

**COMPARATIVE STUDY OF NETWORKED COMMUNITIES, CRISIS
COMMUNICATION, AND TECHNOLOGY: RHETORIC OF DISASTER
IN THE NEPAL EARTHQUAKE AND HURRICANE MARIA**

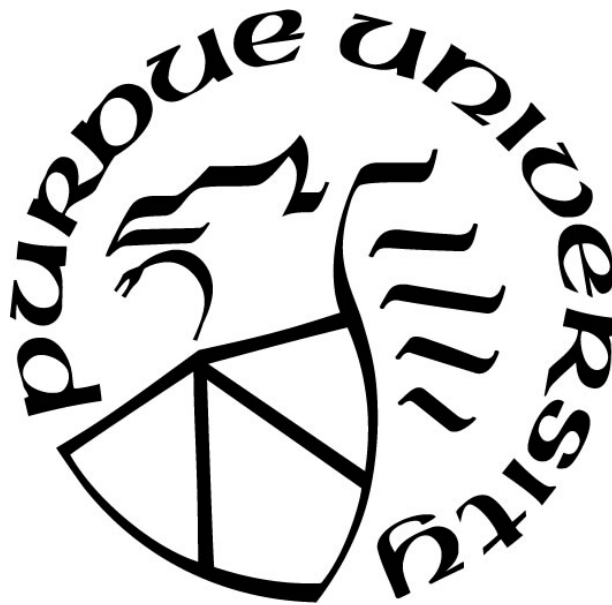
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For Dijju, Ama, Daddy, and my mi amor C for their unconditional maya.

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ABSTRACT

In April and May 2015 Nepal suffered two massive earthquakes of 7.5 and 6.5 magnitudes in the Richter scale, killing 8856 and injuring 22309. Two years later in September 2017, Puerto Rico underwent the Category 5 Hurricane Maria, killing an estimate of 800 to 8000 people and displacing hundreds of thousands of Puerto Ricans (Kishore et al., 2018). This dissertation project is the comparative study of Nepal's and Puerto Rico's networked communities, their actors, participants (Potts, 2014), and the users (Ingraham, 2015; Johnson, 1998) who used crisis communication practices to address the havoc created by the disaster. Using a mixed-methods research approach and with framework created with the Assemblage Theory (DeLanda, 2016), I argue that disasters create situations in which various networked communities are formed into transnational assemblages along with an emergence of innovative digital technical and professional communication practices.

Keywords: Disaster, transnational disaster response, Networked Communities, Assemblage Theory, mixed-methods, narrative inquiry, rhetoric of disaster, technical and professional communication, crisis communication, social Media, social network analysis

CHAPTER 1. INTRODUCTION: DISASTER AND NETWORKED COMMUNITIES

1.1 Introduction

April 25, 2015 was a normal Saturday afternoon in Kathmandu, the capital city of Nepal. All schools, colleges, and government offices were closed but most businesses, shops, and restaurants were open as usual. This Saturday, I was attending a conference, the International Folklore Congress, where people from different parts of the world had gathered. As soon as I met my friend, Pritisha, around 11:40 am local time, we started taking selfies, tweeting, and having fun as we listened to the speaker who was presenting on urbanization. Fifteen minutes later, the building started to shake, and I remember all the people in the room rushing towards the door. I asked my friend, “Is this an earthquake?” and she said, “No,” but all the people in the room had already started to scream and to fight with the shaking building to get out. After running out, I checked Twitter on my phone. Not even within five minutes, there were pictures, news, and information shared worldwide that a 7.5 magnitude earthquake had struck Nepal. All the people in that room as well as my family and close ones had survived, but more than 8,000 people, in 14 districts of Nepal, lost their lives and around 26,000 were injured.

In this moment of chaos, we rushed outside where more than 400 people had gathered (another conference was being hosted at the same venue). At that time, I had two jobs and an online presence in Nepal. I worked as an English newsreader at “Radio Nepal,” Nepal’s national radio station, and I was a communications officer at a nonprofit organization. Both jobs and my online presence made me a disaster responder. I was immediately reporting, tweeting, replying, and retweeting, and, like me, thousands of Nepalis in Nepal and abroad had started doing the same. Nepal is considered one of the most vulnerable populations during a time of a disaster, but after the earthquake, I witnessed the rhetorical agency of the Nepalis in responding to disaster and managing the risk like never before.

Two years later, in September 2017, Puerto Rico underwent the category-five Hurricane Maria killing an estimated 64 to 8,000 people and displacing hundreds of thousands of Puerto Ricans (Kishore et al., 2018). I was already in the U.S. and in the second year of my Ph.D. studies when Hurricane Maria happened. As I had already started to think about “disasters” being my major research area, I was observing Hurricane Maria in Puerto Rico via online media.

As with the Nepal Earthquake, Hurricane Maria caused a great amount of discourse in the digital space. Also, similar to Nepal, Puerto Ricans were also showcasing their rhetorical agency in responding to Hurricane Maria.

These two massive disasters, the Nepal Earthquake and Hurricane Maria, rattled communities, geographies, infrastructures, and created humanitarian crises and brought lives to a standstill. Nevertheless, the crisis also brought the world together to network, to participate, and to act and help in the emergence of transnational networked communities in Nepal and Puerto Rico (Frost, 2013; Potts, 2014). These communities, both online and offline, worked together to build their knowledge about each disaster by developing unique composing and communication practices: to disseminate information, to draw the attention of stakeholders, to raise funds, and to perform relief and rescue operations. However, the formation of networked communities during times of disaster is not a new phenomenon, and scholars have studied these kinds of networks, beginning with the early nineteenth century (Aldrich, 2012). Contextually, these two disasters happened during the Digital Age in which networks were already in existence and where online interactions inevitably aid in the formation of social ties, networks, and assemblages (DeLanda, 2016; Latour, 2005; Newman, 2010; Papacharissi, 2015; Potts, 2014; Wasserman and Faust, 1994). This dissertation project is the comparative study of Nepal's and Puerto Rico's networked communities, their participants (Jenkins et al., n.d.; Potts, 2014), their media users (Ingraham, 2015; Johnson, 1998), and the experience architects (Potts & Salvo, 2017) who used unique composition and crisis communication practices to address the havoc created by the disaster.

A disaster shifts geography, people, and culture, yet it also initiates movement in space and causes various networks to form, creating a local space for global stakeholders to act. Aldrich (2012) defines a disaster as, "an event that suspends normal activities and threatens or causes severe, communitywide damage" (p. 3). On the one hand, disaster disrupts the normal life of the people, and on the other hand, disaster brings people together to form various communities (Potts, 2014). These communities are supported by "the speed and spread of the Internet and the simultaneous comparative growth in travel, cross-cultural media, and global advertisement" (Appadurai, 2013, p. 26). In the contemporary digital world, disaster motivates public discourses in the web with collective interactions in cross-cultural as well as transcultural ways (Ding, 2014). Current trends identified during recent disasters suggest that catastrophic events create multidisciplinary networked participatory actions within the local and the global communities,

such that the global community participates by responding to the local disasters (Aldrich et al., 2015; Kim & Hastak, 2018; Murthy & Gross, 2017). These networked actions (Latour, 2005) have been made possible with the advances in information and communication technologies that use social networking to make information more accessible than in any period in history (Toya & Skidmore, 2015). Surges in networking via social web were observed during and after both the Nepal Earthquake and Hurricane Maria. Data and information were shared, thus creating “knowledge” (Mao et al., 2015) during each disaster.

By situating my research in disaster-affected, digitally networked societies, Nepal and Puerto Rico, my dissertation is a mixed-methods study that conducts a comparative analysis of networked communities and their uses of technologies to communicate during the disaster. For this project, I conducted 28 interviews with participants from Nepal and Puerto Rico, representing local community members, government officials, media personnel, and activists involved during the Nepal Earthquake and Hurricane Maria. In addition to the interviews, I also purchased approximately 55 million tweets (35 million from the Nepal Earthquake and 20 million from Hurricane Maria) from Twitter to conduct a social network analysis (SNA) (Goswami, 2018; Howison et al., 2011; Scott, 2000; Wasserman & Faust, 1994).

With a theoretical framework situated in Assemblage Theory (DeLanda, 2016), my hypothesis is that disaster motivates the formation of transnational networked assemblages via the diaspora and international governmental and non-governmental (including media) disaster response systems. My premise is that with their emergent digital rhetorical and participatory actions, national and international communities in Nepal and Puerto Rico formed their own stronger transnational networks with a combination of their own local (non-Western and decolonial) practices of knowledge-making. The comparison of crisis communication within two different contexts will help in articulating a rhetoric of disaster in transnational contexts, and it will help in planning future global networked responses to these kinds of disasters.

My study was limited to the analysis of the interviews of selected participants and social networks analysis of the Twitter Data. While analyzing the interviews, I focused on how they formed the networked communities both online and offline, and how they used technology to compose, communicate, and maneuver during the disaster. Similarly, while analyzing tweets, I specifically looked at whether or not transnational connections were formed or not by using a method called social network analysis. Additionally, I also want to acknowledge the limitation of

Assemblage Theory in my analysis. To address this limitation, I have used theories of comparative rhetorics (Mao et al., 2015) to help me avoid imposing Assemblage Theory too strongly in my analysis. As I explain in my Chapter 3, I have practiced self-reflexivity in analyzing participant narratives and allowing the narratives to guide the interpretation. While, the exploration of a hybrid theory that blends Western and non-Western concepts would have been innovative, that approach lies beyond the scope of this dissertation. However, in the future, that kind of research would be very interesting to pursue. Consequently, this project does not offer a scientific analysis of what constitutes a disaster, nor an evaluation or critique of the networked communities and their actions. The project is also not an evaluation or judgment of whether or not the relief and rescue operations were sufficient. Additionally, this study is also not an assessment of the relief and rescue works of governmental or non-governmental organizations. Furthermore, this study is not an analysis of emotions, psychological effects, or any mental health challenges faced by people after two disasters. Instead, my primary aim was to study the formation of assemblages and the communication practices during these two disasters.

1.2 Background

The Nepal Earthquake and Hurricane Maria occurred two years apart, and though these two catastrophes were different, they created similar levels of havoc and crisis in Nepal and Puerto Rico. This section will provide a brief historical background on both disasters and their consequences.

1.2.1 Nepal Earthquake 2015

Recorded as one of the biggest disasters in nearly a century, the Nepal Earthquake created chaos in 14 districts of Nepal by taking lives and sparking a humanitarian crisis. The *Post Disaster Needs Assessment* (PDNA) that was published by the National Planning Commission of the Nepal Government after the earthquake said, “Our immediate neighbors and the global community at large stood in solidarity with us by sending unprecedented volumes of technical, financial, and humanitarian aid” (PDNA, 2015, p. 4). Furthermore, as per the PDNA, the total damage caused by the earthquakes was equivalent to \$7 billion. With such a great loss, the report also forecasted that there will be “2.5 to 3.5 per cent increase in poverty” (PDNA,

2015, p. 16). Along with its massive destruction, the earthquake also brought global attention to Nepal. Immediately after the earthquake, the digital social web was filled with information, pictures, and videos, linking Nepal to the outside global world. As a survivor of the Nepal Earthquake myself and a user of Twitter, I used Twitter to respond to the disaster, as did my colleagues and friends. The Nepal government launched a Twitter account dedicated to disaster relief on the first day of the earthquake. The account ([@NEOCOfficial](#)) reached out to the public to continually share information and updates on the post-disaster situation and relief as well as the rescue operation.

1.2.2 Hurricane Maria 2017

In September 17, 2017, Puerto Rico, along with several Caribbean Islands, suffered through the destructive Hurricane Maria. According to a study conducted by Kishore et al., (2018), “Maria caused an estimated \$90 billion in damages, making it the third costliest tropical cyclone in the United States since 1900” (p. 163). Additionally, a situational report, “Regional Overview: Impacts of Hurricanes Irma and Maria,” claimed that 169,000 people and 75,000 buildings were exposed to wind speeds higher than 252 km/h in Puerto Rico and other Caribbean Islands. The official death count of the death in Puerto Rico from Hurricane Maria is 64; however, Kishore et al., (2018) claimed that the death toll exceeded 4,645, which is 70 times more than the official estimate. “In contrast to sudden disasters, hurricanes often allow officials and populations a window of opportunity to prepare, evacuate people, and update emergency plans” (Zorrilla, 2017). However, due to the unexpected amount of damage, the public life in Puerto Rico came to a standstill with power-outages and a broad communications stoppage. Hurricane Maria has been regarded one of the most catastrophic events to devastate cities in Puerto Rico and other Caribbean islands.

Additionally, Hurricane Maria caused a large number of Puerto Ricans to relocate to the U.S. mainland. A report published by the Center for Puerto Rican Studies, “Puerto Rican Exodus: One Year Since Hurricane Maria,” suggests that 159,415 (and up to 176,603) Puerto Ricans have relocated to the United States in the year since Hurricane Maria made landfall in Puerto Rico. Similar to the Nepal Earthquake response, various organizations (private and public like NGOs) inside Puerto Rico as well as outside Puerto Rico, especially in the U.S. mainland, were involved in relief and rescue activities. From the social web to the wider Puerto Rican

diaspora in the United States, Puerto Ricans formed a variety of networked communities to address the aftermath of Hurricane Maria.

1.3 Research Questions

In this section, I present the primary and secondary research questions that have guided my research. The scope of my study focuses on two different disasters in two different communities in Nepal and Puerto Rico. I aimed to answer the following research questions by studying the assemblages and communication networks that were motivated by the Nepal Earthquake and Hurricane Maria in Puerto Rico:

1.3.1 Primary Research Question

- How did the transnational assemblage of official and unofficial communities form in Nepal and Puerto Rico to mitigate the challenges of these different disasters?
- What are the unique digital rhetorical and participatory actions of the assemblages in Nepal and Puerto Rico that helped in performing transnational crisis communications?
- What are the non-Western and decolonial practices of knowledge-making and communication during a disaster that we can use to better help vulnerable populations in need?

1.3.2 Secondary Research Questions

- What kinds of digital technologies are prominent, and most used during disasters, such as earthquakes and hurricanes?
- What do the digital narratives and written communications shared by people who experienced the Nepal Earthquake and Hurricane Maria suggest about disaster knowledge?
- What could be a multidimensional framework for responding digitally with future disasters?

- How can transnational communication strategies be formulated by larger organizations like governments, media, multinational companies, and INGOs to mitigate the challenges of disaster?
- What would be an appropriate crisis-related community-service pedagogy that we can develop in higher education?

1.4 Key Concepts

In the following section, I would like to provide definitions and understandings of key concepts that I have used and contextualized within this dissertation. My dissertation is a comparative study of networked communities and their participatory actions, as well as a study of the uses of information and communication technologies to form transnational communities or assemblages during the Nepal Earthquake and Hurricane Maria. In doing so, I examine how communities develop networks and how they collaborate to create knowledge during disaster. In addition to that, through the use of Assemblage Theory and SNA (described in detail in Chapter 2), I explore the formation of transnational assemblages and how crisis communication can support disaster response and how it can better offer social justice to vulnerable populations during times of disaster. In understanding these larger concepts, I would like to present a few definitions of networked communities, transnational assemblages, and crisis communication and crisis publics for social justice.

1.4.1 Networked Communities

With help of boyd (2010), DeLanda (2016), and Pigg (2014) for this project, I define networked communities formed during disasters as the communities that are created through technologies that allow people to communicate, coordinate distributed work, and establish networked participation that helps in the sharing of data, information, and knowledge. During a time of crisis, various “networked micro communities” (Potts, 2014) tend to form around a given disaster and disperse quickly afterwards; however, they help each other work through a disaster by participating in the response, sharing information, collecting data, and working together in relief and rescue operations. boyd (2010) regards these kinds of networked communities as “networked publics” who are the “publics that are restructured by networked technologies and

therefore simultaneously are (1) the space constructed through networked technologies and (2) the imagined collective that emerges as a result of the intersection of people, technology, and practice” (p. 39). With the help of online technologies, these communities thrive on collapsing the public as well as the private boundaries to respond to the urgency of the situation (Papacharissi, 2015; Potts, 2014).

1.4.2 Transnational Assemblages

With the help of scholars, such as Ding (2014), DeLanda (2016), and Deleuze & Guattari (1987), I define transnational assemblages in the context of disaster as groups or collectives of people, organization, entities, who are connected via online and offline mediums via objects like phones, computers across the borders, and people who gather to respond to a certain situation of natural or political crisis. These transnational assemblages are formed in response to a global phenomenon like a disaster and are motivated by affect. These assemblages are mediated or extended via digital means within a variety of media. Digital media helps in the transmission of affect in the form of pictures, videos, and texts embedded within the information, which creates intense urgency that motivates the formation of assemblages around them to act.

1.4.3 Crisis Communication and Crisis Publics for Social Justice

Effective communication during a crisis, such as an earthquake or hurricane, is very important, and it becomes a tool that can help the lives of people. Most natural disasters are unpredictable crises, like earthquakes, and some are somewhat predictable like hurricanes, but the damage and the extent of disasters like Hurricane Maria and the Nepal Earthquake are ultimately unpredictable. Walaski (2011) suggests that crisis, as a concept, includes the idea that the threat posed by the event is as serious, and often equally as catastrophic, as the event itself. Moreover, the actual timing of the event is often unpredictable though not necessarily unexpected. In crisis events that are unpredictable, the ability to communicate becomes an important asset. Potts (2014) argues, “we need to possess tools with which we can locate the many technologies, people, groups, and websites through which people are sharing information” (p. 16). With access to various technological tools, as Potts (2014) argues, technology experts and scientists could work hand in hand with social scientists to respond more effectively to

crises. Walaski (2011) defines crisis communications as “those messages that are given to audiences during an emergency event that threatens them either immediately or at some foreseeable point in the near future” (p. 9). Today, with technological advancement, social media has become a space where millions of communicators as well as millions of audience members can discourse together.

Nevertheless, crisis communications during a disaster tend to be haphazard and multidimensional. Hence, for this project, I define crisis communication in the context of disaster as communications performed by sharing information, messages, pictures, data, during an emergency event used by various traditional means as well as newer mediums of communications, including mobile phones and social media. Similarly, from TPC scholars like Jones et al., (2016) who, in their groundbreaking article on disrupting the past of technical communication, argue that international and intercultural professional communications should focus on the spaces among cultures, use varied levels of analysis, and transcend national contexts to investigate global phenomena and transcultural communities. Bringing this concept of transcultural global communities, i.e. respect of cultures, to this project, I will combine crisis communication with social justice, defining these combined acts as conducting communications during a crisis by highlighting and voicing the experiences of marginalized communities and vulnerable populations.

Moreover, during the situation of the crisis, there is an emergence of actors who help in facilitating communications and provide “assessments of communication effectiveness,” (Coombs & Holladay, 2014). Crisis communications scholars like Coombs & Holladay (2014) regard these actors as the crisis publics. They are the actors who emerge during the crisis who facilitate crisis communication in their respective communities during the disaster. The crisis publics who emerge on social media can bring changes in the way communication is facilitated during a disaster. In many cases, crisis publics help in identifying the gaps in communication by the official disaster response system and standing up for the community. The role of crisis publics during important in conducting crisis communication for social justice as they could help in voicing the experiences of the marginalized community during a disaster.

1.5 Current Scholarship and Gaps

In this section, I provide a brief review of current scholarship in disaster studies in technical communication and related fields to highlight the gap I am trying to fill.

Each crisis requires different and distinct ways of handling its components, such as the mobilization of a network of stakeholders, the involvement of the local community, and the implementation of rescue and relief efforts by the international community. After a disaster strikes, the pre-existing, locally established structures like government and social infrastructures like military or police, families, and private and public organizations might remain mostly the same, but their actions change drastically to respond to the nature of the disaster and the needs of the community. Nevertheless, disasters in the digital age could have a lesser impact if a larger number of online and networked publics (Papacharissi, 2015) were mobilized. In these situations, the local “public” is vulnerable but they are also active participants who can mobilize their online presence through various technologies, including their mobile phones and social media. Using Assemblage Theory (AT) and social network analysis (SNA) as complimentary approaches to understanding disaster situations, researchers can examine how human actors conduct networked actions with the support of non-human actors to respond and manage the situations created by the disaster.

During a time of a disaster in the current digitized and globalized age, the use of technology becomes very important. In a previous study related to disasters, Potts (2014) explores the use of Actor Network Theory (ANT) as theorized by Latour (2005) to understand how human and non-human actors are mobilized during a disaster. Latour refers to the collective of actors as an “actant” (Potts, 2014, p. 25). Potts elaborates, “actant which is a network comprising any actors—cell phones, blogs, people, and so on—that can act and do an act within the network” (p. 25). According to Latour (2005), ANT explores the networked participation between human and non-human actors. Vulnerable situations after a major disaster demand multi-sectoral “networked actions” conducted by the “networked publics” (Papacharissi, 2015, 2018; Potts, 2009) and extensive risk communication campaigns (Ding, 2014; Frost, 2013; Grabill & Simmons, 1998) via networks of technical and professional writers, journalists, public relations communicators, engineers, broadcasters, social media users, government, stakeholders, healthcare providers and the affected population.

Meanwhile, multiple disciplines have offered their perspectives on the dynamic interactions within disasters and epidemics through social media and other communication technologies. As disaster is inevitable and it concerns everyone (both the state and the public), scholarship on disaster response has also been prominent in disciplines spanning engineering, political science, sociology, communication, as well as in the field of rhetoric and composition. More specifically, scholars in TPC (Angeli, 2018; Ding, 2014; Frost, 2013; Potts, 2014; Richards, 2018; Sauer, 2003; Stephens & Richards, 2020) have completed studies on crises, disasters, epidemics, and emergencies in which they explore various aspects of communication in transcultural societies and the workplace, studying how communication technologies influence how people respond. These scholars have already laid a groundwork for understanding disaster, technology, and communications in emergencies. These works help us better understand how networks, communications, and technology can help during disaster. Moreover, these works have also motivated me to think about my own experiences of surviving an earthquake from the academic perspective. Below I outline concepts of networks in understanding disaster.

1.5.1 Assemblage, Social Networks, Social Capital

As inevitable as disaster and uncertainty, the formation of assemblages, communities, and social networks after any disaster is equally inevitable. DeLanda (2016) describes an assemblage as “a multiplicity which is made up of many heterogeneous terms and which establishes liaisons, relations between them, across ages, sexes and reigns—different natures” (p. 1). Disaster brings disruptions and prompts a response, as assemblages emerge through interactions among the people who are suffering through similar kinds of experiences. A catastrophe also creates a situation in which communities form alliances or coalitions and form into a larger common assemblage (e. g. a social justice movement). Similarly, in disaster situations non-governmental organizations (NGOs) can form coalitions (or assemblages) that can include the private sector and also the government (DeLanda, 2016, p. 20). These alliances or coalitions are material in nature, and in a digitally advanced world the assemblages are robust because of technologies such as the Internet, mobile phones, and the digital web.

Similarly, assemblages are formed via personal, social, and technological networks. Newman (2010) calls these assemblages, “social networks [...] in which the vertices are people, or sometimes groups of people, and the edges represent some form of social interaction between

them, such as friendship” (p. 5). Today, these human friendships are supported via non-human technologies like the mobile phones, computers, or the Internet. Latour (2005) argues that social networks are formed with both human and non-human actors whose relationship could be understood via ANT. Latour (2005) claims, “a good ANT [actor-network theory] account is a narrative or a description or a proposition where all the actors do something and don’t just sit there” (p. 128). However, in the context of disaster, Assemblage Theory provides a better framework that can help in talking about disaster response because during disaster the networks are evolving and expanding and dissolving quickly. In contrast, ANT seem to work well with stable networks (like organizations, universities, companies, and laboratories). Hence, Assemblage Theory seems to be more useful in thinking about situations like disaster that are much more fluid and evolving. Disaster demands actors work efficiently and keep expanding the network to addressing community needs. Potts (2014) argues that the participants in the network “now work across multiple systems, balancing activities on multiple technologies, connecting to various applications and websites, and accessing spaces through a plethora of devices” (p. 20). With the use of technological devices, people both inside and outside the disaster create a networked space to connect, to interact, and to receive and disseminate information.

Many social scientists describe the formation of assemblages during a disaster as “social capital” (Aldrich, 2018; Gittel & Videl, 1998). Various studies have been conducted in social sciences that focus on the role of social capital during a disaster. Hidayati (2018) quotes various scholars and defines social capital as “networks, together with shared norms, values, and understandings which facilitate cooperation within or among groups” (p. 2). Social capital is also the social structures that people are a part of in which they share their obligations and expectations. Meanwhile, the members of a community are connected with each other. During a disaster, people who share personal or social relationships in both physical and online spaces are driven to support and assist each other out of pre-existing connections and/or obligation. Research conducted by Nakagawa & Shaw (2004) on the Gujrat and Kobe earthquakes demonstrates the importance of bonding, bridging, and linking social capital toward furthering recovery and rehabilitation efforts (Alipour et al., 2015, p. 52). Such bonds and links create opportunities of support in the community that help people in need.

Meanwhile, scholars have also highlighted that various mobile applications such as Twitter, WhatsApp, and Facebook, also help to form communication networks and assemblages

during crises. Pigg (2014) argues, “social media offer a means through which individuals can aggregate people and knowledge or, at the least, learn how existing webs of participation are held together” (p. 70). Communities created or expanded within social media are formed via affect; Papacharissi (2015) argues, “we respond affectively, we invest our emotion to these stories, and we contribute to developing narratives that emerge through our own affectively charged and digitally expressed endorsement, rejection, or views” (p. 5). Papacharissi (2015) suggests that people respond affectively during a crisis as it becomes a common experience for a large number of people who share stories in both online and offline environments forming stronger personal bonds and connections to their community.

1.5.2 Moving Beyond Current Disaster Scholarship

The current scholarship on disaster and social media highlights the importance of social media in bringing together the global community for disaster management. Scholars in the various disciplines have identified several frameworks to help understand how networks form and function during a disaster (Aldrich, 2012; Ding, 2014; Frost, 2013; Potts, 2014). These scholars have explained the roles of networks, social capital, assemblages, and networked publics in disaster response. They have also established a foundation for newer studies like mine that use mixed-method methodologies to provide micro- and macro-level understandings of transnational networked communities. Current practices in the global disaster response demand a transnational mechanism to handle future disasters. My study will try to fill a gap in the current literature by studying the rhetorical and digital practices of the transnational assemblages that are connected by technology.

By building on past studies of disaster, my dissertation brings together multidisciplinary scholarship, using a mixed-methods approach to study two different disasters that happened in two highly marginalized and politically unstable communities. By juxtaposing two different disasters, my study will advocate for developing communication networks that are social justice-oriented, especially for vulnerable communities like Nepal and Puerto Rico. My project creates an understanding of transnational rhetorical practices developed by networked communities during a disaster. It also argues that the rhetoric of disaster in the Digital Age is mediated via networked publics around the world. My project is impact-oriented in that I recommend methods and practices of transnationally useable, modifiable, and flexible crisis communication methods

that could also be taught to students who are learning about disaster response. This method could also become a model used by non-academic institutions, such as governments, media, NGOs, and local communities to rhetorically respond to and manage future disasters.

In the current field of Technical and Professional Communication (TPC), as well as Disaster Studies, my research has the following aims:

- a) bring multiple disciplines together into a common disaster study
- b) provide a methodological contribution in technical and professional communication by conjoining social network analysis with comparative rhetorics
- c) lay the groundwork for additional transnational digital crisis communication methodologies for addressing disaster
- d) advocate for social justice for two different communities that have suffered through catastrophic disasters and have been experiencing political turmoil.

With these four aims in mind, an underlying objective of this study is to highlight the works of communities that tend to be ignored and marginalized.

My scholarship builds upon the previous studies by conducting a mixed-method study of both online and the offline networked communities and by using Assemblage Theory to explore how communities respond during disasters. My study was designed to be as flexible as an assemblage itself. I bring an assemblage of disciplines to a conversation about disaster because disasters concern all and everyone. Additionally, I am grounding my study in rhetorical theories to create a unique understanding of transnational assemblages and how they come together to respond to catastrophic events like earthquakes or hurricanes. Academic readers of this dissertation will discover a new approach to understanding disasters and how networked communities respond to them. Non-academic readers will find recommendations for developing new ways to implement crisis communication networks during times of disaster. Thus, this study should have an impact within the university, on local communities, among online activists, and with researchers who will need to provide leadership in response to future disasters.

1.6 The Thesis of This Dissertation

The thesis of this dissertation is that disaster motivates the formation of transnational networked assemblages via a culture's diaspora and international governmental and non-governmental disaster response systems. With their emergent digital rhetorical and participatory

actions, national and international communities in Nepal and Puerto Rico formed their own stronger transnational assemblages that feature a process of knowledge making. My secondary thesis is that digital technologies like laptops, mobile phones, and various social media and applications like Twitter, WhatsApp, Google Docs, websites, and YouTube become the space where knowledge about disaster is curated, negotiated, and disseminated. In this knowledge-making process, the global community becomes interconnected at the official level as well as at the unofficial level. These connections and networked participations have helped Nepalis and Puerto Ricans respond to their respective disasters.

1.7 Chapter Summary

This concluding section provides a summary of each chapter in this dissertation:

Chapter 2: Current Scholarship and Theoretical Framework

Chapter 2 offers a literature review of the current scholarship in the field of disaster studies, epidemic research, and study of disaster in technical and professional communication while establishing the theoretical framework for the study. The theoretical framework of this study is based on Assemblage Theory. Additionally, I bring Social Network Analysis as a complementary theory for the Assemblage theory. In this chapter, I also review scholarship from a variety of disciplines, which will also help me contextualize my study. I bring various scholars into the conversation while demonstrating that various studies support various perspectives regarding disaster studies. I argue that a conversation among these disciplines is necessary to create an impact-oriented study of disaster, technologies, and networked communities.

Chapter 3: Research Methods

Chapter 3 outlines my methods in detail. Using a narrative form, I describe the process of choosing and using a mixed-methods approach for my project. This methods chapter will also provide an overview and step-by-step process on how both qualitative and quantitative methods were used to collect data and analyze the data in detail. For qualitative methods, I discuss how I used narrative inquiry as my method to gather interviews from 28 participants from Nepal and Puerto Rico. In addition, to gather quantitative data, I purchased and analyzed 55 million tweets

from the Nepal Earthquake and Hurricane Maria. I have used Social Network Analysis to analyze tweets that I purchased from Twitter. In the chapter, I also describe the step-by-step process of data collection and social network analysis.

Chapter 4: Findings

In Chapter 4, I present the results of my data collection and data analysis from my mixed-methods approach. In this chapter, I argue that various transnational assemblages are formed with the help of digital technologies, especially when various global actors respond to the local crisis. In this chapter, I discuss six major findings in detail. As this is a mixed-methods study, the findings I present are a combination of both narrative inquiry as well as a social network analysis of the Twitter data that I purchased. In doing so, I also present the visualization of networks created with the help of social network analysis.

Chapter 5: Discussions

In Chapter 5, I draw conclusions from my findings presented in Chapter 4 with the help of theories that I discussed in Chapter 2. Through this chapter, I argue Through this chapter, I argue that a) formation of transnational assemblages during a disaster is inevitable and those assemblages help in disaster recovery; b) any study of crisis communication should include intercultural communication, which helps contextualize information based on the local context; lastly, c) the role of social media in disaster response should be enhanced with the lessons from past disasters. Furthermore, with those central arguments, I claim that disaster in a global context requires Furthermore, beyond these centering arguments, I claim that disaster in a global context requires the following understanding: a) The work of actors who emerge during a disaster is dynamic and powerful. Identifying those actors and their assemblages might help in faster disaster recovery and b) Catastrophic local disasters are global concerns.

Chapter 6: Conclusions

The concluding chapter suggests some strategies for developing transnational crisis communication mechanisms for various networked communities and encourages future scholarship to devise and study those strategies. In addition to that, I also discuss the contribution

of social network analysis in technical communication as well as the pedagogical implications of this research in technical communication classes.

1.8 Conclusion

My dissertation provides an overview of how transnational assemblages are formed during a disaster and how those assemblages work together in disaster response. The two methodological approaches I used, narrative inquiry and social network analysis, provide various novel perspectives on transnational disaster response. While narrative inquiry has provided an in-depth understanding of how people or actors work within the local network when responding to disaster response, a bigger picture illustrates how people worldwide participate through social media like Twitter to respond globally to disaster with digital means. Since this is a comparative study, I bring discourse about comparative rhetorics and the perspective of social network analysis into TPC as a methodological contribution to the field. In the next chapter, I discuss in detail current scholarship in disaster studies, as well as theoretical frameworks.

CHAPTER 2. CURRENT SCHOLARSHIP AND THEORY

2.1 Introduction

Earthquakes and hurricanes, as disasters, create ecological disturbances by shifting geographies, displacing lives, and destroying infrastructure. During these chaotic times, an ecology comes into existence by forming assemblages (DeLanda, 2016) of both human and non-human actors (Latour, 2005) often mediated via networks: social, communal, and technological. The precarious conditions after any disaster require a network of not only humans but also non-human elements such as mobile phones, laptops, food, shelter, or information shared via various printed or online materials. Additionally, since disasters are location- and context-specific, responding to them requires enculturation on the part of first responders, which include government employees, non-governmental agencies, informal networks of volunteers and activists, community members, and so on. Researchers who study ongoing risk communication and disaster-based responses have highlighted the importance of networks, rhetoric, and newer technologies during and after any disaster (Angeli & Norwood, 2017; Cho et al., 2015; Potts, 2014; Richards, 2017; Sauer, 2003). Current scholarship in technical and professional communication pursue various approaches on disaster, epidemic, and emergencies. (Angeli, 2018; Ding, 2014; Potts, 2014; Richards, 2017). However, the study of transnational networks and the flow of communication in disaster response, although important, has not been adequately studied, especially in the field of Technical and Professional Communication (TPC).

Disaster response in an increasingly globalized world will require more advanced and easier ways to communicate. Technical and professional communication can help during a time of disaster by “making information more useable and accessible to those who need that information,” and in doing so, they might help in saving numerous lives jeopardized by these disasters (“Defining Technical Communication,” n.d.). Disaster responses within current digital contexts create a variety of local cultural- and context-specific rhetorical situations. Those rhetorical situations are dynamic in nature and require easier, faster, and effective ways of communication. Historically, technical communication has already been useful in the context of human-made crises like war, and it was used to specifically explain how weapons operate to American soldiers during World War II (Connors, 1982). In the age of computers and digital

technologies, technical and professional communication has drastically changed and engages more people globally than ever. As Kimball (2016) argues, we are truly living in a golden age for technical and professional communication in the sense that more people than ever before are engaging in sharing know-how as part of their everyday lives. In this context, the role of technical and professional communication during a disaster becomes more important.

Meanwhile, scholarship on disaster spans various disciplines as the contemporary scholars in science and technology as well as liberal arts have been invested in exploring the intricacies related to disaster. Additionally, technological advancement has led to more scholarship and research on networked actions conducted via digital technologies that address the issue of disaster. As a result, many studies have focused on how digital media creates space for assemblages and networks to be created and mobilized during the disaster (Murthy & Gross, 2017; Potts, 2009). Scholars in the field of Technical and Professional Communication have been studying disaster with relation to social media, transnational response, and intercultural communication (Ding, 2010; Frost, 2013; Potts, 2014; Richards, 2017). However, a gap exists in the comparative studies of different disasters in the transnational context, which highlights the integration networks, technologies, and rhetorical practices of global network in response to disaster.

