tropical storm with winds of at least 120 km/h, which occasionally penetrates into temperate latitudes and is typically accompanied by rain, thunder and lightning</i>
Natural Disaster	<i>a large occurrence brought on by natural processes on earth that has a negative impact on the ecosystem and kills a lot of people</i>
Severe Weather	<i>any potentially damaging climatic event that could also result in severe civil unrest or the death of people</i>
Tornado Watch	<i>Issued by national weather forecasting organizations when the weather is conducive to the development of strong thunderstorms with the potential to produce tornadoes</i>
Tornado Warning	<i>Issued by local weather forecasting offices worldwide to notify the public when a tornado has been recorded or detected by weather radar</i>
Enhanced Fujita Scale	<i>based on projected wind speeds and associated damage, used to give a tornado a 'rating'</i>
EF0 (weak)	<i>light damage: some chimney damage; sign board damage; tree branches broken off; shallow-rooted trees uprooted</i>
EF1 (weak)	<i>moderate damage: mobile homes smashed into foundations or flipped; roof surfaces ripped off; moving cars forced off the road</i>
EF2 (strong)	<i>considerable damage: mobile homes destroyed; big trees snapped or uprooted; light objects become projectiles</i>
EF3 (strong)	<i>severe damage: trains overturned; well-built houses' roofs and some walls blown off; heavy cars lifted and tossed</i>
EF4 (violent)	<i>devastating damage: well-built homes flattened; weakly-built buildings blown a distance; enormous missiles produced</i>
EF5 (violent)	<i>incredible damage: strong houses lifted off foundations, carried considerable distances; auto-sized missiles airborne</i>

1: Introducing the Physical and Digital Field

When the tornado came, it was kind of like a reset because we were all, like, on the same... Our feet were on the same ground. We all went through the same together. (Joel, interview, 3 March 2022)

Natural disasters have long been a challenge for humanity (Faas and Barrios 2015), and human beings have always embedded those disasters into their cultural narrative. Embedding them is using them as circumstances which give life meaning, not only for the individual but also for the community. This thesis's research focuses on how people assess risk depending on their own experiences with severe weather and the cultural context in which they live. Does the cultural environment they live in frame their perception of that disaster? Which role does the cultural narrative play, regarding solace and consequences?

Tornadoes have been reported all over the world, but the United States has thousands of them each year, which is far more than any other country globally (National Geographic 2019). The majority of them occur in what is colloquially dubbed as 'Tornado Alley', a loosely defined region of the Great Plains where the atmospheric conditions are ideal for enormous, tornado-spawning thunderstorms. These tornadoes can leave a path of devastation in their wake, sometimes with fatal consequences. My research investigating the social impacts of these tornadoes spanned from February to April of 2022, which happened to be in the midst of tornado season. In just these three months, my field site has seen seven severe tornado outbreaks with approximately 22 fatalities and 149 injured (NWS 2022).

Tornado Alley spans across several states and, although the borders of my field site are unclear, I focused primarily on people living in the states of Indiana, Oklahoma, Alabama, Texas, Kansas, Mississippi, South Carolina, Arkansas and Iowa. Severe weather events in these regions have accelerated in recent decades, having detrimental effects on agriculture, biodiversity and ecosystems, food security, freshwater resources, human health and habituation patterns and energy, among others (Motha 2011), warranting the importance of climate, disaster and anthropological study.

The question this research aims to answer is as follows: How do residents from a hazard-prone area in the United States manifest perceptions of risk? I aim to investigate this by developing a better understanding of the lives of those who are affected by these natural disasters and how locals understand and perceive risk. By doing this, I hope to gain insights that could provide policy-makers, social scientists and citizens with information on how to more effectively deal with and mitigate the risks of severe weather.

Natural disasters and their environmental and social effects are important to research because they can severely affect people's livelihoods. It is crucial to include the viewpoint of those impacted by disasters in the framework of catastrophe study and management because it could aid in the

development of more effective readjustment strategies. I utilized a method of digital ethnography, observing and inquiring into people's perspectives, concerns and values online.

Theoretical Framework(s)

The *Anthropocene* refers to the current epoch, denoting that human action has emerged as a major worldwide geological force (Steffen et al. 2011). The Anthropocene denotes a paradigm change in the relationship between nature and the effects of industrial activity that has been brought about by people's ambition for economic expansion. This concept has gained widespread acceptance in the field of global change study since its introduction and is now occasionally used in popular media articles on climate change or other global environmental challenges.

Crises and catastrophes are notions that anthropologists have struggled to operationalize for years, gaining more attention at the start of the Anthropocene (Reid 2013). Climate change has increased the severity and frequency of natural disasters, resulting in significant increase in losses due to environmental hazards. The increase in the number and intensity of severe weather events sweeping the central United States has caused a reorientation in disaster management systems in the previous two decades, particularly in the Midwest of the United States (Oliver-Smith and Hoffman 2019).

The main overarching theme in which the conceptual debate is situated is that of risk, hazards and disasters (Faas and Barrios 2015). Risk is defined by Cutter (1996, 529) as the probabilistic chance of a hazard occurring. In the context of my thesis, however, it is crucial to make the distinction between *objective* and *subjective* risk, as previous anthropologists have also done (e.g., Boholm 2003). The perception of risk moves beyond the quantifiable aspects of risk into the realm of subjective judgment. It refers to people's assessments of risks to which they (or their facilities, or environments) are or may be exposed. Simply put, these risk perceptions are world interpretations based on personal experiences and/or beliefs. They are ingrained in society's norms, value systems and cultural beliefs. This approach to risk perception is the conceptualization this thesis will be working under.

Much of my inspiration for this thesis came from the anthropologists Anthony Oliver-Smith and Susanna Hoffman, who emphasize that the crucial inclusion of how a people perceive the risks around them, as well as how they imagine and respond to the tragedy that occurs, has been made possible by the concept of culture (Oliver-Smith and Hoffman 2019). They also address the value of ethnographic fieldwork as a valuable tool to study risk and disaster. They argue that the only way to properly understand a community's knowledge and axiomatic desires is through on-the-ground inquiry, which, according to them, has progressively demonstrated to be superior to imposing top-down programs or making superficial assumptions (Oliver-Smith and Hoffman 2019). I wish to build on the groundwork they have laid in the field of anthropology by conducting ethnographic research to investigate ways in which people's perceptions of risk manifest in hazard-prone environments and

how this further affects people's capacities to deal with the consequences of severe weather in the United States. By doing this, I hope to further show how ethnographic methodology can be used to supplement risk analysis and risk perception research.

Conceptual Debate

In this section, I will introduce the conceptual debate within which this thesis is situated. I will start by introducing Mary Douglas's and Ulrich Beck's ideas on risk and will then compare and contrast the two.

According to anthropologist Mary Douglas (1992), risk is a social construct where people evaluate the same risks but arrive at different assessments based on underlying cultural biases related to their way of life. By definition, her *Cultural Theory of Risk* (CTR) concentrates on societal norms that shape people's perceptions of risk, making it a "culturally standardized response" (Douglas 1992, 40). Early in the 1980s, Douglas and her colleagues created this CTR as an alternative to the prevalent technical, cognitive and psychological methods for evaluating risk perception (Douglas and Wildavsky 1983). Depending on one's values and desired kind of social order, CTR sees risk perception as a social process in which some risks are identified and others are hidden.

Ulrich Beck builds on Douglas's work by introducing the concept of the modern-day *Risk Society* (1992). In his theories on the risk society, Beck argues that a totalizing, globalizing economy based on scientific and technical knowledge is becoming more crucial to social organization and social conflict. Earlier class-based civilizations exclusively oppressed the proletariat, but in the growing global risk society, all groups - even the wealthy - are at risk. Beck emphasizes the crucial fact that risk and class positions now overlap on both a national and even global scale. Everybody is at risk for hazards like the COVID-19 pandemic, pollution and global warming. This indicates that trust in the advancement of science and technology is taking center stage in assessing the new risks and uncertainties of the modern world. As a result, people's perceptions changed significantly due to the increasing risks of this nature, altering their beliefs, interests and behaviors.

This thesis is centered around the debate of risk perception, as contested by Douglas and Beck. In order to clarify the contrast in their views, I will briefly compare the two. The role of culture and the significance of risk are two ideas that Douglas and Beck share. However, Douglas follows trends of historical continuity in culturally determined patterns of risk, in contrast to Beck, who concentrates on a new modern era characterized by global risks. According to Beck, there are new types of risks, such as nuclear and ecologically destructive risks, that were not present in the past but now pose a serious threat, while Douglas contends that risks are persistent over time and solely influenced by local culture.

Another important point that Ulrich Beck emphasizes, which contrasts with Mary Douglas's views is the following: "Risk societies are not class societies - that is not saying enough. They contain

within themselves a grass-roots developmental dynamics that destroys boundaries, through which people are forced together in the uniform position of civilization's self-endangering" (1992, 47). According to Douglas, risk perception is strongly embedded within a local culture and is therefore constrained within local and cultural boundaries. In the aforementioned quote, Beck argues the opposite, stating that modern risks break down these cultural boundaries by forcing humanity into a state of uniformity against these new emerging risks.

Both Douglas's and Beck's work entail different degrees of understanding how risk is socially constructed. In *Risk and Culture* (1983), Douglas and Wildavsky argue that there are essentially no discernable differences between the risks we face today and those that people faced in the past. In *World at Risk* (2009), Beck openly and firmly disputes this contention, stating that Douglas and Wildavsky seem to miss or ignore the fact that "people in the Stone Age did not have the capacity for nuclear and ecological self-destruction and that the threats posed by lurking demons did not exhibit the same political dynamic as the man-made risks of climate change" (84). Climate change is used frequently throughout *World at Risk* as an example of civilization's self-endangering. While Douglas and others cautiously kept to pointing out how new developments were really continuations of established processes, Beck was not afraid to declare what he viewed as a distinct break among historical continuities. Throughout this thesis, I hope to contribute to this debate through an ethnographic lens by focusing on the contrasts and similarities between Douglas's purely cultural approach and Beck's proposed modernization of risks in light of disaster studies.

Supplemental Frameworks

A disaster is defined as an occurrence or process that exceeds a susceptible social group's ability to withstand and recover (Faas and Barrios 2015). By relating a calamity to local people's distinctive worldviews, an anthropological perspective can help us better understand how they make sense of it. Disaster-related coping is always a distinctive and contingent development in reaction to local culture and politics, as evidenced by a culturally-specific and site-based reading of the discourse on a natural disaster (Schlehe 2010). This thesis focuses on natural disasters in the form of severe weather. I cover tornadoes as well as hurricanes and will briefly distinguish the two. Tornadoes are unpredictable and formed by a wind vortex created by the hot, high-pressure wind of a single thunderstorm over land, whereas hurricanes are vast, spinning formations of several thunderstorms and can be predicted and prepared for several days ahead of time (NASA 2020). Tornadoes can arise from thunderstorms that make up a hurricane, but solitary thunderstorms are more common. Tornadoes are significantly smaller and more frequent than hurricanes, which can be seen on satellite images and have a far larger range of impact (NASA 2020). Flooding is another natural hazard that is often the result of these severe weather phenomena and is another hazard that I will briefly touch upon.

One of the themes I will be investigating within the framework of risk, hazards and disasters is that of demographics and social inequalities. Natural disasters provide a fruitful ground for investigating systemic social inequality (Oliver-Smith 1996). Age, gender, income and ethnicity are all components of identity that influence the built environment, hazard exposure and adaptive process, resulting in more severe consequences for some groups than others (Reid 2013). Scholars have argued that social structures are strong and long-lasting, particularly in disaster scenarios where the social order is disrupted quickly and profoundly (Enarson 2012, Fothergill and Peek 2004). Pierre Bourdieu (2018, 287) defined social class as a group of individuals who share similar capital and external living conditions, which is the definition this text will be working under. He defined three different forms of capital, namely, *economic*, *cultural* and *social* capital. I will be focusing mainly on *economic* capital, which is immediately and directly convertible into money and may be institutionalized in the form of property rights.

Research Location and Population

The term ‘Tornado Alley’ has been popularized by the media and is commonly used in the general public to describe numerous areas of the United States that have a high frequency of tornado occurrence (Gagan et al. 2010). The map below (see Figure 1) of average annual tornado incidence, which is used in official publications on tornadoes, highlights the Tornado Alley running from Texas to the Dakotas.

