#HUMANITY SAVED CHENNAI

An exploration on the role of social media in the 2015 Chennai floods

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ABSTRACT

The heavy flood that hit the South Indian city of Chennai in 2015 stand out as one of the first large-scale examples of citizen-driven emergency response. Due to the absence of government authorities from this disaster emergency scene, groups composed of ordinary citizens, celebrities and NGO workers collectively developed an organized mechanism to rescue people and distribute aid in the immediate hours following the destructive event. Crucial to an effective and prompt field response was the establishment of a digital community. After the overwhelming amount of help requests and photos posted on existing Facebook pages, some volunteers created specific social media channels and digital platforms to centralize flood-response communication. Since Chennai suffered from communication-network and power shortages, the role of Chennaiite emigrants living in different parts of India and abroad played a key role in keeping Chennai connected. These digital volunteers established telephone helplines and verified locations and types of relief needed, collecting and assembling information in databases and updating field volunteer groups with crucial data for planning the aid deliveries around the city. Using an experimental mixed-method approach, an ethnographic exploration of the rationales for social mobilization integrates the mapping of dynamics of social networking in the disaster response. This analysis illustrates how social networks built between digital and field volunteers enabled a city-wide aid coverage. However, dynamics of social networking through the use of social media and unequal ownership of smart phones reveal how digital platforms perpetuate an exclusive volunteer participation and limited reach to those affected. Based on a field reconstruction of the emergency response with key informants of the 2015 Chennai floods' response, this thesis explores in detail the social media-mediated collaboration between field and digital volunteer in the disaster response.

Key words: disaster response – social media – mobilization – emigrants – social networks

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Figure 1. Flood affected people rescued by fishermen in Kotturpuram, Chennai.
(Photo Credit: Shaju John, The Hindu)

1.1. Setting the Scene

In November-December 2015, the state of Tamil Nadu (India) was violently hit by heavy rainfall during the north-west monsoon season (Kotteswaran, 2015; Raha, 2015). The first depression started in Neyveli, a town south of Chennai, on 8th November; the heavy rains recorded 500 mm of rainfall. The second spell happened on 16th November, which hit Chennai and surrounding towns with about 200 mm of rain (J. Pradeep, personal communication, April 25, 2019). Incessant rains on 23rd November were followed by a high-risk warning of heavy rains starting from 28th November (Bhuvana and Arul Aram, 2019). This fourth spell of severe rainfall event took place on 1st December; one of the consequences was the complete fill-up of the Chembarambakkam reservoir – one of Chennai's main water sources (J. Pradeep, personal communication, April 25, 2019). The city became waterlogged as a consequence of the record-breaking 374 mm of rainfalls (Bhuvana and Arul Aram, 2019).

In the night of 1st December, the water of Lake Chembaramkabbam was released into the Adyar river; this information had not been anticipatedly communicated to citizens, which for the those closer to the lake, meant having their homes flooded in the middle of that night (Narasimhan et al., 2016). The consequences were severe flooding on 2nd and 3rd December, creating havoc in many sections of the city; the major consequences were recorded in close vicinity to the Chembaramkabbam Lake, in low-lying areas and neighbourhoods closer to the two main rivers, the Adyar and the Cooum rivers (Narasimhan et al., 2016).

The so-called '2015 Chennai floods' caused the loss of 421 human lives and over two million people were displaced (Ramasamy, Vijay and Dhinesh, 2018). The loss of properties was approximately worth US$ 80,000 millions, making it one of the most expensive disasters of 2015 globally (Ramasamy et al., 2018). A total of about 3 million families belonging to low socio-economic groups were estimated to have their house either partially or totally damaged (Krishna, Ronan, and Alisic, 2018). The floods created vast disruptions in physical connections, with roads, bridges and rail links being submerged. Communication became problematic as most telecommunication networks were disrupted due to power supply and network operator issues (Vishnu and Sridharan, 2016). As a consequence, many parts of the city became completely isolated. The Chennai airport was also flooded and closed until 5th December, when only a few cargo flights delivering relief materials could fly again (Vishnu and Sridharan, 2016).

While governmental efforts were mainly labelled as a major failure, many informal networks of citizens' coordinated relief operations for affected people in urban Chennai through social media and other technologies (i.e.: social media, radios, crowdsourced mapping) (Ramachandran and Anand, 2016). Indeed, in this dysfunctional aftermath of the 2015 Chennai floods, social media played a key role for the crowdsourcing of both flood-related information and aid funds, as well as for the practical coordination of the relief operations among people living in distinct (yet temporarily isolated) parts of the city (Yadav and Rahman, 2016). People from various regions of the world cooperated to respond to this disaster and help those affected by the floods; social media played a unique role in enabling this interconnectedness and

timeliness. The most used social media platforms – Twitter, Facebook and WhatsApp – were the engine of this response: through these platforms, people would either share their need requests or voluntarily offer help (Yadav and Rahman, 2016). These informal networks became the life safer for thousands of people heavily affected by these urban floods (Mariaselvam and Gopichandran, 2016).