In highlighting the gaps, this chapter reviews various scholarship on disasters, networked communities, and crisis communication to: a) better understand various arguments and research methods that have been already used in the study of disaster; b) explore, identify, and highlight the gaps in these studies; and, c) create space for my scholarship. Since my project spans multiple disciplines and theories that are useful for studying disaster, I bring various studies from TPC, STEM, and Liberal Arts. After the review of this scholarship, I provide an overview of Assemblage Theory and its implications in my study and TPC. I also briefly discuss Social Network Analysis (SNA) as a perspective as a complementary to the assemblage theory.

2.2 Scholarship on Disaster

In this section, I review various scholarship on disaster that has been published in TPC, other disciplines in the liberal arts, STEM, and social media studies. This review of literature from various disciplines will help in understanding and exploring the similarities and differences in the discourse on disaster. With this review, I show that disaster is a common area of study in

various disciplines, hence interdisciplinary interactions in the study of disaster could be beneficial as the world continues to be challenged by unpredictable natural disasters. For interdisciplinary interactions, TPC could serve as a common ground that can bring together scholarship in disaster and create connections outside of academia while supporting the industry and disaster responders. My discussion is divided into the following sections:

- Disaster/Emergency/Risk Studies in Technical and Professional Communication
- Disaster Studies in the Liberal Arts
- Disaster Studies in STEM (specifically Engineering, Computer, and Technology Studies)
- Social Media Studies on Disaster

I will end this literature review by highlighting the research gaps that my study seeks to fill.

2.2.1 Disaster/Emergency/Risk Studies in Technical and Professional Communication

Various scholars have researched the role of TPC during disaster. Historically, technical writing in the context of the United States education wasn't prioritized. However, the number of technical writing courses expanded significantly at the end of World War II (WW II). Connors (1982) shows that there was a striking growth of technical writing in response to WW II. The war required the expertise of technical writers because user manuals were needed to go with new war-related technologies (p. 12). As the history suggests, technical writing was especially important during the time of crisis. In an early technical communication study on disaster, Sauer (1994) examines the role of multidimensional visual and verbal information design in delivering information within a large-scale technological disaster. She explores the relationship between language and representation by comparing the visual representation of accident data in the reports of two different disasters: the Wilberg Mine Fire, which killed 27 miners in 1984, and the William Station No. 9 Coal Mine Explosion of 1989 (also called the Pyro Mining Company Disaster). Her research reveals, the "role of technical communicators can help agency writers understand how the structure of knowledge and its translation into textual narratives has practical consequences in the workplace" (p. 417). Years later in her book, *The Rhetoric of Risk: Technical Documentation in Hazardous Environments*, Sauer (2003) expanded her decades-long research in risk and technical communication. Sauer (2003) examines the complexities related to documentation practices during large-scale disaster and explores the ways that technical

communicators can help institutions in overcoming the challenges of writing about, discoursing about, and negotiating the consequences of disaster.

Meanwhile, other scholars in TPC have focused on risk communication as a way to understand risk. The National Research Council (1989) defines risk communication as “interactions and exchanges among individuals, groups and institutions in the process of determining, analyzing, and managing risk.” Establishing foundations of risk communication, Grabill & Simmons (1998) in their work argue that technical communicators can play a significant role with their research and writing skills towards communicating risk. They claim that the risk of a given situation is socially constructed; therefore, conceptualizing risk from a socially constructed point of view will help in locating knowledge-making within the communication process and also aid the examination of power in such a process (Grabill & Simmons, 1998). Walsh & Walker (2016) highlight that TPC scholars have long recognized that uncertainty plays a key role in the deliberation over risks and urges communicators to adopt a consistent rhetorical framework for uncertainty that helps in producing better risk analysis and strategies.

Recent scholarship in TPC builds upon the study on risk or disasters by researching various dynamics related to disaster that includes newer technological interventions. Current scholars in TPC have broadened the scope of research by exploring various theories and examining formation of networks in disaster, emergency response, user experience, data visualization, and the role of social media during disaster. Potts (2014) presents Actor-Network Theory (ANT) as a methodology for studying the role of social media in disaster response. Potts (2014) argues that, “by using ANT, researchers can pinpoint and visualize networks that various actors validating information create, during activities such as when victims are found alive, when news emerges, and when other detail surface” (p. 63). Her work examines various disasters: the 2005 Hurricane Katrina, the 2005 London Bombings, and the 2008 Mumbai Attacks. In examining these disasters, Potts demonstrates how various online communities are formed and the roles of such communities in disaster response. The book opens up space for a discussion of the social web as a contextual, flexible, and responsive space where researchers and practitioners can focus on participants and their experiences which can lead research and development processes in building stronger insights for architecting participant-centered experiences (Potts, 2014). In presenting various case studies where participants engage with the technologies so as to respond

to disaster, Potts concludes that, researchers can use theories like ANT to design programs and plans that support people who work during disaster to locate data, validate information, and exchange knowledge. Similarly, she urges researchers and practitioners to not ignore the social web and work toward meeting the needs of social web participants.

Some scholars in TPC have focused in examining various transnational risk communication, where digital spaces provide voices and empower local people during disaster. Frost (2013) has studied the Deepwater Horizon disaster of 2010 that killed 11 men as a case study. She examined various communication artifacts, including a website, blog posts, bulletin boards, and public notice. In this article, she argues that various international and national entities used local spaces to share information about this disaster while regional and local communicators shared multiple versions of information on globalized digital sites. She uses ANT and transcultural analysis as her frameworks for analyzing these artifacts because “transcultural analysis calls into question traditional understandings and helps maintain important critiques of the production of master narratives” (Frost, 2013). Her research suggests there were two different rhetorics of risks occurring in the Deepwater Horizon disaster. Specifically, she argues, the non-local and local versions of risk communication were different, and the international actants in the disaster response weren’t responsive to the local actors. In response, the local groups used digital media to have their voices heard, which Frost (2013) regards as “digital guerrilla media.” The digital guerrilla media allowed “the citizens of small communities like Dauphin island to come to voice in a way that was not possible a few years ago” (Frost, 2013, p. 63) as it was an outlet for various communal citizens to communicate about risk in their own ways.

Meanwhile, some TPC scholars have also explored the epidemics and global public health crises and the requirement of transcultural communications in addressing those crises. Huiling Ding (2014), in her book *Rhetoric of a Global Epidemic: Transcultural Communication About SARS*, offers “a new conceptual framework of transcultural professional communication as a robust way to examine intercultural communication practices, tools for studying and contextualizing transcultural communication in the study of epidemic” (p. 18). Examining the global epidemic SARS, Ding highlights the importance of transcultural communication in the response to a global epidemic. In her book, she develops a critical contextualized methodology that investigates the “knowledge created and legitimized across cultures and the power relations

sustaining such legitimizing process” (p. 35). She utilizes six dimensions of her critical contextualized methodology to study SARS as a global epidemic, including “key players, time-space axes, tipping points, interaction analysis, power-knowledge relations, and contexts” (p. 35). With the use of this methodology, she examines various artifacts related to the SARS epidemic. In almost nine years of data collection, she examined a wide range of sources that include “Chinese websites; mainstream media; public health documents, press releases, and publications; regional media in Hong Kong and Guangdong Province; Scientific publications in English and Chinese; archival research of classified official documents, photos...among others” (p. 259). Her research has contributed to building a theory of transcultural risk analysis that “serves as a useful tool for global risk analysis because of its attention to transcultural forces, global flows, power dynamics, knowledge production and negotiations and impacts of local contexts on risk communication practices” (p. 240).

Furthermore, some scholars in TPC have also been studying the risk communications associated with issues of climate change (Blythe et al., 2008; Walsh & Walker, 2016). Other scholars have focused on the importance of designing more effective as well as interactive communication technologies including data visualization. They argue such technology will help to address the public need for localized information for decision making by making information accessible during disaster (Richards, 2017, 2018). Similarly, Stephens & DeLorme (2019) also explore ways to highlight user agency and design interactive tools for visualizing environmental risks. They suggest, “a user-centered approach which foregrounds agency can help risk communication researchers and practitioners identify and address power relations among users, designers, and developers” (p. 392). Additionally, studies have also examined the risk communications strategies of bigger governmental commissions during larger catastrophic events like the 2011 Japan Earthquake. Reamer (2015) examines the rhetoric and risk communication strategies employed by the Atomic Energy Commission (AEC) and Nuclear Regulatory Commission (NRC) by conducting an analysis of reports issued by the AEC and NRC. He highlights that the reports do not address the need of the non-specialist audiences and require better risk communication strategies.

Meanwhile, Bowdon (2014) offers pedagogical study that examines how a digital platform like Twitter can be used to teach emergency messaging in TPC. Bowdon shows how she used social media and service learning in her technical communication classroom to teach

emergency messaging and usage of social media. In her class, her students analyzed tweets from various people and organizations to understand the twitter patterns related to Hurricane Irene. This encouraged students to a) critically think about Twitter as space for emergency messaging and b) to examine their own social media practices to recognize the importance of an audience-centered approach to social communication. Bowdon concludes that “technical communication scholars need to continue to study twitter conversations and patterns to learn what we can about what people are saying, how information is moving and changing, and how these forums can be used to promote safe and informed citizenry” (p. 50).

This review of the literature regarding risk communication, disaster, and emergency suggests that TPC scholars have been keenly studying various aspects of disasters from local, global, technological, and pedagogical perspectives. Scholars who have researched various disasters within the U.S. and beyond have provided the groundwork for responding to various natural disasters, health epidemics, or crises. Research studies have mostly focused on analyzing the content of documents produced during disaster or analyzing the importance of data visualizations and interactive technologies. Most research reviewed in this section also highlights the importance of interaction between academic and non-academic workplaces. Scholars such as Ding (2014), Frost (2013), and Potts (2014) have highlighted how industry can benefit from academic research regarding risk communication, and they argue that academic researchers and non-academic practitioners need to work together during times of crisis.

2.2.2 Disaster Studies in the Liberal Arts

Scholars in other disciplines in the liberal arts, such as political science, communications, and sociology have been studying disaster for decades. Moreover, some scholars in liberal arts have been motivated to study the importance of social networks in disaster response and community resilience (Aldrich et al., 2015; Anderson, 1969; Lee et al., 2007). Scholars in communication are interested in exploring the networked communications among actors during disaster (Lee et al., 2007; López-Carresi, 2013). Likewise, scholars in sociology have been interested in understanding humanitarianism, social capital, and public health epidemics (A. Broom & J. Broom, 2017; Redshaw & Ingham, 2018; West & O'Reilly, 2016). These scholars have approached disaster from their respective disciplinary lenses and examined some concepts like social capital, networks, care, and transnational responsibility.

In political science, there has been much interest in talking about disaster from the perspective of social capital. These studies focus on networks from the perspectives of individuals, families, and communities (Aldrich, 2012; Alipour et al., 2015; Kim et al., 2017). Political science scholar Aldrich (2015) in his anthology, *Resilience and Recovery in Asian Disasters Community Ties, Market Mechanisms, and Governance*, has curated research that highlights disaster responses from three different networked actions: families and community ties, market and production networks, and government policy and risk management. This collection presents research on various kinds of catastrophic disasters in Asia and looks into pre- and post-disaster mitigation and response mechanisms. The book also provides various kinds of policy recommendations for reforms at the national level.

Similarly, Kapucu et al., (2012), in their anthology, *Disaster Resiliency: Interdisciplinary Perspectives*, have invited scholars in various disciplines spanning public administration, network studies, as well as sociology, to rethink to the topic of disaster resiliency. The editors explain that their approach in this book emphasizes multi-organizational and multi-jurisdictional planning processes in preparing for emergencies and crises. The articles they included in this collection focus on four different elements: prevention/mitigation, preparedness, response, and recovery (p. 1). This collection provides a range of articles that discuss disasters from various countries and contexts around the world, including the United States, Mexico, Japan, and Turkey. Similarly, the articles in this collection provide a conceptual insight into understanding disaster resiliency, networks, public-private role in disaster management and the importance of networks in increasing disaster resiliency. Kapucu et al., (2012) conclude that “stakeholders from multi-jurisdictions and multi-sectors need to be involved in the planning and implementation for disaster resiliency” (p. 356).

Additionally, scholars in Communication Studies have been studying and exploring the strength of networked communities, the role of journalism and media in disaster, the importance of humanitarian aids, the social networks that emerge during specific disasters, and the role of Twitter in disaster management. An early publication by Anderson (1969) studies the Alaska Earthquake of 1964 and examines disaster warnings in the communities of California and Hawaii by comparing and contrasting the public warnings and responses. Recent scholarship in communications have used various approaches to study disaster. Lee et al., (2017) described and explained post-disaster recovery networks and community resilience. Madianou et al., (2016)

used an interview-based study to explore the uses of digital communication technologies for accountability purposes in the recovery from the 2013 Typhoon Haiyan in the Philippines. Their research reveals that even though newer technologies have increased the feedback collection mechanism, they don't necessarily increase the accountability to the affected people. Likewise, some scholars like Correa et al., (2016) have focused on how people engage with media during a disaster from the audience perspective by studying the 2014 Chile Earthquake and a massive fire that erupted after the earthquake. They asked 36 participants in six Chilean cities to keep a media diary in which participants wrote about their experiences after the earthquake. By using linguistic and textual analysis to examine the audience's response in the media diaries to the disaster, they concluded that audiences are more active and are witnesses of the media rather than passive consumers of information.

Scholars in political science, sociology, and communications have been studying various aspects of disaster for decades. These studies provide research on various aspects, including sectors like the media, as well as network-based research that studies and examines the roles of technology and media, organizations in disaster response, public resilience, and recovery efforts.

2.2.3 Disaster Research in STEM

Similar to the researchers in the liberal arts, STEM researchers have also studied disaster with a focus on technology, social capital, disaster resilience, as well as infrastructural issues, such as GIS and information technology. Studies done by STEM researchers differs from research in STEM because they primarily focus on the management of disasters in various regions and countries, such as Nepal and Pakistan (Malik & Cruickshank, 2016; Merrilees, 2016). For example, Chang, Elnashai, & Spencer (2011) examine the various transportation networks that form during times of emergency, providing frameworks for managing and formulating traffic plans and making decisions during the emergency. Likewise, Sadri (2016) in his dissertation, *Social Network Influence on Ridesharing, Disaster Communications, and Community Interactions*, suggests newer techniques to understand how individuals and communities are socially influenced via online and offline environments while making shared-trips, communicating risk during extreme weather, and interacting in respective communities.

Some collaborative studies have taken an interdisciplinary approach to studying disaster. A survey-based research study from an interdisciplinary team from engineering,

communications, and political science (Sadri et al., 2018) focuses their research on examining the importance of social capital after tornadoes struck rural communities in southern Indiana in 2012. Their survey-based study assesses the combined effects of physical infrastructure damage, characteristics of social capital and personal networks in disaster recovery. Sadri et al., (2018) argue that, “communities having strong social ties are likely to better face adverse impacts together and policies should be as such neighborhood attachments are increased” (p. 1380). They conclude that stronger social capital helps quicken the recovery of the community (Sadri et al., 2018). This kind of collaborative study demonstrates that disaster scholars from various disciplines have successfully worked together. Some other disciplinary areas where social capital has been studied include water resources development, earthquake engineering, environmental management, and so on. Chan et al., (2018) in their article, “Social capital as a vital resource in flood disaster recovery in Malaysia,” share their finding that social capital helps in building collaboration and partnerships among various disaster-related organizations and mobilizes the public as volunteers, which deepens community and family ties. Similarly, Berke et al., (2008) explore the human-ecological dimension of social capital after the 2004 Tsunami in Thailand. Their study explores disaster resiliency from the perspective of the community and shows how communities in Thailand adapted to the changing conditions in the aftermath of the disaster. The results of this interview-based study suggest that aid delivery programs need to recognize social capital and that the participation of the community members should be recognized.

Similarly, research in computer science has focused on developing software and technologies that can support a disaster response. Catarci et al., (2008) offer a description of software called “Work Pad” that aims to provide a software and communication infrastructure to support operators facing an emergency. Likewise, other computer science scholars in their edited collection, *Earthquake Early Warning Systems*, Gasparini et al., (2007) demonstrate how early warning seismic networks provide near real-time shake maps for damage estimation and emergency management immediately after an event. The collection curates research from various factors related to early warning systems that are used for earthquakes to mitigation measures for post-earthquake information systems. Computer science scholars seem to be primarily focused on how to improve communications-related hardware and software, so as to increase the mitigation capacities of the earthquake affected communities.

This review suggests that scholarship on various aspects of disaster has been an interest to scholars in both the liberal arts and sciences. These studies provide a varied understanding of networks, technologies, and human interactions in a disaster response. Likewise, technology-oriented studies are working toward maximizing the impact of technologies during disasters and figuring out what has worked in the past and what hasn't. Scholars in computer science and technology are invested in creating better technology-based software, and hardware apparatuses that can help in disaster and emergency situations.

2.2.4 Social Media Research in Disaster Studies

Meanwhile, social media in disaster studies has been an increasing area of research that has interested scholars in various disciplines, including TPC as well as in the communications. Scholars have been invested in exploring various aspects of the use of social media during disaster, especially the use of Twitter (Resnyansky, 2015; Potts, 2014; Cho et al, 2013).

Potts et.al. (2011) explore the role of the hashtag in exchanging information about recent disaster. They argue that, "Twitter has proven an extremely useful crisis communications tool in response to various natural and human-made disaster" (p. 235). In exploring the use of Twitter and hashtags in disaster response, Potts et.al. (2011) provide a groundwork in exploring Twitter as a medium of communicating during crisis by providing examples of use of this medium in two different disasters, the 2010 earthquake in New Zealand and the 2011 earthquake in Japan. Similarly, some media-focused studies of disaster extended the meaning and understanding of data during disaster events by focusing on human or non-human actors as well as global online communities that emerge and disappear with an information event (Resnyansky, 2015).

In contrast, some scholars have specifically focused on studying networks and participation via the digital media. Cho et al., (2013) argue that during Japan's 2011 earthquake, Twitter was one of the best information sources during the crisis. By analyzing the URLs shared within the tweets during the 2011 earthquake, their study examines the types of information resources on which the public relies during crises. This allowed Cho et al., (2013) to provide a better analysis of crisis communication through social media and how Twitter can play an important role in communicating crisis. Their research examines Twitter as a space for the public to discuss the crisis situation, share and exchange help and fundraising information by engaging with each other rather than relying on the information in official government tweets (p. 30).

Similarly, in her book *Affective Publics*, Papacharissi (2015) examines how people used Twitter during the Egypt Uprising and how affect urges people to use social media in the context of crisis. She says, “I focus on Twitter because it is a contemporary medium for storytelling, enabling co-creating and collaborative filtering that sustains ambient and affective engagement for the publics it interconnects” (p. 27). Though Papacharissi’s work is not specifically about disaster, her work explores the use of Twitter in a public/political crisis in Egypt. She has analyzed approximately 1.5 million tweets surrounding hashtag #egypt. Her research concludes that people are motivated by affect in responding to political crisis like the one in Egypt.

Similarly, the use of social media, especially Twitter, during disasters helps people share their stories, disseminate information, and connect in ways that help them respond to a disaster. Some researchers have analyzed millions of Tweets to study human behavior during a disaster (Cho et al., 2013; Han, 2019; Murthy & Gross, 2017; Potts et al., 2011). In their research, Murthy and Gross (2017) collected and analyzed 142,786 geo-tagged tweets before and after Hurricane Sandy’s U.S. landfall. They argue that there is a shift in users’ social media behavior during a disruptive event; therefore, responders need to understand the complexity of human behavior within social media during a disaster event. Their study concludes that social media did serve as a useful space to coordinate volunteer efforts, mobilize resources, and alert first responders. As social media has become part of most of the people’s daily lives, it is also a growing research area for the social scientists because it helps them understand the public reaction to a real-time disaster and the possible avenues for crisis management (Murthy & Gross, 2017, p. 358).

2.2.5 Research Gaps

The literature reviewed in this chapter suggests that academic discourse on disaster has been ongoing for a long period of time. As the world is challenged by unprecedented risks associated with climate change and disaster, newer ways of thinking and addressing disaster will be required. The advancement of technology is creating new challenges and opportunities in disaster response. In this literature review, I have discussed the literature from TPC, political science, sociology, communications, STEM, and social media research. To conclude this review, I will identify some gaps in the literature and highlight the importance of my research.

Researchers in TPC have studied the technical and practical aspects of disaster response (Angeli, 2018; Angeli & Norwood, 2017; Ding, 2010, 2014; Potts, 2013; Richards, 2017). In this literature, TPC scholars provide a communal voice that bridges the gap between academia and the industry in response to disaster and crisis. Meanwhile, other liberal arts scholars have focused on studying disaster resiliency, digital networks, the role of media during disasters, and the role of humanitarian aid agencies (Aldrich, 2012; Chan et al., 2018; Kapucu et al., 2012; Madianou et al., 2016). The scholars in other liberal arts have examined the concept of disaster from various perspective, and their research has been more focused in understanding the social, political, and communications related phenomena that a disaster creates. Additionally, in STEM, researchers are invested in designing better technologies, understanding technical aspects of various technology apparatuses and their impact in disaster (Catarci et al., 2008; Gasparini et al., 2007; Sadri et al., 2015). Meanwhile, scholars who are interested in studying social media during disaster or crisis are focused on the role and use of social media, as well as its importance to disaster response (Ding, 2010; Murthy & Gross, 2017; Potts, 2014; Potts et al., 2011; Resnyansky, 2015). The field of Disaster Studies tends to have a larger scope. Various scholars have researched aspects of disasters around the world.

Nevertheless, there are some gaps in these studies that my research aims at fulfilling. The major gaps in the previous studies in disaster are the following:

- A study on transnational networks and the role of social media in providing common spaces for people to network and participate in the recovery.
- A comparative study of different disasters that compares the global response.
- An exploration of the ways crisis communications can be used for social justice during a time of disaster.
- A study of the role and strength of local people and their communities in addressing the consequences of disaster.

My research fills these gaps by studying two different disasters, the Nepal Earthquake in 2015 and Hurricane Maria in 2017, and the transnational assemblages that emerged during these two disasters via the social web. Additionally, my research builds upon research by various scholars (Angeli, 2018; Ding, 2014; Potts, 2014; Sauer, 2003) in TPC who have researched various aspects of natural and human-made disasters, as well as public health emergencies.

2.3 Theoretical Framework

In this section, I provide an overview of the theoretical framework for my study. My dissertation studies assemblages of human and non-human actors that emerged globally during the Nepal Earthquake and Hurricane Maria. By viewing disaster response as a global phenomenon, Assemblage Theory can help us understanding how communities emerge and disperse during disasters and how communication flows globally when these events happen. In this section, I provide an overview of Assemblage Theory. I will also provide a brief introduction to SNA as a supportive theoretical perspective that complements Assemblage Theory.

2.3.1 Assemblage Theory

Assemblage Theory explains how networks are formed via personal, social, and technological interactions. The concept of an assemblage first appeared in the work of theorists Deleuze and Guattari (1987) in their book *A Thousand Plateaus*. According to Deleuze and Guattari, an assemblage establishes connections among multiplicities, and it is always in the process of becoming or emerging. Deleuze and Guattari explain their concept of an assemblage by comparing it to a rhizome. They argue, “a rhizome ceaselessly establishes connections between semiotic chains, organizations of power, and circumstances relative to arts, sciences, and social struggles” (p. 7). An assemblage is in the process of becoming when it establishes its existence by interacting with other beings—both human and non-human. DeLanda (2016) builds upon this idea by defining an assemblage as, “a multiplicity, which is made up of heterogenous terms and which establishes liaisons, relations between them, across ages, sexes and reigns – different nature” (p. 1). The nature of an assemblage is its reliance on the multiple connections that establish the assemblage’s identity. These multiple connections are mediated by various actors that are non-human, such as objects, mobile phones, computers, and other technologies. In the current technological context, assemblages can either be real or online meaning they can exist in the physical world or in online spaces like the Internet. This means an assemblage is a becoming that brings elements together (Slack & Wise, 2015).

The human and non-human elements in an assemblage co-exist with each other. Scientific inventions, technological advancement, objects, and human beings are in an evolving network. Objectively understanding and valuing this network was deemed necessary by scholars

like Heidegger. Heidegger (1971), in his chapter “Thing,” explores the power of things by describing how the formation of a jug brings together earth, the potter who makes the jug, and how it is something that has been made to self-stand. In understanding Heidegger, the jug could be regarded as a representation of an assemblage of potter, earth, the people who are involved in transporting the jug to its consumer, and the consumer who uses the jug. He argues that the physical distance among humans is shrinking due to the power of things. In another work, *The Question Concerning Technology and Other Essays*, Heidegger (1977) suggests that human life is chained to technology (p. 4). While he talks about technology in general, and not specifics like television or radio, he regards technologies as challenging and revealing such that there are “unlocking, transforming, storing, distributing, and switching about are ways of revealing” (p. 16). Thirty or forty years after this piece, we can definitely see how technology has unlocked various possibilities of storing and distributing data and in doing so it has become part of daily lives of people such that people are linked via technologies in forming an assemblage.

Understanding that impact of technology is something crucial to understanding how assemblages work. These technological advancements come into existence by “blurring the boundaries or distinction between bodies, objects, and contexts that are seen evident in myriad biotechnological and digital technological developments that are changing the landscape of living” (Coole & Frost, p. 16). Similarly, Bennett (2004) explores the ecological relationships of human and non-human actors in an assemblage. She argues, “thing-power materialism figures materiality as a protean flow of matter-energy and figures the thing as a relatively composed form of that flow” (p. 349). Such flows are important in the ecological system between human and non-human actors and often the flow of energy is mediated via a “thing.” She acknowledges that human beings and things overlap and exist together in the form of a network, which is essential to understanding assemblages. Bennett adds, “the relevant point for thinking about thing-power is this: a material body always resides within some assemblage or other, and its thing-power is a function of that grouping [...] A thing has power by virtue of its operating in conjunction with others” (pp. 353-354). In an assemblage, things are equally powerful and play a significant role in the flow of energy, or information, or resources.

The concept of an assemblage has various other elements that help in getting an in-depth understanding of the theory. Some of these concepts are rhizomes, emergence and exteriority,

territorializing and deterritorializing, affect, and agency. In the sections below, I provide a brief description of these concepts.

2.3.2 Rhizomes

To understand the concept of assemblages, it is important to talk about the concept of rhizomes, as they were discussed by Deleuze and Guattari (1987). Rhizomes exist in a variety of natural forms, and they grow in various directions like potatoes and couch grass, or many types of weeds (p. 7). A rhizome has a variety of points at which the network emerges into view. In Assemblage Theory, a rhizome is a networking mechanism that helps connect one entity (human or non-human) to the others in the assemblage. Deleuze and Guattari suggest that a rhizome has no beginning or end because “it is always in the middle, between things, interbeing, *intermezzo*” (p. 25). As Delanda (2016) suggests, the rhizome helps in the formation of assemblages, which are always in the process of becoming or emerging. The major characteristics of a rhizome, as argued by Deleuze and Guattari (1987), is that a) it connects any point in the assemblage to any other point; b) it has neither a beginning nor an end; c) it brings together very different regimes of signs and even non-sign states; d) it operates by variation, expansion, conquest, capture, and offshoots; e) it pertains to a map that is always detachable, connectable, reversible, modifiable, and has multiple entryways and exits and its own lines of flight; and f) “it is an acentered, non-hierarchical, nonsignifying system without an organizing memory or central automaton, defined solely by a circulation of state” (p. 21). These characteristics of the rhizome make it adaptable, connectable, and accessible to large numbers of people, organizations, and entities that are responding to a larger phenomenon like disaster.

The networks that emerge during disaster are rhizomatic in the sense that people around the world can be connected with a tweet, or a hashtag, and a simple act of caring can connect people into an assemblage. These networks do not have a beginning or an end, and there is no single entity that operates these networks. This means they are non-hierarchical like rhizomes. Additionally, disaster networks are like rhizomes because the entry and exit points are always open, and even if the connection is broken or shattered at a given spot, it will start up again on one of its old lines or create new lines (p. 9). Deleuze and Guattari (1987) further argue that a rhizome has multiple entryways that foster connections among fields. In the context of a disaster, the social web serves as a rhizome that helps varieties of people enter into a conversation as a

form of disaster response. Such conversations and interactions lead to disaster response in terms of volunteering, fundraising, and helping people in need.

2.3.3 Emergence and Exteriority

According to Delanda (2016), assemblages should be understood through two different concepts: the concept of emergence and the concept of exteriority. Johnson-Sheehan and Pellegrini (forthcoming 2021) refer to emergence and exteriority as follows: “emergence in an assemblage is in a state of evolution—growing, changing, or devolving—and exteriority means that the assemblage itself is autonomous and defined by other assemblages that are exterior to it (p. 10). Delanda (2016) suggests that emergence is part of an assemblage because conversations, interactions, and connections establish these connections among its parts. The characteristic of emergence in an assemblage means that the interactions between or among entities continues. If such interactions cease, then the assemblage itself ceases to exist. Here, we can think of emergence as being rhizomatic, where interaction or becoming never cease to exist and a connection is established from one end to the other end of the assemblage. The concept of exteriority suggests that assemblages are autonomous, meaning there is no one entity that controls an assemblage. Rather, an assemblage is formed within the networked connections between and among entities and the assemblages that are exterior to an assemblage helps in defining them and providing an identity.

2.3.4 Territorializing and Deterritorializing

The emergence of an assemblages can involve boundaries that are created in physical space, such as a community, city, or nation-state, or it can involve boundaries in online space, such as creating a Facebook group, communicating through group messaging, and using specific hashtags on Twitter. As Deleuze and Guattari suggest, this process of emergence can be described as “territorialization,” by which an assemblage establishes its identity by claiming space. Delanda (2016) refers to territorialization as “not only to the determination of spatial boundaries of a whole—as in the territory of the community, city, or nation-state—but also to the degree to which an assemblage’s component parts are drawn from a homogenous repertoire, or the degree to which an assemblage homogenizes its own component” (p. 22). In the process of

becoming, an assemblage creates or occupies certain spaces (real physical spaces like buildings or online spaces like Twitter) through the process of self-organizing by establishing rules, regulations, and traditions. The process of territorialization happens such that, “an assemblage subsists by growing and territorializing new spaces, which means the multiplicity is constantly seeking to occupy new spaces and organize its gains” (Johnson-Sheehan & Pellegrini, forthcoming 2021, p. 10). Online spaces provide ample opportunities for an assemblage to occupy spaces with their conversations and their habits or rituals. An example of such territorialization could be tweeting with the same hashtags and/or changing of the profile picture with a frame expressing solidarity for a cause or event.

Similarly, as an assemblage emerges and evolves, some of its links may be broken or even shattered at a given spot; within those broken spaces, the rhizome will mend by rebuilding one of its old lines, or it will form new lines by returning to the state that existed prior to creation of that part of the assemblage (DeLanda, 2016; Deleuze & Guattari, 1987). This process is called deterritorialization. Delanda (2016) suggest, “a process of deterritorialization, on the other hand would be any process that takes the subject back to the state it had prior to the creation of fixed associations between ideas, that is, the state in which ideas and sensations are connected as in a *delirium*” (p. 27). This makes the assemblage lose its influence, such that the components of assemblage seek other flows, or points of connection, where they can join a different assemblage or even create one by re-inventing their relationship to other elements in the assemblage. Johnson-Sheehan & Pellegrini (forthcoming 2021) argue that, “these deterritorialized elements become less structured, less relevant, and are ultimately restructured within the assemblage—or they are left behind (p. 11). Delanda (2016) also suggests that deterritorialization is also promoted by technological inventions that allow conversations to take place at a distance, blurring their spatial boundaries (p. 29). This process may signal the end of networked partnerships or geographical dispersion, or the elimination of some rituals, which further invites the invention of newer forms of communal participation (Delanda, 2016).

Both territorializing and deterritorializing are processes associated with the evolution, growth, repair, and decay of an assemblage. These two concepts help in understanding the emergence of communities, their works, and how they disperse and fall apart. In response to disaster, the formation of assemblages, communities, and social networks are inevitable but somewhat unpredictable. In a digitally advanced world, these assemblages are robust because

technologies such as the Internet and mobile phones assist in helping people form assemblages or networks. These technologies support the creation of assemblages that cross traditional physical boundaries, allowing human and non-human actors to organize or perform common actions.

2.3.5 Affect

While the dual process of territorializing and deterritorializing continues in an assemblage, both of these processes are also motivated by affect. As a new assemblage emerges, affect plays a significant role. The concept of affect first appeared in the work of Spinoza, who defined affect as “states of mind and body that include, but also extend beyond, just emotions and feelings to describe driving forces that are suggestive of tendencies to act in a variety of ways, or to not act at all” (see also Papacharissi, 2015). Affect helps human beings act, react, or not act in certain situations. Brian Massumi, the translator of Deleuze and Guattari’s (1987) *A Thousand Plateaus*, suggests that “affect doesn’t denote a personal feeling but it is an ability to affect and be affected. It is a pre-personal intensity corresponding to the passage from one experiential state of body to another and implying an augmentation or diminution in that body’s capacity to act” (p. XVI). In an assemblage, affect helps bodies react or act to form newer ties or relationships or newer habits and rituals. In doing so, the non-human elements help to assert those ties. For example, participation in discussions in online communities rely on phenomena such as “likes” and “retweets.” Likes and retweets are the actions that assert that a tweet motivated people to either support the cause or the argument mentioned in that tweet or it may be people admire or simply like whatever the tweet is mentioning. Affect, as an element of assemblage, could be the perception of a situation that leads to a modification of the body, which then triggers the emotion of consciousness of the mind (Deleuze, 1987, as described in Papacharissi, 2015). Likewise, Clough (2008) defines affect in the following way: “affect refers to the metastability of a body, where the unstable pre-individual forces, which make up the metastability of a body, are neither in a linear nor deterministic relationship to it” (p. 4). Towards the formation of assemblages, affect plays a role in creating non-linear and non-hierarchical relationships, thus creating a territory where an assemblage can thrive.

Affect is spontaneous as well as contextual in that it is created as a response to events, happenings, or incidents. Massumi (2002) characterizes affect by recognizing the importance of intensity. Events, incidents, and happenings force the emergence or evolution of an assemblage

as it creates spontaneous moments where situations are intense and require the attention of people who can address intense situations with the use of technologies. Response to such situation is affective and is powerful as it helps people to be connected, to be collected, and to take action. Rice (2008) suggests that “affect is not personal feeling but is instead the means through which bodies act in context with each other” (p. 203). Affect in an assemblage helps in creating flows within and among people and motivates them to take an action. For example, when responding to a disaster, people post their stories and narratives by using various social media, such as Twitter, Instagram, Facebook, and WhatsApp. In the telling of these stories, affect is shared among people, which helps in territorializing the assemblage because human suffering is intense. Papacharisi (2015) argues, “we respond affectively, we invest our emotion to these stories, and we contribute to developing narratives that emerge through our own affectively charged and digitally expressed endorsement, rejection, or views” (p. 5). Affect helps in creating flows within an assemblage and helps in self-organizing, territorializing, and deterritorializing the assemblage.

2.4 Social Network Analysis

Social Network Analysis (SNA) enhances the study of networks and assemblages by providing an understanding of how networks of relations link social entities while explaining how webs or ties among social units work together (Wasserman & Faust, 1994). Additionally, SNA takes as its starting point the premise that social life is created primarily and most importantly by relations and patterns formed among these relations (Scott & Carrington, 2011). The history of SNA goes back to various physicists, mathematicians, and social scientists in the 1950s. The earlier approaches of SNA were mostly qualitative in nature; however, the quantitative aspect has also gained influence in the past few decades (Frith, 2014). Network scholars define social network as a set of socially relevant nodes connected by one or more relations (Borgatti, 2013; Scott & Carrington, 2011; Wasserman & Faust, 1994). These relations are based on individual relationships, organizational relationships, formal and information relationships, and ad-hoc relationships. Such relationships are developed via shared interests or affective ties, which are based on network members’ feelings toward one another or cognitive awareness (Borgatti et al., 2009; Papacharissi, 2015; Scott & Carrington, 2011). Additionally,

SNA as argued by Monge & Contractor (2003) is an analytic technique that enables researchers to represent relational data and explore the nature and properties of those relations.