When moist air from the Gulf of Mexico collides with dry cold air from Canada, a tornado can form in this area. Tornadoes occur throughout the year in the region, but the majority occur in the summer and spring, and are frequently accompanied by thunderstorms (Gagan et al. 2010). The Great Plains region contains flat and arid terrain, making it an ideal location for conflicting air masses to collide. The people I spoke to are from relatively small cities, towns and communities all over this region.

Because my field site is so large and my methodology is all-encompassing, the research population consists of many diverse communities, varying in characteristics such as age, occupation and social class. I utilized digital ethnography to ensure that I was able to reach informants all across Tornado Alley. However, it is important to consider that the people I come into contact with using this method are exclusively limited to people who utilize social media. This automatically excludes potential participants who do not have access to the internet and individuals who voluntarily choose to stay away from social media. I conducted my fieldwork on several different platforms. In the following sections, I will further elaborate on the digital spaces in which my research took place.

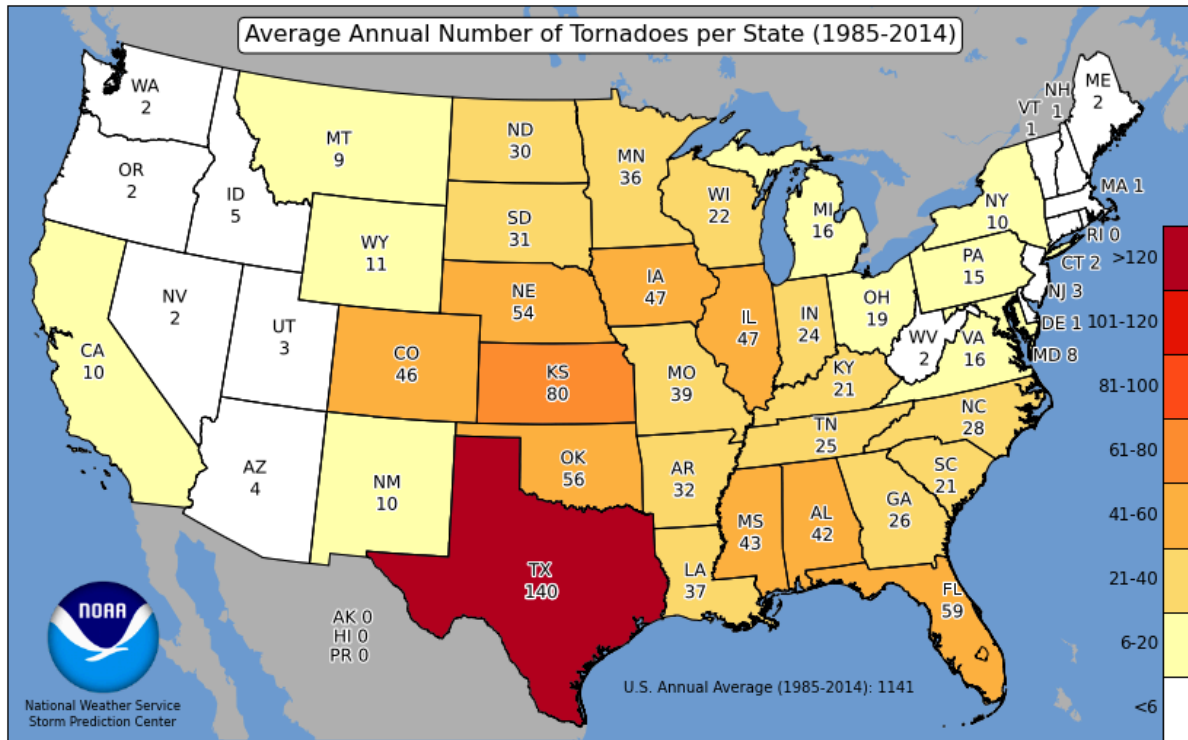


Figure 1. Average Annual Number of Tornadoes per State (1985 - 2014). Map by NOAA National Weather Service, “Storm Prediction Center WCM Page”, accessed on 25 February, 2022.

Digital Spaces

The first digital space I utilized in my fieldwork was *Facebook*, which is a social networking website where users can post statements, comments, share photographs and links, chat live and watch short-form videos. Facebook places emphasis on community and networking and contains ‘groups’ that bring like-minded individuals together. I focused on groups that are designed to inform its members on tornado watches and warnings and supercell thunderstorms as well as providing live media coverage. These groups provided me with the possibility to get in touch with informants. As I quickly realized, these groups carry their own form of culture, providing me with valuable insights into these online cultures of disaster and how they influence risk perception. The majority of the people in these groups were concerned citizens who tended to keep an eye out on severe weather updates and notifications. I also joined groups of storm chasers and spotters in order to gain further access to the people living in the area. The people I encountered in this space consisted more of general enthusiasts, meteorologists, meteorology students and photographers.

Another digital space that I used frequently was *Reddit*, which is an online network of communities where people come together based on interests, passions and hobbies. Reddit is a social sharing platform at its core. It is based on users submitting links, images and texts, which are then voted on by everyone. The most popular content rises to the top, while the least popular information fades away. Reddit is a massive platform with thousands of smaller communities known as

subreddits. A subreddit is simply a discussion board dedicated to a single topic. These subreddits bring together users based on shared interests in niche subjects, professional networks or geographical regions. Subreddits relating to severe weather, tornadoes and Tornado Alley is where I recruited the majority of my interview participants and conducted a large portion of my online analysis with the aim of gaining insight on people's cultural attitudes, values and beliefs to investigate the role of culture within risk perception. Reddit was chosen as the main platform for data gathering in this study for the following reasons. First off, compared to websites that concentrate on social network construction, Reddit's main purpose is to share viewpoints and promote conversation on a specific topic. Second, Reddit allows for the transmission of information in a variety of formats (including text-based postings, links and images), which can offer a rich dataset for understanding perceptions and feelings. Thirdly, Reddit's anonymous setting removes the possibility for personal experiences and opinions to be linked to one's identity and, therefore, encourages more authentic discussion. This makes it a useful platform for learning about the experiences of online community members.

I also spent a significant amount of time in live streams during this fieldwork. One example, the website *Twitch*, enables users to broadcast themselves online. While many Twitch streamers are amateur productions, some users have made a living on this platform. Twitch allowed me to follow severe weather events in real-time, not just through news sources, but also through storm chasers and independent weather surveyors.

I utilized several other platforms as well, including but not limited to *YouTube*, *Twitter*, *Instagram* and varying news sources. A large portion of the research on these websites was conducted in the comment sections under relevant articles, videos and blogs.

Research Methodology

Since the internet's mainstreaming in the mid-1990s, conducting ethnographic research online has been a recognized practice in the social sciences. These methodologies involve interviews paired with the analysis of websites or blogs. Individuals and organizations can now choose how to represent themselves on websites, social media platforms and platforms such as YouTube. For example, I frequently visited official social platforms of the Federal Emergency Management Agency (FEMA) to observe their online activity.¹ I observed numerous social media platforms. A large part of my online analysis also consisted of following live streams of active weather events at the time and taking note of public reaction to these events.

Digital ethnography is a branch of ethnography "representing real-life cultures through combining the characteristic features of digital media with the elements of story" (Underberg and Zorn 2013, 10). As a digital ethnographer, it was my responsibility to process the collection of texts

¹ For example, see www.youtube.com/FEMA

and graphics on digital platforms and make sense of the meanings conveyed. This method allowed me to cover a large geographical territory and gave me the luxury to instantaneously ‘be present’ whenever there was a severe weather outbreak. It also allowed me to come in contact with a large range of different individuals of different backgrounds and occupations, allowing me to conduct research that also carried a comparative element.

I recruited my interview participants through documentaries, my personal online recruitment posts and direct requests sent to individuals online. Having several sources with which to recruit participants was beneficial because it allowed me to access a larger variety of individuals. Furthermore, people responding to online recruitment posts were especially valuable informants because they actively showed interest in sharing their experiences and thoughts, resulting in a lot of data. Documentary research was also valuable because it allowed me to get in touch with experts and first responders, which offered a complementary perspective to the risk perception of ‘average citizens’ or people affected by disaster.

Interviews

A large portion of my data collection depended on semi-structured interviews. After familiarizing myself with the general population, I kept note of informants who seemed to have information relevant for my research. Once I introduced myself and my research and established some connections and rapport with these people through online chatting, I requested to conduct interviews. I ensured that my interviewees felt comfortable talking with me by being sensitive to their needs and showing my concern for their well-being throughout the interview. Because these interviews took place online, it was important to consider some of the potential consequences that this had on establishing rapport: I did not see these informants regularly and several essential indicators, such as body language, went missing. I audio recorded all of my interviews and transcribed them shortly after. I did, of course, obtain informed consent before engaging in any sort of recording practices. I often tailored topic lists and questions to the person I was interviewing. These served as a guideline throughout the interview but I did not let it dictate the interview process. Some of my participants had busy schedules and preferred to conduct the interview over chat, meaning that I conducted the interview by messaging back and forth with the interview participant, sometimes over the span of several days.

Audiovisual Ethnography

Audiovisual ethnography was another method I utilized in which my participants could choose to send me photographs, screenshots and news articles of whatever it was they deemed important and relevant for discussion. Because I stayed in contact with participants online, they would often send me resources without me even having to ask. I believe that this was a unique and

empowering method that yielded a wide range of sensory data. I find that using these methodologies in disaster research provides a novel way to record people's perceptions of hazards and disasters, as well as providing useful theoretical insights into extreme occurrences that are primarily geographical and place-based. My participants sent me photographs of their towns or homes, news articles, podcasts and video series, which deepened my insight in the field and the population. Especially because I did not directly have access to my field site, receiving these resources was incredibly insightful to me in painting a picture of the field and what was of importance to my participants. This practice allowed me to develop a deeper connection with the respective participants, going beyond just interview-format discussions. Utilizing this sensory ethnographic method allowed me to further stay in contact with participants and develop a deeper connection with them. Having this material provided me with insight on the emotional impact of these natural disasters and further deepened my understanding of risk perception throughout the field.

Positionality

Matthew et al. (2009), in their work on natural disasters and human security, emphasize the “need for grounded research that collects evidence about human insecurity that is free from the ideological biases and prejudices that are inherent in popular narratives about the poor and vulnerable” (308). This quote was a rule of thumb that I followed throughout my fieldwork, leading to me being extremely mindful of evidence, biases and knowledge constraints. I also consistently reminded myself to address how my informants' views may differ from my own. I am native to Europe and have lived on the east coast of the United States for four years, where I experienced two hurricanes and saw one small tornado that was far out in the sea. Considering my lack of experience with severe weather, these events, which were already relatively insignificant compared to the weather people in Tornado Alley experience, were incredible to me. Throughout my fieldwork, I have been exposed to many stories that I perceived as epic and unimaginable, but some of these stories were quite commonplace for people in the field. It is for this reason that I had to take care not to overdramatize these stories and, instead, approach them in a more academic light.

Besides the normality of storms, I had to remain aware that there may have been other cultural norms or practices that I did not know of. I always encouraged my participants that ‘over-explaining’ would never be an issue and that I was happy to receive as many details about their culture and communities as possible. Of course, many of my participants have also had traumatic and emotionally charged experiences with severe weather. I kept in mind that my positionality as a female researcher could very well result in some people being more open to sharing personal information with me while making others less eager to do so.

Furthermore, I always presented myself as a 22-year-old university student conducting research. This aspect of my positionality took on different roles depending on who I was talking to.

When speaking to other academics and professionals, I would be more inclined to share information on my field of study and the university I was attending. When speaking to people without a background in academia, I was always careful not to come across as imposing, but rather as interested and concerned about their situations.

Challenges and Ethical Considerations

Using digital ethnography presents challenges but also benefits when compared to using traditional ethnography. The internet is a large arena where a wide range of people come together and are instantaneously available. After conducting digital ethnography, Hine (2008) retrospectively recalls, “I could not even work out how many people I had met, never mind fathom how I might make enough sense out of what had gone on to produce anything coherent in the way of fieldnotes” (21). I prepared myself for this uncertainty by keeping a comprehensive record of participants.

As I previously mentioned, it is also important to consider that the people I come into contact with using this method are exclusively limited to people who utilize social media. This automatically excludes potential participants who do not have access to the internet and individuals who voluntarily choose to stay away from social media. It is important to keep in mind that this may lead to the underrepresentation of certain social groupings.