In the realm of TPC, the study of networks isn't new. Scholars in TPC (Angeli, 2018; Ding, 2014; Pigg, 2014; Potts, 2014; C. Spinuzzi, 2007) have long been studying networks, distributed work, networked communications in disaster, emergency medical services, and so on. Most scholars in TPC have worked to understand the perspective of networks via theories like Actor Network Theory, Activity Theory, or Assemblage Theory. However, there has been less work from the perspective of SNA. From a TPC point of view, SNA could provide a deeper understanding of networks. As Frith (2014) argues:

By drawing from SNA to map and conceptualize the social networks in which technical communicators operate, researchers will be able to better understand the roles technical communicators play in organizations, the multiple audiences as they connect, and how technical communicators' network positions may provide them with opportunities to shape various types of information production. (p. 289)

The perspective of SNA in the study of TPC can help in theorizing how information flows within a network, who are the principal actors in the network, and how network could be mobilized in dissemination of information.

In the context of this dissertation, SNA helps us conceptualize how transnational networks are formed, how people communicate across physical borders, and what roles users, organizations, and governments play in curating information online during the disaster event. SNA considers each point in a network as nodes or actors and analyzes the relationship, ties, or patterns that connect one node or actor to the other. There are three approaches in SNA that one can use to examine a network: a) examining the structures of the networks, b) examining the dynamics of tie (relationship) formation within the nodes, and c) examining how patterns of relations affect the outcome. My research question was mostly focused on examining the dynamics of those ties and how patterns among those ties affect the disaster response. (The findings of these two examinations of networks can be found in Chapter 4.) As articulated by Varda (2017), "the goal of SNA in disaster research is a more complete understanding of who is at risk, who recovers, how survivors recover from disaster, and how to adapt in order to mitigate vulnerability and impacts" (p. 55). SNA in disaster research can help first responders to understand and act in ways that help people who are at risk. Since communication among the

network members is an important factor in disaster response, scholars of TPC might benefit from understanding communications flow within such networks.

Likewise, SNA can also help us understand the attributes of disaster-based networks, such as their communication patterns based on their respective diaspora, governmental networks, and networks based on the religious networks. These attributes are understood in terms of patterns or structures of ties among the units (Wasserman & Faust, 1994). While Assemblage Theory provides an overall theoretical understanding of networks, SNA helps in providing a structural understanding of how the patterns of networks are formed. The networks that emerge during a disaster are dynamic in nature or sometimes they are ad hoc social networks that are formed between those who need help and those who provide help during disaster. These networks possess agency, which results from one's position inside a social network (Frith, 2014; Scott & Carrington, 2011). These networks could be regarded as ecosystems where participants are communicating, discovering, and contextualizing plans for moving ahead (Potts, 2014). SNA helps in understanding these networks by breaking them down into a) actors and their actions, b) their relational ties where flows occur, c) network models focusing on individuals' view, and d) network models that conceptualize the social, economic, and political structures (Borgatti et al., 2009; Monge & Contractor, 2003; Wasserman & Faust, 1994).

Nevertheless, the study of networks and the analysis of a community's network structure is not new in social sciences. As technological advancement has increased our understanding of how people network, there is growing interest in unraveling the structure of computer-supported virtual communities that have proliferated in recent years (Borgatti et al., 2009). In the case of disaster, many studies in various disciplines have researched networked actions that occur in social media during disasters (Cho et al., 2013; Crooks et al., 2013; Kim & Hastak, 2018) to examine patterns within these networks and their responses to disaster.

2.5 Conclusion

In this chapter, I reviewed the scholarship on disaster from various disciplinary perspectives, and I illustrated the gaps in the literature of TPC and other disaster related literature in liberal arts as well as in other disciplines. Additionally, I have also summarized the theories that I will use to study the rhetoric of disasters in two different contexts. In the next chapter, I discuss my research methods, which apply these theories, and I show how these theories have

informed my methodologies and practices while conducting my research. In Chapter 4, I present my findings from my mixed-methods research approach. Then, in Chapter 5, I discuss these findings and theorize them with the help of the theoretical framework I have discussed in this chapter. More specifically, I map out how an assemblage and the networks among its actors allow us to illustrate crisis communication networks that form during disasters.

CHAPTER 3. RESEARCH METHODS

3.1 Introduction: Navigating Methods for Research

Disaster research is challenging because it is associated with the destruction of lives, infrastructures, and well-being. Today's experiences with disasters are recorded in the digital mediums in the form of narratives. These experiences, both official and unofficial, help in shaping knowledge during a disaster. Potts (2014) suggests that during a disaster, "unlike prior experiences in which users marched through a set of interfaces and stayed contained within systems, social web participants consider an entire ecosystem of solutions for communicating with others across multiple networks" (p. 18). Researching an entire ecosystem and its actors is a challenging task in itself. In such ecosystems, or assemblages, rhetoric "never escapes from world into social or the symbolic: it is always worldly, a dynamic, emergent composite of meaning and matter" (Rickert, 2013, p. 222). As one of the actors in the disaster eco-system myself, I accepted this challenge to understand disaster rhetoric by seeking, finding, and listening to the narratives of actors. I wanted to highlight the bravery these people demonstrated during the disaster responses following the Nepal Earthquake and Hurricane Maria.

In this chapter, I begin by providing a step-by-step description of my mixed-methods approach that guided my research in Table 3.1 and Table 3.2. In these tables, I present the major tasks and the major steps within this methodology, as well as the minor steps that helped me in achieving these major tasks. I also begin this chapter with my narrative of adapting my Western education toward studying my non-Western country, Nepal, and Puerto Rico, a community that I eventually became part of due to my research. Then, I will provide a brief overview of my two research sites, Nepal and Puerto Rico, a description of the grants that allowed me to work on my project, an overview of my mixed-methods study, and a description of my methods in detail.

Table 3.1: *Qualitative Research: Narrative Inquiry Steps*

Major Step: Conducting Narrative Inquiry with Participants from Nepal and Puerto Rico	
Minor Steps Step 1: Identifying Research Sites Step 2: Planning Site Visits and Grant Writing Step 3: Finding and Recruiting Participants Step 4: Conducting Interviews Step 5: Coding and Analyzing Data via Nvivo	Why <ul style="list-style-type: none"> • To narrow down the scope of the research and explore the feasibility of conducting research • To collect narratives of the actors of disaster in Nepal and Puerto Rico. • To fund my travel to Nepal and Puerto Rico • To find and recruit individuals who had an important role in disaster • To listen, record, and understand the narratives of the participants who have dedicated their time and energy in disaster response. • To analyze the data objectively via a Nvivo (a qualitative data analysis software) and understand and explore the narratives of the participants.
Deliverable 1: Recordings and transcriptions of 28 interviews with participants from Nepal and Puerto Rico Deliverable 2: Analysis of data through 5 themes that emerged	

Table 3.2: *Quantitative Research: Social Network Analysis Steps*

Major Step: Conducting Social Network Analysis of Twitter Data	
Minor Steps Step 1: Identifying social media for data collection Step 2: Collecting Data with a Twitter Purchase Step 3: Analyze the Social Network through Twitter Data	Why <ul style="list-style-type: none"> • To narrow down the scope of research in exploring the social media used during disaster • To collect data of various Twitter users across the world who have tweeted • To analyze the data and create visualizations based on the Twitter data
Deliverable 1: Visualizing the transnational network during the Nepal Earthquake and Hurricane Maria. Deliverable 2: Analysis of the networks in the data visualizations	

3.2 My Story and Positionality

When I started my Ph.D. studies in 2016, memories of the earthquake were still very fresh in my mind, and I couldn't let it go. My academic investment in rhetorical theories and technical and professional communication (TPC) made me contemplate and critically think about my approach to responding to the Nepal Earthquake of 2015. I was a journalist, communications practitioner, and an active social media user during the time of the earthquake. Through these professional and personal practices, I have been an active responder to the disaster and its consequences in Nepal. As I started to think about my personal experiences rhetorically, disaster studies became my area of study through which I was able to remain connected with my community and country.

Additionally, while I was studying the Nepal Earthquake, other disasters were happening around the world. Smaller countries and marginalized spaces suffer more from disasters, because they lack the infrastructure and finances to respond to a disaster of catastrophic nature. Soon after Hurricane Maria struck in late September 2017, news and information about Puerto Rico started to fill my social media feed. As a comparative rhetorician, I started to see similarities and differences in the Nepal Earthquake and Hurricane Maria. While doing so, I met my partner who is from Puerto Rico and we shared our experiences of disaster: I had experienced the Nepal Earthquake directly, and he experienced Hurricane Maria through his diasporic connections, especially when he wasn't able to be in touch with his family members. Our comparative conversations about technology, people, and suffering became the first comparative methodological step for me to conceptualize the full project. A few months later, I got a chance to listen to firsthand experiences of Hurricane Maria while speaking with my partner's parents, Mami and Papi. As a scholar invested in comparative rhetorics (Mao, 2011; Mao et al., 2015; Wang, 2013) and narrative inquiry (Clandinin, 2013; Connelly & Clandinin, 1990.; Jones, 2017), I started to reflect as a researcher about my own narratives, as well as the narratives shared by my partner and his parents. I decided my dissertation project would gather and study the narratives of people who have suffered and have also worked hard to respond to disaster.

Meanwhile, as a researcher educated mostly from a Western point of view, I had never been trained to think about the non-Western world from a non-Western point of view. I found it challenging to conceptualize the appropriate methods and a methodology for this study. Scholar Bo Wang has talked about these kinds of transcultural challenges in her articles; however, in her

work she highlights the need for deeply reflective and reflexive practices and processes while developing new interpretive frameworks for research across cultural, geographical, and disciplinary boundaries. Similarly, other scholars like Garrett (2013), Mao (2011), Mao et al., (2015), and Wang (2013) focus on how to do research in non-Western spaces with careful self-reflexivity. Garrett (2013) states that, “speaking for/about an underrepresented tradition or group especially calls for self-reflexivity because of the insulating effects of good intentions” (p. 251). Comparative rhetoricians, while researching underrepresented groups, individuals, and spaces, tend to focus on the requirement for researchers to be self-reflexive about their academic training, their cultural background, and how these factors might affect the people and the contexts that they are researching. As I started exploring the sites of this study, I often found myself in thinking within the theoretical lenses that I am familiar with and have been always taught. However, as an emerging researcher in a non-Western rhetorical field, I had to challenge my own Western education and move out of it towards a research method that would allow me to conduct research that lifts up the community.

Nevertheless, I was fortunate to have already acquired various TPC concepts, knowledge, and patterns for understanding and navigating communities outside of the academia. As a researcher, I found it challenging to think outside of the acquired knowledge and understanding of the theories and frameworks produced by Western theorists. These theories provide tremendous support for thinking, researching, and bringing one’s ideas into reality. With that being said, while I value my Western education, I began to challenge myself to conceptualize the non-Western sites (one of which is my home) and colonized spaces by trying to step outside of the canonical paradigms of those Western theories. This is why combining comparative methodologies with TPC became an important methodological choice for my project. As a researcher, I wanted to challenge myself with the following methodological and ethical questions:

- How can I conduct unbiased research of my own community while I compare them to a community that I am not part of?
- How do I negotiate the education I have received from the West and put it in conversation with my non-Western education, while creating a balance between them?
- How can I move towards bridging the gap between the Western and non-Western theoretical and methodological practices?

As I write this methods chapter, I am sharing my positionality and my experiences as a researcher in order to contemplate these questions with which I started conducting my research. I have reflected upon these questions throughout my study, and I will answer them in the conclusion of this dissertation. I provide this information as a background for my research, so I can be as transparent as possible as a researcher, while establishing my position as a researcher from a non-Western background with a Western education.

My project is a mixed-methods study in which I conducted qualitative narrative inquiry (interviews) with people who have actively worked as disaster responders in Nepal and Puerto Rico. To complete this part of the project, I purchased Twitter data for conducting a quantitative analysis of 56 million tweets from the Nepal Earthquake and Hurricane Maria. In the following sections, I will discuss my research space, describe my research design in detail, and identify the limitations of my study.

3.3 Research Design: Mixed Methods

My hypothesis is that disaster motivates the formation of transnational networked assemblages via the diaspora and international governmental and non-governmental (including media) disaster response systems. My premise is that with their emergent digital rhetorical and participatory actions, national and international communities in Nepal and Puerto Rico formed their own stronger transnational networks with a combination of their own local (non-Western and decolonial) practices of knowledge-making. To understand the making of these complex assemblages and their knowledge making practices, I decided to use a mixed-methods research approach. Creswell & Plano Clark (2018) argue that a mixed-methods approach uses a combination of methods, research design, and philosophical orientations to collect and analyze qualitative and quantitative data rigorously in response to research questions. In addition to this, a mixed-method study also integrates two forms of data and their results. My research question was designed to look for the formation and mobilization of transnational assemblages after the disaster. The research question and the rigorousness of the research demanded two epistemological routes for my study: qualitative and quantitative. Combining these two research methods helped me gain different perspectives about how transnational networks function on a people-to-people level and how it functions on societal, cultural, and global level.

Additionally, because I was studying two different disasters in two very different contexts, a mixed-methods approach helped me investigate the deeper cultural contexts that would have been limited had I only used one research approach. As Watkins and Gioia (2015) argue, mixed methods involve using data collection and analysis from both qualitative and quantitative methods in ways that are rigorous and epistemologically sound. Mixed methods are rigorous but having two different locations and contexts made the project more complex than a typical one. With that being said, mixed methods can also help to minimize some complexities as “the limitations of one method can be offset by the strengths of the other, and the combination of quantitative and qualitative data provides a more complete understanding of the research problem than either approach by itself” (Creswell & Plano Clark, 2018). With the use of mixed-methods research in this project, I was able to gain an in-depth understanding of human experiences by studying both narratives and the larger networks of human interaction within digital/social media. A mixed-methods approach also allowed me to visualize a large amount of data to observe how people form transnational connections.

Furthermore, I chose narrative inquiry as my qualitative method, because this kind of research provides a holistic view of social phenomena, while ceding agency to the research participants to narrate their own stories (Watkins & Gioia, 2015). Additionally, narrative inquiry allowed what Jones (2017) refers to as the “unique sensitivity to participants’ epistemological and ontological perspectives by tapping into their lived experiences.” To support my qualitative methods, I used SNA as my quantitative method for analyzing data from Twitter. Due to the nature of my research question, seeking a broader understanding of how networks are mobilized via digital spaces (especially social media) was especially important. As Watkins and Gioia (2015) suggests, quantitative methods can generate a broader understanding of a phenomenon from hundreds (even thousands) of people, allowing us to understand the breadth of the human experience. My SNA of the Twitter data allowed me to gain an overview of how hundreds and thousands of people across the world create transnational assemblages during a disaster, and it also allowed me to identify the network among the users of various countries and continents. The mixed-methods research approach allowed me to put representative narratives of people who responded to the disaster side-by-side with thousands of those who responded to the disaster via social media. Below I describe both of my methods as well as my strategies for data collection and analysis.

3.4 Qualitative Research: Narrative Inquiry

To conduct my qualitative research, I followed narrative inquiry, which is one of the five major qualitative research methods (Creswell, 2014). My research question demanded in-depth experiences with the participants; as such, narrative inquiry was the best approach as it helped me to gather stories and lived experiences of people who survived the Nepal Earthquake and Hurricane Maria in Puerto Rico. Since both of these sites can be viewed as “marginalized spaces,” narrative inquiry became a way for me to study and honor their lives and lived experiences as a source of important knowledge and understanding (Clandinin, 2013; Connelly & Clandinin, 1990.). By gathering the experiences of ordinary people who have been actively involved in relief and rescue during these two catastrophic events, I aimed at not only highlighting individual experiences but also exploring the social, cultural, familial, narratives within which individuals’ experiences are constituted, shaped, expressed, and enacted (Clandinin, 2013; Jones 2017).

As McAlpine (2016) argues, narratives have power to unearth in great depth human experiences that are shaped by events, incidents, and cultural nuances as they incorporate the temporality, social contexts, complicating events, and evaluative conclusions that together make coherent stories. Additionally, the participants are involved in the meaning-making process (Jones, 2017). Using a narrative inquiry approach allowed my participants and me to occupy a safer space and have conversations about our lived experiences. This approach also allowed participants to feel comfortable, meaning they were willing to share their many stories with me. Below, I describe my steps of conducting my qualitative research in detail.

3.4.1 Step 1: Identifying Transnational Online/Offline Research Locations

As mentioned in Chapter 1, my primary research question was, “How did the transnational assemblage of official and unofficial communities form in Nepal and Puerto Rico to mitigate the challenges of the Nepal Earthquake and Hurricane Maria?” My research question situates my project into various spatial and cultural locations, including the social web. These locations consist of Nepal and Puerto Rico, including the social web of the Nepalis and Puerto Rican diaspora as well as global micro-communities on Twitter. My decision to study two different disasters pushed me toward a complex understanding of the cultural, political, and

social differences between Nepal and Puerto Rico. Not only are the physical locations important to this project but of equal importance are the online digital locations established via social mediums like Twitter, Facebook, and WhatsApp. These online communities are inseparable from the physical communities and their role in disaster response is extremely important. Additionally, the diaspora community from Nepal and Puerto Rico around the world who are interlinked by social media are also integral focus of this research because they played an important role in the disaster response. Below I provide a detailed explanation about my locations Nepal and Puerto Rico:

Nepal, Nepali Diaspora and Digital Spaces:

Nepal is a small landlocked country, which is very prone to natural disasters. Nepal hadn't had a large earthquake in the prior 90 years. Even though there were always predictions that one day a big earthquake will happen in Nepal, no one knew when. On April 25, 2015, a 7.5 magnitude earthquake rattled 14 districts of Nepal, including my hometown Kathmandu. The earthquake happened at a time when Nepal was already adapting to the digital transformation and had an active presence in the social web. In 2015, mobile and internet technologies weren't new to the Nepali people, and they were familiar with many technologies, including various digital platforms like Facebook, Twitter, Instagram, and blogging among others. For this reason, along with the physical location of Nepal, I have also chosen the Nepali Twittersphere as part of my research site where various online communities exist and were involved in seeking, curating, and disseminating information during the earthquake. This is why the role of technology during the Nepal Earthquake was crucial (Clandinin, 2013; Connelly & Clandinin, 1990.; Jones, 2017). As a participant within offline Nepali spaces as well as online spaces, I have observed and participated myself in using social media during and after the Nepal Earthquake. In addition to that, the Nepali diaspora around the world also played an important role in the disaster response. During the earthquake, as I will show, Nepalis in Nepal, the Nepali diaspora, and international communities and organizations were interconnected into a complex transnational assemblage. Social media like Twitter, Facebook, and WhatsApp became a space where global interactions could happen among the Nepalese themselves and also among the international communities who wanted to help and support the Nepalis.

Puerto Rico, Puerto Rican Diaspora, Digital Spaces

Puerto Rico is a small island that was once part of the Spanish Empire and is now a commonwealth of the United States. As described in an article, “Puerto Rico: History and Heritage,” “the issue of political status is one under constant debate, with some in favor of statehood, others independence, and still others the continuation of commonwealth status” (“Puerto Rico- History and Heritage” in Smithsonian.com, 2007). On September 17, 2017, Puerto Rico suffered through a category five-hurricane named Maria. In the aftermath of Hurricane Maria, Puerto Rico had lost most of its technological connections, electricity, and any access to information, leaving the island in a limbo. The hurricane devastated Puerto Rico; however, the total death toll from Puerto Rico is still not clear. Kishore et al., (2018) have estimated that the mortality rate from September 20th through December 31st in 2017 after Hurricane Maria as 4,645. Responding to the crisis, Puerto Rican communities tried to help each other and didn’t wait for the government to come and support them. Like the Nepal Earthquake, communities in Puerto Rico as well as outside Puerto Rico, especially in the U. S. mainland, were involved in the disaster response. Since Puerto Rico is part of the U.S., the people couldn’t legally receive wider international support like Nepal. Federal U.S. policies and regulations stopped international organizations from directly intervening and supporting Puerto Rican communities. However, the network of Puerto Ricans in the U.S. offered significant support and became a crucial part of the disaster response. Similar to the Nepalis, Puerto Ricans formed a variety of networked communities in the social web to address the aftermath of Hurricane Maria and they continue to do so now. The role of online communities in responding to Hurricane Maria was equally important to that of the Nepal Earthquake.

3.4.2 Step 2: Planning Site Visits and Grant Writing

For my data collection, I reached out to various individuals, explored the locations, and made connections with the participants in order to listen to their stories. Hence, planning site visits and negotiating my time and money as an international graduate student was also part of my research methods. An international graduate student can work only for 20 hours a week and the stipend is limited. So, traveling to my research locations, which are poles apart, I needed to plan everything a year in advance. I considered site visits vital for my data collection because I

was re-entering my own community and was reaching out to a community that I wasn't a member of. The site visits allowed me to experience first-hand accounts of people's stories and see and feel how these participants worked to respond to disaster in their respective communities. The planning of the site visits required careful thinking, allotment of time, and budgeting. In this process, grant seeking, and grant writing also became very important for me.

Subsequently, I was privileged to have received two different grants that supported my travel. While learning about Puerto Rico online and trying to make connection with various Puerto Rican organizations, I stumbled upon the Center for Puerto Rican Studies housed at CUNY, New York. I learned about their Summer Dissertation Fellowship and reached out to them to ask if I could apply for it. After many email exchanges, I was awarded with a Summer Dissertation Fellowship of (\$2,574) to travel to Puerto Rico for data collection. Similarly, for my travel to Nepal I applied for an internal grant at Purdue University's Center for Intercultural Learning, Mentorship, Assessment, and Research (CILMAR). I was awarded a \$2,000 grant for traveling to Nepal as well as for transcribing my data. Without these two awards, my research travel during the summer of 2019 wouldn't have been possible. These two grants allowed me to travel to my research locations and collect my interviews. After receiving these grants, I planned my visit to Nepal and Puerto Rico. I visited Nepal in 2019 from May 5th to June 5th, and Puerto Rico from June 27th to July 11th the same year. Additionally, I required \$2,500 for purchasing Twitter data from Nepal and Puerto Rico. For this, I received a \$1,500 Promise award from the College of Liberal Arts at Purdue, and \$150 was provided to me by the English Department for applying to fellowships outside of English Department. I also received a \$200 award by winning the Graduate Pedagogy Showcase organized by the Introductory Composition at Purdue (ICaP) program. The remaining funds of \$300 and \$350 were generously provided by Dr. Bradley Dilger, the Director of ICaP, and, my advisor, Dr. Richard Johnson-Sheehan, respectively. I wouldn't have been able to purchase the necessary Twitter data without receiving this support.

3.4.3 Step 3: Finding and Recruiting Participants

My IRB (Protocol number: 1811021345) application was approved on December 21, 2018. Afterward, I started to locate participants from Nepal and Puerto Rico via the Internet. The goal of finding participants was to be able to conduct interviews with them and listen to their narratives of how they responded to the disaster. To meet this goal, I conducted digital searches

using Google Search Engine as well as social media platforms like Facebook and Twitter as well as other mediums like newspapers and television documentaries. These searches led me to materials that potential participants had curated. I was also able to locate participants by reading about them in newspapers, finding Facebook groups, and searching Twitter hashtags, such as #NepalEarthquake and #HurricaneMaria. I was also using a snowball sampling approach: my participants helped me locate other participants. I was in touch with various participants via email, Facebook messages, phone calls, and Twitter direct messages. My partner's Mami and Papi, via their own church network, also helped me locate participants.

On Facebook, I reached out to various organizations because they were more likely than individuals to respond via Facebook. My search process on Facebook involved using keywords such as "Puerto Rico" and "Hurricane Maria," and I personally liked the Facebook pages I found. I then used the "Send Message" feature to reach out to the organizations or participants, asking for their email addresses so that I could formally send an invitation for participating in my interview. Additionally, for example, after watching a TV documentary, I figured out that I could locate specific social media activists through their Twitter feed, which allowed me to locate other people similar to them. Below (Figure 3.1) is a screenshot of a Twitter conversation through which I located my first participant in Puerto Rico. While the journalist who made the TV documentary never responded to my message, the activist who it featured did respond, and I was able to interview them a year later. Similarly, I searched through various news and journal articles via Google Scholar, journal databases like EBSCOhost that specifically were written on Hurricane Maria and Puerto Rico. This allowed me to identify various organizations and individuals who responded in the aftermath of Hurricane Maria.

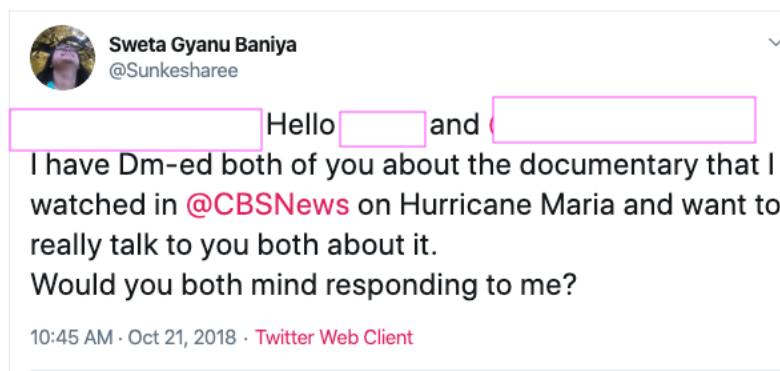


Figure 3.1. Reaching out to participants via Twitter

Additionally, my request to locate participants was also posted on a Facebook group called the “Puerto Rican Studies Association.” Meanwhile, two of my Puerto Rican colleagues electronically shared a recruiting flyer (Appendix A) I had created, helping me reach out to their respective networks and locate participants. This flyer was shared by my other friends from Puerto Rico within their own Facebook and WhatsApp networks. This was another way I got into contact with various participants in Puerto Rico. Hence, I was able to conduct 14 different interviews with participants from Puerto Rico.

The strategies that I developed were designed to reach out to everyone ethically and professionally. I relied on publicly available resources and information, and I sent them a formal recruitment email or message on the platform I originally used to contact them. This allowed me to use as many digital platforms as possible to find my participants. Without the use of digital media, I wouldn’t have been able to find the diverse group of participants that I used in my study. Out of the many organizations and people I contacted, only one participant resisted participating in the interview without compensation and requested monetary payment for doing the interview. Since, my dissertation didn’t allow me to pay the participants, I wasn’t able to conduct the interview.

While seeking participants in Nepal, I benefited by knowing the community as a member of the culture. Hence, to recruit Nepali participants, I used Facebook, Facebook Messenger, WhatsApp, Viber, and Twitter’s direct message feature to make initial contact and then send them a formal recruiting email. I contacted many of my Nepali colleagues, friends, and potential participants two months before I travelled to Nepal. As soon as I landed in Nepal, I sent follow-up emails and made telephone calls to participants. As in Puerto Rico, I used snowball sampling before and after the interviews, which allowed me to reach to a wider number of participants. I ended up contacting and reaching out to over 50 people in Nepal with more than 100 emails, direct messages, Facebook messages, and WhatsApp and Viber messages. Out of these contacts, I was able to conduct interviews from 14 people in Nepal.

3.4.4 Step 4: Conducting Interviews

The participants of this study included online and offline activists, government representatives, community leaders, community-based organizations, and members of the Nepali and Puerto Rican diaspora. The goal of conducting interviews with the participants was to listen,

record, and understand the narratives of the participants who have dedicated their time and energy in the disaster response. All 28 participants were at least 21 years old and had been involved in the disaster responses to the Nepal Earthquake and Hurricane Maria in Puerto Rico. The participants represented various communities, organizations, and agencies, and they all had a direct involvement in performing networked activities during the disasters. Many of the participants were activists, journalists, NGO workers, government representatives, students, teachers, members of diaspora, and online activists. All the participants had experienced the disaster in one way or the other, and they could speak either English, Nepali, or Spanish. They were able to provide fully informed consent for this study, and none of the participants disclosed that they had Post-traumatic Stress Disorder (PTSD).

The interviews were conducted in four different (physical and/or online) locations: Washington DC, Puerto Rico, Nepal, and via Skype. A total of 28 interviews (14 from Nepal and 14 from Puerto Rico) were conducted. Out of them, 14 participants were female and 14 were male. Out of 28 interviews, 1 interview was conducted in Washington DC, 6 were conducted via Skype, 11 were conducted in Puerto Rico, and 12 were conducted in Nepal. The interviews ranged in time from 45 to 90 minutes, and they were recorded using Garage Band in a MacBook Pro laptop. The interview spaces were typically coffee shops or the offices of the participants, and one interview happened at a church in Puerto Rico. I sought to do the interviews in places where participants would feel most comfortable. Three interviews were conducted in Spanish with my partner acting as a translator. These interviews included a signed confidentiality form and a word-to-word impromptu translation during the interview. In Nepal, 11 interviews were conducted in Nepali with a mixture of English and Nepali language and remaining 3 were in English. Besides the recording, handwritten notes were also taken.

Before being interviewed, all participants were informed about the details and purpose of the research project, and they were sent a set of questions via e-mail. They signed the IRB-approved consent form before the interview. During the interview, participants were notified that the study would involve a collection of narratives, including their stories, and I as a researcher would be conducting the interview but only moderating the conversation. Some of the interviews were very emotional and during that time, it was difficult to maintain the boundary between researcher and participant boundary because my participants I were both emotional human

beings. Each interview became an informal sharing of their stories, of their experiences, and the work they did during the time of the disaster.

3.4.5 Step 5: Coding Data via Nvivo for Mac

All 28 recorded interviews were transcribed by professional transcribers, using grant money provided by CILMAR at Purdue. To transcribe the Nepali interviews, I had hired a local translator as well as a transcriber who signed a confidentiality form before translating. For interviews in English and Spanish, I used Rev (www.rev.com), an online transcription service which transcribes interviews with the charge of \$1 per minute. This transcription service is a secured and professional site that involves more than 50,000 professionals who transcribe audio as well as video files. The transcription service offered a rather fast turnaround time of 24 hours to 36 hours per interview. I was also able to acquire a signed confidentiality agreement (Appendix E) form from a representative at Rev before they transcribed my interviews. After I received all the transcribed interviews, I listened to each interview and its transcription side-by-side so as to cross-check if the transcribers had missed any sections of the interview. The transcription was 99% accurate as they have claimed on their website.

After all the data were transcribed, I uploaded the Microsoft Word version of my transcriptions into the qualitative data analysis software Nvivo for Mac for the purpose of the data analysis. Nvivo is a qualitative data analysis application that allows scientific coding for interview-based research. I used Nvivo because the software allows coding of interviews in an efficient way by providing a space to organize, store, and retrieve the qualitative data that I have collected for my dissertation. Moreover, Nvivo provided data management, query, and visualization tools. All the interview data was analyzed by using a grounded theory approach that yielded into five different categories: a) Affective Responses b) Transnational Networks, c) Technology, and d) Crisis Communications. In Table 3.3, I display the coding scheme, a brief definition of each category, sample codes, and sample narratives.

These coding schemes helped to answer my three major research questions by dividing them into five different schemes. Each scheme was developed based on the coding of the narratives as well as based on the research questions. My research questions were specifically looking for three different themes: transnational assemblages, the use of technology, and crisis communication patterns. In addition to these themes, my data led me to think about the role of

affect in support of the transnational assemblages and crisis communication. All these themes were identified within each interview, which led me to develop the coding scheme displayed in Table 3.3. With the help of scholars like Coombs (2007), DeLanda (2016), Deleuze & Guattari (1987), Frandsen & Johansen (2010), Potts (2014), and Papacharissi (2015), I have defined those four themes as categories in which the interviews were coded. Each category has its own coding samples. In Nvivo, those coding samples are considered nodes where interviews can be coded. Similarly, Table 3.3 also displays the examples of narratives both from Nepal and Puerto Rico that were coded within each category. In Chapter 4, I will display further details of the coding scheme and my findings from my data analysis.

Table 3.3: Coding Scheme

Category	Definition	Code Samples	Narratives
Affective Responses	An immediate spontaneous action of gearing up to saving lives of people by expressing motivation and urgency	Saving Lives Responsibility Activism Empathy	<p>“I was so hyper because I used to cover all those emergencies, and I did all that in less than an hour. I was like, ‘I have to do something.’” (Puerto Rican Participant)</p> <p>“It is just adrenaline. I could not stay still. So, after seeing it, that friend had connected me on that video call.” (Nepali Participant)</p>
Transnational Assemblages	as groups or collectives of people, organization, entities, who are connected via online and offline mediums via objects like phone, computers across the borders, and people who gather to respond to a certain situation of natural or political crisis.	Network among organizations Transnational Networks Diaspora Network	<p>“Well, you’re not going to believe this, but at the beginning tarps, the first tarps arrived from Australia. I have a Serbian friend who lives in Australia, and she was the first person to react and sent tarps. So, we received tarps from everywhere, from the United States, but from Mexico, from Spain, from the nearby islands.” (Puerto Rican Participant)</p> <p>“We realized in less than one day that the issue was not money at that time because the Nepali people from abroad, and also foreigners who loved Nepal, were raising fund within two or three days.” (Nepali Participant)</p>
Technology	Technologies used to respond to disaster especially social media like Twitter, Facebook, Instagram, WhatsApp, GoFundMe	Social Media Misinformation Viral Technology	<p>“I did a lot of outreach through social media that’s sitting there like in my Instagram and the GoFundMe page on Facebook. So, people could see where the help was going. So, I made sure to take photos of the efforts and have an open communication with the funders.” (Puerto Rican Participant)</p> <p>“So, Twitter helped a lot to connect and support them through the updates. So, Twitter helped a lot in it because someone would retweet or mention in the updates they share. So, you get that information quickly. Unknowingly we did a great job at that time.” (Nepali Participant)</p>

Table 3.3 continued

Crisis Communication	Communications during crisis by using data, information, assessment, translation by an individual or an organization (e.g. radio, television, newspaper, NGO, or government)	Curating Information Audiences Writing, Data, Assessment Information Verification Media/Journalism	<p>“The radio basically became the tool of communication, the main tool. Because they would inform the people that were ... There was this old lady that had stranded, or the man that needed the meds. So, this was the way that they were basically throughout the radio reporting things that were happening.” (Puerto Rican Participant)</p> <p>“I think the social medias became the go-to platform for us. Actually, a lot of our communication happened largely through social media. I had seen over 95 or 99 percentage of our entire communication was relied on social media. It was except for a few emails we might have sent to our networks.” (Nepali participant)</p>
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3.5 Quantitative Research: Social Network Analysis

For quantitative research, I used SNA to study the formation and mobilization of networks among the users from various countries on Twitter during the Nepal Earthquake and Hurricane Maria. SNA uses graphs and visualizations of networks to understand and analyze the social phenomena (Borgatti & Everett, 1997; Wasserman & Faust, 1994). My research questions were specifically looking whether or not people around the world form transnational assemblages during disaster by using social media. Hence, SNA allowed me to demonstrate the transnational networks among the users of various countries around the world and visualize their networks in the form of graphs and charts. SNA could be regarded as a tool that researchers can use to collect data from social networks of individuals who are either not connected or not connected directly and create sample network and understand their positions in the network.