Additionally, on the internet, anyone can pretend to be someone they are not, potentially leading to challenges with identification verification. When functioning in a digital environment, an individual can adopt numerous personas, avatars or roles that are distinct from their true identities offline due to online anonymity. As a researcher, this can make it challenging to identify actual, authentic stories. In order to combat this, I conducted further investigation on active social media users before taking them at their word. I did this mainly by investigating whether or not the users were who they said they were through assessing account reliability by checking, for example, how long the account has been active and what their networks were like with other users, among others. On top of this, I also took extra care with the process of anonymizing my participants.

Given that I utilized the internet to recruit my participants, it is relatively easy for outsiders to identify them. For the digital ethnographer to extensively examine online social interactions while ensuring the safety and privacy of research participants, a knowledge of the new forms of unobtrusive methodologies made accessible by computers and internet access is required. For this reason, I took extra measures, such as physically and technically safeguarding my data, anonymizing participant information, transcribing raw data as soon as possible and storing de-identified data separately from coding lists.

Using the internet is a modern, widely accepted method for confirming cultural values and reaffirming collective ideals, as well as for finding resonance after suffering (Underberg and Zorn 2013). My priority was to do no harm and, considering the continuous devastation and destruction in

my field, I took extreme caution not to upset any of my informants who may have been exposed to traumatic events. My background in psychology has equipped me with the tools I need to deal with emotionally charged events and conversations. It is worth noting that upset or traumatized people can tolerate study well, according to research, (Benight 2004) and skipping this form of research could also be considered unethical. I ensured my participants' well-being by consistently checking in with them during and after the interview. At the beginning of the interviews, I always made it clear to my participants that they were free to step out whenever they wished and that I would not use their data, if they so desired.

I ensured that all of my participants were above the age of 18. This demanded some additional screening during recruitment as one can never be entirely sure of the true identity of research participants when the research is conducted online. Before engaging in any sort of interview process, I asked potential participants for demographic information in order to verify their identities.

Content Overview

The contents of this thesis will be divided into two main bodies. The first section will be centered around demographics and social inequalities. I will discuss how risk perception manifests itself differentially across different groups of people in light of severe weather events. In the second chapter, I will move on to discuss perceptions of risk in a more holistic and communal setting. This chapter will cover notions of religion and desensitization I have observed throughout the communities. In this section, I aim to show how people evaluate risks in terms of emic, locally defined values and concerns. Because my research is based in the digital sphere while still referring to a physical field site, I would like to make some room to paint a picture of what the field is like and how severe weather can be experienced. I will do this by including two interludes, in which I include and discuss fragments from interviews I had with first responders. These stories were important for me as a remote ethnographer, who has not visited the field in person. These stories aim to paint a picture of the field and some experiences my participants have been through.

Interlude 1

On February fifth and sixth, 2008, the Southern United States and the lower Ohio Valley were hit by a fatal tornado outbreak known as ‘Super Tuesday’. Between the afternoon of February fifth and the early morning of February sixth, the outbreak produced 87 tornadoes in 15 hours. Several destructive tornadoes were produced by the storm system in densely populated areas, including the Memphis metropolitan area, Jackson, Tennessee and the northeastern end of the Nashville metropolitan area. A total of 57 people were killed, with hundreds more injured, across four states and 18 counties. Glenn is now retired but, at the time of this tornado, he was a firefighter on duty. During an interview on 17 March, 2022, he recounted his experiences at the Union University that was hit.

The tornado, when that happened, we were actually out on a false alarm call and we get called to check out this alarm. Over our radio in the truck, we can hear dispatch saying Union University has been hit by a tornado. There are reports that Union University has been hit by a tornado. We're on the other side of town and Union University wasn't my territory. But, from what I heard, it was every engine available to head up there. So I knew it was pretty bad then. There's a couple of entrances and they said trees and buildings and cars and everything were down. I'm sitting in the back of the truck and it's pretty dark because it was raining really hard. There was still tornadic activity going off and everything. So I couldn't really see anything. And all the lights were out. That was the eerie thing. No street lights, no stop lights or anything like that. They're all out. So we get up to Union University and it's kind of pitch black. Well, when I got out, it was like, "Holy..." And it looked like a bomb went off. There was just debris everywhere. I thought, "Man, this is going to be a body recovery," because I thought, "There's no way anybody can live through that." My first thought was, "Boy, how many bodies are we going to pull out tonight?"

That night was ingrained in Glenn's memory. The National Weather Service issued the advisory in the middle of winter on an unusually warm day, warning of a severe weather outbreak over the Southeast of the United States. Emergency personnel and school administrators discovered there were 11 pupils trapped under the debris.

We go over there and we're standing on this pile of rubble. And my chief was saying, "You mean there's boys down- there's students below this?" So me and this other firefighter that I work with quite a bit, we started scouting around the bottom of this pile because everyone was kind of up on top of the mountain. And so we got down and we started scurrying around the bottom part, and we could see there was, like, a little cave of concrete. And so we flashed our flashlight in there, and the first thing we saw was a urinal. So I said, "Anybody in there?" And there was, like, four or five,

“Yeah, we’re trapped!” “We’re in here!” “We’re in here!” And this one kid said, “I’m right behind this toilet, right here!” He said, “I can see your light! I can hear your walkie-talkie!”

Several students at the university had sought refuge in the restrooms of their dorms while a tornado destroyed the surrounding structures.

But this urinal was kind of right in the way to get out. So my buddy gets a hammer and he tells the kid, “If I smash this urinal, can you get out?” The guy’s like, “Please smash it! Smash it!” So it’s porcelain and a couple of whacks with the hammer, it just broke. And this kid just comes scurrying out, just on his belly and his knees. I went in there on my belly and then I could talk to some of the guys. So they got some chains, put it around this bucket and we’re lifting off pieces of concrete piece by piece. So they’re getting one person out at a time, over an hour or something like that. I’d run down in that little hole and talked to mostly the last guy because he was trapped, like, right at the bottom and he couldn’t move. His legs ended up getting hypoxia, which is a blood flow stoppage. And so he was pretty much paralyzed. And then the sirens are going off. They’re telling us to evacuate because there’s more tornadoes coming for the university. The kids are going, “Please don’t leave! Please don’t leave!” And so we said, “Hey, we’re not leaving.” The sky was all dark and scary-looking. We just kept on going ‘til the last guy got out of there.

Fortunately, the second storm never materialized and the rescuers were able to continue their duties. While the students waited for rescuers to arrive, he and his fellow detainees passed the time by singing, praying and throwing up. The student at the very bottom had been stuck in an extremely uncomfortable position, with his knees in his chest, unable to move, for five hours. Around 23.30, he was finally extricated from the wreckage and sent straight to the hospital.

He didn’t think he was going to make it. I didn’t either. So he told me to tell his mom that he loved her and stuff. He just wanted me down there. So I stayed there. And it was heartbreaking because he gave up. He actually passed out about the last 15 minutes, and I kept saying his name. I thought he passed away.

As soon as he saw the wreckage, he assumed people had died. When he was talking to the trapped student at the bottom, he thought the student would not live to see the next day. These accounts can be understood in the light of Mary Douglas’s cultural theory of risk perception, in the sense that Glenn’s previous experiences as a firefighter shaped his risk perceptions. An individual working in this sector is frequently exposed to greater risk scenarios because of the ‘firefighter culture’. As a result, firefighters may perceive less personal risk and instead concentrate on potential

risks to others. This would explain why, despite being instructed to leave as another storm was approaching, Glenn and his colleagues chose to stay until all of the students had been rescued.

2: A Changing Climate and a Segregated Response

I have lived in and visited various places throughout the course of my life, and everywhere I go, I encounter people who have similar stories to share about the weather and changes in the climate they have noticed. In Iceland, the glaciers are melting away at a concerning rate; in Egypt, the coral reefs in the Red Sea are losing color; in Switzerland, the snow is disappearing off the Alps; in the United States, there are more instances of severe weather and issues with flooding as a result of it. People everywhere express concern that local landscapes, seascapes and icescapes are irreparably changing as a result of the increasingly unpredictable weather.

As more people engage in a carbon-based, throw-away culture of consumption, biological systems are being pushed to new breaking points, and ocean and atmosphere warming is transforming life for millions of people (Matthew et al. 2009). In order to cope with the consequences of climate change more effectively, a contextual, local and critical understanding of how climate change affects social organization and institutional responses is crucial. Anthropological study can contribute to this understanding by investigating the experiences and risk perceptions of people that are affected by climate change and how they cope with it.

Firstly, I would like to put into perspective the nature of tornadoes and dangerous weather throughout Tornado Alley, as this thesis may create a false representation of tornado seasons. One of my main informants, professional meteorologist Tom, refers to tornadoes as “low probability but high impact events”. The following vignette aims to demonstrate the general perspectives of the population and their experiences with severe weather.

Today I found a Twitch channel run by two storm chasers who often live stream during severe weather events and decided to tune in to one of their streams. A user in the comments made a remark that sparked a lot of activity and controversy in the comment section. The comment was: “So dangerous! Why would anyone live in Tornado Alley?!” This single question provoked a lot of discussion and responses. Many individuals made remarks about tornadoes being “exceedingly rare” and people claiming to have lived in the area their entire lives said that they had never personally seen one. A 38-year-old viewer specifically mentioned that outsiders tend to overestimate the frequency of tornadoes. She had lived in the same place her entire life and said that “the last time a tornado hit my hometown was before I was born.” As an outsider myself, I decided to further investigate this general public experience with severe weather. I logged in to my Reddit account and created a post inquiring about the experiences of Tornado Alley residents with severe weather. The users in these comments generally provided me with similar responses. One user said, “Losing your home to a tornado is really really rare. But the news makes it seem way more common than it really is, since they don’t do news reports about the thousands and thousands of people who are perfectly safe after a tornado. (fieldnotes, 22 February 2022)

This excerpt aims to demonstrate a realistic view of living in Tornado Alley, in order to put the dramatic stories throughout this thesis in a properly-represented context. These users frequently asserted that practically everywhere is susceptible to some sort of risk.

That being said, this thesis focuses on the sub-demographic in Tornado Alley that *has* been affected by severe weather. In this chapter, I plan on investigating, through interviews and online analysis, some factors that may influence the risk individuals in the United States face in the context of severe weather, with a special emphasis on the production and reproduction of economic and social inequalities. I will start by highlighting the role of climate change in this issue in order to demonstrate the fluctuating nature of risk (and corresponding risk perception) in these environments. I will then move on to discuss some of my observations pertaining to inequality, which I will demonstrate through the discussion of living conditions, institutionalized assistance and societal practices around evacuation.

A Changing Climate: The “New Normal”

Given the enormous impact humans have had on the environment since the beginning of the Anthropocene, it is important to ask ourselves, where is the line between a natural and a man-made disaster? Severe weather is certainly not unique to this epoch. However, because I utilize severe weather as a manifestation of anthropogenic climate change in the United States, I first intend to clearly demonstrate the link between severe weather phenomena and climate change. This is an essential first step, especially considering that this research investigates the importance of Ulrich Beck’s risk society thesis for comprehending the nature of climate change, hazard and politics.

Now that I’m older and can fully grasp climate change, I do notice differences as opposed to when I was younger. I remember a tornado outbreak when I was fairly young in the month of December, but it wasn’t a regular occurrence. We had another outbreak this past December that affected multiple states in Tornado Alley, and I noticed many stating that it was becoming the new normal to have such weather in our winter months. Not tornado-related, but my state has had three winter storms in the last month. That’s *not* normal at all for us. (...) I definitely believe climate change is contributing to severe weather phenomenon. (Emma, interview, 16 March 2022, emphasis added)

This is a quote from 27-year-old Emma, a healthcare worker, who has lived in the state of Arkansas for her whole life. I learned a lot about her perspectives and her community as she is an active user on Reddit. The interview I had with her was mainly focused on the losses that she and her family faced following tornadoes, such as the death of her uncle in 2014, and the impact that severe weather events have had on her community. During an interview, she reported directly observing climate change manifesting itself in the form of severe weather phenomena. Not only did Emma

mention her own perception, but also the perceptions of many others, who were referring to a “new normal”.

This ‘new normal’ alludes to Beck’s contributions, who believes that the ‘new’ risks of late-modern civilization are difficult to calculate (2009, 63) because of their non-localized character and probable long-term repercussions. Catastrophic situations, such as the winter storms that Emma referred to, are no longer the exception, but rather the new norm in a risk society.

Another incredibly helpful informant I met on Reddit was Grace, a 40-year-old high school teacher who has lived in Texas for her whole life. At the time of my research, she was also studying American history. When I spoke to her, she mentioned noticing longitudinal changes in the weather: “It’s something that you have to see over time. You’re talking about a decade at least, of looking at things, because I do think that the storms are getting stronger.” Throughout this interview, she placed special emphasis on how the change is extremely gradual and almost unnoticeable if one does not live in the location for an extended period of time. This is where Mary Douglas’s (1992) contributions to the conceptual debate shine through. Her cultural theory of risk (CTR) allows us to place greater focus on the psychological, political and social setting in which extreme weather is subjectively understood in relation to climate change.

Grace made another interesting observation:

So you have, like, these tornadoes that go through [cities and towns throughout the United States], and they’re far more devastating (...) than what happens in the Great Plains. And part of that might be that it’s more populated, but that might be a factor of why they’re getting deadlier is because, again, that’s part of climate change. Our Tornado Alley has shifted. (Grace, interview, 24 April 2022)

This observation that Grace made about Tornado Alley shifting is an interesting one that I consistently heard from a number of other participants as well. These participants’ shared understanding indicates the existence of a cultural basis. It is most likely based on shared experience and reasoning among the interviewees rather than on specialized knowledge. However, the observation does seem to hold merit based on meteorological studies. According to research, the location of tornado days *has* changed eastward, southeastward and northeastward (Cao et al. 2021).

This shift means that there are places which are suddenly newly affected by severe weather (or more affected than before). For people living in those places, there would no longer be a historical continuity as new risks have emerged for them and their risk perceptions may change in response to these new risks. This would bring Douglas’s CTR into question. As an example, I refer back to Emma’s encounter with an increase in the amount and severity of winter storms. According to Douglas’s CTR, people living in these areas would rely on culturally-based risk perceptions from the past, implying that they would not adapt their behavior to account for new emerging risks. In contrast to that, in line with Beck’s description (2015, 83), the risk perception of these people would change in

response to the new emerging risk and they would develop new ways of being, looking, hearing and acting in their environment. Given Emma's description of the increase in severe winter storms being accepted as the "new normal", it seems that people living in that area have accepted severe winter storms as a risk factor associated with living there, which would be in line with Beck's description. Indeed, it does seem that the community quickly adapted to these changes: "Our city provided road services that made sure streets were cleared from snow and ice." She also mentioned being "very impressed" with the state's and local community's quick implementation of measures. "The Southern US as a whole was better prepared this year compared to the year before," she told me. "Hopefully that preparation continues going forward in the coming years!"

Grace frequently deals with tornado preparation due to her Texas residence. During my interview with her, I realized that it seemed as though a subculture of people frequently exposed to tornadoes had developed in her environment, due to their increasing awareness of severe weather and tornado protection measures. Grace would often send me videos from a YouTube channel called *It's a Southern Thing*, many of them relating to Southern weather that would often comically represent the situations in ways that many others could relate to.² By supplying language, concepts, laws and other elements that are unique to that particular subculture, this subculture starts to define and create a version of collective 'reality' that directs its members' lives within the subculture. To put it another way, the emergence of more violent storm seasons in Texas is changing how the local populace perceives risk, what they witness and what they imagine would happen 'normally' during these seasons. Beck (1992) emphasizes this notion when he says, "Risk society is a catastrophic society. In it the exceptional condition threatens to become the norm" (24).

I was able to get an expert's opinion on the reported 'shift' of Tornado Alley when I interviewed Tom, a professional meteorologist who reported live during a deadly tornado in 2013 that took place in Moore, Oklahoma. The following was his account of what is occurring in the current meteorological landscape:

Climate change is absolutely happening, and we see it a lot (...) We have seen the ingredients necessary for tornadoes have certainly increased (...) In my observations, Tornado Alley has been expanding because of climate change over the last couple of years. One of the (...) debates that people have out here is that they think that Tornado Alley is shifting, and it's not shifting. It's not like Oklahoma is no longer in Tornado Alley, but more so that we have seen an expansion of Tornado Alley where it's not only in the middle of America, but it's in the southeastern part of America as well. (Tom, interview, 27 April 2022)

² Some examples:

Southern Dads Before A Tornado: <https://www.youtube.com/watch?v=sFgcv05ZHLk>

Why Southern Weather Makes No Sense: <https://www.youtube.com/watch?v=SCA7DO5EcBQ>

Things Southerners Say During Bad Weather: https://www.youtube.com/watch?v=bM98p_BZXjI

This expansion can increase risks in previously unaffected areas. Beck views these risks as fundamentally new in the modern risk society. Douglas, on the other hand, views this as merely a worsening of a risk that is otherwise essentially unchanged.

Last October, we set a record for the most tornadoes ever. In October, we had 34 tornadoes, and we usually average two. So you want to talk about a sharp increase? (...) Our season for tornadoes is also lengthening as well, especially going into the fall times. It's a trend that I've definitely noticed, and I would say that very well could be tied to climate change, because what we've noticed with climate change is the variability that we have more now with our weather. It's no longer just springtime that is active for tornadoes. Now, we're seeing it in the fall as well. But it's the variability. You can have some really active years, and then you can have some years that are just completely quiet. And that's something that we're not accustomed to. (Tom, interview, 27 April 2022)

In this segment, Tom provided me with information that I was unable to find anywhere else. Here, he discussed the month of October, which was not always considered a season for tornadoes. Tom described that, during this 'second' tornado season, there were a few major tornado outbreaks. Throughout the field site, this second tornado season in the autumn is also being embraced as a 'new normal', as discussed by Emma.

The main reason why I included this section in my thesis is to demonstrate that this issue of risk caused by severe weather is not one that we can expect to remain the same over the years. In light of Douglas's CTR, one could argue that risks associated with severe weather are not unique to the Anthropocene and have been present throughout human history. However, based on Tom's explanations, it is reasonable to assume that climate change can cause fluctuations in extreme weather seasons. The risk tied to these extreme weather events is, therefore, also expected to fluctuate over the years. This is in line with Beck's risk society, which emphasizes the novelty of climate-related threats and the dynamics of modernization that lead to the development of such concerns. It is asserted that the forms of risk that are essential to Beck's concept are epitomized by climate change, which can be difficult to observe and calculate.

Now that I have clarified the ways in which severe weather is relevant to Beck's assertion within the conceptual debate, I would like to move on to discuss the ways in which climate change, in the form of severe weather, is impacting communities. I will do this by first investigating living conditions and then moving on to more macro-oriented issues of institutional and government approaches.

Land Inequality

A fellow student in my program had relatives residing in the United States at the time of my research and was kind enough to refer me through to her mother, who I refer to as Christy, who I was

fortunate enough to interview. 54-year-old Christy has experience working in the insurance industry and provided me with many valuable insights, which is why her name will appear frequently throughout this thesis. During a discussion that we had about hurricane Katrina, she first opened my eyes to the issue of geophysical living conditions:

Katrina was very devastating, and I don't know how many lives were lost because of the flooding. It was more so the actual flooding that happened than it was tornadoes (...) or just wind damage. It was mostly flooding. So I think that's something that concerns a lot of people because if they're one, they're already below sea level and two, if their houses are in lower areas, then it's definitely a concern. (Christy, interview, 26 April 2022)

Christy's account sparked my interest in investigating the topic further. I inquired in some people's experiences with hurricane Katrina when living on low elevations.

[My city] is built on a floodplain, with poor construction projects worsening floods. (...) Businesses are just used to it. I had entered a copy shop one time when it had just started to rain. Fast forward 15 minutes, and it's a downpour. The water had risen above the curb and was coming in the doors of the store. The employees just sighed and got the sandbags out - they kept them right behind the counter for convenience. (Reddit user, social media analysis, 23 April 2013)

Research shows that people living at these lower elevations are at a greater risk for flooding (Pradhan 2009, Mojaddadi et al. 2017). However, they do seem more prepared to deal with these risks, as demonstrated through the fact that the employees at the copy shop were ready to quickly and efficiently deal with the crisis. This story helped me realize that people who live in floodplains with buildings and homes that are not structurally sound may perceive more flood risk which allows them to prepare better. This account is in line with Douglas's (1992) CTR as this individual asserted that flood risk in his city is simply a fact of life, which is why the residents are sufficiently prepared. Their local cultures have taught them how to anticipate and prepare for this risk. However, hurricane Katrina flooded areas that are typically not prone to flooding. For example, the residents in New Orleans were not as accustomed to flood risk. In total, some 518 of the 771 deaths in New Orleans that were examined following hurricane Katrina were caused by exposure to flooding (Jonkman et al. 2009). Hurricane Katrina serves as an excellent example of a risk in Beck's (1992) risk society. The associated flood risk was no longer a risk exclusive to communities living at low elevations - severe weather on this scale does not discriminate.

I, personally, come from a relatively affluent family and we have lived in the United States for four years, which also gave me some insight on how people from my own demographic perceived these situations. While interviewing my mother about the several severe weather events we experienced during our time there, she mentioned: "I realized that we have always picked houses on

some sort of elevation or a situation where we were a bit higher up or not in a steep valley or not at the bottom of anything. And I think, unconsciously, that's what we were attracted to." She demonstrated how having the resources and ability to actively choose one's own living location can reduce perceived risk and aid in a sense of security against these environmental risks. In this case, choosing to live at a higher elevation reduced our risk of being exposed to flash floods, which often came hand-in-hand with severe weather issues. This exemplifies how people with more resources are better equipped to deal with the new risks as described by Beck (1992), whereas those with less resources may be more dependent on the help offered by the community/culture they are part of.

However, the living situation has to do not only with where the home is located, but also the quality of the home itself, which is what I will be discussing next.

Estate Inequality

Emma follows online updates and information regularly. She shared a story with me about a National Weather Service surveyor who traveled to an area in Texas that was affected by tornadoes during the time in which I was conducting the fieldwork. The surveyor had shared his thoughts on Facebook and posted an image of an impacted house that Emma also shared with me (see Figure 2). This is what she had to say about the image: "Basically the house is a newer build but was constructed poorly, as in it was simply nailed together and so the tornado pulled the walls down much more easily. Tornado Alley really should have better constructed homes and it's truly sad that we don't." This first drew my attention to the poor construction of homes in Tornado Alley and how this issue is exacerbated through economic inequalities among people, placing certain groups more at risk than others.

Certain cost restrictions may even prohibit some individuals from living in a house or building complex at all. Christy mentioned that:

It's not uncommon for people to live in trailers. So, basically, a trailer would be kind of like a manufactured home, but it's usually very long and narrow. (...) Those are most susceptible to hurricanes, tornadoes, any kind of wind or storm, because some of them can be on a cement base. But most people don't have them grounded. So it's not unusual that they will fall over or just be completely demolished. (Christy, interview, 26 April 2022)

People who live in mobile homes account for around half of tornado deaths (Ashley 2007). According to Daley et al. (2005), during a powerful tornado, people in mobile homes were 35 times more likely to die and 12 times more likely to get serious injuries. Christy, through her account on mobile home living, showed that underlying physical and societal vulnerabilities have a significant impact on the effects or severity of tornado impacts on people. I recall watching news forecasts and weather reporters urgently advising people who live in trailers to seek shelter elsewhere.



Figure 2. Facebook post by NWS surveyor, showcasing home in Texas destroyed by tornado. Photograph by Tim Marshall. Facebook, March 25, 2022.

What role do the particular characteristics of trailer and mobile home parks have in determining the risk of disaster for residents? I hope to shed more light on this issue using an ethnographic approach. Upon stating my question on the internet, several individuals came forward to share their experiences. One individual shared an experience from last year.

In the tornado that passed through my town in 2011, I saw a trailer that looked like Godzilla used it to beat down Mothra. It was thrown across the road and twisted. They pulled one of my students and her brother from the bathroom. She was nearly dead. No problem living in one, I do to this day. However, when the warning goes off, I'm out the door to the underground shelter. (Reddit user, social media analysis, 9 March 2019)

This user's understanding of risk when a tornado could hit a mobile home is in line with Douglas's (1992) CTR because it is based on his experiences and prior culture. Many mobile home parks will have these underground shelters, but many others do not. A tornado shelter was

provided for inhabitants of about 33% of mobile home parks in the United States, according to Schmidlin et al. (2009), who also observed that many of these facilities were above-ground chambers with windows intended for functions other than tornado shelters.