SNA of Twitter data from Nepal Earthquake and Hurricane Maria helped to obtain overall understanding of various networks and how people join or leave a social network on the basis of tasks to be accomplished, and their levels of interests, resources, and commitments. Wasserman & Faust (1994) define social networks as, “a set of nodes (or network members) that

are tied by one or more types of relations” (p. 20). Social networks are usually studied at two levels—egocentric, where the network of individual actors is studied, or a whole network, where all the actors (individual, community, and organizations) are studied together (Goswami et al., 2018, p. 3). Network analysis typically determines the presence and degree of connectedness among actors in terms of a variety of relationships, such as information, resource sharing, and emotional support (Goswami et al., 2018, p. 5). In order to conduct an SNA, three major steps are involved: a) identify the social media for data collection, b) purchase the data, and c) conduct SNA. Below I describe these processes in detail.

3.5.1 Step: 1: Identifying Social Media Data

There are various social media such as Facebook, Twitter, Instagram, among others that were used in both disasters: Nepal Earthquake and Hurricane Maria. Choosing one particular social media would narrow down the scope of research and make it very specific. Since, compared to other social media, the users of Twitter reveal considerably fewer private data and their main activity is sending tweets, which is meant to be a public message and thus publicly available (Moffit, 2017). Hence, I decided to choose Twitter as area of focus because a) it has representative population who use Twitter from around the world; b) it has geo-locations of the users; c) most of the data is public and easily accessible; d) the purchase of the historical tweets is easier in comparison to other social media; e) Twitter can provide a corpus of data (tweets) for the analysis. Similarly, since I had myself used Twitter during the Nepal Earthquake, and observed Puerto Rico’s Hurricane Maria on Twitter, I was familiar with Twitter as a space where people around the world participate. Hence, I decided to use Twitter as an area of focus for understanding how it became a space for transnational interactions during these two disasters.

3.5.2 Step 2: Collecting Data by Purchasing Twitter Data

After deciding to choose Twitter as my social media, I decided to explore the data collection methods of Twitter. Some of the technicalities associated with Twitter data collection were beyond my understanding. Overcoming those challenges, I decided to purchase data from Twitter’s sister organization called Gnip. However, there were many processes that were associated with the purchase of the data. The first step in data collection was to identify what

kind of corpus data I was looking for. There were two different options, Historical Power Track and Full-Archive Search. Both of these options would provide publicly available tweets from March 2006 onward. A Historical Power Track would generate a dataset containing tweets that were tweeted within 10-minute periods (Moffit, 2017). From this method, one can limit their data set to the specific things they are looking for. Similarly, Full-Archive Search would lead to a search similar to a Google Search without any specificity. Hence, I decided to choose Historical Power Track data purchase as it allowed me to narrow down my data collection by identifying dates, locations, hashtags, and keywords associated with both the Nepal Earthquake and Hurricane Maria.

However, in order for me to purchase the data, my case had to be approved. As determined by Gnip, a case explains a) the scope of my study, b) the purpose of my study, c) and the specific kinds of tweets I needed. The details of my explanation are in Appendix F. In addition to that, I also have my contract paper with Twitter displayed in my Appendix G. Table 3.4 displays the choices I have made to purchase the data. Since, I was trying to purchase the data from the Nepal Earthquake and Hurricane Maria, I explored and identified various popular hashtags that were used during these two disasters. Then, I needed to narrow down the dates. The start date for each data was the day the event happened, and the end date was the 8th day of the event. I had to narrow down the time-frame due to the pricing. Initially, when I had a month-long timeline the price of Tweets from the Nepal Earthquake came to more than \$25,000 and for Hurricane Maria, it was \$5,000. This was beyond my capacity to purchase.

Secondly, I also needed to narrow down the locations from where I was purchasing the data. As, shown in Table 3.4, the region for Nepal included Nepal, Asia, Europe, the U.S., Latin America, and Australia, and the region for Puerto Rico was only Puerto Rico and the U.S. The region for Puerto Rico is limited because the expansion of the region would exceed my budget which was \$2,500. The limitation did work out well for my research questions, especially since I was concentrating my research on the initial response to these disasters by comparing the Nepal Earthquake and Hurricane Maria. One week of tweets from each site was enough for me to conduct my research. The total number of tweets purchased were 36 million tweets from Nepal and 20 million tweets from Puerto Rico. The format of the data was in JavaScript Object Notation (Java) format. The corpus of data consisted of a user's ID, screen name, location, protection (if their tweets are protected), verified (some user accounts are verified by Twitter),

followers, friends, listed (if they are listed in certain groups), favorites, status, reply, retweet, favorite, language, and timestamps.

Table 3.4: Twitter Data Purchase

Location	Hashtags	Time frame	Regions
Nepal	#NepalEarthquake #earthquake #QuakeNepal #quakeNepal #earthquakenepal #EarthquakeNepal #NepalEarthquakeRelief #NepalQuakeRelief #Pray4Nepal #prayfornepal #NepalQuake #NepalRelief #NepalRises	4/24/15-5/1/15	Nepal, Asia, Europe, US, Latin America, Australia
Puerto Rico	#Hurricane #HurricaneMaria #Relief #PuertoRico #Boricua #Relief #StayStrong #ReliefEfforts #Help #PuertoRicoStrong #PuertoRicoRelief #ClimateChange #BastaYa!, #UnitedForPuertoRico #PuertoRicoWillRise YoNoMeQuito, #EchaPa'Lante, #SePuede, #Pa'Arriba, #VamosPa'Encima, #Maria #PuertoRicoLoHaceMejor, #HuracanMaria, #UnidosPorPuertoRico, #PuertoRicoStrong #Comfort4PuertoRico #LatinaInfluencersCoalition	Sept 17, 2017 – Sep 24, 2017	Puerto Rico, USA

3.5.3 Step 3: Conducting Social Network Analysis

After collecting the corpus of the Twitter data, I conducted an SNA of the data. I wasn't doing a content analysis of the Tweets but only focused on finding out whether users from around the world create transnational connections via Twitter or not. In addition to qualitative inquiry with the actors who responded to the disasters, I wanted to also understand how people responded to disaster online by connecting, networking, and fundraising during the first week of two disasters. In order to understand this, I needed a larger data sample that can provide a macro view of how networks functioned in the social web during the Nepal Earthquake and Hurricane Maria. My first purpose for conducting SNA was to find out how people around the world made connections on Twitter by using the features such as reply or retweet. However, due to my limited knowledge of computer programming, for conducting my analysis, I received help from Takahiro Yabe from the Department of Civil Engineering at Purdue who helped me with production of some graphs and networks by using the programming language Python.

My research question was more focused on identifying the connections among actors across the world. This is why I regarded the locations of the actors as a node, and the reply and retweet as their relationship or a connection among them. For the purpose of this study, I have analyzed the Tweets, reply, and retweets in the corpus of data that I have gathered. For the analysis, I have not separated the replies and retweets in my data because I considered both to be actions that describe a connection. To simplify this concept, all the actors whose geo-location in the data is Nepal were considered to be “node” Nepal. The nodes from Nepal are connected to other nodes (e.g., U.S., Australia) with the reply and retweet. In addition to that, social networks analysis also involves creating matrices. The JSON file of the Twitter data was changed into matrices by creating *weights*, where the weight of each link corresponds to the number of replies and retweets that occurred among the countries. My purpose for conducting SNA was only limited to:

- visualizing the transnational networks in terms of how actors from different countries are connected with each other
- comparing the visualizations of transnational networks during the Nepal Earthquake and Hurricane Maria
- understanding how the patterns of relations have affected disaster response in the Nepal Earthquake and Hurricane Maria

In Chapter 4, I present the results of this SNA, including a visual presentation of the social relations in the graphs. These graphs offer a broader picture of the networks that formed during and after the Nepal Earthquake and Hurricane Maria. Transforming the Twitter data into graphs and revealing the social relationship among the Twitter users has given me a broader picture of the networks that formed during and after the Nepal Earthquake and Hurricane Maria that I will discuss more in my findings.

3.6 Limitations

As with all research methodologies, there are limitations that need to be acknowledged. My mixed-methods approach has three main limitations. The first limitation is related with my research sites, with Nepal being the country of my origin and Puerto Rico being a completely different community. The second limitation is the limitation of interviewees in both Nepal and

Puerto Rico; lastly, the third limitation involves the use of Twitter data and SNA. Below, I describe these limitations and how I managed them.

The first limitation of my methodology involves the research sites. As someone who experienced the Nepal Earthquake, I have an emotional connection to my hometown and my own personal opinions as well as bias regarding the interpretation of the event and the global response. To overcome these challenges, I tried to rely on the eye-witness accounts of my participants, as well as objective research that was conducted on the event. While acknowledging my personal bias, I have tried to become as objective as possible to avoid interpreting my data based on my personal opinion. Instead, I did my best to allow my data to reveal the themes itself. Meanwhile, Puerto Rico was a completely new territory of research for me. I wasn't part of the Puerto Rican community, and I have very limited knowledge of the culture and history of the community. Moreover, I experienced a language barrier as well, since most of my interviewees spoke Spanish. Hence, I needed to study and research this community in great depth. To understand the culture of the community, my partner and his parents became my entry point. Conversations with them about the social, cultural, political, and religious contexts of Puerto Rico helped me understand the community better. Moreover, as someone who is always concerned about Western researchers interpreting and imposing their definitions onto Nepal and Nepali culture, I wanted to avoid conducting my research in ways that interpret Puerto Rico from an outsider's point of view. Recognizing that I am an outsider in their community, I again relied on my participants' narratives and tried to analyze those narratives as objectively as possible without any preconceived notions.

The second limitation of the project is the limited number of interviewees available in both Nepal and Puerto Rico, as well as my comparative interpretation and analysis of these interviews. The limited number of interviewees could possibly reflect a smaller limited network and not the entire larger network. Additionally, while interpreting these interviews, I made comparisons between two different countries and contexts. To make my comparison unbiased, I again went back to comparative rhetorics and the idea of self-reflexivity (Mao et al., 2015). Comparative rhetorics offers a method for making comparisons between two different cultures, creating a common context by putting both cultures side-by-side and not making one superior to the other. Similarly, while interpreting these interviews I practiced self-reflexivity, another comparative rhetorics methods, to overcome the challenges I faced while interpreting the data.

Self-reflexivity allows researchers to think deeply about their methods and analyses and avoid imposing their personal understanding in the interpretation the behaviors of the cultures they aren't a part of.

Finally, the last limitation involved the Twitter data I purchased as well as SNA. Due to budget limitations, I could purchase only a limited dataset from both Nepal and Puerto Rico. The purchase of Twitter data also took me longer than expected. This delay limited my ability to engage with the data as much as I would have liked. Hence, I had to seek help from an expert to help me visualize the data quickly so I would be able to use it in my dissertation. The data I purchased is only from a 7-day time frame; hence, due to the limited timeframe, the data reflects transnational connections created only within these seven days. Due to my time limitation, I wasn't able to conduct content or sentiment analysis of the Twitter data that I purchased. As a result, my research was limited to looking at the initial disaster response; nevertheless, the limited data did allow me to answer my overall research question.

With that being said, these limitations are minor compared to the benefits of this research. If successful, this project will build upon previous disaster studies by bringing multidisciplinary studies together to create a transnational framework that could be applied in various contexts and countries during disasters.

3.7 Conclusion

In this chapter, I provided an overview of the mixed-methods approach that I used to conduct my research. My methods used a narrative approach, in part, to recognize my positionality as an international researcher. Using a mixed-methods approach allowed me to identify some interesting results, which are helpful toward understanding both the micro- and macro- levels of disaster response. A mixed-methods approach was also ideal for answering the research questions with which I began this study. In the next chapter, I will describe the major findings of my project. These results will allow me to showcase the importance of transnational disaster response, the supportive role that professional and technical communication can provide, and the role of transnational assemblages in disaster response.

CHAPTER 4. RESULTS AND FINDINGS

4.1 Introduction

To conduct a comparative analysis of the networked communities formed during the Nepal Earthquake and Hurricane Maria, I chose a mixed-methods approach. Using mixed methods allowed me to a) acquire the stories of actors involved in the disaster response locally and globally, and b) use big data to understand the usage of social media, specifically Twitter, in transnational disaster responses. Disaster response in the digital age is enhanced by internet-based technologies and social media platforms like Facebook, Twitter, Instagram, WhatsApp, and blogs among others. These platforms have enhanced people's abilities to form networks that create transnational assemblages via digital mediums like phones, tablets, and computers. During catastrophic situations, the formation of transnational assemblages is rapid. These assemblages display a collective form of agency (Delanda, 2016) in responding to a disaster. This chapter will illustrate the findings based on my collection of qualitative and quantitative data, highlighting the works of people who went above and beyond to serve their community as well as the global community in response to these two disasters.

The results presented in this chapter are based on the merger of the qualitative and quantitative data that I have gathered. The results that I present in this chapter illustrate a comparative analysis of networked communities, technology, and crisis communication during the Nepal Earthquake and Hurricane Maria. As a recap, my research project was designed to answer the following primary research questions:

- How did transnational assemblages of official and unofficial communities form in Nepal and Puerto Rico to mitigate the challenges of two different disasters?
- What are the unique digital rhetorical and participatory actions of the assemblages in Nepal and Puerto Rico that helped in performing crisis communications transnationally?
- What are the non-Western and decolonial practices of knowledge-making during a disaster that we can explore to compose and communicate better to help vulnerable populations in need?

Similarly, my secondary research questions included the following:

- What kind of digital technologies are prominent and most used during disasters like earthquakes and hurricanes?
- What do the digital narratives and written communications shared during the Nepal Earthquake and Hurricane Maria suggest about disaster knowledge?
- How can transnational communication strategies be formulated by larger organizations like the government, media, multinational companies, and INGOs to mitigate the challenges of disaster?
- How can we implement crisis-related community service pedagogy?

To answer these questions, I conducted two different forms of data analysis: analysis of actor narratives and a social network analysis (SNA) of tweets. My research questions and the coding of my data resulted in four different categories or themes. They are **Affective Responses, Transnational Networks, Technology, and Crisis Communication**. These themes represent the results of both qualitative as well as quantitative data coding and analysis. In the following section, I elaborate on each of these themes by displaying results from the data analysis from Nepal and Puerto Rico and comparing and contrasting the results. While doing so, I will also share representative narratives of my participants in each of the categories. Specifically, SNA has been used to display the transnational networks and the usage of communication technology. Hence, data visualizations created from SNA will be shared in those specific categories. Based on Assemblage Theory as well as the comparative rhetorics methodology described in Chapter 3, this chapter will expand upon the following results:

- Affective Response in Disaster Relief
- Transnational Networks and Assemblages During Disaster
- Role of Technology in Disaster Response
- Crisis Communication Practices

4.2 Affective Response in Disaster Relief

“I was like, I have to do something.”—participant from Puerto Rico.

The participants consistently stated that they were highly motivated to perform spontaneous actions in saving lives, serving communities in need, and reaching out to ask for help, actions that I have categorized as examples of “affective response.” With the help of

scholars like Deleuze & Guattarai (1987) and Papacharissi (2015), I define affective response as, “an immediate spontaneous action of preparing oneself to save lives of people by expressing motivation and urgency.” All the 28 participants, both from Nepal and Puerto Rico, collectively expressed that they either a) felt like they had to do something, or b) showed responsibility and commitment to the community that they are part of. The participants in this category stated that they felt motivated to do activism both online and offline, felt of a variety of emotions such as love and empathy towards their community, as well as anger towards the government’s lack of support. Additionally, they also expressed feelings of frustrations and a sense of urgency to do something for the community they were part of. In the moment of chaos and confusion, people performed immediate actions towards saving lives and supporting their communities in need. As Papacharissi (2015) argues, affect is, “a pre-personal intensity corresponding to the passage from one experiential state of the body to another and implying an augmentation or diminution in that body’s capacity to act” (p. 13). The affective response is mediated by spontaneous actions that include joining or forming a group, gathering of information, conducting a needs assessment, and finding ways to provide immediate relief, as illustrated by Figure 4.1.

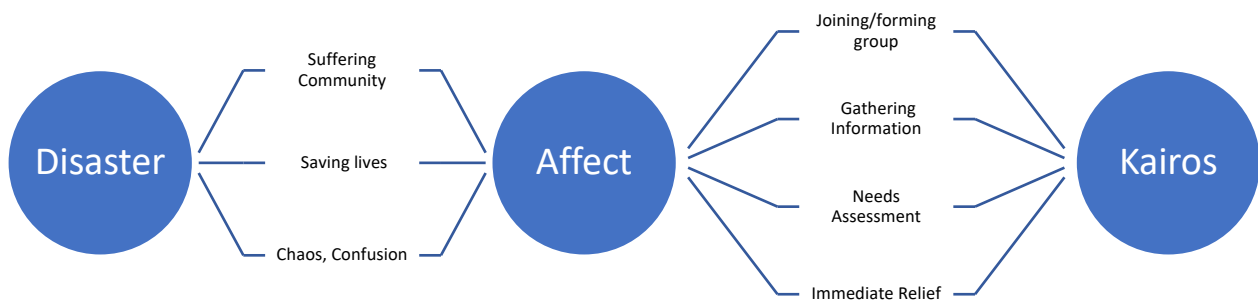


Figure 4.1: Affective Response in Disaster Relief

My data reveals that affective responses during a disaster are contextual and cultural. Some of the cultural aspects and interviews have revealed how affect is motivated by the values (morals) and ethics people grew up with. Both Nepali and Puerto Rican communities are closely knitted and are there to help each other in the time of need. According to the narratives shared by the actors, the Nepal Earthquake and the Hurricane Maria created a greater need for the communities to act together. Hence, the demonstration of attachment towards community, the

sense of responsibility during the time of crisis, and a basic sense of human morality and ethics motivated people to perform affective response. In responding to disaster affectively, the participants from both Nepal and Puerto Rico stated that they didn't wait for the government to come and rescue people who were suffering in their community.

Similarly, affective response is also mediated via technology. The participants stated that they used technology to share their narratives, stories, as well as anger and frustrations online via various platforms (e.g. Twitter, Instagram, Facebook, Blogs), which has helped them to a) to become part of various communities, b) form their disaster response groups, c) reach out to people who can help in talkback against the government, media, or humanitarian organizations, and d) reach out to the communities who are in need. Papacharissi (2015) suggests that “affect allows us to examine emotive gestures that blend opinion expression, phatic communication, and emotion into one, not unlike many of our utterances in everyday life, which typically involve several orientations rather than being strictly emotional, rational, political, cultural, or social” (p. 95). Affective responses in disaster share the idea of immediacy and urgency that embeds in itself people's opinions as well as emotions. Additionally, those responses could also have been motivated by people's upbringing that highlights the importance of being morally responsible towards the community.

All 14 narratives of the participants or actors of the Nepal Earthquake demonstrated affective response. The participants represented members of the media, NGOs, government, and private organization workers. The total number of responses in this coding was 77. The codes that were most prominent in this coding were the following: **Activism, Responsibility, Saving Lives, Emotions, Empathy, Feeling Human, and Challenging authorities**. The narratives of participants demonstrated a sense of responsibility and commitment to their communities and a strong desire to be engaged in the community online or offline for disaster response. Participants revealed that they were motivated due to their ties to the community, their community-based work, or their desire to respond to the disaster. Some were driven by the work they already do in the community; some participants were motivated solely due to the earthquake, making an instant decision to participating in organizing a larger relief program.

In all 14 narratives of the participants or actors of Hurricane Maria in Puerto Rico, affective response was demonstrated. The participants from Puerto Rico represented members of the media (including freelancers), NGOs, universities, the government, and private

organizations. There were 137 references in this coding. Some prominent codes in Puerto Rico were the following: **Activism, Responsibility, Saving Lives, Emotions, Empathy, Feeling Human, Challenging Authorities, and Something for My People.** Similar to the participants in Nepal, a sense of doing something for the community was the most common theme that emerged from all Puerto Rican participants. Likewise, the Puerto Rican participants also displayed courage, empathy, and motivation towards supporting the community. Those similarities involved reaching out to the community to volunteer, providing immediate relief, and clearing blocked roads, among others. Participants, similarly, described how the people in Puerto Rico had faced hurricanes before and were prepared for this one; however, they weren't prepared for the catastrophe that this hurricane created. Hence, the participants stated that the massive destruction created by the hurricane made them feel responsible towards the communities that were suffering throughout the island. Participants from Puerto Rico displayed activism, anger, empathy, emotions, and were driven by the sentiment of "doing something for my people."

In the sections below, I will discuss the major common theme that emerged while comparing and contrasting the data from Nepal and Puerto Rico. In describing the common themes involving affect, I also include different narratives that are associated with this particular theme. The major commonality in this particular theme can be divided into two parts:

- a) Spontaneous actions during a disaster
- b) Sense of commitment towards the community

4.2.1 Spontaneous Actions During Disaster

Participants from Nepal and Puerto Rico all showcased their spontaneous actions to respond to the Nepal Earthquake and Hurricane Maria. The affective response in a disaster is spontaneous as participants have noted in their narratives as it was the perfect time to act and help the community as the community needs support as they have suffered through a disaster. The coding in affective responses articulated above from both Nepal and Puerto Rico suggests the participants' actions were spontaneous. Participants noted that their actions were oriented towards immediate relief and rescue to help in saving the lives of the people who were suffering due to disaster.

All the participants both from Nepal and Puerto Rico had gone through a similar (but not same) experience of disaster by either being physically present during the disaster or being far

away but yet experiencing disaster via the social web. This caused the actors to experience a common sentiment of fear as well as a desire and drive to be involved in spontaneous actions. A participant from Puerto Rico shared that as she was experiencing the hurricane, she decided just to show up at the only functioning radio station in Puerto Rico with some coffee and food because she knew the other broadcasters were working 24/7. She shared that, as she was listening to the radio 24/7, she thought she needed to do something for these people who are working. When she showed up at the radio station she was welcomed, and she recounts the other broadcasters as saying:

Please come and help. And, I said, 'If you want, I can do some of the headlines and write the headlines and stay here for an hour or two, and then I will go home.' He said, 'No, no, no, no. We need you to go on-air. We need to take a break.' (Participant from Puerto Rico)

Her response is spontaneous and affective as the experience of the hurricane and suffering compelled her to prepare food and take it to the radio station, which led her to present programs 24/7 for the next few weeks at the radio station. During the time of the hurricane, all participants showcased similar kinds of actions which they thought were the right things to do at that very time. These spontaneous actions were affective responses to the situation, and as participants articulated this was the result of a mutual crisis of chaos and frustrations that the disaster had put them through. During a disaster, people react to the chaotic situation affectively by performing spontaneous actions, such as using social web as a medium to share their emotions and also to observe and participate in the ongoing communications surrounding the disaster.

Furthermore, by allowing actors to spontaneously respond to a disaster, the social web provides a platform for the people to organize their actions. In the chaos and panic of a disaster, actors employ social web tools to communicate and validate information, using the available tools in new ways to make connections (Potts, 2014). A participant from Nepal shared:

It was because that was very immediate at that time. Like, you would post one thing on the internet, on Facebook, and they would reach out to me. And then we would carry it from there. So, that was very instant. If you had a tarp at home, you would go, just take it and bring it. (Participant from Nepal)

In this narrative, we see three common themes: urgency leading the participant to use Facebook to share the needs, a need to disseminate the message to people via Facebook, and the motivation to act instantly thus motivating others who read the status. The spontaneous actions that led to

affective response here are mediated via Facebook, which resulted in a networked and collective response.

4.2.2 Sense of Commitment Towards the Community

All the participants from Nepal and Puerto Rico also demonstrated a sense of commitment towards their community. This sense of commitment towards the community is affective as it helps to create “flows” that aid the establishment of the assemblage. DeLanda (2016) argues that “when a community is densely connected, we can expect a reduction of personal differences and an increased degree of conformity,” (p. 22) which helps in territorializing the assemblage. Nepal and Puerto Rico were devastated due to the earthquake and the hurricane. In both contexts, the government wasn’t reliable, in this context as shared by participants from both Nepal and Puerto Rico, the sense of commitment towards community rose to the extent that people started to act on their own. As a response to the lack of work that the government was doing both in Nepal and Puerto Rico, both communities were motivated to serve and help themselves, which led to territorializing acts in which new “articulations were being forged” regarding disaster response, thus “constituting a new assemblage or territory” (Slack & Wise, 2015, p. 158). In the context of disaster, new articulations during the Nepal Earthquake were also formed, including hashtags such as #NepalRises or popular slogans shared by Nepali participants, including “kehi garou” translated in English as “let’s do something.” Similarly, for Puerto Rico, new articulations were seen in hashtags #PuertoRicowillRise or common expressions shared by Puerto Rican participants, such as “something for my people.” One participant from Nepal articulated:

For example, if a man is trapped in the nearby, people did not wait for the government, they immediately went there and pulled him out to save his life whether they were experts or not. (Participant from Nepal)

Similarly, a participant from Puerto Rico shared:

We told everybody, ‘Okay, let’s go back to our homes, let’s sleep through the night, cool it down. 7 AM tomorrow, let’s go out with whatever machine, power machine, tools you’ve got or anything, machetes, whatever you have, we’re going to start cleaning the road.’ Because we couldn’t work for the government. It was so devastating that if we would have waited for the government party, we wouldn’t be leaving our homes. (Participant from Puerto Rico)

Both of these narratives suggest that the people's sense of community got stronger because they couldn't wait for the government to come and do the work for them. They perceived that the need for relief was immediate and they were motivated to act. The desire to act right at the moment is affective, which further helped in the formation of smaller assemblages that responded to the disaster. For example, participants described pulling people out from rubble or clearing roads. Meanwhile, governmental organizations were exterior to the assemblages that were being formed due to frustration or anger with the government. This sense of anger and frustration as well as love and commitment to the community helped the assemblages within smaller communities to respond to the devastation created by the earthquake and hurricane in Nepal and Puerto Rico.

Hence, during both the disasters in Nepal and Puerto Rico, people affectively responded to the disaster, which led them to perform actions to support their respective communities and the community members who required support. These actions, as I have explained here, showcase that the affective reactions that supported the community might also have been motivated by a basic human morality and ethics. However, for the current project, I have limited my data and analysis to concentrate on only observing the affective reactions, not their motivations. Exploring the moral and ethical aspects of disaster response could be done in further research.

4.3 Transnational Networks and Assemblages During Disaster

My analysis of interviews, as well as SNA of Twitter data, revealed that people depended on the interpersonal as well as public networks that they created during the disaster. With the help of scholars like DeLanda (2016) and Deleuze & Guattari (1987), I define transnational assemblages in the context of disaster as “groups or collectives of people, organization, or entities, who are connected via online and offline mediums via objects like phone, computers across the borders, and people who gather to respond to a certain situation of natural or political crisis.” The narratives of all the participants in this category suggested that the transnational networked connection and communications were inevitable during the disaster and that the social web helped them to create and maintain those connections. The formation of social networks in a post-disaster situation has already been articulated by previous researchers (Alipour et al., 2015; Chang et al., 2011; Patil & Purkayastha, 2018). All 28 participants, both from Nepal and Puerto

Rico revealed their dependencies on these networks, such as interpersonal networks, professional networks, and networks created via the social web. The codes in this category that were highlighted most were **Diaspora Networks, Networks Among the Organizations, Multidisciplinary Networks (e.g., networks of engineers, medical professionals, and technicians), Networks of Journalists, and Transnational Networks**. Collectively, the participants from both Nepal and Puerto Rico stated that a) they reached out to their family, friends, friend of friends, b) created professional networked participation via the organizations that they were part of, c) established stronger networks with the use of social media like Facebook or Twitter, d) reached out to their respective diaspora network, and e) expanded networks by joining or leaving the various disaster relief groups. The formation of various kinds of networks helped both Nepal and Puerto Rico to respond to disaster quicker and in a more efficient manner as displayed in Figure 4.2.

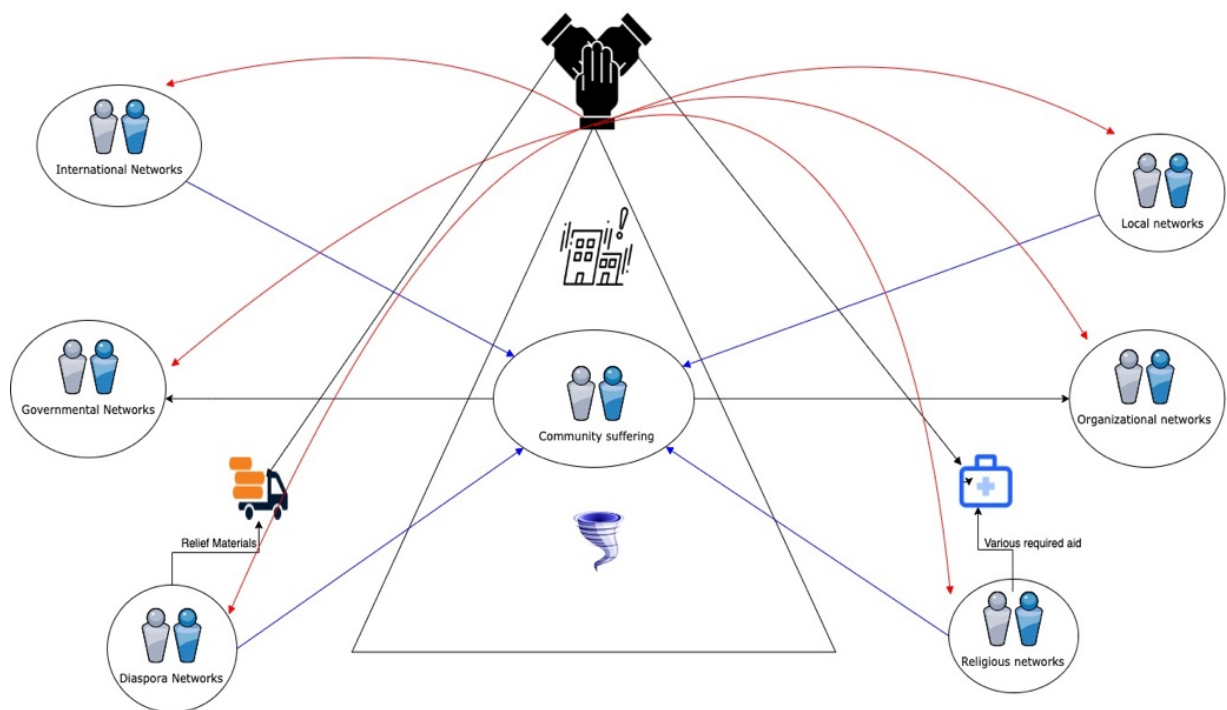


Figure 4.2: Networks during the Nepal Earthquake and Hurricane Maria

Meanwhile, my data showed that catastrophic events also establish a rhetorical situation in which various networks and assemblages are formed via interpersonal, social, and technological networks. Both in Nepal and Puerto Rico, the communications within these networks during the crisis helped in forming alliances or coalitions that become a larger

assemblage (e.g., a social justice movement) that helped in disaster response. Meanwhile, various already established and structured organizations also formed their assemblages in the form of a cluster (DeLanda, 2016, p. 20). These alliances or coalitions are material in nature, and in a digitally advanced world the assemblages are robust because of technologies such as the Internet, mobile phones, and the digital social web (Bennett, 2004; Rice, 2012). With the use of technological devices, actors during a disaster create a networked space to connect, to interact, and to receive and disseminate information which can be regarded as “distributed work” (Pigg, 2014). The participants articulated that during the crisis they worked through multiple systems by collaborating with multiple actors via communication channels mediated by the Internet technologies. Participants argued that this kind of work became inevitable due to the intensity of the disaster being so big that the government wasn’t able to handle all the consequences alone. Hence, people like participants of this study didn’t depend on the government, but they depended on their own already established connections or the newer connections that they create.

In all 14 narratives from the 2015 Nepal Earthquake, the actors noted various ways that they depended on a network or were able to establish a certain network after the earthquake happened. In Nvivo, the total number of responses in this category was 178. The codes that were mentioned most in the participants’ narratives were the following: **Official and Unofficial Networks, Diaspora Network, Dispersing of Network, Multidisciplinary Network, Network Among Organizations, and Transnational Networks**. Since all the participants were disaster responders, they were members of at least one network that helped them to carry out their relief activities more efficiently. While carrying out the relief work, people mobilized their own interpersonal networks or their official work networks; they used networks created via their social media presence, or they activated their diaspora network.

Likewise, three interviewees were non-Nepali, or expats, living in Nepal for research or work purposes. Their networks were international, allowing them to invite people in their respective country to be a part of their disaster response network in Nepal. Moreover, 11 Nepali participants mentioned that they had ties with the Nepali diaspora outside the country and were able to reach out to them. One participant who represented the government mentioned that they were in touch with larger humanitarian organizations as well as government representatives of international countries who were willing to support Nepal after the earthquake. Meanwhile, four participants mentioned their networks with international organizations that helped them in

raising funds. Two Nepali participants who were in the U.S. during the time of earthquake described how they networked with the Nepali diaspora in the U.S. and were connected to various communities in Nepal via Facebook, free phone calls via a mobile application called Viber, and also Google Docs where they curated information to support relief-oriented actions.

All 14 participants from Puerto Rico articulated that they used their interpersonal, official, diaspora network and/or random networks created via social media. In Nvivo, the total number of responses in this category were 58. Similar to Nepal, the codes that were used most by the participants in this category were the following: **Diaspora Network, Medical Networks, Networking Among Organizations, Networks of Journalists, Religious Networks, Transnational Networks, and Networks of non-governmental Organizations.** The diaspora networks for Puerto Ricans were primarily the Puerto Rican population in the U.S. In addition to that, the religious network primarily created via the Catholic Church was also active in responding to the disaster. With the help of these networks, the participants were able to raise funds, carry out relief activities, and support communities in need with rescue and relief.

Participants recounted that they reached out within their interpersonal networks and beyond to seek help, build communities, and support communities that had already established networks as well as newly formed networks. Four participants represented community-based organizations that participated in community-based activities. One of them represented a foodbank in Puerto Rico that included networks of more than 100 smaller organizations who helped in the distribution of food after Hurricane Maria. One participant represented a feminist organization that relied on the networks of their community leaders to distribute disaster relief. Six participants mentioned the use of social media like Facebook or GoFundMe to raise money through their networks. Three participants represented private organizations in Puerto Rico, which had connections in the U.S. and beyond and via their organizations, allowing them to support the suffering communities. Three participants who represented the media mentioned that the networks of journalists on the island and beyond the U.S. made it easier to share information within the community and beyond to a larger network. Meanwhile, the church network was also mentioned by five participants who described how the church became a space for people to come together and organize relief efforts.

In the section below I will discuss three major common themes that emerged while comparing and contrasting the data from Nepal and Puerto Rico within the code **Transnational**

Assemblage. While describing the common themes, I also include various narratives that are associated with this particular theme. The major commonality in this particular theme can be divided into the following parts:

- a) Official networks among various organizations
- b) Joining or forming informal networks
- c) Transnational networks/assemblages

4.3.1 Official Networks Among Various Organizations

Organizational networks during the Nepal Earthquake and Hurricane Maria helped in organizing larger-scale disaster response. These already established networks or organizations both governmental as well as the non-governmental organizations (NGOs) helped in the disaster responses. Nine participants from Nepal noted that they have been a part of official networks that helped them to be a part of the disaster response. For example, in the case of Nepal, the government organized a conference called a “donor conference,” where leaders of various countries around the world pledged monetary assistance to Nepal to respond to the Nepal Earthquake. Similarly, networks of international non-governmental/humanitarian organizations like the United Nations, the European Union, the Red Cross, among others, also helped in the disaster response. A participant who represents a network of international humanitarian organizations working in Nepal shared that soon after the earthquake there was an upsurge in international organizations who came to Nepal to support Nepali communities. She recounts the following:

I think it was from 36 countries altogether. There are a lot of members in our country too. Some are from America and other places. Everybody from all over the world has done at least something from their side. Everybody helped and we, also had collected some amount of money from members (Participant from Nepal)

As the participant noted, many organizations from around the world came to Nepal to provide support. The Nepal government during the crisis eased governmental policies and welcomed everyone around the world to provide aid and support to Nepalis. Hence, smaller as well as larger organizations were coming from everywhere around the world to support the Nepali community.