The above accounts illustrate the impact that housing, specifically mobile housing, has on risk perception in relation to extreme weather. People living in mobile housing are particularly at risk due to tornadoes, which is reflected in their risk perception. This can be understood within the framework of Douglas's CTR, as the risk has been so embedded in the culture that specific guidelines for how to act in response to a tornado (warning) when living in a mobile home were created (see Figure 3).

Many individuals who reside in mobile housing are compelled to do so due to limited financial resources. The subject of insurance, which I will be focusing on in the next section, is another crucial element when examining the role of economic capital in managing risk.

Individualized Risk: The Case of Insurance

In 2013, while I was living in the United States, a hurricane hit our home and we were out of power for several days. My father quickly went out and purchased a backup generator for the first time and, as part of my fieldwork, I had a discussion with him in which he recalled that storm. “I learned everything about our house and our generator and I- it’s still amazing. It’s amazing. You start a generator and suddenly the fridge works in every room. We had to live like that for, I think for only two or three days, and then we got the power back,” he said. He emphasized the crucial difference backup power generators can have when he mentioned, “Our neighbors, they were out of power for two weeks.” When asking Christy approximately how many people have backup generators in her area she said the following: “I wouldn’t say everybody does. They are quite expensive.” She continued by saying, “Upper-middle class and higher class people will have generators. I think that it’s probably cost-prohibitive for some of the lower income families.”

This is where I would like to introduce a core feature of Beck’s (1992) risk society, namely, that of the *individualization* of risks. Individualization, according to Beck, is “the disintegration of the certainties of industrial society as well as the compulsion to find and invent new certainties for oneself” (Beck et al. 1994, 14). This notion provides insight into how much Beck’s risk society still applies today as well as some interesting speculation about the future of corporate governance in risk society. As the state shirks its traditional duties and transfers them to its people, the risk that individuals face increases as a result of making their welfare a matter of individual responsibility through self-provision (e.g., private disability and life insurance, unemployment insurance, increased personal savings, etc.).

While it may be tempting to view this process as emancipatory, Beck contends that, under modernity, freedom from the stifling and social-ordering practices of industrial society only liberates people into “the turbulence of the risk society” (Beck et al. 1994, 7). This individualization causes a division, creating strata of people that are able to support themselves, build social networks, attain educational goals, amass wealth and ensure their personal security. On the other hand, it also creates



Figure 3. Tornado safety for mobile homes steps and checklist. Instructions by NOAA National Weather Service, “Severe Weather Preparedness Week”, accessed on 16 March, 2022.

strata of people with increased risk, compromised long-term economic security, limited access to educational possibilities and, consequently, the labor market resulting in cascading impacts on their health and well-being as a whole (Beck et al. 1994).

One aspect of the individualization of risk that I observed in the field was that of insurance. Christy provided me with more insights on the further consequences of trailer and mobile home living, specifically in regards to insurance and recovery costs, as she used to work in the insurance industry, doing financial planning:

This is where I see the biggest problem. If you're just renting, people don't understand that they can buy insurance to protect their property. It's relatively cheap. But people that are on a lower income, that's just-insurance is one of those things that they think is not something they need. But for \$10 a month, they could cover \$10,000 worth of personal property that they have. So say the trailer is destroyed and all of their belongings are gone. The owner of the trailer will normally have insurance on the trailer, but it doesn't cover the contents because he's renting it out. So the people that are living in it, the contents belong to them. And if they don't have insurance on it, it makes it very difficult for them to have to start over again. It's a very simple solution to protect them, but most people don't bother getting it or they're not aware of it. (Christy, interview, 26 April 2022)

In this passage, Christy demonstrated how helpful insurance is to cope with the consequences of severe weather. However, \$10 a month may make a significant impact to low-income individuals in reducing immediate 'smaller' risks that are more prevalent (e.g., paying bills, eating enough to survive), leaving little to no room to be as concerned with potential 'larger' and unforeseeable risks like tornadoes. This underlines an important aspect of risk perception for individuals with less resources. These individuals may not have the resources to take measures to prepare for the possibility of a 'large', comparatively unlikely, risk while also dealing with 'smaller' guaranteed and immediate risks. Therefore, they need to make a choice: Do they prioritize financially managing the guaranteed, 'small' day-to-day risks or the possibility of a 'large' risk occurring (such as a tornado hitting their trailer)? It seems reasonable to prioritize the immediate and guaranteed risks. Unfortunately, in some cases this has devastating consequences, with residents potentially losing all of their belongings with no way of recovering through insurance payouts.

Beck (1992), within the conceptual debate, points out that many risks in the risk society (e.g., radioactivity, air pollution, climate change) affect both the rich and the poor. However, he emphasizes that the wealthy can *purchase* safety from risks depending on their level of wealth, influence and/or knowledge (35). One way to acquire safety from risks is through insurance, which also draws attention to people who are underinsured or uninsured and cannot afford the same precautions. So far, these aspects also fit in with the framework of Douglas's (1992) CTR. The wealthy and poor have their own respective subculture with their own values and norms that influence how its members

perceive risk. However, while Douglas's CTR posits that the risk perception is solely based on cultural norms and values, Beck emphasizes the individualized aspect of risk perception. He argues that, although severe weather is a social risk, reducing one's vulnerability to severe weather hazards is becoming more and more individualized. It is up to the reflexive individual to make plans, fortify the home, find insurance and protect themselves, with their ability to do so being influenced by social inequalities. The successful negotiation of risk through reflexivity remains heavily dependent on socioeconomic or class position, and people in higher socioeconomic or class positions have more freedom to engage in reflexivity because they have more wealth, power and education. Despite their differences, Douglas and Beck do agree on the importance of social class and resources for risk perception.

Insurance is, however, not the only thing for disaster victims to fall back on. In the following section, I will focus on the governmental support that people with lower income receive and how it influences their risk perception.

Bureaucratized Risk: "They tell me nothing but to wait"

Affluent communities have historically gotten help in the form of, for example, infrastructure reconstruction before poorer communities (Bolin and Stanford 1998). Under Douglas's (1992) CTR, this may differentially influence the risk perception of different communities.

I decided to look into this in more depth and asked Christy about what resources lower-income citizens have access to following severe weather storms. "We do have FEMA, which is the Federal Emergency Management Agency", she informed me. "They will supply financial support to the lower-income people to help them rebuild, kind of help them get back up on their feet."

While many social media users seemed satisfied with the services that FEMA provide, there were many others on local subreddits and discussion boards pertaining directly to FEMA that voiced their frustration with how relief efforts were being organized. One individual recounted her experiences with FEMA following hurricane Ida last year. The following account is from the second of September, 2021. "Applied the day after the storm. Still pending [two days later]." She evacuated her home before the storm, which received substantial damage. "I've called four or five times. They tell me nothing but to wait. I have \$12. I'm stuck in Alabama. Only have the hotel till the 4th. The 1st was my birthday. I'm tired."

Several other users tried to comfort her and suggest things she could try to do. She was told to call the Red Cross and Catholic Charities, who also could not help her. "Tried again. Called FEMA. I made a mistake on my application," she explained. She realized that she had not indicated needing new clothing, even though she had nothing. "I asked to please edit it," she continued. "They told me they can't edit it and I should have been truthful. I was truthful. It's just human error. I was clicking tiny boxes in a car on the Interstate from my phone."

This is only one of the many accounts I came across on the internet of people struggling with finances following a disaster. Other people also seemed unhappy with the bureaucratic nature of FEMA and believed in the self-sufficiency of local communities:

Tree across the road? Fuck waiting. Me and the guys with chainsaws are going to get it out of the way. If there has to be a FEMA-esque organization, then it has to be on a local scale. It's better for the community. Less bureaucracy, time wasted, other FEMA bullshit. FEMA managed after [hurricane] Isabel and it took some people months to years to get money. (Reddit user, social media analysis, 29 October 2012)

This requirement for flexibility revealed a conflict between the expectations that survivors should be able to receive state assistance but should not be overwhelmed with a formal and bureaucratic procedure. He further emphasized the importance of communities to be self-sufficient following disaster and displayed a general mistrust in institutionalized relief efforts to properly carry out their duties. Another user replied to this statement with:

A tornado ripped through my hometown last year, demolishing several houses and generally making a mess of things. Within 12 hours, high schoolers were sending Facebook messages to alumni who had moved on - informing us of what happened. The community was rushing so headlong into cleanup that the fire department had to tell them to hold back so they could first do proper organization. (...) There was no thought of calling up the state government. (Reddit user, social media analysis, 29 October 2012)

Despite the fact that modernization has created a risk society (Beck 1992) where people must deal with new threats and crises, it has also enabled people to reflect on themselves as well as their social environment, allowing them to rebuild their subjectivity and individuality alongside and within their community, as is shown in this segment. These accounts demonstrate the ways in which people show self-reliance following these disasters. These users, along with a large number of others, frequently express attitudes that emphasize self-help, lack of faith in the ability of the state to protect them and reluctance to readily accept recommendations for new government regulations. According to these locals, it is crucial that each person take responsibility for their own self-preparation activities and that the community members collaborate to build the collective capacity required to improve the security and resilience of their community.

The mistrust in science and governmental regulations to mitigate these modern-day risks is a concept that is essential to Beck's view of the risk society and is also demonstrated by these participants. He offers a view of risk that emphasizes the tensions between social welfare, political objectives and economic advantage in how risk is viewed, comprehended and handled in the modern age. It is the individuals who must confront the hazards and figure out how to lessen the effects of risks on their lives due to the worsening social class determinants and the declining power of the

dominating institutions (Beck 1992, 87-90). This is where Beck's notion of individualization comes back into play. Threats and ambivalences in human life, such as hurricane Isabel in 2003, must be observed, evaluated and managed by individuals themselves (Beck 1992, 2015).

As a result, risk society develops what Beck refers to as a climate of doubt and fear. He noted a growing trend of public mistrust of expert systems. The legitimacy and importance of institutions are being called into question because they are no longer the wellspring of people's lives. Instead, it is up to each person to determine their own sense of purpose and level of assurance. In the risk society, a climate of public skepticism has replaced earlier presumptions surrounding acceptance of knowledge and institutional authority. This contrasts with Douglas's CTR, as the previous cultural norms of relying on authority to deal with risks cannot be relied on anymore and people have started to perceive risks as something they have to deal with themselves.

Property and personal valuables are not the only thing that people in Tornado Alley must account for when considering the risks of severe weather in their area. In order to ensure their own safety, households may choose to evacuate from their homes in anticipation for hurricanes. In severe cases, the state may even issue a mandatory evacuation. The last section of this chapter will move on to discuss evacuation behaviors and how these may be influenced by resources and risk perception.

Evacuation: "We had been abandoned"

Christy provided me with many valuable insights on the issue of inequalities, in general. She also had some insights to share regarding inequalities in evacuation: "Many people can't afford to stay in a hotel." Christy mentioned having to evacuate for hurricane Ivan in September of 2004, and being able to stay with family who lived out of state. It has also happened that her family evacuated from their homes and stayed with Christy for some nights. Unfortunately, many lower income individuals do not have the means to evacuate, not to mention temporarily maintaining their lives in an unfamiliar territory (e.g., Whitehead et al. 2000).

Beck's (1992) contributions to the conceptual debate make a clear appearance here in the sense that political, economic and socio-cultural structures have an impact on how the risks that drive people to migrate are perceived. In this light, Beck's (2004) paradigm of methodological cosmopolitanism really referred to a 'cosmopolitan turn' in how we think about movements, circulations and migrations. In the context of climate change and severe weather, growing evacuation can be explained by the breakdown of many industrial society's certainties and the need to search and create new certainties for oneself and others.

I briefly spoke to a 29-year-old man named Peter, who recalled waiting for hurricane Ida to make landfall in Louisiana's capital city in August of 2021. As the hurricane approached, he had spent days watching lengthy lines of cars evacuate from Baton Rouge, destined for safer destinations out of state. "We couldn't afford to depart because we didn't have any money," he told me. Peter also

told me that many of his low-income neighbors were in the same boat. They wanted to leave to protect their families, but did not have the means to. “Many of us in my area were forced to just wait, not knowing how bad it was going to get. It was really terrifying,” he said. “We had been abandoned.” He demonstrated to me how disaster cycles occur when individuals who are most vulnerable are unable to get money for weather-related preparation.

In light of the conceptual debate, the theories of Douglas (Douglas and Wildavsky 1983) attempt to explain why people have different risk perceptions and reactions that are created locally owing to different cultural backgrounds. This variance arises from the fact that people’s risk perceptions, information processes and reactions are constrained by collective perception, social norms and rules in addition to being influenced by their families, friends, coworkers and communities. More particular, over an extended period of time, accumulated disaster experience and regional risk perception and risk management strategies are developed.