Meanwhile, in Puerto Rico, the community-based, smaller organizations could draw upon larger networks. Since Puerto Rico is a part of the U.S., the governments of international countries were barred by the U.S. law from bringing in food or other forms of aid, and they weren't able to pledge the financial support in comparison to the aid offered to Nepal. However, the networks among community-based organizations, as well as private organizations, were helpful in the case of Puerto Rico. An organization like Food Bank had its network of smaller community-based organizations which helped them distribute food. Eight participants from Puerto Rico noted that they had been a part of the official networks because of their professional work, community-based work, or because the organization they were part of was involved in relief efforts. Also, in Puerto Rico, religious networks were active in disaster relief. Churches became a network point for a lot of volunteers, relief providers, and activists. As these churches had pre-existing networks and knew their communities better, they became hubs for various relief related activities. Puerto Rico has a large Catholic population and attending church is a central part of cultural and religious life in Puerto Rico. Hence, during and after Hurricane Maria, churches became spaces where people could not only find information and learn the whereabouts of the people, but they also acted as spaces for relief operations that supported other organizations. A participant from Puerto Rico representing an international private organization explained how his company networked with his church to provide relief. He recounts:

At that moment, we put all our merchandise in a church that the city told us to take it to, a certain church because they were taking care of ... Giving it away to everybody. It was an excellent opportunity to serve all the people because even though we as employees had hard times, the company was making it easier for us. (Participant from Puerto Rico)

Big organizations that do not have deep ties with the actual communities in Puerto Rico networked with churches with the help of their employees. As noted by the participant, the company wanted to serve the people in need, and providing relief materials to the church helped them support the community.

4.3.2 Joining or Forming Informal Networks During Disaster

Similarly, as participants were involved in the disaster response, they mentioned either that they created informal networks or joined already existing informal networks for disaster response. This joining or forming of informal networks during the disaster was supported with

the help of technology. Latour (2005) suggests that in a network both human and non-human elements are actors that assist in the formation of the networks. Social media platforms like Facebook, Twitter, and Instagram became a means through which people could instantly form or join a network of volunteer workers who would devote their time and energy to the disaster response. A participant from Nepal recounted:

We posted on Facebook to say about the time of meeting at ‘Yellow House’ for whoever was interested...It just grew rapidly and became a huge success. Hundreds of people started showing up on any given day. There was a massive crowd. It was to extend that for one day we could not control the crowd anymore. We also started to fundraise through two different friends. One friend was based in New York (USA) and the other friend was based in Belgium. They set up two funding raising platform. (Participant from Nepal).

In this narrative, we can see how the participant decided to post that they are meeting at “Yellow House” and invited people to join their disaster relief initiative. Later on, with a lot of people joining this group, they formed a formal Facebook group called “Himalayan Disaster Relief Volunteer Group.” This act of self-organizing a network is a form of territorializing as mentioned by scholars like DeLanda (2016) and Deleuze & Guattari (1987). As the participant shared, while this assemblage came into existence and kept on growing, there were some who came to join the network but later decided to leave the network and also form their own disaster relief group. For instance, another participant recounted that they first went to the Yellow House as a volunteer to offer their support, but since there was a massive turnout and a lot of people were already involved, they decided to create their relief group that focused specifically in Rasuwa, one of the worst-hit districts of Nepal. This demonstrates how, like a rhizome, the informal disaster relief networks started to grow laterally and organically in Nepal.

Meanwhile, in Puerto Rico, people also relied on informal networks as well as diaspora networks to provide training in collecting data on Hurricane Maria. These networks were often created via friends of friends and through social media like Facebook and WhatsApp. One participant from Puerto Rico mobilized hundreds of people to use a mobile phone-based application called “Connect Relief” that helped in collecting data as well as identifying community need and matching them with donors and volunteers. She shares:

We recruited them through friends of friends of friends, through the diaspora. A lot of people came to Puerto Rico to help. Most of them were college students. The universities in Puerto Rico were closed. Everybody

had an urge to go out and help. They were helping us collect data and helping any way that we needed. It was a monumental effort. It was like me, and like four volunteers, and then 600 volunteers in the streets. We would train groups of 10 to 20, 50, 100 people. We did a couple of trainings via Facebook Live. We would train pastors in churches, and then they would train their congregation. We trained nurses, and they trained the other nurses. We trained, you name it, social workers. We've trained psychologists. Nobody had work, so everybody was wanting to go out and help. (Participant from Puerto Rico)

As the participant recounted, much of the relief effort was also managed through a network of networks, including the diaspora. With the help of these networks, the participant was able to train hundreds of volunteers who were willing to join their relief effort. This application helped in connecting to various volunteers, donors, and the community that needed the support. Since the application was grassroots based, it was made available to various actors who could help just by uploading the data that they can find in the community. This application and the network of people who used the application helped the understanding of the extent of the effects that were caused by the disaster.

4.3.3 Transnational Networks/Assemblages

During both the disasters in Nepal and Puerto Rico, many transnational networks were formed. As a result, the disaster responders were not only reliant on the networks within their periphery, but they were also connecting to people outside their specific countries and inviting them to respond to the disaster. These connections both online and offline were mediated via social media. People also depended on their respective diaspora, and people who identified themselves as members of the diaspora (people living outside their country of origin) were also involved via social media for disaster response. During the interview, 12 participants from Nepal and nine participants from Puerto Rico mentioned that they were involved in creating or participating in transnational networks. These participants mentioned that they each connected to at least one person, an organization, or groups outside their country to seek support. Much of this support also came in the form of fundraising, tweeting, sharing of messages, working via Google Docs, and more. Transnational connections were vital to the Nepal Earthquake and Hurricane Maria as people around the world reached out to help people in Nepal and Puerto Rico. A participant from Puerto Rico reflected this activity in the following narrative:

Well, you're not going to believe this, but at the beginning tarps, the first tarps arrived from Australia. I have a Serbian friend who lives in Australia and she was the first person to react and send tarps. So, we received tarps from everywhere, from the United States, and Mexico, from Spain, from the nearby islands. (Participant from Puerto Rico)

Similarly, a participant from Nepal shared:

We realized in less than one day that, the issue was not money at that time because the Nepali people from abroad, and also foreigners who loved Nepal, were raising funds within two or three days. (Participant from Nepal)

These two narratives suggest that people in both Nepal and Puerto Rico weren't networking exclusively among each other within the vicinity of their own country or region but were also creating connections beyond that. Those connections were like the rhizomes described by Deleuze and Guattari (1987). The rhizomes are always in the process of becoming and each one grows by creating connections and flows that help in territorializing. Technology played a vital role (I will discuss the role of technology in detail in the next section) in making those transnational connections successful.

In examining the transnational networks, I also used Social Network Analysis (SNA), which helped me produce graphs and charts. The total number of tweets collected were 55 million (35 million from Nepal and 20 million from Puerto Rico). For the purpose of analysis, tweets or users who weren't geo-tagged were removed. Hence, for the analysis 2,636,216 tweets from Nepal were used and 2,089,701 tweets were used from Puerto Rico. The total number of users for the Nepal Earthquake were 1,074,007, and for Hurricane Maria there were 889,670 users. Figures 4.3 and 4.4 show a visualization among the users in various countries who engaged in replying or retweeting tweets. The SNA was conducted by considering countries and continents from where the tweets were sent as nodes. Similarly, the relationships among these nodes were the replies as well as retweets that were sent among the users. In both Figures 4.3 and 4.4, the larger nodes represent Asia, Africa, South America, Oceania, North America, and Europe and the smaller nodes represent the countries within these continents. Similarly, the thickness of the lines represents the strength in relationships among the nodes, meaning the reply and retweet relationship were higher among those countries and continents. The thicker the lines, the stronger the ties and relationships among users residing in these countries.

The SNA of the Nepal Earthquake in Figure 4.3 represents the network formation on Twitter among the users of various countries and continents. As the figure demonstrates, there were three prominent network clusters prominent during the Nepal Earthquake: Europe-Asia-North America, North America-Asia-Oceania, and Oceania-Europe-Asia. As shown in the figure, the strongest of these three networks was Europe-Asia-North America. This means that there was a higher frequency of replies and retweets among this network. Likewise, the other two major networks North America-Asia-Oceania and Oceania-Europe-Asia also revealed stronger relationships based on reply and retweet. Meanwhile, other ties were weaker among various African and Latin American countries. However, we can see that people tweeted, retweeted, or replied from all around the world during the Nepal Earthquake. Furthermore, this strong network was likely because of three reasons: a) the investment of European, Australian, and U.S. governments as well as NGOs in Nepal, b) the presence of Nepali populations in these continents, and c) various trade and economic relationships within the countries, multinational companies, and also people who operate small businesses.

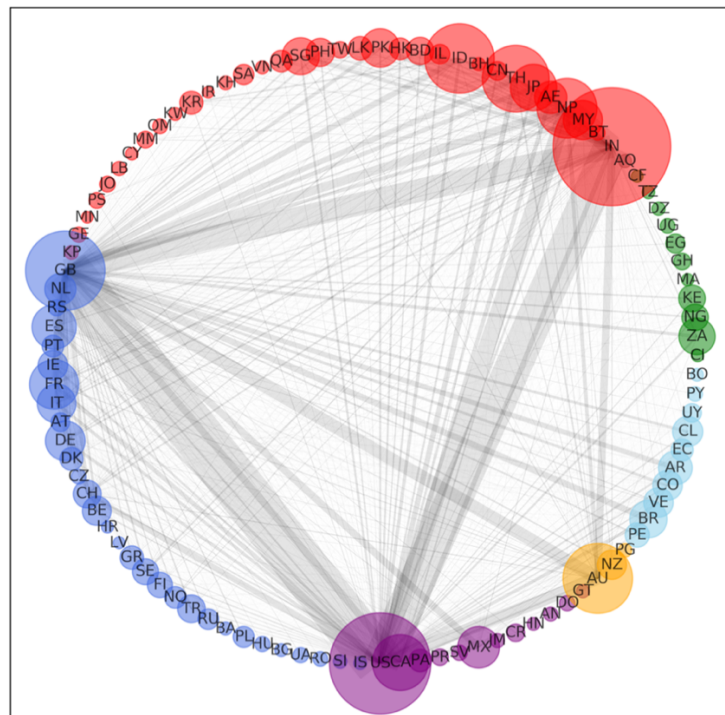


Figure 4.3: SNA among the users residing in various countries in the world during the Nepal Earthquake. In the figure Red = Asia, Green = Africa, Light Blue =South America, Yellow = Oceania, Purple = North America, Dark Blue = Europe.

In contrast, for Puerto Rico, as Figure 4.4 demonstrates, the networks among the continents were weaker. The strongest network is between Europe and the U.S. and we can also see a network between the U.S. and South America. There is a weaker network among fewer countries in Asia and the U.S. However, unlike the Nepal Earthquake, even though people around the world tweeted, retweeted, or replied the relationship among various continents and Puerto Rico seems weaker than the relationships with Nepal. The U.S. seems to be the major actor and the most prominent node, being the primary connection to the outer world. The reason for these weak networked actions seen among replies and retweets could be due to having less knowledge about Puerto Rico or a lack of concern by others in the rest of the world as it is considered as part of the U.S. Nevertheless, the U.S. seemed to be the prominent actor during Hurricane Maria, and the Puerto Rican population in the U.S. could be the reason for the U.S. being visualized as the major actor.

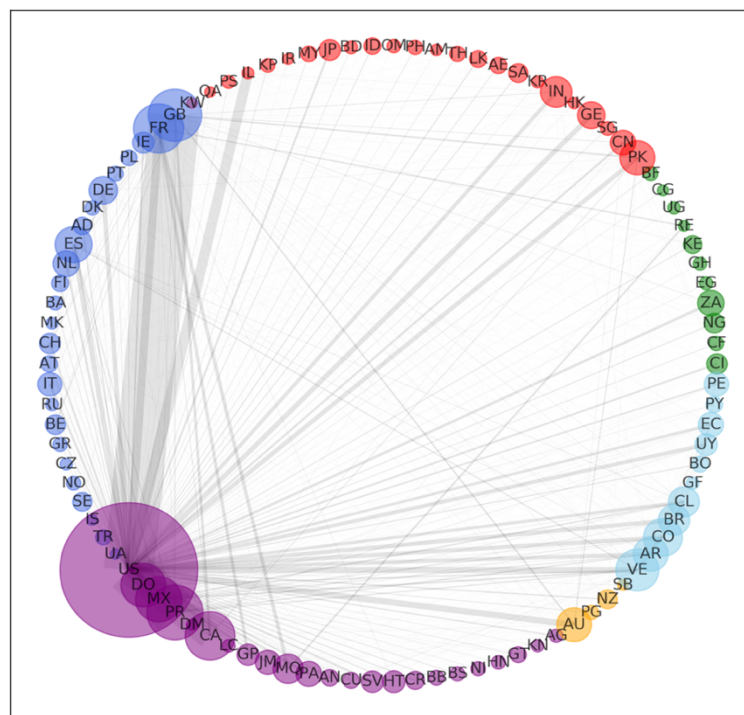


Figure 4.4: SNA among the users residing in various countries in the world during and immediately after Hurricane Maria. In the figure Red = Asia, Green = Africa, Light Blue =South America, Yellow = Oceania, Purple = North America, Dark Blue = Europe.

The SNA of the Twitter data reveals that the Nepal Earthquake received more worldwide attention in comparison to Hurricane Maria. There were stronger relationships among users in Europe, the U.S., Asia, and Australia during the Nepal Earthquake in comparison to the relationships among users during Hurricane Maria. This reveals that the disaster response in Puerto Rico received less global attention than that of Nepal.

4.4 Role of Technology in Disaster Response

The importance of technology use (especially social media) in disaster response has been researched by various scholars (Cho et al., 2013; Ding, 2010; Frost, 2013; Murthy & Gross, 2017; Potts, 2014). During a disaster, people rely on the available technologies to seek information, to share information, and to validate information (Potts, 2014). During the earthquake and the hurricane, Nepalis and Puerto Ricans, respectively, amplified their voices by a) engaging in the social web, b) inviting the people around the world to engage in conversation, and c) conducting disaster relief works. For my research, I defined the category “technology” as technologies used to respond to disaster especially social media like Twitter, Facebook, Instagram, WhatsApp, GoFundMe, and blogs. Social mediums like Twitter, Facebook, and Instagram were widely used during 2015 as well as 2017 when the disasters hit Nepal and Puerto Rico, respectively. Additionally, internet-based fundraising platforms like GoFundMe, collaborative platforms like Google Docs, and other social media spaces like WhatsApp and Viber were also in use. During both disasters, people not only in Nepal or Puerto Rico but all around the world used social media to express sympathy to the suffering people, organize relief-oriented actions, or simply donate money via a variety of internet-based platforms.

Within three days of the earthquake, the United Nations (UN) in Nepal, a worldwide humanitarian organization, sent out a flash appeal to raise USD 422 million to meet the needs of millions of suffering people. Out of the total money requested, 48% was related to health, hygiene, and food security (“United Nations Flash Appeal,” n.d.). This request was publicized using social media channels including the U.N. website. Mark Zuckerberg from Facebook also set up a fundraiser to help people affected by the earthquake. One week after the earthquake, Zuckerberg, via his Facebook page, announced that “more than 750,000 people from around the world gave over \$15 million to the International Medical Corps relief efforts, and Facebook donated an additional \$2 million on top of that to local recovery efforts” (“Zuckerberg’s

Facebook Post,” 2015). With this generous support pouring in from all around the world, the U.N. reported that “103,686 injured people received treatment, including 2,088 who had undergone major surgeries, and 26,160 who had received psychosocial support in 14 districts” (“Nepal Flash Appeal,” in United Nations Development Program, 2015).

In contrast, in Puerto Rico, the use of technology was not as powerful as it was in Nepal. Electricity, telecommunication, internet, and just about everything was shut down. Very few people had access to the Internet and, as noted by the participants, the Internet would come and go. As soon as they made a connection, their unsent messages on WhatsApp would be sent, and unpublished Facebook posts would be published. Even though the island was suffering through lack of electricity and internet, there were small hubs in San Juan, or at private organizations, where people had electricity and an Internet connection was available. Those who had access to the Internet were able to send out messages as well as organize the relief-oriented actions. Unlike the 2015 Nepal Earthquake, Mark Zuckerberg didn’t raise funds via his own Facebook page for Puerto Rico; however, there were some news stories of partnerships with between the Red Cross and Facebook to build “population maps” (“Mark Zuckerberg Tours,” 2017). In October 2017, Mark Zuckerberg shared a live streaming video of a virtual reality avatar of himself in Puerto Rico. However, this was highly criticized by people who regarded him as “a heartless billionaire” and accused him of “exploiting disaster” (“Mark Zuckerberg Apologizes,” 2017).

Meanwhile, on the governmental level after the earthquake, the Nepal government decided to create a Twitter account as well as a web-based platform for curating information about disaster response. This platform is now embedded into the website, [Nepal Disaster Risk Reduction Portal](http://drportal.gov.np/) (<http://drportal.gov.np/>). Both the Twitter account and the website were used to curate information during the Nepal Earthquake. In contrast to Nepal, in Puerto Rico, since FEMA was an active responder, there were already established technology-based applications like a Twitter Account, FEMA’s Official Facebook, and a website with information and reporting features to use in the case of emergency. After the declaration of a major disaster in Puerto Rico, FEMA set up this portal to share all the available information regarding Hurricane Maria both in English and in Spanish <https://www.fema.gov/disaster/4339/>. Even though the technology was a failure due to unreliable electricity and telecommunications in Puerto Rico, many people outside Puerto Rico managed to use the technology for information.

While larger organizations like governments, the United Nations, Facebook, and FEMA were using technology to inform people, raise funding, and also respond to disaster, local people and smaller organizations were also using such technologies. All 28 participants noted the use of various technologies as a response to the disaster, both as an official representative of their organization (e.g., government, NGOs, media, and private organization) or as individuals. The codes that received a high number of references were **Facebook, Twitter, Instagram, Mobile Applications, GoFundMe Campaign, Social Media, WhatsApp, Website, and Crowdfunding**. These codes led to the themes that were most common in the narratives: a) uses of social media like Twitter, Facebook, WhatsApp, and Instagram, b) creation of web-based or mobile-based applications for disaster response, and c) crowdfunding. Participants in both Nepal and Puerto Rico collectively expressed that without the availability of technology, the disaster response that they participated in wouldn't have been possible. As a result, technology helped participants in connecting, participating, and responding to the disaster as displayed in Fig 4.5

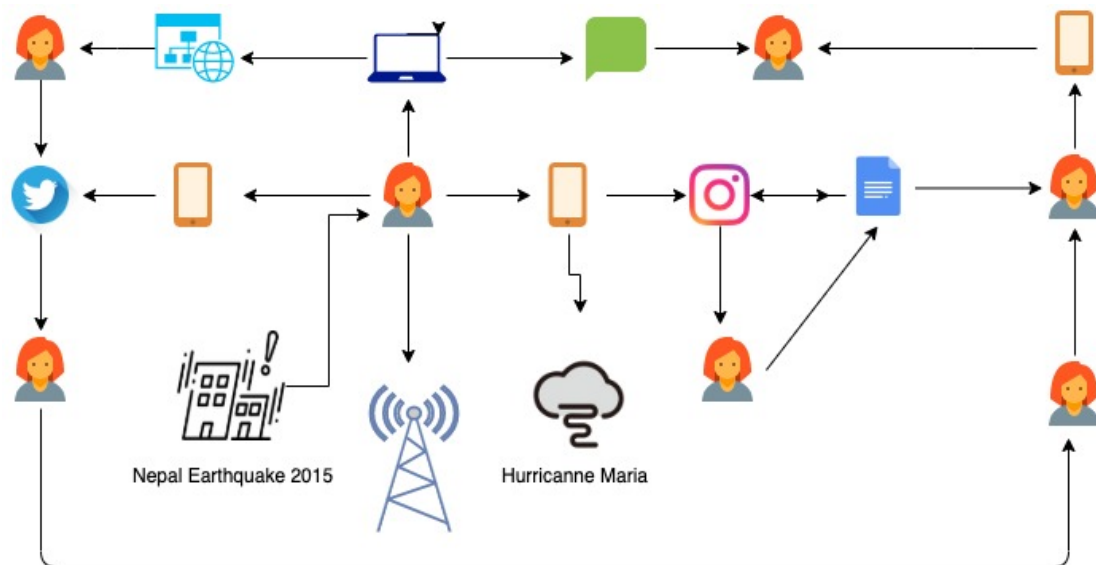


Figure 4.5: Uses of technology in Nepal Earthquake and Hurricane Maria

All 14 participants from Nepal shared that they have used technology to share information, seek information, curate information and resources, validate information, and organize relief-oriented actions. The mobile phone network wasn't working properly immediately after the earthquake; however, via 3G technology, the Internet was available on mobile phones. Hence, many people who had accessible mobile phones were actively tweeting

and sharing information online. All the participants in my study mentioned that they had used a variety of digital media technologies. The codes in this section that were highly used by the participants were **Twitter, Facebook, WhatsApp, Instagram, Websites, Viber (similar to WhatsApp), Blogging Sites, Interactive Maps, Google Docs, and GoFundMe**. One of the participants was directly involved with the government to curate the governmental information website immediately after the disaster. Another participant mentioned that since they were noticing a gap in relief supply, they created a web-based platform to provide supply chain management for relief supplies. Likewise, two diaspora Nepalis who had established a non-governmental, volunteer-based organization were using web-based platforms including Google Docs, Facebook, and Twitter for organizing relief, conducting surveys, as well as preparing data visualizations. Similarly, Sinha (2015) in her article published in *The New York Times* shares the following:

In the wake of the 7.8 magnitude earthquake that hit their country over the weekend, many Nepalis at home and abroad have found a new way to help—as digital volunteers, spending hours hunched over their laptops, using crowdsourcing technologies and social platforms to participate in the relief effort. (Sinha, 2015, para 1)

Nepalis at home and abroad were maximizing the use of social media and responding to the disaster in their own unique ways. In addition to crowdfunding and volunteering, Nepalis wrote digital stories that included pictures curated on platforms like Instagram. Participants shared that they used multiple different platforms based on the purposes these platforms served. The most mentioned purpose for using social media was connecting with numerous people who could volunteer, organize relief efforts, as well as to network to raise funding. Similarly, a journalist participant mentioned that she was contacted by media outlets all around the world in response to her blog posts, tweets, and pictures. She shared that a blogpost that she wrote on the day of the earthquake was picked up by BBC news and went viral. Likewise, other participants mentioned that they were continually tweeting pictures, information, as well as finding out fake news, and curating information in their blog sites. Likewise, other participants mentioned the use of Google Docs and how it was employed by various Nepalis around the world to coordinate relief-oriented actions by validating information.

Furthermore, all 14 participants from Puerto Rico mentioned that even though there were a lot of issues with a lack of electricity and telecommunication during Hurricane Maria, people

were still able to use the Internet by randomly accessing it at various places or via their workplaces that had Internet access. The codes that received a high number of references in the participants' narratives were **Facebook, Twitter, WhatsApp, Instagram, Website, GoFundMe, Amazon Wishlist, Satellite Cells, and Hackathon**, and they were also able to create a mobile-based application for disaster relief. Many participants articulated that Facebook and WhatsApp were the platforms that were used most during Hurricane Maria because these platforms are more popular than Twitter in Puerto Rico. One participant shared that she had used her Facebook, Twitter, and Instagram to share news, her opinions on politics, and so on. Hence, during the disaster, once she started supporting the local station, her social media became a source of information to people. Via her social media as well as her work on the radio, she was able to create a network of journalists around Puerto Rico that helped to provide accurate and instant information to the people. Two other journalist participants mentioned how they used their social media to communicate with diaspora who wanted to communicate, know the situation in Puerto Rico, and also help if needed. Another participant from Puerto Rico noted the innovative use of Facebook in his university class that led him and his students to organize a relief campaign via Facebook. He shared that while he was organizing the relief, he used to utilize Facebook Live, as well as group chat function in WhatsApp to communicate with his relief team.

Meanwhile, a participant representing a very popular community-based organization in Puerto Rico shared that their organization was able to help people to communicate with their loved ones as they had satellite phones, internet services, as well as the local radio station. He recounts, "So there were, sometimes, 200 people making a line to use the phone to communicate with the people in the state, outside from Puerto Rico, and also from other parts of the island" (Participant from Puerto Rico). Additionally, the organization was also able to raise funding for providing alternative sources of energy to people in very geographically distant locations in Puerto Rico. He recalled that people from many countries pledged monetary support as well as technical material support (like satellite phones) to the organization as they trusted the organization. Similarly, participants from Puerto Rico mentioned that they used their Facebook accounts as well as GoFundMe to do fundraising to support their communities and used Amazon Wishlist to share the need of relief materials. These fundraising activities ranged from requesting solar lamps to housing materials, to food, to installing solar panels on the houses of local

citizens, as well as immediate relief materials. Most of the participants in my study shared that they were supported by their diaspora networks as well as people from other countries.

The major common themes on the role and uses of technology during the Nepal Earthquake and Hurricane Maria that emerged from the narratives of actors are as followed:

- Supporting the emergence of assemblages
- Developing innovative technological solutions

4.4.1 Supporting the Emergence of Assemblages

After the disasters, people were also creating websites and mobile-based applications in both Nepal and Puerto Rico, respectively. In Nepal, the government started its own disaster portal. One participant who was involved in the creation of the website explained that within two to three hours of work, they set up a website for curating official information from the government. They also used social media platforms to collect and verify the data, and after curating this data they would develop governmental responses for supporting earthquake survivors in need. Meanwhile, an organization named Kathmandu Living Labs was also helping by creating a Humanitarian Open Street Maps. Facebook and Google responded to the Nepal Earthquake by activating new features during the earthquake. Google activated a technology called “People Finder” that helped relatives and friends locate their loved ones, and Facebook launched its Safety Check feature. One Nepali participant was contacted via Facebook before the Safety Check was launched:

Google also created its crisis mark, likewise, Facebook does as a safety check. So that time, I talked to one of the V.P.s of Facebook and asked if we could set up the safety checks through Facebook. I do not think things did work much. They got to know about the disaster in Nepal and I think they did care about that. (Participant from Nepal)

Large technology enterprises were also creatively thinking about the best possible ways of supporting disaster-affected areas and were reaching out to affected community members. In contrast, in Puerto Rico, a community-based organization created their own mobile-based application called “Connect Relief” that helped connect volunteers and donors to specific communities in need. A participant who used and trained people in using Connect Relief shared the following:

We develop these apps where we collect the information. When the person that is collecting the information through the app is in an area that has Internet, like Burger King or whatever, it goes into our cloud and then it gets categorized in a database, and then we can make it public through maps, through Excel tables. (Participant from Puerto Rico)

The Connect Relief application was able to help many volunteers, relief providers, and survivors of Hurricane Maria receive support. Data and information are always crucial during a disaster, and during Hurricane Maria, mobile-based applications like Connect Relief supported people's endeavor to provide relief, volunteer, and to receive the relief. Many other participants also mentioned that they used the Amazon Wishlist feature to collect donations that helped people. Meanwhile, various smaller organizations as well as local people and members of the Puerto Rican diaspora were involved in the relief. Two participants, who initiated their relief actions via Facebook received a great amount of support and donations, allowing them to formally establish a non-profit organization that provides reconstruction supplies and other support to people who suffered through Hurricane Maria.

Hence, according to the participants, the role of social media during the Nepal Earthquake and Hurricane Maria was inevitable. As noted by the participants, during the crisis situations, they used various medium of technology ranging from their mobile phones and laptops, to the Internet. They shared that the use of social media technology was significant because it became an outlet for people to express their frustrations, curate information, join existing networks, or form their own networks. Technology proved to be a vital mechanism that helped people, but not all the stories were good. In some instances, my participants revealed that they knew of people who raised money and kept it for themselves. This lack of accountability was seen in both the Nepal Earthquake and Hurricane Maria. However, besides some issues of accountability, all 28 participants agreed that the role of technology was vital during the disasters and their aftermath.

4.4.2 Creation of Innovative Technological Solutions

After the disasters, people also created websites and mobile-based applications in both Nepal and Puerto Rico, respectively. In Nepal, the government started its own disaster portal. One participant who was involved in the creation of the website explained that within two to three hours of work, they set up a website for curating official information from the government.

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Large technology enterprises were also creatively thinking about the best possible ways of supporting disaster-affected areas and were reaching out to affected community members. A participant who used these tools and trained people in using Connect Relief shared the following:

We develop these apps where we collect the information. When the person that is collecting the information through the app is in an area that has Internet, like Burger King or whatever, it goes into our cloud and then it gets categorized in a database, and then we can make it public through maps, through Excel tables. (Participant from Puerto Rico)

The Connect Relief application was able to help many volunteers, relief providers, and survivors of Hurricane Maria receive support. Data and information are always crucial during a disaster, and during Hurricane Maria, mobile-based applications like Connect Relief supported people’s endeavor to provide relief, volunteer, and to receive the relief. Many other participants also mentioned that they used the Amazon Wishlist feature to collect donations that helped people. Meanwhile, various smaller organizations as well as local people and members of the Puerto Rican diaspora were involved in the relief. Two participants, who initiated their relief actions via Facebook received a great amount of support and donations, allowing them to formally establish a non-profit organization that provides reconstruction supplies and other support to people who suffered through Hurricane Maria.

Hence, according to the participants, the role of social media during the Nepal Earthquake and Hurricane Maria was inevitable. As noted by the participants, during the crisis

situations, they used various mediums ranging from their mobile phones and laptops, to the Internet. They shared that the use of social media technology was significant because it became an outlet for people to express their frustrations, curate information, join existing networks, or form their own networks. Technology proved to be a vital mechanism that helped people, but not all the stories were good. In some instances, my participants revealed that they know of people who raised money and kept it for themselves. This lack of accountability was seen in both the Nepal Earthquake and Hurricane Maria. However, besides some issues of accountability, all 28 participants agreed that the role of technology was vital during the disasters and their aftermath.

4.5 Crisis Communication Practices

The nature and context of each crisis are different and, as Horsley and Barker (2002) point out, “no single crisis communication plan is going to solve every problem” (p. 408). Similarly, catastrophic natural disasters present a variety of infrastructural- and communication-based challenges that can cause established crisis communication mechanisms to fail. In the context of the Nepal Earthquake and Hurricane Maria, crisis communication was performed via a traditional medium of communications like radio and non-traditional social medias like Twitter or Facebook. With the help of crisis communications scholars like Coombs & Holladay (2014) and Walaski (2011), I define crisis communication in the context of disaster as, “communications performed by sharing information, messages, pictures, and data, during an emergency event used by various traditional means as well as newer mediums of communication, including mobile phones and social media.” All 28 participants collectively expressed that a) they participated in conducting crisis communications, b) they used various social media in communicating crises, and c) social media was an effective and active medium of communication. Additionally, the participants expressed that crisis communications were practiced by both individual actors as well as organizations. In doing so, actors who used crisis communication during the disaster also articulated that they used various social media to engage with the authorities in distributing messages by using social media functions like retweeting or liking on Twitter and sharing or liking on Facebook. Additionally, the participants also articulated in challenging and questioning the authorities. The codes that received highest references in all narratives in the Crisis Communications category were **Information Distribution, Power of Communications, Radio Stations, Mass Media, Writing, Data,**

Assessment, Documenting Work, Disaster Data, Curating Information, and Thinking

About Audiences. Similarly, from the Twitter data, the words that were used in communicating during the Nepal Earthquake and Hurricane Maria are displayed in Figures 4.8 and 4.9 below. As shown by the charts, the words “earthquake” and “hurricane” had the highest frequency, followed by “relief,” “news,” “food,” and “volunteer.”

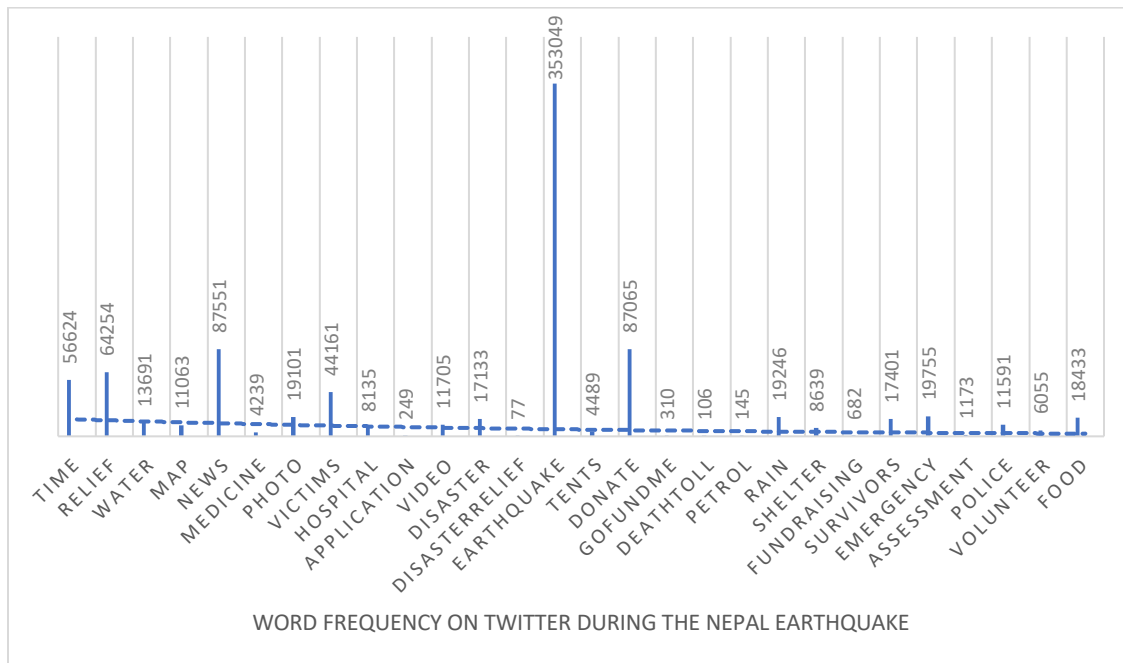


Figure 4.6: Word Frequency on Twitter During the Nepal Earthquake

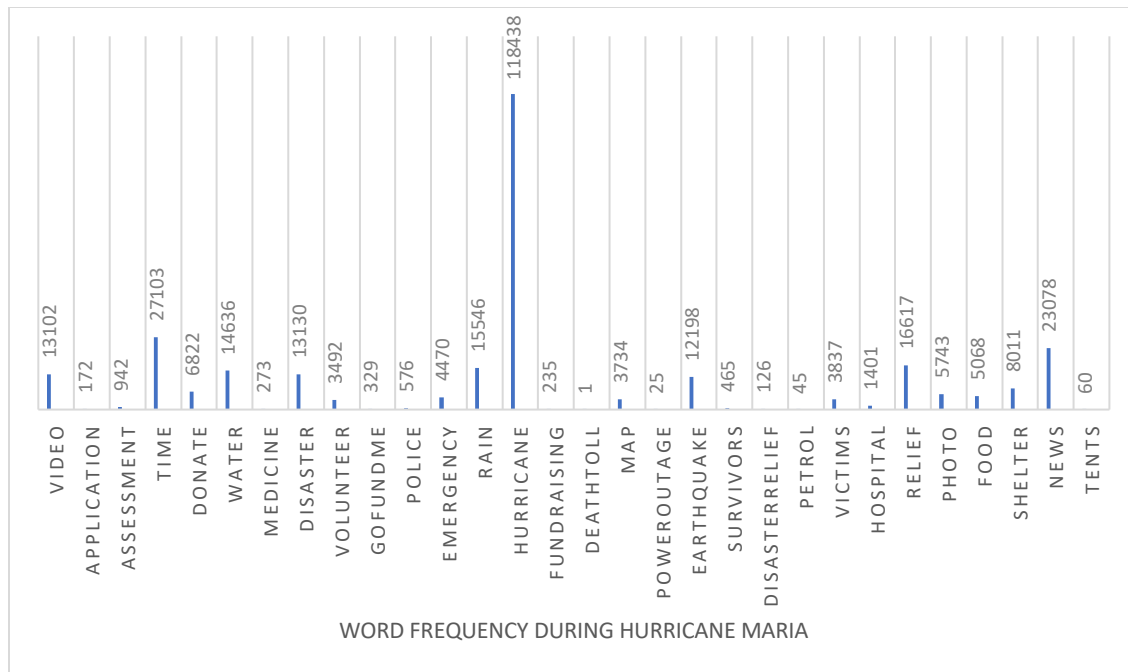


Figure 4.7: Word Frequency on Twitter During Hurricane Maria

In both crises, there were two different levels of crisis communications: the official crisis communications and the unofficial crisis communications mediated via local actors mediated through social media platforms like Twitter, Facebook, Blogs, WhatsApp, and Google Docs. Hence, the crisis communication practices during the Nepal Earthquake and Hurricane Maria weren't solely controlled by organizations who were responding to the disaster but by people who were equally involved. Participants articulated that they were also establishing their own communications network and curating as well as sharing information about the rescue, relief, and volunteering activities. In doing so, the participants expressed that they presented an alternative narrative through digital media platforms. They did so to raise their voice during the crisis to counter the one-sided official narratives provided by governments and mainstream organizations.