In this chapter, I have discussed the ways in which risk perception manifests differentially across different social groupings in the context of severe weather. This investigation was based on ethnographic explorations into topics of climate change, living conditions, institutionalized risk and evacuation behaviors. I linked the accounts of my informants to the conceptual debate between Mary Douglas’s CTR and Ulrich Beck’s risk society. I was able to tie citizens’ perceptions of the changing meteorological landscape to Ulrich Beck’s ideas about the changing nature of late-modern civilization and the new environmental risks that come with it. One may contend that threats related to severe weather are not unique to the Anthropocene and have existed throughout human history in light of Douglas’s CTR. However, based on the accounts of my participants, I anticipate that the risk associated with these extreme weather events will change over time. This is consistent with Beck’s theory of the risk society, which highlights the novelty of climate hazards and the modernization dynamics that give rise to the emergence of such concerns.

I discussed the difficulties that come with insurance and the ways that risk perception, which differs between socioeconomic groups of people, can influence people’s decisions regarding insurance. I spoke about this specifically in the context of mobile home residents. I further discussed Ulrich Beck’s ideas about the effects of social inequalities on risk preparedness and the role that insurance plays in it. Beck emphasizes that numerous dangers in the risk society affect both the rich and the poor. He does stress, though, that wealth, power and/or expertise allow the privileged to purchase protection against risks. Despite the difference in their views, Douglas and Beck both concur that social class and resources play a significant role in risk perception.

I also emphasized Beck’s views on authority and the ways in which his notion of the risk society is shaping late-modern attitudes towards authority. He observed a rise in the populace’s skepticism in expert systems, similar to the dissatisfaction I observed online regarding FEMA’s

ability to effectively and fairly carry out its duties. Contrary to Douglas's CTR, people now regard risks as something they must manage on their own because the prior cultural norms of depending on authority to deal with risks can no longer be depended on. I linked the concept of evacuation to Mary Douglas's theory, describing the ways in which collective perceptions and social norms influence people's risk perception and, by proxy, their decision to evacuate. From here, I will move away from social inequalities and into the realm of community and what ties different actors together.

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Interlude 2

During the late afternoon and early evening of April 27, 2011, a violent high-end EF4 tornado damaged portions of Tuscaloosa and Birmingham, Alabama, as well as smaller municipalities and rural areas between the two cities. The following interview excerpt recounts the experience of an, at the time 20-year-old man, named Dave as he drove through Tuscaloosa documenting the storm with his friend:

When the storm's coming through and you're listening to us talk, there's so much going through your brain and so much disconnect and the fact that you don't realize that when you're looking at that tornado, the debris and stuff, those are people's houses and belongings, and there's just this disconnect that your brain isn't able to comprehend what all's happening right in front of you. It's really crazy.

I remember going over the footage Dave collected of this monstrous tornado. He continued driving despite the repeated warnings from the local meteorologist, who could be heard over the car radio. Dave was fixated on witnessing a tornado up close and was not aware of the size of the storm or the devastation it would bring only minutes later. Beyond them, a vague but menacing plume of darkness appeared to rise from the trees. They turned around as they noticed the funnel appear above the treetops. It was surrounded by countless specks dancing in the air. They could now clearly see it, full and soaring above the rooftops, growing larger by the second. They were in its immediate path. Dave and his friend reversed extremely quickly on the middle of the highway as the massive storm passed right over where they just were moments ago. They stopped on the side of the highway and peered out the back windshield to see it. Despite their survival, they were instantly surrounded by devastation and death. A few minutes after the EF4 tornado destroyed the neighborhood, Dave and his friend got to work assisting to rescue victims from the rubble.

So we walked up to this one house- it was like a six-foot tall pile of rubble. And there's this small girl. She's just standing there on top of the pile crying for her mom. So we get over there and we talk to her for a minute and we determine that she's on top of her house. And so we just start digging down. And first, we come to her sister and her sister was fine. She was banged up, bruised up and tangled up with a coffee table. But we're able to dig down and get her out. And then she's able to kind of talk to us and articulate a little more clearly that her mom's still in there. So, while we're trying to dig down looking for her mom, we're having to talk to the six-year-old and be like, "Hey, look, you've got to quit crying. We can't hear when you're crying and yelling for your mom." And eventually we got down and some other people came over and started helping. At that point, we got down and found her mom. Her mom was pretty banged up.

The wind leveled entire towns and completely destroyed entire neighborhoods in a matter of seconds. More than 50 people were killed by the storm on that Wednesday afternoon. That day would go on to have a direct impact on Dave's life.

So, after the storm came through, my aunt kind of suggested, "Hey, have you ever thought about being a first responder?" And it hadn't been something that had ever crossed my mind. But after the tornado, I went through and wanted to get, like, a first-aid type class. I didn't know that, actually, you could go take a class and have a license and work on an ambulance. But when I signed up for this class, it was actually at a volunteer fire department. So from then on, I knew exactly what I was doing.

The storm chase ended up giving Dave a new direction in life - not as a storm chaser, but as a public servant instead. He works as a firefighter and his job is to save lives. He claimed that the tornado changed his life.

It's definitely one of those things. I always look back and I don't necessarily have really negative memories of the day of the tornado. I know for a lot of people it was a really negative day with a lot of loss of life and property. But for me... For me it was a really good thing. I wasn't in a great place in my life at that point. So I don't share that in a lot of interviews, but it definitely was one of those things where it changed my life for the better.

Something that I took away from this interview is that, in some cases, these devastating storms can also have a positive influence on people's lives. Going through an experience like this may allow people to engage in processes of self-discovery and community building.

3: Coming Together in the Face of Severe Weather

Environmental risks, particularly those related to natural disasters, have a long and intertwined relationship with human history. This current focus specifically addresses group perceptions and behavior under uncertain circumstances by applying the Mary Douglas's (1992) cultural theory of risk (CTR), which holds that culture shapes how people perceive, comprehend, experience and react to important aspects of the worlds in which they live. Since what is remembered, recognized or imagined is based on cultural norms and ideals, this framing is especially pertinent to the study of climate change, which involves moving away from a known past, through an altered present and into an unpredictable future.

Everyone can be impacted by extreme weather. In this chapter, I will move on from topics of social disparity, segregation and inequality and take a more community-centered approach. I will start by demonstrating the ways in which modern-day technology and the digital media have transformed the field site by allowing for more interconnectivity. I will also take some time to discuss the role of religiosity and the ways in which (church-based) communities further bring people together in the face of disaster. I will conclude by discussing some of my observations regarding group cohesiveness and altruistic endeavors throughout communities in Tornado Alley following disasters.

Technology: The Science, Media and Information Society

Emma has lived in Arkansas all her life and shared with me a story of a tornado she went through in April of 2011. "My dad's town was actually hit worse [than mine] and his neighborhood received a good amount of damage. This tornado was only an EF2," she told me. "[He] decided to rebuild on the same property [pause] because what are the odds of it happening again?" I felt a sense of relief. Everyone was okay. He was able to rebuild. What *are* the odds? "Approximately three years later in April 2014, a tornado followed that exact same path (...) but it was a much larger tornado," she continued and my heart sank. "His entire neighborhood was leveled. My uncle died in this storm. Many others, including two children in my dad's neighborhood."

Something that I found noteworthy about her story was the following: "After we lost my uncle, I downloaded a weather app from the Red Cross that allows me to enter locations of my loved ones and if any of them are in a warning, it sends me a notification - no matter what city or state they are in. I have had it for eight years and it's very handy!" In Ulrich Beck's (1992) risk society, new risks are emerging but there is also the development of new ways to tackle these risks. Back in the early 2000s, the majority of the general public received tornado warnings mostly from television, with sirens serving as a close secondary source (Balluz et al. 2000, Brown et al. 2002, Comstock and Mallonee 2005). Many more warning sources have emerged since then as a result of advanced

technology, including the internet, campus alarm systems, text messages and numerous applications on mobile devices (Jauernic and Van Den Broeke 2016).

Most of my participants mentioned having weather apps that issue notifications, warnings and safety advice, which have become gradually more prevalent and more widely used (Wehde et al. 2021). They mentioned using apps such as *weather.com*, *RadarScope*, *AccuWeather*, *Weather Underground* and *Storm*, among others. Relaying disaster information is quite new and is often the result of private companies repackaging and sometimes enhancing data from the National Weather Service and delivering the information through phone apps or websites, essentially transforming the information into a consumer good (Anaman and Lellyett 1996).

Real-estate agent Joel lives in Joplin, Missouri and had just moved there in 2011 when a devastating EF5 tornado hit the town. He was 28 years old at the time. He directed my attention to the novelty of this technology when he referred back to his experience. “If a tornado would come now, there would be so much more information accessible because you have social media now. And you saw social media back then, but it wasn’t the same. Like, you weren’t getting live updates,” he told me. This account demonstrates how changes in the media during the last decade have improved the accessibility of information. This is consistent with Beck’s idea of a risk society, in which new risks emerge and are addressed by society through various (technological) measures. Joel further illustrated this point by recalling how he contacted his family following the devastating tornado:

I got a hold of my mom and I said, “Hey, I think this [the tornado] happened.” And she thought I was joking. She thought it was a joke because the information didn’t travel as fast. (...) I’m kind of skipping ahead here, but we got through town and it was about an hour and a half later. I called back home and they still hadn’t heard anything. (...) And it was about- it was probably three hours after that tornado hit that they called me back and they were like, “Oh my gosh. We just got word.” (...) That’s interesting because I think it would be a lot different now. (Joel, interview, March 3, 2022)

Joel demonstrated how, within a single decade, risk perception changed due to the emergence of technology that allowed for an increase in information sharing. Along with apps, websites and text notifications, there are also private organizations livestreaming severe weather online. On March fifth, 2022, a large tornado outbreak took place in Iowa. There were ten reported tornadoes and significant damage done. There were six injuries and seven deaths (Rose and Alonso 2022). During this time, I followed a five-hour livestream issued by a popular meteorologist on YouTube.³ I took notes of the reporter, what he said, his behavior, the chat and their interactions:

On March 5th, I sat down to follow what I thought would be a short livestream by the weather YouTuber *Ryan Hall, Y’all*. This live stream consisted of Ryan switching between weather radar maps, videos

³ For full live stream, visit: <https://www.youtube.com/watch?v=17GjnnzVqaY>

that viewers sent him on Twitter and live footage from four storm chasers patrolling the streets. As a typical weather man would, he explained what he was seeing in comprehensible, scientific terms and reported what these weather observations mean for people living in those areas. Approximately seven minutes into the stream, an alarm-like sound started playing and a large text popped up on the bottom of the stream: SEVERE THUNDERSTORM WARNING. These types of popups would appear all throughout the livestream with varying texts such as TORNADO WATCH and PDS (Particularly Dangerous Situation) TORNADO WARNING. Ryan would then proceed to draw the viewers' attention to what was happening and what those people should do to ensure their safety. The intensity that Ryan would communicate to the audience was reflected in the chat, with people continuously voicing their concerns about themselves and their loved ones: "My wife is driving from Missouri to Webster County, Iowa right now. She will be over in Cedar Falls around 6:30. Do you think she would get here safe if she keeps driving?" Unfortunately, Ryan could not answer all of these concerns personally so he had moderators in his chat who helped him. Once a tornado hit the ground, he proceeded to "ring the bells". This procedure caused sirens to go off and the lights in his room flickered blue and red and would last for several minutes. I assume this was an attempt to capture the attention of people who were not actively watching the stream. "If you're not paying attention, you better start. It looks like things are ramping up a little bit quicker than we thought." All throughout, people were sending their thoughts and prayers in the chat. One individual asked, "Is it possible that the tornado storm will hit Pennsylvania?" To this, Ryan responded, "No, no. It is not possible that this storm will hit Pennsylvania – not in a tornadic way, anyways." Following this response, many people in the chat started asking about their own locations: "What about central Missouri? Will we be impacted in any way?" "What about Milwaukee? I got family there." Eventually, moderators had to jump in to remind people to keep discussions in the chat focused on the situation in Iowa. Some hours into the stream, the situation got worse. Ryan communicated with his audience all the while: "Please, take shelter immediately. Get into the most interior room of your home. Cover your head with something, okay? Have a helmet, okay? Especially if you have kids. I know they got bike helmets. I know they got baseball helmets or something. Grab them. They're in the garage, right? Grab them on your way to your safe spot. Slap them on and we're going to get through this together, okay?" Throughout the stream, I could tell that Ryan was trying desperately to communicate how serious this was. He mentioned that he knew that Iowans had been through their fair share of tornado warnings. This storm, however, was more severe than anything Iowa had seen in many years and Ryan wanted people to take it seriously: "This is not your normal tornado situation. These are all big tornadoes causing incredible damage, all right? (...) These things are different. These are monsters, okay?" Throughout the stream, people were donating various amounts of money and Ryan would show his gratitude. One individual donated \$80 and added that it was lunch money for the four storm chasers, who were also constantly in contact with Ryan and updating him on the situation. Another hour into the stream, there was a propane leak near a highway. I could tell that Ryan was trying to get this news out to as many people as possible by posting on his social media and telling his viewers to spread the word. He also kept a close eye on the storm chasers to ensure that they would not go near the danger. Approximately three hours into the stream, fatality reports started coming in. Despite the intensity and emotional heaviness, Ryan stayed committed to spreading awareness and the energy was there throughout. (fieldnotes, 5 March 2022)

Ryan is a former news reporter who quit working at the TV station to pursue online forecasting. This live stream provided me with insights on how people receive and perceive their weather information online. These newly emerging forms of relaying information are being rapidly and widely accepted by many members of the general public. Interestingly, Ryan directly addressed issues of desensitization, which is also a big theme in my research. He urged people with mobile homes to evacuate and people with basements to use them. He directly related to the audience by saying that he understands that, after some time, tornado warnings lose their urgency through mere exposure. This is an issue that he directly experienced and understood and people were about to face the consequences of not taking this warning, in particular, seriously.

From what I have observed in the field, weather information is readily accessible in a variety of forms; not just via news outlets but also through apps, social media and individuals who take it upon themselves to inform the public in novel ways, such as through live stream, rendering weather information to be available and omnipresent at all times. Viewed in light of Douglas's (1992) cultural conception of risk, this extensive media coverage plays a role in the culture and, ultimately, in citizens' risk perceptions. On the one hand, in light of Douglas's CTR, one could argue that the media coverage (including its new forms) has already become part of the culture and thereby of the population's risk perception. On the other hand, this might be interpreted in Beck's framework as emerging risks to confront and new solutions to address them.

In contemporary societies, where we must deal with an increasing amount of current information in daily life, Beck (1992) emphasizes that people have grown highly dependent on mass media: "The risk society in this sense is also the *science, media and information* society" (46). This quote, as well as others found throughout Beck's writings, make it abundantly clear that concepts of a risk society are theoretically predisposed to prioritize the mass media as a crucial setting for social construction, contestation and criticism of risks.

Although these technologies bring a lot of benefits regarding efficient disaster communication and preparedness, Christy, who I referred to extensively in the first chapter, also pointed out a downside. "I feel like the media pushes the fear so much more than what they need to. Every summer we have meteorologists who will tell us that this is going to be the worst hurricane season in years. Every summer they say the same thing," she mentioned. As a result, repeated warnings that have little or no personal impact are frequently considered as a concern since the population exposed to the repeated cautions becomes complacent (LeClerc and Joslyn 2015, Simmons and Sutter 2011). Beck's proposition of the science, media and information society offers both a chance and a risk: despite being exposed to the possibility of interconnectivity and having the ability to easily access information, people can grow apathetic in response to this overwhelming amount of information. This is something that I would like to expand on in the following section.

Desensitization: “Oh, another one...”

In 2011, Joel had moved to Joplin in Missouri only two weeks before an extremely large EF5 tornado hit the city. In an interview, he mentioned something that first drew my attention to this phenomenon: “I think that everyone who lived in Joplin basically got used to the sirens, right? So they were just used to being like, ‘Yeah, the sirens go off every once in a while but nothing actually happens.’” It ended up killing 161 people, injuring 1,371 others and caused more than \$2.8 billion (€2.6 billion) in damage, making it the country’s deadliest and costliest tornado since 1947 (Griffin 2021). This event set the new record for the number of tornado-caused deaths.

Before starting my fieldwork, I was under the impression that tornado watches and warnings were taken extremely seriously by community members. My findings indicated the opposite. Practically everyone that I spoke to during my fieldwork had reported observing this phenomenon of desensitization in one way or another. Many of the deaths that I discussed with interview participants could have been directly prevented by taking the warnings seriously. One Reddit user commented that: “I think it’s just a fact of life most of us have lived with since we were small. We’ve gotten desensitized. I’ve lived through at least 100 tornado warnings.” When asked for further explanation on this desensitization, they responded with, “I’ve yet to die from a tornado or know anyone who has, so I no longer find them threatening.” Viewed within Douglas’s (1992) CTR framework, this desensitized attitude can be attributed to the user’s past experiences with disaster and the local culture’s collective response to them.

When faced with hazards, our past experiences determine whether we notice a risk and how we form understanding, values, sentiments and judgments (Seymour 1994, Peacock et al. 2005, Wachinger et al. 2013). Evan was 13 years old at the time of the tornado and is now working at a television station. He told me that: “My family is the type to go outside and watch when there’s a tornado. We’ve grown up around tornadoes our whole life so it’s just something cool to watch.” I asked if that is what they did during that tornado: “We had the wise idea of going out and getting pizza. We couldn’t see two inches in front of us because the rain was so intense. Little did we know, the tornado would happen that night.” I also had other participants who reported going outside to check the storm. Hazardous weather like this happens frequently in Tornado Alley, giving people several opportunities to build and acquire weather experiences. After being exposed to countless inconsequential tornado warnings, why not go out and get pizza?

Christy is located in Alabama and shared several of her personal experiences with me: “When tornadoes hit, people die and it’s really scary. I feel like I should be more worried than I am when we have a warning, but usually I don’t get that concerned about it, probably because it seems like it happens all the time.” Because risk perception is influenced, according to Douglas, by one’s local culture and collective attitudes, this desensitized attitude may be exacerbated when others reflect and display similar attitudes. Christy mentioned several times that her husband often nonchalantly decided

to go to bed during these warnings. This is not surprising considering that The National Weather Service issues an annual average of 2,000 tornado warnings; from the beginning of the year to the end of my fieldwork, 115 of those have been in Alabama alone (Sebree 2022).

Roughly three out of four warnings are false alarms (Erdman 2015). Previous experience with these warnings and relatively insignificant storms can work to lower perceived risk associated with future events (Peacock et al. 2005). This can, sadly, lead to injuries and fatalities, reiterating the importance of researching risk perception. Emma elaborated on how she lost her uncle in April of 2014 to an EF4 tornado:

You get used to these storms growing up and for the most part, it's a severe thunderstorm and nothing further happens. That was the case with my uncle. He was in his 50s and had lived through many 'tornado warnings'. He did not take heed that night, and he ignored the warnings - as a lot of people do in Tornado Alley. My grandpa found him the next day. (Emma, interview, 15 March 2022)

I found it noteworthy that Emma mentioned that many individuals residing in the region tended to ignore the warnings, implying that this was not an isolated incident. She followed this up by saying, "You definitely get used to them. But I think, after you actually go through one, you take them much more seriously afterwards." This was something that was reported by several other participants as well, including Joel and Evan, who had been through one of the most severe tornadoes in American history. Based on these accounts, which can be understood within Douglas's CTR, it appears that going through a severe and traumatic event can counteract the effects of desensitization and heighten risk perception.

Douglas's contribution to the debate becomes clear when we consider her argumentation that the history of a community and its ties to the industry, the community's economic benefits and, especially, the pattern of exposure all have an impact on how we subjectively view environmental exposure as a risk. In this context, the frequent exposure to potential risk shapes the ways in which my participants perceive the risks. Within the relevant conceptual debate and within the cultural anthropology framework as a whole, Douglas (1986) made additional attempts to incorporate person-environment factors. Douglas's CTR proposes that people make judgments about local dangers, risky situations and lifestyles based on their cultural frameworks. As Douglas has long emphasized: "Each form of social life has its own typical risk portfolio. Common values lead to common fears (and, by implication, to a common agreement not to fear other things)" (Douglas and Wildavsky 1983, 8). This is a notion that I aim to elaborate on further in the following section.

Social Support and Gaining Control: “It’s about the people”

In that moment, you’re like, “I don’t care about my computer. I don’t care about all the stuff I thought were so important. It’s just stuff... and it can all be gone.” And you really, like, make this realization of what’s really important, which is family, which is the moment. And all the stuff that you think is important, isn’t. I remember that changing me. (Joel, interview, 3 March 2022)

This is a quote from an interview that I had with Joel, who lived through the devastating 2011 tornado that ripped through Joplin. He recalled the ways in which the tornado reshaped his perspective on the world and how the people and the community took a central point of importance. “The things that we think are important and the status and the titles and the money are all stuff that can be taken away in an instant. And life is something that is not replaced,” he recalled. People’s concerns and priorities were something that I expected to differ between people of different socioeconomic classes and privileges. However, this sentiment of Joel’s is one that everyone seemed to share.

The importance of social support as a protective resource during times of stress has long been recognized (Kaniasty and Norris 1995). Joel informed me that, following the tornado, he, personally, volunteered with the fire department and helped out during the rebuilding process. He also recalled going out the night after the tornado to find people who needed help and soon realized that this type of behavior was something that almost everyone was already undertaking. “There wasn’t, like, people sitting on the roads. There weren’t people camping out. Everyone took everyone in,” he told me.

When talking to Emma about the community, she also mentioned that, “As terrible as these storms are, it can bring people together.” Because natural disasters affect entire communities, it is crucial to look for collective strategies of dealing with the resulting uncertainty. From what I observed, individuals actively sought the company of others to manage uncertainties at every stage of the disaster: they gathered friends and family to huddle in basements, they prayed together as storms passed overhead, they worked together to find and rescue others, guided each other to a safe meeting place, collectively managed uncertainties about the rebuilding process and found comfort from others as they discussed future plans.

Rachel was 22 years old when the devastating EF5 tornado hit Joplin. I briefly spoke with her about the experience. She was in the car with her dad when she saw the sky rapidly getting darker and she heard the sirens going off. They pulled over to a convenience store at the side of the road and went inside to take shelter. At the time, she did not think much of the storm but, as soon as she entered the store, she was confronted with an already-sheltering group of approximately 15 strangers, some of them crying and repeating, “I don’t wanna die. I don’t wanna die.” She recalled, “Hearing the crying and screaming and praying [pause] it really scared me. It made me understand the severity of the situation.” Debris had started hitting the walls and, at this point, she was also in tears. “We told

each other we loved each other, even though we never met before.” Joel’s, Emma’s and Rachel’s accounts can all be understood within Douglas’s (1992) CTR. They showed me that natural disasters can create bonds between people through shared experiences. A collective sense of risk develops as a result of everyone being in the same situation and their risk perception becoming strongly interrelated.

The fluid and multi-faceted nature of uncertainty seemed to be at the heart of many of my participants’ encounters with these storms. The uncertainty that my participants described varied but it was often founded in their powerlessness in controlling the storm’s outcome. (1) Faith (a belief that God was monitoring their ultimate security) and (2) action-based collective coping seemed to be some of the primary means of gaining control among my participants.

Faith, Not Fear

Religion is deeply established in local everyday life and has become an integral part of culture in many disaster-prone areas around the world (Sun et al. 2018). One of these places is Tornado Alley. I spoke to a 23-year-old girl named Cassandra who I used to study with. She spent a year in Texas on exchange and recounts how religious her host family and the general local population was. “God is a big part of everything. It’s huge,” she said. “I think I barely know anyone I met there who was not religious.” The religiosity of the central United States is something that, apparently, stands out to people who are not accustomed to that type of environment.

“For me personally, faith is everything,” Joel told me. There was one sentence that he said that particularly stood out to me: “I choose to operate in faith and not fear.” This is a resounding sentiment that many of these community members seemed to identify with.

Especially during storms, many participants recalled praying and turning to their faith. The story of nine-year-old Annistyn Rackley⁴ who was tragically killed by a tornado (Sheets 2021), is well-known among my participants. I read through this story many times on different news sources and was consistently impressed by the statement that the girl’s mother made: “I was flying around in the tornado and I prayed to Jesus to take care of me, and he spit me out - and the tornado spit me out into the mud.” During times of uncertainty to the highest degree, it appears that people in the field site turn to their faith to find comfort. These accounts can be understood within Douglas’s (1992) CTR framework. Faith is a central part of the local culture, and is what people rely on when faced with severe risks.