In all 14 narratives from Nepal, participants stated that they used various social media platforms either officially or unofficially to perform crisis communications during the 2015 Nepal Earthquake. The codes that were referenced high by the participants in this category were **Audiences, Curating Information, Disseminating Information, Intercultural Communication, Lack of Information, Misinformation, Verifying Information, Writing, Data, Assessment, and curating audience-based Radio Programs**. A participant representing

the government mentioned that for official crisis communications, the Home Ministry of Nepal was mostly involved. The ministry would collect the data and information from police, the army, and other governmental entities and distribute it via the government's official media outlet as well as other media outlets. This participant worked with the government to create a website that communicated all the information they collected through Twitter as well as from phone calls from various governmental offices in the affected areas. A participant representing the media explained that she hadn't reported on any previous crisis, and she found it very difficult to think about writing and communicating during a disaster. However, challenging herself, she participated in writing about disaster starting with a blogpost on her personal blog that was shared widely by the BBC news. She also mentioned that she tweeted pictures as well as stories, which made her a focal point of contact for various international journalists.

Similarly, participants who were organizing their relief and rescue actions shared that they would use social media platforms like Facebook, Twitter, or Instagram to communicate about the relief work they were organizing, expressing their needs, and sharing accountability for their works online. Two diaspora Nepalis were involved in organizing relief works via inviting people on Google Docs to share the information about the crisis. They also shared that they communicated information they have gathered via various volunteers on Google Doc, and that it would be shared via Twitter, Facebook groups, group chats, and also working towards data visualization, conducting surveys, and translating any government-provided information. In Nepal, various international NGOs were also involved in curating information about the earthquake. In doing so, their major focus was collecting and providing reports, photographs, and videos, which were shared via their websites, media, as well as their official social media channels. The international organizations according to several participants were sharing information to showcase their work during disaster rather than actually sharing information on what to do next. Hence, several participants from Nepal also criticized the curation of information by these organizations as a form of publicity designed to heighten their reputation while the actual groundwork didn't speak much about their work.

Likewise, in Puerto Rico, all 14 participants also mentioned the use of various social media platforms as well as journalism platforms or organizational platforms for performing crisis communication during Hurricane Maria. The codes that were referenced by the participants of the Puerto Rico were **Information Distribution, Mass Media, Power of Communications**

Mediums, Writing, Data, Assessment, Information, and Documenting Work. All the participants articulated the need and importance of communications during the time of crisis. Some of the big consequences of Hurricane Maria were lack of electricity and communications. In this case, participants shared that they improvised communications by writing letters, with in person communications, and also by sending messages from their mobile devices and waiting for them to be delivered. A representative of a community-based organization shared that they used their alternative energy resource to use the electricity, Internet, and their community-based radio. People around that area would queue up to call their loved ones and also to share information about their safety and seek information on their loved ones by announcing it via community radio. Three participants who represented community-based organizations shared that they had to change their communication practices to reach out to the community. A representative of a community-based organization shared that in order to collect data and information about the community, they had to conduct interviews with the community members by talking to them one-on-one. The participant shared that, due to the resilient culture of the community in Puerto Rico, the survivors wouldn't share their difficulties, hence, in order to collect data of needs and requirements of the community, individual one-on-one communication with care was necessary. They needed to change their practices because community members who were in shock weren't opening up and were hiding their emotions and feelings due to the psychological trauma of the hurricane.

Similarly, three participants who were journalists mentioned that they were involved in writing, reporting, photographing, as well as broadcasting radio 24/7 during Hurricane Maria. While doing so, each person developed their own methods through which they communicated about the crisis, thus creating an impact in the community. All three journalists used different mediums of communication during the crisis. One used photography to show what was happening in Puerto Rico; the second was involved in broadcasting 24/7 and gathering people around the island for disaster response; lastly, the third was involved in writing and publishing factual stories about Puerto Ricans in the U.S.-based media. Likewise, four activists who used social media to raise funding and help communities mentioned that, for them, their Facebook accounts and WhatsApp was a medium through which they shared information and messages about their relief work. They used photographs and stories, reached out to survivors who needed support, and reported back to the people who donated via Facebook. For accountability purposes,

they used anecdotes as well as videos and photos of the survivors who received support from donors. Hence, social media became their platform for crisis communication, which was mostly about donation, volunteering, and obtain information about the community.

In practicing crisis communication during the Nepal Earthquake and Hurricane Maria, both organizations as well as local people were involved. The major themes that were common in the narratives of both Nepalis and Puerto Ricans included the following:

- Organizational crisis communication
- Actors' Crisis Communication

4.5.1 Organizational Crisis Communication

Participants who represented various organizations, shared that they communicated during the crises by following organizational protocols and networking with other organizations. The participants shared that during and after the Nepal Earthquake and Hurricane Maria, crisis communications were conducted by coordinating with the government, media, and sharing that information via social media. In the case of both Nepal and Puerto Rico, radio was the most effective and one of the primary sources of information for the people. In the case of Nepal, Radio Nepal, the national radio broadcaster of Nepal, was conducting crisis communication by providing information about the earthquake, bringing in various expert speakers to refute a rumor, and providing information about governmental and other relief-based activities. In the case of Puerto Rico, WAPA Radio, a small family-owned radio, was the only radio that was functioning throughout the island, and during the hurricane the station became the major source of information that people relied on during and after Hurricane Maria. One participant who was involved in WAPA radio shared this opinion:

And, I said on air, 'All the reporters, I know there's not going to be any newspapers or any television or radio stations working. So, if you have nothing to do, please come. We need your help. This is the only network that is operating, and we need to help them. They don't have any employees, and this is the only way ... We have to do our community service.' So, about 70 reporters and former reporters showed up, and we created a schedule. (Participant from Puerto Rico)

With this announcement, WAPA radio became a communication and relief hub for Hurricane Maria. Reporters, politicians, volunteers, and relief providers continuously came in and out of

the radio station. Through the radio, the participant was able to project the voices of people who were suffering and help them reach out to the respective disaster responders. While doing so, she also used social media, which made the communication process more dynamic and able to reach people outside of Puerto Rico as well.

Moreover, in the case of Nepal, the government of Nepal was assisted in disaster response as well as via crisis communication by various INGOs like the United Nations, the European Union, and others that have a historical presence in Nepal. These organizations coordinated with the government, media, and other community-based organizations in Nepal to gather information and share them via their websites and their social media. However, the United Nations, which was a leader of the disaster response in Nepal, was criticized for its “situational reports” that reported what was going on in Nepal. While the situation reports were only one of the communications mechanisms, they were criticized for not representing community voices. A participant who was leading an organization that specifically worked to create crisis communication products during the earthquake mentioned:

There was always a daily number of coordination meetings, and I went there. At this point, there's nobody there except the U.N. and a couple of big organizations. So, I felt that, okay, there was a lot of space for me to inject the communication components. The U.N. would be thinking, and, you know, there's this situation reports of how to bring those together. But I was like, okay, I'm not talking about putting a situation report. I am talking about talking to the community. So how are we going to do that quickly, and how can we ensure that it's a quick and meaningful process? (Participant from Nepal)

The participant later mentioned that she mobilized her team to reach out to the community and gather data as well as stories from people. That way people could speak themselves. Likewise, the same participant's organization used to run a television-based program, which had 6.6 million subscribers and viewers on the Facebook. Hence, they were the first to conduct a need-based survey from that population online and distribute that data to other organizations like the U.N. to aid disaster response. Later, the participant's organization also created a very short narrative-based radio program on disaster response. This program was created under communications protocol adopted by the participant's organization, which allowed community members to tell their stories as well as provide information on how to respond to disaster-related issues like the water crisis and problems related to open defecation after the earthquake. This

community-based program became immensely popular in Nepal during the earthquake as the community could share their knowledge of how to respond to the earthquake.

However, in the case of Hurricane Maria, smaller community-based organizations, churches, private organizations, and organizations like the American Red Cross, were more active in comparison to larger international humanitarian organizations. The role of the community-based organizations was larger in that they knew the needs and requirements of the community they were working for and they understood their audiences well. Similar to what happened in Nepal, larger humanitarian organizations were also criticized for manipulating information and not being accountable while reporting information about the community. As information was very crucial during disaster, participants articulated that they relied on information shared on Facebook by friends and family members. One participant who represented a community-based organization that worked in disaster response by creating a mobile based information collecting application shared the following:

The one thing that I've found is that information is power, and people don't want to give up their power. Bigger humanitarian relief organizations feel threatened by open platforms like ours because I'm not saying the Red Cross but somebody like the Red Cross that has its platform. They have private platforms and they have access and power. After all, they have the numbers, and they'll get money because they have this information that nobody else has. What we're doing is we're democratizing, or whatever the word is, the information so the government cannot manipulate the data. It's completely transparent. If there are 20 sick people, it's going to be on our website. (Participant from Puerto Rico)

This was a unique crisis communication mechanism, used in Puerto Rico, where information that was collected via an app challenged the national narrative shared by the government as well as by other large humanitarian organizations. This mobile based application gained popularity as it helped in providing information about the need of the community as well as volunteers and donors that matched. They curated the information online on their website, making it accessible to the public.

Organizations involved in disaster response during the Nepal Earthquake and Hurricane Maria needed to be innovative because the users to whom they were providing information were not only passive listeners but also active responders. These organizations also depended on retweets, responses, shares, and likes of users to whom they were communicating the

information. Hence, they had to be innovative in the uses of various social media platforms while communicating their message to various users.

4.5.2 Actors' Crisis Communication

The participants who didn't represent any organizations and worked individually during the Nepal Earthquake and Hurricane Maria shared that the major platform that they used to communicated crisis was through social media channels. Social media can provide an alternative space for people to perform crisis communication without pre-existing organizational protocols. Using digital spaces, participants in both Nepal and Puerto Rico were able to voice their concerns against the official narratives, as well as to share, curate, and validate information during the crisis. Responding to the Nepal Earthquake and Hurricane Maria, the participants shared that they became the focal point within their networks to share information on the updates of the disaster, relief and rescue activities, as well as the requirement of the community. In both communities, the actors were also involved in writing, collecting data, conducting assessment, and sharing the information via their social media accounts.

The participants from Nepal revealed that they used social media to share information via Twitter, curate information in blogs, or Facebook groups, utilize Google Docs to organize relief, and various data visualizations to provide data of Nepal. As articulated by the participants, even though the government was trying to disseminate information, it wasn't enough. Hence, to avoid rumors, to organize relief and rescue activities, and to reach out to the communities who have been ignored by larger organizations, the participants conducted their own crisis communications. In conducting such crisis communications, participants organized data collection by mobilizing volunteers on ground, data translation, and information curation on the websites in multimodal form. Participants shared that since the Nepali government had limited human resources to handle the catastrophic disaster as well as the communication mechanism, it was slower and hence required a lot of volunteers to enhance such communication. Therefore, Nepali activists relied on social media as well as on the grapevine informational network to access information from the community. One participant from Nepal shared:

I was answering these questions for one hour, staying up, and feeling like a crazy thing. I was trying to figure out information, trying to share information, trying to locate people and help people feel better, and in some cases trying to share the unfortunate news. (Participant from Nepal)

The participant during the time of the earthquake created his own relief work and wasn't affiliated with any organization. However, he served as a communication point for many other people in his network. Even though there were official mechanisms for people finding, people outside Nepal needed the information about their loved ones immediately. The participant shared that Nepal is a closely knitted society, and information travels from family, relatives, and friends of friends, so it was easier to locate information about people. Similarly, another participant mentioned that she was involved in translating governmental information from Nepali to English in order to make information accessible to non-Nepali speakers who were trying to locate information about their loved ones in Nepal. Likewise, another participant collected various information sites that were sharing misinformation and curated those in his blog so that people can get verified information. The ways actors in Nepal conducted crisis communication were by mobilizing their resources to get accurate and valid information about the ignored and marginalized communities within Nepal. They also curated such information on social media to conduct relief and rescue activities as well as to make the government and other disaster responding organizations accountable.

Similarly, during Hurricane Maria, social media became a space for crisis communication where activists aren't waiting for the government or the U.S. to respond to disaster, but Puerto Ricans themselves have the control of their narratives. Participants shared that they curated the information on their respective Facebook accounts and websites and shared it with their community to help them. An activist participant from Puerto Rico shared:

We're not going to manipulate the information. We're not going to make it look better or worse, so somebody gets the money. We are completely transparent, completely like I said before for the people, by the people. We have no agenda. Our only agenda is to give voice to those people that don't have a voice. That's different. I didn't know this, but humanitarian relief is very profitable, extremely profitable. (Participant from Puerto Rico)

As the participant noted, Puerto Ricans demanded transparency in information, and local community-based organizations were the ones who were strongly advocating for such information. Local community-based organizations, as well as activists, served as a communication channel between local organizers and Puerto Ricans in the diaspora, and they used the Internet as well as material spaces to collect donations, while serving as a hub for building community and ensuring survival (Vega, 2019). Platforms like Facebook were used by various Puerto Ricans in the U.S. as well as around the globe to respond to Hurricane Maria.

They used them to share information about the needs of the community at the very moment, organize fundraising through platforms like GoFundMe, as well as call for volunteers. According to the participants, these platforms became the reliable source of information within their community for information related to relief, volunteering, and donations.

4.6 Conclusion

In this chapter, I discussed four major findings that resulted from analyzing the narratives of the actors as well as social network analysis of Twitter data. These results reveal that transnational assemblages are inevitable during disaster and various actors who emerge as information providers and disaster relief leaders help in the formation of such assemblages. These findings also suggest that people perform spontaneous actions due to their affective response to the disaster leading them to become part of assemblages that respond to disaster. Additionally, the results suggest that technology such as social media have an important role in disaster relief and in the formation of the transnational assemblages. As articulated by the participants and as displayed by the SNA data, digital social media-based technologies have the power to provide quicker, faster, and effective information during crisis. The comparison of networks formed on Twitter during the Nepal Earthquake, and Hurricane Maria, suggested that, more international networks were formed during the Nepal Earthquake than during Hurricane Maria. In the next chapter, I will discuss these findings by theorizing them with the help of the Assemblage Theory.

CHAPTER 5. DISCUSSION

5.1 Introduction

In this chapter, I use Assemblage Theory to discuss the various themes that emerged from the results of my research, which were presented in Chapter 4. As discussed in earlier chapters, I used a mixed-methods approach to understand a) how assemblages were formed during the Nepal Earthquake and Hurricane Maria, b) the uses of social media during these two disasters, and c) the crisis communications strategies used by organizations as well as individual people. My research questions led to findings that can be summarized as follows: The formation of assemblages during a disaster is inevitable, and these assemblages facilitate crisis communication by using social media to save people's lives. These findings support my hypothesis that disaster motivates the formation of transnational networked assemblages via the diaspora and international governmental and non-governmental (including media) disaster response systems. This is exemplified by a variety of emergent digital rhetorical and participatory actions, as national and international communities in Nepal and Puerto Rico formed their own stronger transnational networks, which helped them mobilize the international community to address their local disasters.

In the previous chapter, I presented a comparative finding of my data from the Nepal Earthquake and Hurricane Maria. In this chapter, I theorize these Chapter 4 findings by analyzing them through the perspective of Assemblage Theory, which I discussed in Chapter 2. By grounding my analysis in these theoretical perspectives and describing the rhetorical pathways I followed, my aim is to create a bridge via my scholarship that can speak for the people of non-Western spaces like Nepal and colonized spaces like Puerto Rico. As an international scholar from a non-Western space, I need to articulate my identity in my scholarship. I am using Assemblage Theory as a medium to understand the complexity of human communication during a disaster but not as a theory that provides a universal understanding of all. Specifically, Assemblage Theory allows us to understand the phenomenon of assemblage creation, characteristics of assemblages, and the outcomes that these assemblages have produced. Since this dissertation is also a comparative project, my analysis is also influenced by comparative rhetorics, though to avoid the complexity, I am not using comparative rhetorics as a

major theoretical perspective. In comparing the disaster responses of Nepal and Puerto Rico and the resultant assemblages that formed, I am putting them as equals, side-by-side, to seek commonalities and differences.

Through this chapter, I argue that a) formation of transnational assemblages during a disaster is inevitable and those assemblages help in disaster recovery; b) any study of crisis communication should include the idea of social justice which helps contextualize information based on the local context; and lastly, c) the role of social media in disaster response should be enhanced with the lessons from past disasters. Furthermore, beyond these centering arguments, I claim that disaster in a global context requires the following understanding:

- a) The work of actors who emerge during a disaster is dynamic and powerful. Identifying those actors and their assemblages might help in faster disaster recovery
- b) Catastrophic local disasters are global concerns as various transnational assemblages emerge around the globe to address the local disaster.

In the following sections, I animate my argument with the help of Assemblage Theory. The section begins with a brief overview of theoretical concepts and a theorizing of the findings that I discussed in Chapter 4. In doing so, I go back to the literature that I reviewed in Chapter 2 and bring in various scholars to theorize the rhetoric of disaster in the context of a globalized world. The major conclusions I draw from the findings that I reported in Chapter 4 are the following:

- a) Major Conclusion 1: The Social Media is Effective in Forming Transnational Affective Assemblages
- b) Major Conclusion 2: Transnational Affective Assemblages Help in Disaster Response
- c) Major Conclusion 3: Practicing Crisis Communications with Social Justice During Disaster will Help in Effective Disaster Response

After discussing these major conclusions, I end this chapter by providing an overview of what could become the “Rhetoric of Disaster” in the globalized and digital age.

5.2 Assemblage Theory

I am using the Assemblage Theory to theorize the findings of my research, which showcased the formation of transnational assemblages. I have found Assemblage Theory to be quite effective for understanding the emergence of communication networks during and after the

Nepal Earthquake and Hurricane Maria that aided in the immediate disaster response. The characteristics of the assemblages, and the flow of communications among human and non-human actors, were essential toward organizing a stronger disaster response. However, as I have stated previously, I am using this theory as a medium for understanding the complexities of transnational disaster response; hence, I am not imposing Assemblage Theory arbitrarily when interpreting my findings. Moreover, I believe that the data itself speaks; therefore, one of my goals is to put this dissertation into a broader discussion of how people come together globally and form various alliances to respond to a disaster.

In a catastrophic situation, a disaster response is very flexible and has the characteristics of a rhizome that grows and expands based on the requirements of the situation. Disaster initiates an assemblage where responders (people or organizations) depend on various technologies such as mobile phones, the Internet, and social media to motivate a common disaster response. Crisis communication in such assemblages help to facilitate communications among various nodes, or actors. Angeli (2012) argues that, “Assemblage Theory provides a way to map the network and understand the directions in which communication travels among nodes” (p. 135). In mapping a disaster network, various actors become involved: disaster relief groups, volunteers, donors, medical service providers, engineers, community leaders, humanitarian organizations, and governments, among others. These actors may work individually within their own assemblages or connect with other assemblages to seek or provide support for organizing the disaster response.

Meanwhile, assemblages embody the characteristics of becoming and the constant process of transformation (Slack & Wise, 2015). While always transforming themselves, the assemblages during a disaster keep growing as per the requirements of the post-disaster context. Assemblages during a catastrophic disaster involve actors both locally and internationally. In the process of transformation, assemblages territorialize existing and new spaces by forging newer articulations, such as creating physical spaces like buildings or, in the present context, creating spaces on the web or other internet-based platforms, or establishing the roles for members or the elements of the assemblages (DeLanda, 2016; Slack & Wise, 2015). Meanwhile, the assemblages often stretch to achieve their own objectives or tasks. Due to this stretching, some elements of each assemblages become disconnected while it is expanding, causing these elements to re-invent their relationships to other elements within its own assemblage and among other

assemblages. In this process of growing and evolving, the assemblage “evolves, some elements of the assemblage lose their relevance, becoming less influential; this is called ‘deterritorializing’” (Johnson-Sheehan & Pellegrini, forthcoming 2021). During a disaster, the processes of territorializing and de-territorializing is what makes assemblages evolve and dissolve, and in the case of disaster this can happen at slower or faster rates.

The findings of my research suggest that during and after a disaster, transnational assemblages are formed to respond to that disaster. Here I want to go back to the definition of transnational assemblages that I stated in Chapter 1. Transnational assemblages are “collectives of people, organization, and entities, who are connected via online or offline mediums, and who gather to respond to a natural and political crisis.” These transnational assemblages are motivated by affect and possess agency to respond to a global phenomenon like a disaster. They territorialize spaces via digital mediums where pictures, videos, and texts, embedded in the form of information, create an intense action that motivates various actors and elements of the assemblage to take action. In the following sections, I will discuss in detail these transnational affective assemblages in disaster response, the role of social media in disaster response that supports the formation of assemblages, and crisis communication for social justice.

5.2.1 Major Conclusion 1: Social Media is Effective in Forming Transnational Affective Assemblages

Social media during the Nepal Earthquake and Hurricane Maria became a multi-faceted platform for digital activism by various actors. These kinds of activism were not only limited to the use of social media but also toward innovations that led to web-based and phone-based applications, GIS maps, and a supply chain management apparatus for volunteers and relief supplies. Various activists during and after the disaster emerged as a rhizome (Deleuze & Guattari, 1987) that connected with other activists who were a part of an existing assemblage or who came together to create new assemblages. While creating or joining these assemblages on Twitter, actors employed several processes such as a) retweeting or replying, b) creating hashtags and using them to express stories, opinions, data, and solidarity; and c) creating direct message chat groups. Similarly, on a social media platform like Facebook, actors a) used liking, commenting on posts, or sharing posts, b) created groups or pages that people could join or like, and c) created message groups. The Facebook groups and pages became a space where actions

such as relief, volunteering, networking, and decision making for relief and rescue happened. These groups helped in territorializing the assemblage by bringing people from various countries, time zones, and disciplines together. While creating such assemblages on the social media, these groups of actors created their own rules and rituals within such groups that helped them to respond to disaster. The examples of such rules and rituals were focusing only on medical relief, focusing only on one particular region, focusing only on managing volunteers, focusing only on raising funds, among others. In this way, social media became a platform where smaller assemblages were formed where people created their own rules and rituals helping people to come together and form their own new assemblages.

On the contrary, DeLanda (2016) argues that social media and digital technology also help in deterritorializing because there are opportunities to create new assemblages, and it is easier to join and leave various groups. Assemblages, formed with the support of social media during disasters, are always evolving and transforming, which means people within certain assemblages also have access and can communicate with other people in other assemblages through likes, comments, replies, retweets, or hashtags functions. While communicating with other assemblages, the assemblages stretch as well as sometimes dissolve leading to deterritorialization. This deterritorialization is a part of the process in disaster response as it helps in forming multiple assemblages that amplify the disaster response helping to save people's lives. As Deleuze and Guattari (1987) suggest, assemblages are always in the process of becoming, transforming, and evolving. As one assemblage deterritorializes, it evolves and transforms, and this process is enhanced by social media because of access to information about various other assemblages.

Meanwhile, social media such as Twitter has played a critical role in disaster management and has been ranked as the fourth most popular source for accessing emergency information (Lindsay, 2011). Various studies conducted on the role of Twitter during disasters (Cho et al., 2013; Crooks et al., 2013; Potts, 2014) have argued that the role of social media during a disaster should be acknowledged because it delivers information to people in a highly efficient way. Social media during both disasters played a significant role in the response through the crowdsourcing of data and information, the visualization of information on web-based platforms, and the sharing of that data and information via social media. With the help of government data, Code for Nepal, a non-profit established by Nepali diaspora youths in the U.S.,

was curating information in the form of an interactive map. Additionally, they were also working on a common Google Doc that crowdsourced information about volunteers, relief supplies, emergency services, and communities in need.

Similarly, in Puerto Rico, Connect Relief was involved in curating information about relief, volunteers, and the communities in need. Such crowdsourced data helped numerous relief organizations as well as volunteers to accurately locate specific requests for help and to gather accurate data on what was happening in real time (Gao et al., 2011). Similar to other big disasters in the world, before the public fully recognized the serious damage caused by the earthquake and the hurricane, social media users were already posting in the digital space their experiences of what was going on in their locality (Cho et al., 2013). Curating personal experiences in the form of a tweet or a picture, and sharing it online, also transformed them into data that could be used by volunteers to get a better understanding of the current state of affairs. As articulated by one participant from Nepal who was working with the government to curate information on a website shared that the ad-hoc disaster team was monitoring the information shared on Twitter, validating it, and then curating it onto the official government website. The curation and sharing of the information were not only limited to the public. Media outlets, NGOs, and government agencies were also using social media to gather and disseminate information in Nepal and Puerto Rico.

Likewise, during both the Nepal Earthquake and Hurricane Maria, the use of hashtags on social media was able to create various communities and assemblages. As suggested by the SNA, retweets and replies on Twitter show that people around the world participated on Twitter in trying to locate or validate data, gather and disseminate information, and create or share knowledge. Potts (2014) describes data, information, and knowledge as, “data [that] can appear in networks words, phrases, images, symbols, and so on; information is validated data, and knowledge is the final stage of content. Knowledge is information that is shared within the network” (24). In sharing this knowledge within the network on Twitter, the participants in my study as well as people beyond my study on Twitter emerged as seekers as well as providers of the knowledge. One of the participants shared that he specifically looked for fake news sites and used his blog to create information that countered fake news. Meanwhile, for other participants, Twitter became a space to look for news as well as opinions shared by the people. Data and information, which are “typically [a] blend of emotionally charged opinions or news updates”

(Papacharissi, 2015, p. 53), circulate in the form of narratives in digital spaces like Twitter. Such narratives on Twitter are powerful and lead people to join various assemblages and networks for disaster response.

Additionally, hashtags on social media also became a prominent outlet for displaying empathy towards Nepal and Puerto Rico, and they were also used as a common medium of organizing various events and activities. Hashtags such as #NepalEarthquake2015, #EarthquakeNepal, #NepalEarthquakeRelief, #ICanYouCanWeCan, #HelpNepal, and #GoHomeIndianMedia were very popular and widely used. The hashtag #NepalEarthquake2015 was trending among the highest topics in the world on Twitter. As I demonstrated in Chapter 4, people around the world were tweeting about the Nepal Earthquake. The SNA revealed that people in various countries like Europe, U.S., and Asia were in a stronger network than the countries from other continents. Similarly, Europe, Australia, and Asia had developed a more or less separate network. Some networked connections could also be seen between users from Africa, Europe, Asia, and the U.S.; however, the replies and retweets on Twitter within these networks aren't as strong as that of Europe, the U.S., and Asia. Hence, though people around the world tweeted about the crisis, SNA shows that the stronger retweet and reply network was established among users from Asia, Europe, the U.S., and Australia. The reason for this could be the presence of Nepali immigrants in Europe, the U.S., and Australia. However, due to the limitation of my data, the nationalities of the users weren't revealed, only the locations. Hence, as displayed by the data, social media like Twitter assisted people around the world to participate in responding to the Nepal Earthquake. Twitter helped to bring together people around the world to create smaller networked communities where they could share their empathy as well as organize relief-oriented actions during the Nepal Earthquake.

Similarly, in Puerto Rico hashtags like #Hurricane, #HurricaneMaria, #Relief, #PuertoRico, #Boricua, #Relief, #StayStrong, #ReliefEfforts, #Help, #PuertoRicoStrong, #PuertoRicoRelief, #ClimateChange, #UnitedForPuertoRico, #PuertoRicoWillRise, and #YoNoMeQuito were popular. With these hashtags, information (including pictures and videos) related to the death toll, rescue and relief efforts, and requirements of rescue/relief were shared, retweeted, and quoted by various Twitter users within Puerto Rico, the U.S., and around the world. In comparison to the Nepal Earthquake, Puerto Rico's Hurricane Maria received less attention on Twitter. The SNA of the Twitter data, which was shared in Chapter 4, shows that the

strongest reply and retweet networks existed between the U.S. and South America; medium strength networks developed between the U.S. and Europe; a smaller network developed between the U.S. and Asia, the U.S. and Africa, and the U.S., and Australia. In Puerto Rico, the U.S. was central to the crisis response network. The presence of Puerto Rican diaspora in the U.S. could be the reason for the higher number of users and tweets coming from the U.S. However, since Puerto Rico is a U.S. territory, the other reason may be the lack of attention by international media as well as the international humanitarian organizations in Puerto Rico. This might be due to the official protocol of the U.S. that restricted various non-U.S. agencies to come and support Puerto Rican communities. The other reason could be lack of access to the Internet and electricity in Puerto Rico during the first few weeks after Hurricane Maria.

The assemblages that were formed during the Nepal Earthquake and Hurricane Maria were motivated via affect and supported by the social media. Transnational assemblages are formed via affect that is mediated by social media in the form of information, pictures, hashtags, or online communities. The interactions of people on Twitter during the two disasters transformed the Twittersphere into an information-providing platform that allowed easy access for not just people, but governments, volunteers, different aid-agencies, and organizations to get the latest information about the disaster. As more users around the globe have made social media as part of their lives, the role of social media in disaster response will likely be even more prominent (Kim & Hastak, 2018; Potts, 2009; Potts et al., 2011). The digital activism displayed by people using social media in Nepal as well as Puerto Rico has undeniably helped communities and people who are in need, even though they are only providing information. Social media platforms like Twitter aided the disaster response by bringing people from around the world together and forming assemblages that are emerging and autonomous in pursuing a common response to the disaster. They are non-hierarchical and are welcoming to anyone who wants to be a part of such a territorialized space (DeLanda, 2016; Marcus & Saka, 2006). Additionally, these assemblages are powerful because they can challenge the authorities or governments and work towards the larger good of the community.

It is important, though, to acknowledge that sometimes these assemblages also lead to some negative effects, socially, politically, as well as economically, such as the spread of misinformation or the facilitation of fraudulent activities that illegally collect money. Some of the participants in my study mentioned that they were aware of such activities and therefore were

very cautious while sharing information, pictures, and stories on social media. To avoid misinformation, one of the participants curated a blog where they shared the links of fake news. Undeniably, the role of social media in the context of disaster is becoming very important. However, in some examples, the participants of this study did witness the rise of fake news and misinformation. As more users around the globe are making social media as part of their lives, it is more likely that the role of social media in disaster response will be more (Kim & Hastak, 2018; Potts, 2009; Potts et al., 2011). However, there were also incidents of misinformation both in Nepal and Puerto Rico, as well as some fraudulent activities regarding funding. In response to such public funding activities, the government of Nepal channeled all the relief through the Prime Minister's Disaster Relief Fund. Nevertheless, in the case of Puerto Rico, there weren't such actions.

While social media during disasters can make some people powerful agents of communication, information, and response, it is important to acknowledge that there were instances of misuse of the platform for the personal gain and unethical official gain. It is also important to note that these technological solutions might also conflict with the public interests as pointed out by Resnyansky (2015). She argues that sometimes technology can empower some groups while disempowering others. This was seen in the context of Nepal as well as Puerto Rico. Communities who were publicized more on the social space got more attention and double the relief materials while some other communities were still suffering and totally ignored. Some participants in this study noted that they have noticed that the aid, volunteers, and other agencies sometimes focused on only one specific location while other severely affected, geographically hard-to-access areas were being neglected. In addition to that, some actions in digital media could also be very detrimental for example, Garland (2015) notes how "voluntourists" were focused on taking pictures and sharing it on social media rather than actually helping people in need. He shares a highly relatable story about an American nurse who took pictures of a Haitian mother and her child without asking permission and later said that she is going to share these pictures back home with friends and families online (Garland, 2015). This definitely happened both in Nepal and Puerto Rico, and sadly, this is one of the darkest realities of social media. In this case, the affective reaction of helping people may have been misused for the personal gain of acquiring retweets or likes on the social media platforms. Social media does provide a platform

for people to come together and form an assemblage; however, sometimes affective reaction on social media can also lead to personal gain, be it monetary or for enhancing popularity.

In a disaster situation, territorializing and deterritorializing become ongoing processes that lead to the formation as well as erosion of the assemblages. Due to this evolutionary process, transnational assemblages that are formed with the help of digital media, can be powerful in a crisis. They can be used to address the immediate crisis and begin generating support for the communities in need. Assemblages are also driven by affect, so disasters motivate a bodily response that can be channeled toward saving lives and supporting communities in need.

5.2.2 Major Conclusion 2: Transnational Affective Assemblages Help in Disaster Response

The affective reactions of people around the globe after both the Nepal Earthquake and Hurricane Maria led to the formation of various micro-communities online as well as offline who worked 24/7 towards curating, sharing, and validating information. Indeed, affect is what motivates these types of actors to share information. Papacharissi (2015) explains, “Affect resides in fluidity presented by the convergence of actual and virtual, as it is aided by the confluent weave of reality and fantasy presented as technology suggests what is and what could be made possible” (p. 15). During a disaster, the *actual* is the information that already exists about the disaster (i.e. its magnitude, number of people affected, death tolls, etc.), and the *virtual* is the curation of that information in the form of pictures, videos, and narratives shared online. This merger of the *actual* and *virtual* motivates the formation of assemblages, where information gathering and sharing on the social web motivates the response to the disaster on the ground.

Disaster creates feelings of urgency and immediacy, leading to affective interactions among the people who are suffering and the people who are observing that suffering online. Humans use their senses, feelings, and emotions to move along with non-human matter because they all coexist and are networked within the assemblage itself. The affect in a human and non-human assemblage creates an inclusive knowledge of the situation or the event. Clough (2008) argues, “Affect is potential that, as soon as it begins to take form, dissolves back into complexity across all levels of matter, as quantum effects feed the indeterminacy appropriate to each level—the subatomic, the physical, the biological, and the cultural” (p. 4). During a disaster, human and non-human elements of the assemblage bodies come together to support humans who are suffering through a catastrophic experience. In doing so, this networking enhances the socio-

cultural interactions, leading to a culture that is focused on serving the people who have been through a disaster.

Affective reactions among various communities during the Nepal Earthquake and Hurricane Maria motivated people to self-organize community-based relief actions. Likewise, both crises motivated people around the globe to create transnational affective assemblages that offered aid and support. Within a week of the Nepal Earthquake, volunteers and journalists from all around the world were supporting Nepali communities in one way or the other. In the case of Puerto Rico, the affective reaction was primarily from the Puerto Rican diaspora in the U.S., journalists from the U.S., and members of various churches in Latin American countries. Klein (2018) argues, “And in every case, deep community relationships, as well as strong ties to the Puerto Rican diaspora, successfully delivered lifesaving aid when the government failed and failed again” (p. 10). In both cases, transnational affective assemblages emerged to support the local community suffering through the disaster.

Furthermore, affect is also mediated by matter in the body because matter possesses rhythms, motion, and movement, and it is the body that brings matter into action. Rice (2008) suggests that, “Affect is not a personal feeling but is instead the means through which bodies act in context with each other” (p. 203). Affective responses were generated during these disasters and were reflected in the timeline of tweets that were shared with the hashtags #NepalEarthquake and #HurricaneMaria displayed in Chapter 4. This finding provides quantitative evidence that different bodies from different parts of the world were coming together to respond to the disasters in Nepal and Puerto Rico. These actions are rhetorical as they were performed in reaction to the event that was being experienced by many people together (Clough, 2008; Rice, 2008). Those actions as shared by the participants in my study were actions motivated by love, empathy, and commitment toward their communities that led them to organize relief works, raise funds, and also work in curating information online.

Meanwhile, the responders of the Nepal Earthquake and Hurricane Maria weren’t just in Nepal or Puerto Rico; they were from all around the world. Their responses sometimes reflected an indirect involvement, such as a retweet, or the direct involvement in organizing relief and rescue operations. Such transnational affective assemblages are formed with spontaneous actions that motivate people to take action during a disaster, while developing a sense of commitment toward the community and the people who are suffering. These spontaneous, immediate, or

affective actions, as well as a sense of commitment, led all the participants interviewed for this project to create their own volunteer and relief networks, join already established assemblages, or work in the online or digital space by forging relationships among numerous other online participants.

Additionally, people are also motivated to transform themselves into disaster responders because of their past and present communal, cultural, and inter-cultural experiences. These motivations are manifested through their bodily capacities and then broadened with the aspects of affect that encompass emotion. Affect further leads to actions like joining relief groups, volunteering, curating information, conducting fundraising activities, and leading the distribution of relief materials (Patil & Purkayastha, 2018). While participating in these disaster response activities, people network (i.e. territorialize) through their actions by focusing their relief-oriented activities on only sharing information, fundraising, or only targeting specific locations or specific populations in the community. These actions territorialize spaces within the assemblage to create a sense of order.

In the context of both the Nepal Earthquake and Hurricane Maria, the territorializing of these assemblages was also motivated by the lack of faith in their governments' roles in the disaster responses and the urgency created by the disasters' destruction. Vega (2019) argues that Puerto Ricans and people in the diaspora responded to the needs of fellow Puerto Ricans through *autogestión*, a Puerto Rican concept that she defines as a coalitional counter-praxis of survival (pp. 40-41). In the case of Nepal, based on my participants' narratives, in the context of Nepali language, this can be regarded as *swa-byabasthapan*, which can be translated in English as self-reliance or self-management. Within the participants' narratives, the distrust of the government was a common sentiment that helped people to self-manage and come together both in online and offline spaces to discuss how disaster relief should be organized. For example, in Nepal, the Himalayan Disaster Relief Group began with a callout by its group leader on Facebook, and for a couple of months they continued their own relief operation. Similarly, in Puerto Rico, the Puerto Rico Somos Gente group originated with a callout on Facebook and is today continuing to work in reconstruction. Exterior to these assemblages were other assemblages, such as governments, non-governmental organizations (NGOs), humanitarian organizations, and the media. These established and structured assemblages, even though they were operational, were designed to follow pre-determined protocols. Those limitations meant their responses to these crises were

delayed. In contrast, newer assemblages like relief group and volunteer groups did not have official protocols, thus they were more flexible in organizing and evolving as the crisis unfolded.

Within these assemblages, territorializing also occurs with regard to the distribution of the work in both online and offline spaces. Pigg (2014) regards this kind of work “symbolic-analytic work” that often develops over multiple times and spaces. It involves many different people and requires layers of expertise and communication. Such expertise in the context of disaster could be networking, accessing information, managing volunteers, among others. My participants described how they were collaborating in Google Docs, working to validate information, and being a liaison to the government and other organizations. These activities meant they were often more successful because of their stronger affective reactions and their clearer communications during chaotic situations. The participants in such assemblages, as Potts (2014) describes, “Now work across multiple systems, balancing activities on multiple technologies, connecting to various applications and websites, and accessing spaces through a plethora of devices” (p. 20). These assemblages thrive on coordinated or distributed work as described by Pigg (2014). Such coordinated work during a disaster enables a variety of interconnections among and across activities that have been separated by temporal, spatial, or disciplinary boundaries (Pigg, 2014; Spinuzzi, 2007). The formation of assemblages during both disasters helped in dissolving or lessening the pre-existing boundaries by bringing together people from various nations together to collectively respond to the disaster.

By doing largely distributed work, the participants in my study regularly stated that responding to the Nepal Earthquake and Hurricane Maria challenged them to communicate beyond language and cultural barriers. In going beyond those barriers, their flexibility, as well as social media, made the communications easier and more accessible, especially since most of them used the English language. Since the assemblages were comprised of people in different locations and time zones, the work distribution was also based on those locations and time zones. People on the ground were supported by people who could curate information online, making connections and supporting the relief work on the ground. Hence, transnational assemblages during a disaster operate across the time zones, locations, and nationalities by creating their own smaller workspaces and territories to respond to the disaster.

Meanwhile, while assemblages are territorializing new spaces, they also expand and stretch. In this process, some interactions (or a lack of interactions) occasionally took attention

away from one subject of the conversation to focus it elsewhere, leading the assemblage to destabilize (DeLanda, 2016). Some participants in the interviews shared that they joined a relief group to volunteer; however, they soon saw that they could do similar work by focusing on communities that had not yet received relief. Hence, they formed their own smaller assemblages and organized relief for these missed communities. In this way, the participants deterritorialized the existing assemblage by expanding, stretching, and sometimes detaching to establish a new assemblage. As DeLanda (2016) argues, assemblages are autonomous, which means they can be “detached from one whole and plugged into another one, entering into new interactions” (p. 20). These detachments lead to a deterritorializing within the larger assemblage, allowing the newly formed assemblage to join another assemblage. In disaster relief work, the process of territorializing and deterritorializing continues as people move from one assemblage to others or create their own workspaces determined by the needs of their communities and requirements of the moment.

During a disaster, transnational assemblages act autonomously and also encompass the rhetorical agency of humans who are supported by non-human elements, such as mobile phones, the Internet, laptops, relief materials, food, medical services, among others. In detaching themselves from one whole and assembling into another, the rhetorical agency of each assemblage plays a vital role. Koerber (2006) defines rhetorical agency as, “negotiation among competing alternative discourses, that grants individuals some ability to reject discursive elements that they find problematic” (p. 94). Nepal's and Puerto Ricans both weren't abiding by the narratives that the government, the media, and larger humanitarian organizations were promoting. Rather, they were listening closely to their communities and knew that their communities required more support than that being identified by the official narratives. Additionally, their self-organized assemblages displayed rhetorical agency by displaying what Jones (2017) refers to as, “a) an awareness of the rhetorical situation, including exigency, Kairos, and an understanding of existing discourses or arguments, and b) the ability, opportunity, or rhetorical space to act” (p. 325).

Moreover, technological apparatuses like mobile phones, laptops, and the Internet also enhanced the rhetorical activities of assemblages through their ability to share alternative narratives from these communities and the work of their assemblages. Geisler (2004) suggests that the concept of rhetorical agency concerns itself with another set of non-traditional

contexts—those connected with media. This connection of, for example, sharing photographs, information, videos via internet “call attention to the complex ways that rhetorical agency may be dispersed, as a series of articulated networks that connect speakers and hearers in multiple ways” (Geisler, 2004, p. 11). The response to the Nepal Earthquake and Hurricane Maria by various transnational assemblages was non-traditional and has often been described as something that both Nepal and Puerto Rico had never experienced before. Some examples of rhetorical agencies displayed by the participants included not waiting for the government before they began helping each other, joining or forming groups to self-organize rescue and relief work, motivating themselves to save lives and support people in need, and creating opportunities for outsiders to donate by using various technologies.

5.2.3 Major Conclusion 3: Practicing Crisis Communications with Social Justice During Disaster Will Help in Effective Disaster Response

As my results demonstrated, communication during the crisis can be enhanced through digital technology and social media because it allows quicker delivery of information to a larger public. The rhetorical situation of each disaster is different, presenting unique challenges in communication. In the crisis situations created by the Nepal Earthquake and Hurricane Maria, communications were mediated by official organizations as well as self-organized assemblages on the Internet. The formation of the transnational assemblages in the digital web facilitated communications by building “a series of locality-based activities and organizations around a key function in the network” (Castells, 2010). Walaski (2011) defines crisis communications as, “those messages that are given to audiences during an emergency event that threatens them either immediately or at some foreseeable point in the near future” (p. 9). These kinds of urgent messages help the audiences to be informed, to be aware of the situation of the crisis, and to create precautionary measures.

Meanwhile, crisis communications within an assemblage can facilitate disaster response by conveying messages and sharing information through a variety of communications mediums, such as mobile phones, SMS, emails, tweets, Facebook messages, and WhatsApp messages. These messages included information on the need for relief materials, callouts for volunteers, and requests for funding, which can be regarded as the “flows in an assemblage” (DeLanda, 2016). The assemblages formed during both disasters and also provided a public voice for

communities who were being ignored. Such communications within the assemblages were flexible, adaptive, and didn't have any official protocols. While repurposing such messages with social media functions like sharing, retweeting, liking, or replying, and sometime rewriting, the crisis communication practices during the Nepal Earthquake and Hurricane Maria blurred the boundaries between the official networks and unofficial networks. Crisis communications are mostly employed in an organizational context (Walaski, 2011); however, my data suggests that, because the context of the world is continually in transformation during a crisis, crisis communication is also always transforming. In this context, catastrophic disasters invite multiple stakeholders and organizations, as well as various evolving assemblages, to communicate about the crisis and aid in the disaster response. To manage a successful disaster response, stronger crisis communication mechanisms are required that involve and highlight the role of the community and the people who are involved in disaster response (Coombs & Holladay, 2014; Horsley & Barker, 2002; Walaski, 2011).

Furthermore, crisis communications during both events was performed by a multitude of actors representing government, NGOs, private organizations, as well as media houses and local people. The actors within various transnational assemblages, who were engaged in seeking, interpreting, and distributing messages to communicate, are regarded as crisis publics by various crisis communication scholars (Coombs & Holladay, 2014; Frandsen & Johansen, 2010; Walaski, 2011). These crisis publics engage in the communications about a disaster, and in doing so they become a part of various assemblages that are either affected by the crisis or are working to respond to the crisis. In this process, crisis publics territorialize the assemblage with the flows created via crisis communication. Moreover, crisis communication has changed over the past 40 years and is mostly responding to crises that are becoming increasingly global as their causes and consequences transcend national and cultural boundaries (Schwarz et al., 2016). The actors or the crisis publics of the Nepal Earthquake, as well as Hurricane Maria, are such examples, as both of these crises attracted the attention of people around the globe and brought them together, thus territorializing these transnational assemblages.

In the case of Nepal, as shared by Subba (2015), "social media engagement not only helped to provide service but also helped Nepal Police to be more accountable and transparent." These crisis publics, a major part of an assemblage, do play the role of an active audience who can talk back and highlight any discrepancies during a disaster, while sharing their voices via

social media platforms. This act of raising voice via social media displays the autonomous characteristics of an assemblage (Delanda, 2016). Social media platforms create the possibility for understanding the public reaction to a disaster in real-time, including the possibility of an emergent crisis public for disaster management (Murthy & Gross, 2017). The people who responded to the disasters I studied were communicating and performing various kinds of communication practices such as gathering data and information, taking pictures and posting them, curating videos and sharing them, or creating webpages for donations. These kinds of practices not only helped in responding to the disaster but also helped in creating a transnational environment where discourse about the disaster was made possible. Hence, the crisis communications in a transnational environment created various flows, helping to create the transnational assemblages.

Moreover, while responding to the Nepal Earthquake, Nepalis created and used their own non-Western ways of crisis communication, and similar to Nepalis, Puerto Ricans created their decolonial crisis communication. Based on my participants' narratives, I define the non-Western and decolonial ways of crisis communication in the context of the Nepal Earthquake and Hurricane Maria as "alternative crisis communication performed by individuals unrelated to any official or any international organizations to curate, share, and validate the information." Similarly, Puerto Ricans had already been using various social media platforms for networking, sharing information during Hurricane Maria, and they were also using social media platforms for "decolonial activism" (Vega, 2017). During both disasters, Nepalis and Puerto Ricans claimed social media space as their own to conduct crisis communications. The creation of alternative processes for giving and receiving aid, in addition to cross-diasporic communicative opportunities, were significant for decentralizing the aid (Vega, 2019). Based on the results that I shared in Chapter 4, crisis communication during disaster should be practiced with social justice. I define crisis communication with social justice as "conducting communications during a crisis by highlighting and voicing the experiences of marginalized communities and vulnerable populations." In both cases, the actors who were involved in the crisis communication during the disaster were focused on uplifting communities, helping people in need, and creating alternative spaces for people to voice themselves. This was an important aspect of territorializing the transnational assemblages in the case of both disasters and was led by people who were oriented towards serving the community.

In the case of both disasters in Nepal and Puerto Rico, social media became an important platform where crisis publics could seek information, share information, interpret information and disperse information to their networks. In seeking and gathering the information, crisis publics become part of various transnational assemblages. Meanwhile, social media also allowed crisis publics to perform crisis communications within their assemblages as suggested by Frandsen and Johansen (2010) by a) communicating to each other, b) communicating with each other, c) communicating against each other or the official narratives shared by the government, d) communicating past each other, and e) communicating about each other. These variety of flows of crisis communications played an important part in territorializing the assemblage. In performing these various ways of communicating during the crisis with their assemblages and beyond, the actors performed the disaster response. As articulated by the participants who didn't represent any organizations in my study, their communication wasn't moderated via any organizational protocol. However, crisis communications within their own assemblages was oriented towards gathering truthful information, verifying it from the community, and using that information to work towards providing disaster relief to the community.

Immediately after the disaster, various actors emerged with information about themselves and their communities in the form of stories, tweets, videos, and photographs. These actors began by circulating their messages within their assemblage. This sharing and communicating allowed people to interact with each other to find out information as well as to plan on what to do next. Hence, this act also initiated the process of emergence from the assemblage. For instance, a few minutes after the Nepal Earthquake and Hurricane Maria happened, actors representing organizations like journalists, governments, NGOs, humanitarian organizations started sending out their crisis-related messages and information by using various social media platforms. Then, people all around the world responded immediately to these crises. Social media allowed numerous people to communicate, share their suffering, as well as share their needs (e.g., need for water, food, medical services) via social media. The suffering and the need definitely created a chaotic situation. Likewise, the communications immediately after the event tended to be haphazard and very chaotic. This is the prime time at which people begin seeking information, and many emerge who curate and share information. Potts (2014) argues that people need information immediately, so they dig through the entire system to find that information. Information becomes power immediately after the event. While actors seek information, they

communicate and reach out to other people who might have expertise or who might be a reliable source of information.

Similarly, during the first weeks after the disaster events, the Nepal Earthquake and Hurricane Maria changed the dynamics and the rhetorical nature of crisis communication. The public became not only passive receivers of the crisis communication but also active responders, interpreters, and transmitters of information (Coombs & Holladay, 2014). These active roles, as my analysis of the actors' narratives suggest, allowed the actors to take on prominent roles, either initiating their own assemblages or becoming part of already established assemblages. Even though there were major actors who performed crisis communication immediately following these events, such as the government and medias sources, the active crisis publics became the most critical actors in the crisis communications that emerged via social media platforms. Social media allowed crisis publics to share their affective reactions immediately and join conversations by becoming part of various assemblages via hashtags or using functions like reply or retweet. Moreover, "the decentralized communications structure in most social media means that these platforms provide different communicative affordances during disasters" (Murthy & Gross, 2017) such as interpretations of messages, individual expressions, and criticisms of official organizations. During the time of crisis, digital tools empower people to express themselves and perform crisis communication. Frost (2013) in her analysis of risk communication during the Deepwater Horizon crisis found that the role of local communicators in writing persuasive messages was often more helpful than the messages from professional communicators at major media outlets.

Likewise, people in both Nepal and Puerto Rico performed crisis communication with social justice with their own non-Western cultural way as well as decolonial ways. These unique ways of communicating during the disaster led to the formation of assemblages that took into account the community's needs. Some of the common themes of the non-Western and decolonial ways of communication shared by Nepali and Puerto Rican participants were a) contextualizing the information based on the audience of the messages, b) involving community and their local knowledge of resisting against disaster and curating those information on social media, c) reusing the information created by the official channels and simplifying it by visualizing the data and information, and d) questioning the authorities to provide accurate information. Both non-Western and decolonial ways of the communication had one purpose: the social justice for the

marginalized population who were suffering and who were ignored in the process of disaster relief. The transnational assemblages that operated via non-Western and decolonial ways defined their boundaries on the basis of social justice and also maintained it throughout the disaster response (DeLanda, 2016). The difference in non-Western and decolonial ways of communication were primarily the distinctive cultural contexts of Nepal as well as Puerto Rico and the rhetorical situation created by the two different disasters. While Nepalis were raising their voices against the governmental as well as international humanitarian organization's rhetoric, the Puerto Ricans were voicing their displeasure against the colonial rhetoric of the U.S. government. Moreover, Puerto Rican participants also highlighted that they needed to change the ways of talking to the community members because they believed the Puerto Rican community is very resilient and wouldn't share their vulnerabilities easily. This required actors performed their communications in such a way that the receivers of such communications were involved.

Meanwhile, along with the crisis publics in both disasters, the role of traditional media like radio in performing crisis communication during the Nepal Earthquake as well as Hurricane Maria was laudable. In Nepal, Radio Nepal was live 24/7, similar to WAPA Radio in Puerto Rico. My own experience of working at Radio Nepal immediately after the earthquake was the following: The Home Ministry of Nepal would send out updates frequently and we would broadcast them as soon as they arrived. Additionally, we would invite onto the air various speakers and experts who could share their expertise about what is going on and help the general public figure out what to do. In addition to that, we also opened phone lines to the public, allowing people to call in and share what was going on, request relief materials, and so on. Radio Nepal is a government-owned radio channel in Nepal and had resources and journalists all over the country.

In contrast, WAPA Radio in Puerto Rico was very active, but it is a family-owned station, not state-owned. In Puerto Rico, I had an opportunity to interview a volunteer journalist who spent day and night on the radio providing information to local people about what was going on. According to my participant, this small radio station turned into a relief hub and an on-going point of contact for many people who were suffering during and after the hurricane. In contrast, Radio Nepal, which was physically inside the periphery of Nepal's governmental protected area, did not turn into a relief hub. Meanwhile, official organizations, such as government agencies, can organize press conferences or release information on their social

media or website, and the media and non-profits can repurpose those messages via their social media or other channels. But the crisis publics are the ones who transmit those messages to a larger number of people within or outside of their network with social media functions like sharing, retweeting, or replying. Organizations like Radio Nepal, WAPA Radio or the government, or the other non-governmental organizations are what Delanda (2016) would call as the “exterior” that helped define the boundaries and identities of the emerging assemblages. An emerging assemblage might sometime communicate and also depend on these already established organizations.

Meanwhile, the participants for this study from both Nepal and Puerto Rico have criticized the organizational crisis communication practices during the disasters as being not beneficial to the community but only benefitting for the fame of the organization. Since all the participant’s work was targeted towards ensuring social justice, some of them have criticized the work of larger organizations not ensuring social justice. The Nepali participants’ criticisms were mostly targeted towards international humanitarian organizations who were in Nepal like the United Nations, European Union, International Red Cross, among others. Likewise, Puerto Rican participants’ criticism was towards the American Red Cross and FEMA. In the context of Nepal, the international humanitarian organizations were able to utilize their networks all over the world to raise funds. However, some participants in my study did criticize the work of these organizations, claiming that the organizations were only focused only on their own priorities rather than working together with the community to serve broader needs during the disaster. Some participants mentioned that the bigger organizations were not transparent about their actual work, because they were focusing on meeting their own objectives rather than addressing the community’s needs. Similar to Nepalis, Puerto Rican participants in my study criticized the government and FEMA by pointing out that these organizations were not transparent about the information being shared. Hence, the participants explained that the crisis communication shared by these organizations wasn’t sufficient for responding to the needs of the community.

Hence, based on the actors’ narrative, I conclude that crisis communication during a disaster should be practiced with a concern for social justice. The communications in such circumstances should be understood from a perspective that focuses on the receiver and represents the various voices of marginalized population. Communications should not privilege one single voice, such as that of the government or a larger NGO. Such practice could involve

the community themselves in conducting crisis communication that helps in making the communication effective during the disaster. The participants of this study explained that they were involved in communicating during the crises by developing their own practices of communication on social media. The situation of the catastrophic disasters requires very sensitive and effective communication because crisis changes the dynamics, needs, and reactions of the community that is suffering. The crisis communications should incorporate the idea of social justice (Jones et al., 2016) that can support the marginalized and the vulnerable communities in the disasters. Meanwhile, morality and ethics also shape how people react to disasters. Since Assemblage Theory doesn't address morality directly, this theory should be extended to encompass morality as a basis for agency. This is an area for future research.

5.3 The Rhetoric of Disaster in a Networked, Technological, Globalized World

Based on the discussions above, in this section, I will attempt to answer this fundamental research question: *What is the rhetoric of disaster in a networked, technological, and globalized world?*

To define and articulate a rhetoric of disaster, I draw from the analysis of narratives of my participants as well as the analysis of the Twitter data via Assemblage Theory. DeLanda (2016) suggests that assemblages are always emerging through the interactions of various elements that are both human and non-human. While emerging, the assemblages expand and regress by creating “lines of flight or flows in which the elements are continuously re-inventing their relationships to other elements in the assemblage” (Johnson-Sheehan & Pellegrini, forthcoming 2021, p. 11). During disaster, as suggested by my data, assemblages are always in the process of emerging and evolving and so is the rhetoric during disaster. According to Rickert (2013), rhetoric is “an emergent result of environmentally situated and interactive engagements, redolent of a world that affects us, that persuades us prior to symbolicity” (p. 34). Disaster creates a rhetorical situation where the context is chaotic and always evolving. As discussed previously in this chapter, disaster creates disruptions and motivates people to engage through interactions on social media, which leads to the formation of multiple assemblages with agency.

Hence, the rhetoric of disaster in a globalized world could be defined as an emerging discourse between, within, and among multiple transnational assemblages around the globe. This rhetoric is shaped by affective interactions and engagements in both online and offline physical

spaces where actual disaster relief happens. These discourses, mediated via affect and disseminated via social media, help in territorializing and forming various assemblages around the globe that responds to the crisis. For instance, an object like a picture of a Nepali woman under the rubble taken by a journalist with his camera, posted on Twitter via a phone or laptop, creates an emotional response from someone living in the U.S., who then finds a GoFundMe site to send money they earned, which was transferred to their bank account by their employer for the services they provide. The person sending the money participates in this giving culture or philanthropic activity, which has been initiated due to the disaster and subsequently becomes a part of the collective memory of that event. The collective memory of the event, imprinted in our psyches and recycled via the media, renders it a permanent part of our history and identity (Papacharissi, 2015, p. 2). In this way, the person donating the money becomes a part of an assemblage that is responding to the crisis on the ground. It is with the support of their money, which flows through various channels, that aid reaches to a person suffering through crisis.

In the globalized world, disaster multiplies the effect of globalized actions by causing sudden shifts in the rhetorical situation, breaking boundaries, and allowing the emergence of various transnational assemblages. The formation of these transnational assemblages is made possible due to the development of technologies like the Internet, mobile phones, websites, and social media. As Heidegger (1977) argues, “technology is a means to an end” and “technology is a human activity” (p. 4). While Heidegger four decades ago was talking about the technologies of his time, his argument is still prevalent today when we think about how current information and communication technologies are a means for saving lives and helping people during disaster. Haff (2017) argues the proliferation of technology across the globe defines the Technosphere—the assemblage of large-scale networked technologies that can make things possible via nearly instantaneous communication and mass distribution. In the context of disaster, people rely on instantaneous communication mechanisms such as social media to communicate as well as connect with other people around the globe and become a part of an assemblage. This assemblage in the context of disaster brings both human and non-human elements together to share information, network, connect, volunteer, and raise funds to help people in need. These actions both local and global are mediated via transnational assemblages that shrink the physical distance by connecting people via social media, shifts the relationship between producers and consumers, and obscures the lines between temporary locales and the national attachments

(Appadurai, 2013). Those national attachments, concerns, and empathetic connections help in the creation of various assemblages such as assemblages of volunteers, donors, information curators, and medical professionals that respond to disaster and help communities that are suffering.

Similarly, the rhetoric of disaster in a networked, technological, globalized world is motivated by affect and is deflected via social media where various transnational assemblages emerge. Affect leads towards the formation of assemblages that have the agency to perform tasks that are not being handled by formalized institutions like the government. Assemblages that formed after both the Nepal Earthquake and Hurricane Maria were transnational, which means people around the world participated in one way or the other as a form of collective response. As articulated previously in this chapter, transnational assemblages are made up of both humans and non-human actors. For example, the tweets, the replies to tweets, and retweets with hashtags like #NepalEarthquake and #HurricaneMaria created communication channels among various users by creating sentimental connections that are made possible via physical networks, such as mobile towers, machines, and satellites. Bennett (2004) argues, these assemblages include humans and their constructions, but they also include some very active and powerful nonhumans: electrons, trees, wind, and electromagnetic fields. Such networked assemblages are material in nature that provide “agential possibilities and responsibilities for reconfiguring the material-social relations of the world” (Barad, 2007).

Furthermore, the agential possibilities of transnational assemblages create various contact zones for the global and local to come together into a collective globalized action. Such contact zones create an environment where various actors like the ones who participated in my study can come together to work to respond to disaster. For example, even though the disaster happened in physical locations, specifically Nepal and Puerto Rico, the users around the world instantly came into contact with locals and started supporting them. That support and its users represented both official and unofficial sectors who demonstrated agency and took responsibility for faster rescue and relief operations. By accelerating their work, communication technologies helped them to connect with people working on the ground as well as people experiencing and suffering through each disaster. Bennett (2004) additionally argues, this is the agency of assemblages: the distinctive efficacy of a working whole made up, variously, of somatic, technological, cultural, and atmospheric elements. These elements allow people to connect, interact, and also engage in creating ambient contact zones that include aspects like feeling, mood, intuition, and decision

making. Rickert (2013) says, “this gets us to the issue of attunement. That is, ambience involves more than just the whole person, as it were; the ambience is inseparable from the person in the environment that gives rise to ambience” (p. 8). Such ambience during a disaster develops among people who are suffering and the people who want to support those suffering. These two disasters, the Nepal Earthquake and Hurricane Maria, involved people who empathized with the suffering of the community, leading them to make decisions based on connections established via social media. Such decisions were part of the decision-making process for activities like organizing relief, volunteering, fundraising, curating information, among others. Decision making during a disaster is faster and quicker and is expedited by digital technology, allowing various opportunities to help, the movement of the people, and the restoration of the local economy.

Moreover, the rhetoric of disaster in the digital world is mitigated by “the speed and spread of the Internet and the simultaneous comparative growth in travel, cross-cultural media, and global advertisement” (Appadurai, 2013, p. 61). The rise of the Internet has created a digitally connected world that reacts to disaster in transcultural ways within a very limited amount of time. Papacharissi (2015) adds, “The Internet reorganizes the flows of time and space in ways that promise greater autonomy but also conform to the habitus of practices, hierarchies, and structures that form its historical context” (p. 7). During a time of crisis and emergency, digital media creates an ambient environment (Rickert, 2013) by bringing people together and by creating different practices and structures that start circulating throughout the world.

Meanwhile, the rhetoric of disaster opens up a global discourse within the various social, political, and economic spaces as it disrupts physical foundations as well as geographical boundaries. This disruption creates various “flows” that help in re-inventing the discourse of the disaster, which is fluid, and always emerging (DeLanda, 2016). It also creates newer ways of taking action, ways of addressing others, and mitigating the challenges of the disaster by the people who are very far away from the location itself. Albala-Bertrand (1993) argues, “Globalization is a societal process that widens and deepens the interactions between each country and the rest of the world” (p. 147). The rhetoric of disaster motivates people around the globe to be a part of transnational assemblage by creating flows that engage people in the discourse and by interconnecting with the vulnerable locals. As Bertrand explains, “In general, these interconnections refer to the institutions associated with the flows of goods, services,

people, information, and cultural traits in a worldwide context” (p. 147). However, in the present context, these flows aren’t just associated with institutions. People themselves, and the assemblages they have created or are part of, are the ones who can expedite the flows of goods, services, people, and information. For instance, in both the Nepal and Puerto Rico disasters, relief materials such as food, water, tarpaulins, medical supplies were arriving from all over the world. Similarly, various people around the globe either engaged online or physically by going to the disaster sites to help the people in need. These flows are expedited by the circulation of information and communications that happens in the digital spaces, creating affective connections among people through narratives and encourages participation, thus, allowing the “global” to participate in the “local” affected by the disaster.

Similarly, a disaster also initiates the creation of a global culture that helps transnational assemblages to thrive. For such a culture, for example, the sharing of the narratives, stories, videos, and photographs, is important for territorializing these transnational assemblages. Meanwhile, this ecosystem is mostly mediated via computerized technologies that expedites the process of sharing, interacting, and participating in the culture in their respective ways. An example of such a culture could be as simple as changing one’s profile picture with “Pray for Nepal,” frame on Facebook or the culture of creating hashtags like #NepalEarthquake, #PuertoRicoRiseUp, #NepalRises, and #HurricaneMaria. As the response of this culture that is quick, fast, and instantaneous, people create millions of data stored in the cloud in the form of their narratives, stories, pictures, videos, and so on. Data is thus humanized, and subjectivity is computerized, allowing humans to join and be a part of the transnational assemblage by sharing their narratives (Hayles, 1999, p. 39). Within these assemblages, narratives and stories with the human element are transformed in the form of data, voices, videos, pictures, emotions, feelings, pain, and suffering. This sharing of the information in the form of narratives and stories via social media during the Nepal Earthquake and Hurricane Maria became a global culture that helped in the formation of various assemblages that responded to these two disasters. Latour (2005) argues, “we don’t assemble because we agree, look-alike, feel good, are socially compatible. or wish to fuse together, but because we are brought by divisive matters of concern into some neutral, isolated place in order to come to some sort of provisional makeshift (dis)agreement” (p. 13). Disaster thus becomes a global phenomenon, where people are assembled and are motivated to work together in solving the disruptions created by the disaster.

Hence, disaster creates an ambience where transnational assemblages are evolved where the local and global come together to discourse, to perform actions, and to solve the crisis created by the disaster. Thus, the rhetoric of disaster in a networked and globalized world with technologies like the Internet:

- creates transnational assemblages that are motivated by the affect that is deflected via digital technology including social media
- disrupts the physical as well as cultural boundaries between nation-states, official and unofficial sectors
- leads towards the creation of a global culture that is inclusive, common, and participated by a collective
- creates an ambient (Rickert, 2013) contact zone for the global and local to come together in collective globalized action.

5.4 Conclusion

In this chapter, I discussed various aspects of communications, uses of technologies, and the formation of transnational assemblages in disaster response. Disasters are inevitable and they bring new challenges. To help mitigate those challenges, research on disasters like the Nepal Earthquake and Hurricane Maria could provide ways that can help in addressing the future disaster. The use of Assemblage Theory has helped to understand the differences and similarities between the Nepal Earthquake and Hurricane Maria. Additionally, it has also helped to articulate the rhetoric of disaster in a networked, technological, globalized world.

CHAPTER 6. CONCLUSION: IMPLICATION AND FUTURE RESEARCH DIRECTIONS

6.1 Introduction

April 25, 2020 was the fifth anniversary of the Nepal Earthquake, and September 17, 2020 will be the third anniversary of Hurricane Maria. I started my Ph.D. studies with the fresh memory of surviving the Nepal Earthquake and also digitally observing the devastation of Hurricane Maria. This led me to begin thinking about how transnational assemblages are formed in response to natural disasters. In this dissertation, I have responded by providing an overview of how transnational assemblages are formed and how crisis communications via social media assist in forming these assemblages. Specifically, I've asked, "How do networks of people and their communication technologies respond to disaster?" The findings of my dissertation were based on a mixed-methods research that led me to interview various actors who contributed to the disaster response and allowed me to analyze the large corpus of Twitter data that I analyzed. As a non-Western researcher, I have practiced self-reflexivity (Mao et al., 2015) throughout this dissertation as I researched within my own community as well as a community that I am not part of.

With a theoretical framework situated in Assemblage Theory (DeLanda, 2016), my hypothesis was that disaster motivates the formation of transnational networked assemblages via a culture's diaspora and international governmental and non-governmental (including media) disaster response systems. My premise was that with their emergent digital rhetorical and participatory actions, national and international communities in Nepal and Puerto Rico formed their own stronger transnational networks with a combination of their own local (non-Western and decolonial) practices of knowledge-making. By comparing crisis communications within two different cultural contexts, I articulated a rhetoric of disaster in transnational contexts. My hope is that this research will help in planning future global networked responses to these kinds of disasters. In this chapter, I will summarize the major points of my dissertation, discuss the implications this dissertation has for professional and technical writing and disaster research, and speculate about potential future directions for research in this area.

6.2 Dissertation Summary

This dissertation project is a comparative study of Nepal's and Puerto Rico's networked communities, focusing on their participants who used crisis communication practices to create transnational assemblages that address the havoc created by the disaster. By comparing the narratives of actors and my study's participants, as well as the networks formed on Twitter, I argue that disasters motivate the formation of transnational assemblages in conjunction with the emergence of innovative digital composition and communication practices. The transnational assemblages that evolved in both disasters led to global philanthropic actions, engagements, and partnerships.

With a mixed-methods approach, which included narrative inquiry and social network analysis (SNA), I collected, compared, and analyzed narratives and tweets sent by people in Nepal and Puerto Rico. My intent was to identify the strategies that local people, activists, governments, non-governmental organizations (NGOs), and the media used to initiate global partnerships to increase disaster response during the aftermath of these disasters. My applied research highlighted the importance of understanding the crisis communication practices of these transnational assemblages as they moved to mitigate disaster-initiated consequences. My research shows that transnational assemblages help and support the government and non-governmental sectors as well as the general public in developing community resilience against environmental risks. Additionally, I showed how an SNA of Twitter data provided a way to understand the millions of tweets that people used to form and mobilize networks for actions and engagements.

In this dissertation, I answered following major research questions:

- How did the transnational assemblages of official and unofficial communities form in Nepal and Puerto Rico to mitigate the challenges of their own disasters?
- What are the unique digital rhetorical and participatory actions of the assemblages in Nepal and Puerto Rico that helped in performing transnational crisis communications?
- What are the non-Western and decolonial practices of knowledge-making and communication during a disaster that we can use to better help vulnerable populations in need?