Action-Based Collective Coping

Scholars of resilience have offered significant insights into how collective activity based on networks of relationships, reciprocity and trust is essential for community resilience (Adger 2003,

⁴ News article sent to me by Emma: <https://www.independent.co.uk/news/world/americas/kentucky-tornado-girl-killed-missouri-b1976000.html>

Adger et al. 2005, Pelling and High 2005). Upon inquiring about the role of the church in community-based coping, Emma informed me that:

When Vilonia [the town that her dad lived in] was hit [in 2014], a lot of their local churches pitched in. I know one was a base for the American Red Cross and also a shelter for those that became homeless. My church does a lot of missionary trips world wide but also around the country, and when areas are affected by severe storms. I know when Louisiana was hit by a hurricane last fall, they gathered a team and went down to help rebuild. (Emma, interview, 8 April 2022)

Through this information, Emma enlightened me on the ways in which people's spirituality does not only assist in individual coping but that church institutions actively assist with rebuilding and charity events following severe storms. Emma gave me some insight into the important ways that religious institutions and customs can contribute to catastrophe risk reduction and recovery efforts. This account can be linked to Douglas's (1992) CTR. The local church culture has an impact on how individuals perceive risk because it is a significant source of support and gives locals a sense of protection and alliance, which, in turn, may temper perceptions of risk.

A number of informants also mentioned how these disasters had offered extremely beneficial chances to become personally involved in missionary activities to reach out to individuals in challenging emotional and material conditions. Grace, for instance, told me about how she actively joined in charity events organized by a religious institution:

When my brother was in college in the mid to late 90s, there had been a tornado that had hit where he was going to college in Arkadelphia, Arkansas. And it was like, one side of the town had just been flat (...) We actually worked with, I think it was the Baptist men's group (...) When the tornado came through, they set up a soup kitchen. We went and we spent one day working in the soup kitchen (...) They had a van, like, a food truck type van and we went out, and some of it was just making sandwiches and putting them into a to-go box. But it was like, "Here's a meal!" And we're just basically handing out meals to the people in areas that couldn't even get to the shelter or the people that were actively working through the rubble. (Grace, interview, 24 April 2022)

This example demonstrates how deeply ingrained mutual aid customs are in the community's culture, as do numerous other firsthand reports from the scene. During these moments of devastation, these types of efforts could be considered life-saving. These first-hand accounts have highlighted the importance of faith communities in providing not just emotional and spiritual assistance, but also practical and financial support to victims and their communities.

Using the works of Mary Douglas, I draw a connection between the use of faith as a moral element of risk perception. The enormous initiatives that make up Douglas's lifetime effort keep anthropology and religion studies closely related. According to her, people's perceptions of risk

acceptance are shaped by the organizations in which they participate, including the religious organizations that I previously mentioned.

Instead of viewing church culture as a static framework with which to interpret risk perceptions, Beck addresses the dynamic and changing nature of culture. He takes it further by discussing a new kind of socio-cultural or political organization based on the ‘commonalities’ carried via risks that is to be expected in the risk society. As it connects with the political, social and ideological characteristics of its period, the religious field is, instead, viewed as a dynamic social field that engages in a constant and reciprocal interaction with the surrounding reality. In the following section, I will further develop on this idea by discussing how social support influences risk perception.

Risk management occurs at the societal level and has sociopolitical repercussions for organizations, governments and culture as a whole, as explored in foundational work by Beck (1992, 1998) as well as Douglas (1992, Douglas and Wildavsky 1983). In order for society to make judgments about risk, there must be open and trustworthy communication. Beck further argues that risk serves as the foundation for socializing because it can create what he called ‘risk communities’. He writes: “Human beings must find a meaning of life in the exchange with others and no longer in the encounter with the like (...) global risks activate and connect actors across borders, who otherwise don’t want to have anything to do with one another” (2007, 287). My research is localized in one part of the world, restricting me from making any conclusions about global affairs. However, I did definitely observe the breaking down of social boundaries within the given locale. Beck’s notions of the ‘risk community’ is one that I would like to further expand on in the following section.

The Modern-Day ‘Risk Community’

Tom, as a news meteorologist, reported on the deadly 2013 tornado in Moore. This tornado claimed at least 24 lives and passed over Plaza Towers Elementary School, where seven children died when the walls of the corridor collapsed on top of them. Tom provided me with some details on the aftermath:

After the 2013 Moore tornado, everyone said, “Look, we need to modify these schools and make them safer for kids when severe weather strikes.” And so the schools put in tornado shelters in every single school. But we had to vote on it. We had to raise our taxes to get these tornado shelters put in. And so, overwhelmingly, in America, it feels like, lately, we argue about everything. But when it comes to tornado shelters, they passed with 85% approval, which, if you can have something that 85% of people agree on, that’s a huge deal. So it passed with overwhelming support. (Tom, interview, 27 April 2022)

It seems that, in this situation, people tend to unite against one common enemy. Interestingly, a link can be made here to both Beck (1992b) and Douglas (1992). When it comes to Douglas, this

demonstrates how a group's judgment of a risk is built on the past. Regarding Beck, this demonstrates how the public's perception of risk has changed as a result of the increased severity of these risks brought on by climate change. Despite decades of storm history, they only recently opted to implement these shelters.

Christy made a similar observation. "Especially now with, just the political division within the country right now, it just seems like people tend to feel like there's two sides to everything and that we all hate each other and that's so not true," she mentioned. "Why do we have to wait for something really bad to happen to show compassion for our neighbors?"

Based on what I have learned from my informants, it seems that these natural hazard events can truly flip a social situation upside down. Political ideologies disappear, previous grudges vanish and people start to really care for one another, which is surprising in light of Douglas's CTR. Political ideologies are a huge part of culture, and the fact that these can be 'overwritten' by hazards shows that risk perception is not always based solely on cultural values, per se. I specifically remember several people online making the observation that: "There was no black or white. There was only people."

Beck (2011) asserts that "cosmopolitanization does indeed make a fundamental difference to our relationships with distant others" (1357). It is based on this train of thought from which he introduces his concept of the 'risk community', in which individual actors, who normally have nothing to do with each other, are drawn together under the threat of mutual risk. Residents of Joplin, for example, were virtually driven, in their own most pressing interest in surviving, to collaborate with those distant individuals to create a new sort of society and politics, and to struggle for its realization. The coming together of individuals from many ideologies and (sub-)cultures to combat risk demonstrates Beck's concept of the risk community and contrasts Douglas in the manner I previously stated.

Evan, who, just like Joel, lived in Joplin at the time of the dangerous 2011 tornado, made a remark that truly stuck with me: "Ever since the tornado, the community has gotten much closer, for sure. People are much more inclined to help one another out. When there was a tornado in Kentucky, a local business in Joplin traveled out to Kentucky to help that city out because we all know what that's like. It's made us closer and stronger as a community." The stories Joel, Evan and Tom tell about the community's collective reactions to severe natural disasters demonstrate that the set of beliefs, customs, attitudes and social institutions we try to understand through the concept of culture are not just in people's heads but also take an emergent and relational form in the connections they make with their immediate social, physical and built environments.

This information is important because it essentially outlines the ways in which the sense of community resulting from devastating weather can last for a longer period of time.

In the second half of this thesis, I investigated the role ways in which risk perception manifests on a more societal level. I have discussed factors that can affect every member of society, regardless of segregating factors such as class. These factors included the pervasiveness of technology and the digital media, desensitization, religiosity and the interpersonal ties that members of society have with one another. I have highlighted Mary Douglas's and Ulrich Beck's approaches to the digital media and the ways in which they shape attitudes and risk perception towards severe weather hazards throughout the field. I discussed the role of desensitization in the formation of risk perceptions and linked it to Douglas's cultural theory of risk, which emphasized people's relations to their environments.

Since religiosity is a component of culture, it seamlessly fits into Douglas's CTR. Beck expands on this conception by situating the debate in the modern day and explaining how the emergence of new risks is changing the social, political and religious landscape. Lastly, I further contribute to the debate by demonstrating how Beck's notion of the 'risk community' is manifesting in the field site in relation to severe weather hazards.

Beck addresses the dynamic and ever-changing nature of culture, which I apply to local cultures around the church, rather than seeing it as a static framework for interpreting risk perceptions. He elaborates by talking about a brand-new sociocultural or political structure based on the 'commonalities' that come with risks and that are typical in the risk society. This shows how the general public's sense of risk has evolved as a result of the heightened seriousness of these risks brought on by climate change.

Concluding Remarks

Understanding how people experience and create responses to climate change in line with their own observations and priorities requires a risk perception approach that extends Mary Douglas's cultural theory of risk (CTR) to delve deeper into how views of nature are represented and how environmental change is observed. The relevance of culture in how people form policy preferences and accept or reject resource management decisions is recognized in climate research that applies CTR to local resource management and climate adaptation contexts. By grounding my work in encounters with real people in real situations, I attempted to answer the question: How do residents from a hazard-prone area in the United States manifest perceptions of risk?

Natural disasters have been studied from various scientific approaches (e.g., geology, physics, engineering). This can be seen as human beings' desperate search for solutions in order to cope with the brutality of nature. They also had to build their societies with laws and ordinances that were supported by strong cultural narratives and established social structures. A social order with classes seemed to have given strength to a communal society since everyone had their respective roles that served the defense and survival of the community. Upon this base, Douglas's concept is plausible, at least to a certain extent: this even lasts until today. A middle-class family can afford a house that is stable and it might purchase insurance policies. Douglas claimed everlasting validity for her construct: all sorts of risks would be perceived on the base of her social-class pattern. Since then, more than 40 years have passed, and I am now able to evaluate that claim in light of modern society's actual perceptions, as revealed by my interviews and other online observations. In the 1990s, Beck refuted Douglas's theory by highlighting global risks that are far greater than those that humans have developed ways to manage over time. People have begun to learn that traditional approaches to dealing with nature do not hold up in the face of these disasters, regardless of their social level. The opposite seems to be true: the Anthropocene paradigm leads to that conclusion. With the fieldwork I did, I could follow this shift in new awareness - and into the direction Beck states.

Concerning both constructs, Douglas's and Beck's, it looks like a hybrid mix. I studied perception of risk and got insights on how victims and witnesses of natural disasters perceive risk nowadays. It is fieldwork in a defined area, of course. According to that, it appears that mankind battles between long-standing strongholds (the kind that would fit into Douglas's idea) *and* new pattern recognition that is practically slapped in our faces through abrupt weather conditions and digital media such that we can no longer ignore it. Perhaps the change in perception Beck states is possible (and where his theory differs from Douglas's) is one that human beings have to learn the hard way.

On a more methodological note, throughout my research, I realized that social media presents an enormous opportunity for engaging with the public and keeping tabs on their concerns. The

breadth, volume and speed of information interchange have all significantly grown. The usage of social media will likely become more rationalized in the future, and there will likely be new approaches of evaluating public opinion and the value of information provided by the general public. Emergency managers and planners will need to overcome this obstacle. Social media integration into these processes will require patience, and, over time, cultural, technological and social realities will inevitably change. Institutions like civil protection agencies and emergency warning systems must adapt to the changing social media landscape and make sure they have solid strategies in place to deal with any ethical issues that may arise in the future as a result of social media use.

In light of this viewpoint, I support additional investigation into the bases of location-based severe weather risk perceptions. Understanding these values would improve the ability of risk communicators to change people's views of severe weather risk because many of these perceptions may be influenced by social dynamics or cultural values that encourage people to attenuate or amplify their risk. I suggest that risk communicators should adopt an integrated strategy by drawing on several facets of people's thinking and behavior, as I have done in this research, because risk perceptions of climate change are intricate and multifaceted. I have demonstrated this multifaceted nature by showing how thoughts regarding risk or safety are influenced by a variety of factors, including social interactions, living conditions and trust in institutions.

Without a doubt, academics and decision-makers will continue their admirable search for reliable measurements - including social and political variables - to aid in identifying vulnerabilities and lowering risk. However, I do not believe that this is the main way that anthropologists have contributed to catastrophe studies, policy and practice. Instead, I believe that anthropology's significance lies in its ability to depict how processes among places actors unfold in specific contexts through the ethnographic lens. I argue that a social perspective that recognizes that disasters are socially framed, rooted and constructed, with humans and their interactions with nature playing a significant role, is necessary.

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