The major results of these questions were—

- People use technology to share their narratives, stories, as well as anger and frustrations online via various platforms (e.g. Twitter, Instagram, Facebook, blogs), which helped them to a) network with various transnational communities, b) self-organize their own disaster response groups, c) reach out to people who could help in talkback against the government, media, or humanitarian organizations, and d) reach out to other communities who were in need.
- During these two disasters, various transnational assemblages were formed by a) reaching out via digital technologies to family, friends, friend of friends, b) creating professional networked participation via the various disaster relief organizations, c) establishing stronger networks with the use of social media like Facebook and Twitter, d) reaching out to their respective diaspora networks, e) forming new networks by joining or leaving the various disaster relief groups.
- During the earthquake and hurricane, Nepalis and Puerto Ricans amplified their voices by a) engaging in the social web, b) inviting people around the world to engage in conversations about the disasters and the responses to those disasters, and c) conducting disaster relief works in a collective way.
- While participating in these crisis communications activities during disasters in Nepal and Puerto Rico, the participants in my study highlighted a) the importance of context and culture-specific crisis communications, b) the need for social justice-oriented crisis communications, c) the ability to represent community voices in crisis communications, and d) the importance of crisis communications to form adaptable and evolving transnational assemblages.

These results suggest that a “rhetoric of disaster” in the networked, technological, and globalized world is an emerging discourse within and among transnational assemblages around the globe. This discourse is influenced by the affective interactions and engagements that take place in both online and offline spaces. Understanding this rhetoric of disaster in our current contexts is important as people throughout the world continue to suffer from unprecedented consequences of crisis and disasters, which are likely to become worse with the progression of climate change. In these contexts, technical communicators have a special role to play in understanding how information and communication flows within the transnational assemblages through the writing, documenting, and communicating of information to transnational audiences.

6.3 Implications of the Research

My research has several important implications. First, this study provides a useful methodology and framework for conducting transnational research, especially in marginalized spaces. My study builds upon the previous studies on disaster, emergency, and epidemics by conducting mixed-method studies of both online and the offline networked communities that are transnational. Furthermore, my mixed-methods approach introduces the application of SNA to technical and professional communication (TPC) practices, allowing researchers in this area to better understand how to help strengthen crisis communications during disaster. My study brings a rhetorical perspective to understanding disaster and aims to create a new understanding of the transnational communities that have suffered through catastrophic events.

Second, this research pushes the boundaries of TPC research by conducting transnational research in the context of natural disaster. To date, no studies in TPC have focused on Nepal or the issues of Nepal, and very few TPC studies have been conducted in Puerto Rico. In pushing those boundaries, this study builds upon previous research in TPC by bringing attention to marginalized spaces like Nepal and colonized spaces like Puerto Rico in the field of Technical and Professional Communication. By bringing in the voices of people from two different countries, cultural contexts, and disaster affected areas, this research will help us understand how people from marginalized spaces respond and adapt to the consequences of disaster. In this transnational way, my research introduces a comparative research approach that features both online and offline spaces in TPC. I fused together a comparative analysis of the offline narratives of people from Nepal and Puerto Rico with the online Tweets sent about the Nepal Earthquake and the Hurricane Maria from around the world.

Third, this research offers a new methodological contribution to the field of TPC. Based on my research question, I chose to conduct mixed-methods research by combining narrative inquiry with SNA analysis. While conducting my narrative inquiry, I wanted the participants in my study to have the agency to share their narratives rather than responding to scripted questions. This allowed me to listen and honor their work, stories, and rhetorical agencies that they embodied during the disasters. Additionally, SNA is not a common methodology in TPC. Since I was working with a large corpus of Twitter data and my research questions asked for an understanding of the formation of transnational networks, SNA tools offered the best approach to visualizing those networks.

Fourth, I have also shown how Assemblage Theory can be used to theoretically understand the formation of communication networks during quickly evolving events like natural disasters. For this project, Assemblage Theory provided a vehicle for understanding how and why transnational assemblages are formed in response to chaotic events like these two disasters. Assemblage Theory allowed me to illustrate, through these two disasters, how transnational assemblages quickly form, evolve, expand, and sometimes dissolve. Assemblage Theory offers a very useful ideology and vocabulary for describing emerging and continuously evolving phenomena. Other scholars have also found Actor Network Theory (ANT) useful in the context of disaster, but for my project, I realized that ANT would be too limited. While ANT seems to work well with stable networks (e.g. organizations, universities, companies, workplaces laboratories), Assemblage Theory was ideal for illuminating emerging, unstable, and always becoming networks, such as those formed after a disaster. In addition to that, the characteristics of assemblages, including territorializing, deterritorializing, and affect, helped me to understand the process of communication within and among assemblages. Hence, Assemblage Theory was useful in thinking about chaotic situations like disasters that are fluid and evolving. For scholars and practitioners of TPC who are working to understand and manage disaster and risk via crisis communications, Assemblage Theory provides a conceptual framework for understanding the dynamic nature of communication and networks during these kinds of events.

My research demonstrates that disaster response is not just a local issue; it is a global issue, and people around the world participate in disaster response. Hence, Assemblage Theory is a useful framework for explaining how multiple stakeholders are motivated to respond during and after a crisis event. A better understanding of the communication flows in the formation of the transnational assemblages will be helpful toward anticipating how people and networks will respond to a disaster. With the help of Assemblage Theory, we can support multiple stakeholders, such as governmental and non-governmental organizations, the media, and disaster activists to identify various key actors and assemblages and help them mobilize to provide faster and safer disaster relief. We can also foster the formation of transnational assemblages in disaster response, motivating people and organizations around the world to get involve. Hence, it is imperative for the official disaster response systems to understand that such assemblages have agency and are always in the process of becoming, forming, evolving, and sometimes dissolving.

Quickly identifying and supporting such assemblages could dramatically decrease the disaster response time and therefore saving lives.

Fifth, my research has pedagogical implications in the fields of TPC and Disaster Studies. Pedagogically, this research supports instructors who want to teach the conventions of TPC in transnational communication, research methodologies, and the rhetoric of disaster. With those themes, instructors could create courses with titles such as Rhetoric of Disaster, Transnational Communication Approaches, or Mixed-Methods Research. Additionally, service-learning or civic engagement courses could also be developed in partnership with local organizations or international organizations to help them prepare for local and global risks. In these courses, students could gain experience working through various digital platforms such as Slack, Google Docs, Twitter, Trello, among others. As my research demonstrates, various actors within the disaster emerge organically from within their societies; hence, our own students sitting in our classes may become key actors who respond to future disasters. As disaster concerns everyone and could affect anyone in various different ways, preparing students to communicate ethically, transparently, and quickly during disaster can also contribute in the disaster response.

Specifically, an aspect of crisis or risk communication could also be incorporated into service courses, such as business communications or technical writing, that serve various departments in U.S. universities. In these courses, instructors who teach assignments like research reports or white papers could incorporate disaster research. Specifically, an assignment could focus on researching a specific disaster and communication during that crisis. This would allow students to think of the varieties of communication practices and technologies that were used to address the disaster. Similarly, this assignment could also be expanded upon by incorporating digital communication and design (See Assignment Example in Appendix I) where students can work in groups to establish communication plans for addressing a crisis.

Moreover, a service-learning course within Business or Technical Writing could focus on risk communication and/or risk assessment that would be developed in partnership with a community member. This course could focus on the developing disaster preparedness materials, various user documents, grant writing, fundraising, and also methods that the organization can use when responding to a disaster. This course could help students understand how risk or crisis is communicated in a workplace setting, and they could help community partners gain support to be prepared for any disaster or crisis.

Thus, my research has five major implications. This study—

- lays the groundwork for additional transnational digital crisis communication methodologies for addressing disaster
- provides a theoretical and methodological contribution in TPC by conjoining Assemblage Theory with SNA
- urges the intellectual community to think about social justice, especially in TPC, from a global perspective
- conducts impact-oriented research that creates a scholarly space for uplifting and advocating marginalized communities
- advocates for social justice for two different communities that have suffered through catastrophic disasters and have been experiencing political turmoil.

6.5 Future Research Directions

My research focused only on the immediate disaster response and, due to the scope of the research, I was only able to focus on limited aspects of these two disasters. However, five years later, Nepalis are still bearing the consequences of the Nepal Earthquake and Puerto Ricans are also still struggling to recover from Hurricane Maria. Recently, Puerto Rico also suffered through a series of major earthquakes. The reconstruction process has been slow, because these activities are often hampered by local as well as international politics. Many of the people continue to suffer long after these kinds of events. One-way researchers can honor the people of these marginalized spaces is to go and listen to their stories of struggle. To hear their stories, I focused on people who emerged as the actors in disaster response, but many others remain unheard. Similarly, I used Twitter data to represent the populations who are present on Twitter and have access to Twitter. Hence, many of the actors on Twitter may not have been physically impacted by these disasters, but collectively they were in a powerful position to respond to the disasters by forming or joining assemblages with people who were physically impacted. Future researchers can focus on learning about the coping mechanisms developed in marginalized societies that have been traumatized, as well as how people recover and reconstruct their lives and communities after disasters.

Meanwhile, the study of disaster and environmental risk is a growing area. As the world continues to suffer from various natural disasters and risks caused or intensified by climate

change, researchers need to collaborate together to mitigate the challenges put forth by disasters. In this way, various governmental and non-governmental organizations can work with Disaster Studies researchers to enhance their communication practices and documentation of events. Researchers can focus on understanding the evolving communication practices during disasters and study how crisis communications can be enhanced with the support of technology during and after the disaster. Other potential areas of research in crisis communications could enhance our understanding of disaster philanthropy, social entrepreneurship in disaster zones, community-based disaster risk management, and user-experience in disaster response mechanisms. Meanwhile, besides Nepal and Puerto Rico, there are other marginalized countries where people do suffer from the consequences of climate change and natural disasters. Researchers can also expand the scope of their research to these areas.

Currently, as I am finishing writing my dissertation, the globe is suffering through a coronavirus outbreak officially known as COVID-19. This epidemic, which started in China, has quickly spread through various countries, creating a global epidemic that is infecting millions and killing hundreds of thousands of people. The virus is quick, swift, and is affecting people around the globe. We are already witnessing various transnational assemblages being formed amid the panic. My initial observation on Twitter has shown that, similar to the Nepal Earthquake and the Hurricane Maria, various transnational assemblages are taking shape and quickly evolving to respond to pressing needs. Since, the context of this epidemic is different than the natural disasters I studied, the discourse and rhetoric of COVID-19 is different and still evolving. Until February 2020, the disease was only affecting countries in Asia, which led people to blame Asians, especially the Chinese, for transmitting the disease. Conspiracy theories are flying around suggesting that COVID-19 is a bioweapon. When the disease began to appear in the United States, many academic conferences were cancelled, universities moved their classes online, and study abroad programs were cancelled. A strict stay-at-home order has been placed in various U.S. states, and there have been shortages of medical supplies and personal protective equipment for the medical professionals. Amid this crisis, we see various assemblages emerging and evolving, including actors who are responding to the crisis by sharing information, curating materials for online teaching, as well as tackling the unfortunate racist backlash. Globally, as people battle the fear the unknown, these assemblages will continue to evolve. Hence, in this context, scholars and practitioners of TPC will surely have a special role in

helping prepare stronger response mechanisms by understanding the transnational communications happening within and among various assemblages.

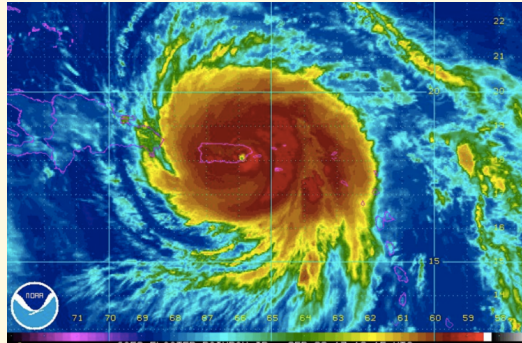
6.6 Conclusion

In this dissertation, I studied two different disasters and the responses to them: the Nepal Earthquake and Hurricane Maria in Puerto Rico, specifically the formation of transnational assemblages during these two disasters. I used a mixed-methods approach and found that the transnational assemblages that evolved around the world were essential in aiding the disaster response in both Nepal and Puerto Rico. My research provides an overview of a) conducting mixed-methods approach to study the transnational ecosystem; b) conducting responsible research and deeply reflecting on the methods used to research marginalized spaces, c) navigating the challenges of conducting unbiased research of my own community while making comparison to a community I am not part of, d) understanding and overcoming the challenges of conducting an empirical research in two different locations and e) introducing SNA to TPC research. As I mention in my previous chapters, when I conceptualized the methods of the project, I was aware that I have been, since high school, educated and trained from Western point of view. In this project, I strove to overcome those challenges by being self-aware as a non-Western researcher and adopting reflective practices as articulated by comparative rhetorics scholars.

Moreover, to ensure quicker and stronger disaster response, I believe the role and work of the transnational assemblages should be taken into account. Various stakeholders in a disaster response should work together to identify transnational assemblages in both online and offline spaces and work together with them in disaster response. Valuing and honoring the work of local peoples as well as global actors while understanding how they operate across languages, cultures, and contextual barriers could help in designing better communication practices that can be employed to respond during and after disasters.

APPENDIX A. RECRUITMENT FLYER 1

#Looking for Volunteers for a study on #HurricaneMaria 2017



**Did you participate in relief and rescue during
#HurricaneMaria 2017?**

**A researcher at Purdue University, Lafayette, Indiana
is looking for
#volunteers to participate in her research on #Disaster**

**#Requirements
#above 21**

**#Have experienced Hurricane Maria 2017
#Have participated in relief / rescue Efforts
#Represents any organization, Community (preferred)
#Have experiences of using social media during disaster
(preferred)**

**#Contact:
baniya@purdue.edu**

APPENDIX B. RECRUITMENT FLYER 2

#Looking for Volunteers for a study on #NepalEarthquake 2015



**Did you participate in relief and rescue during
#Nepal Earthquake 2015?**

**A researcher at Purdue University, Lafayette, Indiana
is looking for
#volunteers to participate in her research on #Disaster**

**#Requirements
#above 21**

#Have experienced Nepal Earthquake 2015

#Have participated in relief / rescue Efforts

#Represents any organization, Community (preferred)

**#Have experiences of using social media during disaster
(preferred)**

**#Contact:
baniya@purdue.edu**

APPENDIX C. LETTER FOR IRB



TRIBHUVAN UNIVERSITY CENTRAL DEPARTMENT OF ENGLISH

Office of the Head of the Department
Kirtipur, Kathmandu, Nepal

Ref. No. October 30, 2018



Date:

To Whom It May Concern:

I am pleased to write this letter regarding Sweta Baniya's request for approval of her proposed research project "Comparative Study of Networked Communities, Crisis Communication, and Technology: Rhetoric of Disaster in Nepal Earthquake and Hurricane Maria." Her stated method of empirical research design that requires interviewing and interacting with victims of Earthquake of April 25, 2015 and the concerned stakeholders in Nepal does not violate the established research conventions and ethical guidelines practised at Tribhuvan University and also among academic communities in Nepal. In fact, her research will greatly contribute to the existing knowledge and scholarship on disaster narratives with a significant bearing on policy formation and disaster management. As a former student of this Department, Sweta will also have an opportunity to interact and share her ideas with the faculties in the Department.

I wish her every success in her academic pursuit and beyond. Should you have any question, please let me know.

Sincerely,

Anirudra Thapa
Professor and Head
Central Department of English
cdetu@edu.np
977-1-4331851

APPENDIX D. LETTER FOR IRB



TRIBHUVAN UNIVERSITY CENTRAL DEPARTMENT OF ENGLISH

Office of the Head of the Department
Kirtipur, Kathmandu, Nepal

Ref. No.

Date:

November 19, 2018

To Whom It May Concern:

I am writing this letter in reference to the previous letter I sent to IRB, Purdue University, dated 30th October 2018, regarding Sweta Baniya's request for approval to conduct primary/ empirical research in Nepal. We wanted to further clarify that in a society like Nepalese where literacy rate (ability to write and read) is not 100% and approximately 30% population is still illiterate, the practice of signing a document by using the impression (finger print) of thumb finger is an accepted cultural and legal practice. In fact, serious documents such as land deeds, bank loans, and citizen certificates still require thumb-prints even if the signatory is literate and educated as an additional security measure. I assure that Sweta will have no issue in requesting "thumb-prints" from for her informants, who are unable to read and write, in pace of their signatures.

Sincerely,

Anirudra Thapa
Professor and Head
Central Department of English
Tribhuvan University

APPENDIX E. CONFIDENTIALITY AGREEMENT

*FOR UNIVERSITY BUSINESS USE ONLY; NOT FOR PERSONAL USE.

IRB PROTOCOL # _____ #1811021345__

Confidentiality Agreement Transcription and/or Translation Services (v20161102)

I, Nate Baker, Director of Finance, on behalf of Rev, Inc. , do hereby agree to maintain full confidentiality in regards to any and all audiotapes, videotapes, and oral or written documentation received from Sweta Baniya related to his/her research study titled *Comparative Study of Networked Communities, Crisis Communication, and Technology: Rhetoric of Disaster in Nepal Earthquake and Hurricane Maria*. Furthermore, I agree:

1. To hold in strictest confidence the identification of any individual that may be inadvertently revealed during the transcription of audio-taped or live oral interviews, or in any associated documents;
2. To not disclose any information received for profit, gain, or otherwise;
3. To not make copies of any audiotapes, videotapes, or computerized files of the transcribed interview texts, unless specifically requested to do so by Sweta Baniya.
4. To store all study-related audiotapes, videotapes and materials in a safe, secure location as long as they are in my possession;
5. To return all audiotapes, videotapes and study-related documents to Sweta Baniya in a complete and timely manner if requested.
6. To delete all electronic files containing study-related documents from company hard drives and any backup devices if requested.

Please provide the following contact information for the researcher and the transcriber and/or translator:

Rev, Inc.:

For Researcher:

Address: 222 Kearny St, 8th Floor

Address: 203 Montefiore St Apt 213, Lafayette, IN 47905

San Francisco, CA 94108

Telephone: 888-369-0701

Telephone: __5712089452__

I am aware that Rev, Inc. can be held legally liable for any breach of this confidentiality agreement, and for any harm incurred by individuals if we disclose identifiable information contained in the audiotapes, videotapes and/or paper files to which we will have access. I am further aware that if any breach of confidentiality occurs, Rev, Inc. will be fully subject to the laws of the State of Indiana.

Name: Nate Baker, Director of Finance

Signature: Nate Baker

Title: Director of Finance

Date 07 / 17 / 2019

PLEASE SUBMIT 1 COPY TO IRB FOR THE STUDY FILE

RETAIN THE ORIGINAL FOR YOUR RECORDS

APPENDIX F. TWITTER USE CASE DESCRIPTION FORM

Name: Sweta Baniya, Purdue University

Email: baniya@purdue.edu

Legal Entity Name (Please include Inc., LLC, Corp. etc): Purdue University

Organization Website: www.purdue.edu

Organization's Twitter Handle: @LifeatPurdue (@Sunkesharee)

Company Headquarters/Billing Address: Purdue University,
500 Oval Drive
Heavlion Hall 324,
West Lafayette 47906

Company description, including industries served and customer locations:

Public University, serving education.

Twitter Use Case Description: In paragraph form, please provide a detailed description of how Twitter data will be used in your service. In your description, please include answers to the following questions:

What is the purpose of your product or service?

The core use of the case is for academic purposes only. Twitter APIs will only be used for academic research purposes. There are no profit-generating activities, but this academic research is a contribution to society.

What will you deliver to your users/customers?

Since this is a work without any profit of customers, there is no delivery to the customers.

How do you intend to analyze Tweets, Twitter users, or their content?

Twitter users will not be analyzed. Their identities will not be revealed in any case. If there is a chance that the identities of the Twitter users will be revealed, then all of them will be anonymized. My research has been approved by IRB at Purdue University. The research during the data collection as well as analysis will adhere to the IRB protocol that protects all the human subjects that are related with the research. For the analysis, I will be using "Social Network Analysis" via Nvivo to generate networks to see how people have networked via Twitter. For this research, there will be analysis of only the keywords, but not the whole tweet. The keywords will be used to analyze for example, how many people have used hashtag #NepalEarthquake or

have used keywords like “relief,” “rescue,” “help,” and “donate.” Only the numerical value will be analyzed. The content of the Tweets, as well as the identities displays such as photographs or location or personal details, will not be used.

For the purpose of sharing, the results of Social Network Analysis will be presented in the form of written publication - the first will be my dissertation project, the second will be publications, and the third will be conferences. These are purely academic audiences and thus, there will be no profit-making involved in this.

How is Twitter data displayed to users of your product or service (e.g. will Tweets and content be displayed at row level or aggregated)?

Like I have mentioned above, the exact content of the Tweets wouldn't be displayed. However, the content, if necessary to be displayed, will be done during classroom activities, conferences, and peer-reviewed academic publications. Again, the identity of Twitter accounts will not be disclosed. Any tweets that disclose personal details and information will not be used for the dissemination. This way, the information shared will be able to protect the identities of the people. The results of Social Network Analysis are displayed in the form of maps and charts and graphs - hence, there will not be any information that is related to the human subjects (Twitter users) displayed. Only the numbers will be displayed. Additionally, the research doesn't involve tweeting, retweeting, or liking the content, or interaction with any Twitter accounts.

Did you, or do you, plan to make available an API that redistributes Twitter content to your customers, either as part of your product or as a complement? If so, please provide us with a sample payload.

No. The API will only be used by me.


In addition to the use case description, please disclose if your product, service, or analysis makes Twitter content or derived information available to a government entity (or entity who serves government entities)

No. This will be used only for academic purpose and will be shared as public information via libraries and doesn't serve or provide service to any government entities.

1. If yes, please provide a list of which government or public sector entities will have access to Twitter content, or information derived from Twitter content, under this use case: N/A

2. Also, we will need a description of which portion(s) of your overall use cases are applicable to each entity; or if they differ from the overall use case, a description of the specific use cases for these entities: N/A

APPENDIX G. TWITTER CUSTOMER ORDER FORM

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Twitter Customer Order Form

This Order Form ("Order") and Customer's use of the Services and Licensed Materials is subject to and governed by the Twitter Master License Agreement located at <https://legal.twitter.com/data-terms/us/mla.html>, including the Twitter Developer Policy located at <https://developer.twitter.com/en/developer-terms/policy>. Capitalized terms used in this Order will have the respective meanings ascribed to them in the Master License Agreement.

Customer (or "you" as defined in Master License Agreement)		Bill to Party	
	Purdue University		Purdue University
Address	100 N. University West lafayette, IN BRNG 2253 US	Address	100 N. University West lafayette, IN BRNG 2253 US
		Contact	Sweta Baniya baniya@purdue.edu 5712089452

Order Information			
Twitter Sales Contact	Emily Ashley	Twitter Account Manager	Kevin Dolezal
Order Effective Date	12/10/2019	Order Term	12/10/2019 - 12/9/2020
Customer PO			This Order will commence on the Order Effective Date and will remain effective for the Order Term (defined above), unless otherwise terminated earlier in accordance the Agreement. This Order is not effective until signed by both parties.
Adminerator Console Number -Account Name	2258--Purdue		

Customer Application	<p>The core use of the case is for academic purposes only. Twitter APIs will only be used for academic research purposes. There are no profit-generating activities, but this academic research is a contribution to society.</p> <p>Since this is a work without any profit of customers. There is no delivery to the customers. Twitter users will not be analyzed. Their identities will not be revealed in any case. If there is a chance that the identities of the Twitter users will be revealed then, all of them will be anonymized. My research has been approved by IRB at Purdue University. The research during the data collection as well as analysis will adhere to the IRB protocol that protects all the human subjects that are related with the research. For the analysis: I will be using "Social Network Analysis" via Nvivo to generate networks to see how people have networked via twitter. For this research, there will be no analysis of only the keywords but not the whole tweet.</p> <p>The list of topic to be researched are:</p> <ol style="list-style-type: none"> 1) Transnational Interaction 2) How do people network via Twitter during a disaster? <p>Here are my broader research questions:</p> <ol style="list-style-type: none"> 1.How did transnational assemblage of official and unofficial communities formed in Nepal and Puerto Rico to mitigate the challenges of two different disasters? 2.What are the unique digital rhetorical and participatory actions of the assemblages in Nepal and Puerto Rico that helped in performing crisis communications transnationally? 3.What are the non-western, decolonized, and western practices of knowledge making during disaster that we can explore to compose and communicate better to help vulnerable populations in need? <p>The keywords will be used to analyze for example: how many people have used hashtag</p>
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<p>#NepalEarthquake or have used keywords like relief, rescue, help, donate. Only the numerical value will be analyzed. The content of the Tweets, as well as the identities displays such as photographs or location or personal details, will not be used.</p> <p>For the purpose of sharing, the results of Social Network Analysis will be presented in the form of written publication - the first will be my dissertation project, the second will be publications, and the third will be conferences. These are purely academic audiences and thus, there will be no profit-making involved in this.</p> <p>As mentioned above, the exact content of the Tweets wouldn't be displayed. However, the content if necessary to be displayed will be done during classroom activities, conferences, and peer-reviewed academic publications. Again, the identity of Twitter accounts will not be disclosed. Any tweets that disclose personal details and information will not be used for the dissemination. This way, the information shared will be able to protect the identities of the people. The results of social network analysis are displayed in the form of maps and charts and graphs - hence, there will not be any information that is related to the human subjects (Twitter users) will be displayed. Only the numbers will be displayed. Additionally, the research doesn't involve Tweeting, Retweeting, or liking the content or interaction with any Twitter accounts.</p> <p>The API will only be used by me. There will be no redistribution of Twitter content via a third-party API. Twitter content will not be made available to a government entity. This will be used only for academic purpose and will be shared as public information via libraries and doesn't serve or provides service to any government entities.</p> <p>User Protection and Government Use. The provisions of Section 14.2 and Section 14.3 of the Agreement shall take precedent over any conflicting or inconsistent provisions set out in this Customer Application.</p>					
Services and Fees					
Service	Price - Fees	Quantity	Unit of Measure	Start Date	End Date
Twitter Historical PowerTrack-Single Job	\$2,500.00	1		12/10/2019	12/9/2020
Total One Time Charges: \$2,500.00					
<p>Incorporated Terms. As set out and incorporated in the Master License Agreement and Developer Policy, Customer may also be subject to the following terms where applicable: as it relates to your display of any of the Twitter Content, the Display Requirements located at https://developer.twitter.com/en/developer-terms/display-requirements; as it relates to your access to Twitter European Data, the Data Protection Addendum located at https://adpr.twitter.com/en/controller-to-controller-transfers.html; as it relates to your use and display of the Twitter Marks, the Twitter Brand Assets and Guidelines located at https://twitter.com/loag; and as it relates to taking automated actions on your account, the Automation Rules located at https://support.twitter.com/articles/76915 ("Automation Rules").</p> <p>Additional Product Terms. If you access or receive the Enterprise Data Collector, Engagement API, Account and Activity API, or InsightsTrack you agree to applicable terms located at https://legal.twitter.com/data-terms/us/additional-terms.html, which are hereby incorporated into the Agreement by reference.</p>					
Business/Pricing Terms:	<p>Nepal Earthquake: Date Range: 4/24/2015-5/1/2015 Operators: place: Nepal OR Asia OR Europe OR United States OR Australia OR Latin America (#NepalEarthquake OR #earthquake OR #QuakeNepal OR #quakeNepal OR #earthquakenepal OR #EarthquakeNepal OR #NepalEarthquakeRelief OR #NepalQuakeRelief OR #Pray4Nepal OR #prayformepal OR #NepalQuake OR #NepalRelief OR #NepalRises)</p> <p>Hurricane Maria: Date Range: 9/17/2017 - 9/24/2017 Operators: (#Hurricane OR #HurricaneMaria OR #Relief OR #PuertoRico OR #Boricua OR #Relief OR #StayStrong OR #ReliefEfforts OR #Help OR #PuertoRicoStrong OR #PuertoRicoRelief OR #ClimateChange OR #UnitedForPuertoRico OR #PuertoRicoWillRise OR YoNoMeQuito OR #EchaPa'Lante OR #SePuede OR #BastaYa OR #Pa'Arriba OR #VamosPa'Encima OR #PuertoRicoLoHaceMejor OR #HuracanMaria OR #UnidosPorPuertoRico OR #PuertoRicoStrong OR #Comfort4PuertoRico OR #LatinaInfluencersCoalition OR #Maria)</p>				

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Customer agrees to not publish any analysis or results of analysis of Follower Graph data without written permission from Twitter. Prohibited publication types include marketing PDFs, blog posts, videos, or public speaking engagements. Customer may, however, market that Customer provides access to insights derived from the relevant endpoints and communicate how the Customer Service works to analyze this data.

Native geo data prior to 9/1/2011 is not available from Twitter; Language Detection, and URL Expansion enrichments prior to 3/26/2012 are not available; Profile Geo prior to 8/1/2013 are not available. All data prior to 1/1/2011 contains user profile information as it appeared in that user's profile in September 2011.

For historical products, Customer is charged based on the number of days and activities requested through Customer's given rules ("Job") and are determined based upon the calendar month in which the Jobs were completed. The smallest unit of time in which a Job can be completed is one (1) Historical Day. A Historical Day is any calendar day in UTC time that the historical job timeframe touches. For example if one asks for a historical job that went from 11:59pm to 12:01am, this would count as 2 historical days.



Upon completion of a historical job, the Twitter Content will only be available for download **for 15 calendar days**. If the Twitter Content is not downloaded by the 15th day, there may be additional charges to re-run the job.

*All rights to Twitter Content granted through the Agreement and this Order Form shall **terminate 12 months from the Order Effective Date**.

Additional Payment Terms. On the Effective Date, Twitter will invoice Customer for the fees indicated above, which will be due upon receipt. Payment must be accepted by Twitter prior to delivery of data.

Receipt and Review of Terms and Exhibits. Customer acknowledges that it has received and reviewed the Twitter Master License Agreement, the Twitter Developer Policy, the Incorporated Terms, the Additional Product Terms and other terms or exhibits incorporated into this Order. Customer understands and agrees the Twitter Master License Agreement, the Twitter Developer Policy, the Incorporated Terms, the Additional Product Terms and other terms or exhibits incorporated into this Order are part of this Order.

Entire Agreement; Counterparts; Originals. This document (including the Twitter Master License Agreement, the Twitter Developer Policy, the Incorporated Terms, the Additional Product Terms), and any applicable exhibits and applicable supplementary terms as defined herein constitutes the entire agreement of the parties and supersedes all prior communications, understandings and agreements relating to the subject matter hereof, whether oral or written. No term or condition contained in Customer's purchase order or similar document will apply unless agreed upon hereunder, even if Twitter has accepted the order set forth in such purchase order, and all such terms or conditions are otherwise hereby expressly rejected by Twitter. This Agreement may only be amended by a written document signed by authorized representatives of Twitter and Customer. This Order may be executed in two or more counterparts, each of which will be deemed an original, but all of which together shall constitute one and the same instrument.

AGREED:		ACCEPTED:	
Customer:	Purdue University	Twitter:	Twitter International Company
By:		By:	
Name	Sweta Baniya	Name	Laurence O'Brien
Title	Graduate Student	Title	EMEA Controller
Date	Dec 10, 2019	Date	Dec 11, 2019

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APPENDIX H. INTERVIEW QUESTIONS

1. Where were you during the earthquake/hurricane?
2. Can you tell me what technology you used to contact your family or friends after the earthquake/hurricane?
3. After the earthquake/hurricane, who (organizations, government, volunteers, family members abroad, etc.) came to support you, and how long did it take you to get any help?
4. Have you been involved in working voluntarily in your community to do relief and rescue works on your own, or via any organization or network during or after earthquake/hurricane?
5. If you were involved, could you tell me what you did exactly during the disaster to work, communicate, and support your community?
6. What methods of communication did you use to create connection in the community that you were serving?
7. Immediately after the earthquake/hurricane, how did you try to connect with other government officials, community members, media, health workers, or any other organizations?
8. How do you feel about the help you received and the support you provided to the community? Was it appropriate and effective?
9. In the long term, what groups or organizations have stayed connected with you, and which ones have fallen away?
10. Did you participate in any interpersonal networks during and after the disaster? For example: Facebook, Twitter, or any networks within or outside your community.

Variations for the Officials:

- How did your organization network with other organizations?
- How did the affected people and their families communicate with you?
- How did you reach out to the community/people who were affected?
- Is your organization still part of the reconstruction efforts in these communities? What are the specific programs that you are launching?

APPENDIX I. ASSIGNMENT RISK COMMUNICATION PROJECT

Introduction:

For Unit 3, your groups should conduct a **Risk Communication Project** with a formal report and sample deliverables that can be used in real situations of risk. All these products should be designed in a way that any organization can use it for their various communication purposes during the time of emergency or crisis. The report and the deliverables that you produce will center around the focus that your group has chosen and should be grounded in your findings from the research you conduct in this unit. I will meet each group individually to establish a plan for the types of deliverables you will produce. Here is the theme that you have chosen before.

Social Media Strategies	Information Management	Risk Communication Strategies	Public Health Crisis Management
Crisis Strategy for Twitter, Instagram, FB, Maps etc.	Information Management Planner	Risk Communication Plan of Action	Plans to address health crisis via communication
Social Media oriented Website, pages, products	Website, brochures, apps, and so on	Website, brochure, flyers,	Event oriented website, flyers, Posters, visualizing public health risks
Note: If you want to do something beyond this- please feel free write to me!			

Objectives:

By completing this unit, you will

- Practice writing, composing, and designing in professional genres through client-based work
- Understand and use both primary and secondary research methods to produce professional reports
- Make rhetorical design decisions and implement design decisions for professional formats and layouts
- Develop project management skills through planning, researching, drafting, revising, and editing multiple deliverables
- Learn and apply strategies for successful teamwork and collaboration
- Build professional ethos through documentation and accountability
- Learn how to professionally evaluate organizations and team members and reflect on your strengths and weaknesses

Deliverables:

1) Group project plan and group contract (2-3 pages, single spaced; 25 points)

Before you get started, your group should develop a project plan that identifies the disaster and the problems that you are addressing and the main points of the report and the deliverables that

you will produce. You will also create a group contract that establishes your group roles and expectations.

2) Group progress report memo (1 page, single-spaced each; 25 points)

Over the course of the project, you will turn in one progress report that relays the status of the project as well as how the group is working together and contributing to the project. Think of these as status updates to me so that I know how things are going and what assistance you might need.

3) Group Deliverables (Length and format varies; 200 points that includes 50 points for professional ethos)

Each group will produce deliverables that are based on the initial project plan. The deliverables can vary from what the group will decide. **However, there should be at least 2 deliverables such as, a website and a flyer, or a video and a brochure.** You have to take into consideration that you are producing these materials for an actual organization. That is why you will need to think about maintaining professionalism in your product. Each individual should have the responsibility of one particular aspect of the group deliverable. Your **professional ethos** will be determined by the accountability tracker created to track the self-progress and group work. You have to let me know the progress in two weeks on what you did on particular days.

4) Group Recommendation Report – Including Individual Memo (4-5 pages, single-spaced for Group and 2 single-spaced pages for Individual; 100 points)

The group recommendation report should highlight the detailed information about the product, objectives of producing this product, and ways to implement this product. Your report should also include the individual group members' reports. This means for the initial 4-5 pages, your report will entirely focus on the product itself. After the end of the report, each member of the group will write at least 2 single-spaced pages, in the report format, of their specific role on producing the deliverable. Your individual explanation is important for receiving your grade.

Guidelines/ Strategies:

Successful projects will accomplish the following:

- Feature team members that work collaboratively and effectively in order to produce the best report and deliverables possible
- Contain researched and well-organized information that backs up proposed recommendations
- Demonstrate the ability to assemble professional and sharp materials that highlight and emphasize pertinent information in rhetorically appropriate ways
- Engage with theoretical principles discussed over the course of the semester, including professional ethos, visual and information design, client-based work, and ethics

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