Chennai citizens, Chennaiite emigrants and other sympathizers across the country and overseas also used Twitter to arrange and coordinate a number of rescue and relief operations. For instance, hashtags such as #ChennaiRainsHelp engaged with relief operations, while #ChennaiRescue shared information about rescue operations conducted by either government disaster forces or volunteers' organizations. Another example are people in need for food, shelter or other basic needs who would post their requests through the Twitter page @ChennaiRains. Those are some of the many tools, platforms and groups created in pre-floods and floods' aftermath.

1.2. Social Media in Disasters

In the last decades, a large number of scholars have investigated the existing differences in the distribution of humanitarian aid among different social groups (Peacock and Girard, 1997; Fothergill, Maestas and Darlington, 1999). Due to the socially constructed nature of disasters, power relations influence the social processes creating inequalities and dissimilar levels of risk exposure; these power dynamics force some people to be more vulnerable to disasters than others (Oliver-Smith, 2004).

Equally, a growing research interest in emerging ways of aid coordination via social media and crowdsourced data has expanded the body of literature on the topic of digital emergency response (Yates and Paquette, 2011). Effective disaster communication may lessen the impact of the disaster or, when not effective, worsen the consequences (Houston et al., 2015). When a disaster happens, lessened communication capacity and fear of a threat create a high demand for information. For this reason, social media have emerged as a novel tool to ameliorate disaster communications (Houston et al., 2015) as well as serving emergency management (Dufty, 2016). Improved disaster communication can also impact disaster risk reduction: by sharing disaster-related information, people's relation to risk can also be positively enhanced (Houston et al., 2015) and people can have the possibility to raise their voice, boost social cohesion and increase social capital (Alexander, 2014).

The use of social media platforms like Facebook and Twitter can help in coordinating the relief and rescue operations, while other platforms such as crowdsourced geographical information systems (GIS) maps (i.e.: OpenStreetMaps, Google Crisis Map, etc.) help in geolocating people in need and the location of the nearby facilities of interest.

Despite the growing interest in researching these new ways of humanitarian aid coordination, there is a research gap in understanding how emergent technologies used for disaster response coordination may contribute to a more equal distribution of goods among affected individuals from different social groups (Twigg and Mosel, 2017). Furthermore,

another gap exists in reflecting upon what social media platforms mean to people in an emergency phase; and which type of information exchange for help or aid requests can (or cannot) be transmitted and communicated through these platforms. This research seeks to understand whether aid coordination through social media is capable of making a difference in alleviating aid differentiation, facilitating communication for effective aid coordination as well as covering specific needs of people. This research aims at investigating the extent to which social media in disaster response can constitute a sustainable tool to manage emergency response.

1.3. Problem statement

Literature shows that there is a clear differential and politically led way to distribute formal aid during the emergency phase of disasters (Arvin, Piretti and Lew, 2002). Due to the frequent limitedness of relief goods, the sovereign decides how to coordinate the distribution of aid. The decision-making process to define who will be those entitled to aid is often found to be a politically interested opportunity to enforce the practice of a certain type of biopolitics in times of disaster (Ophir, 2006). Aid distribution reaches specific groups and excludes others; this can happen both when aid is delivered by domestic and international organizations or institutions. The differentiation of aid means also that the existing vulnerabilities within a society are being reinforced. Differential distribution of aid can heavily impact the society by strengthening existing vulnerabilities and undermining efforts towards building societal resilience (Martin, 2005; Gill, 2007). Studies focusing on South India have identified the main forms of differential aid distribution being based on social identity features such as caste belonging, ethnic group, gender, class and religion (Aldrich, 2010; Mariaselvam and Gopichandran, 2016). A clear example of differential aid distribution in Chennai was documented in the aftermath of the 2004 Tsunami, when people belonging to lower castes, tribal groups, women and other groups were unequally reached by aid programs (Martin, 2005; Gill, 2007; Aldrich, 2010).

However, due to the use of social media and the creation of grassroots networks of aid, there is an emergent trend in using remotely managed forms of communication between the affected people and the aid coordinators and deliverers. These networks are mainly comprised of citizens collecting crowd-sourced information and organizing the supply-chain of aid. The social media-mediated aid of the 2015 Chennai floods is an example of network architecture formed by participants making their resources, in most cases, directly available to other actors comprised in the network and without the need for centralized coordination (Keim and Noji, 2011). The social media-based citizens' coordination of the 2015 floods promotes an active, dynamic and relational roles of the network. Differently from official forms of aid coordination and communication – functioning on a unidirectional way from the aid giver (the government) to the aid receiver, in a "'servers' supply and 'clients' benefit" fashion (Keim and Noji, 2011) – the community-based response favoured a more tailored and bilateral relationship between aid provider and aid requestor. Despite all positive outcomes reached by these information and

communication networks, concerns raise on the possibility of spreading misinformation, rumours, fake news and privacy rights violations (Kim and Hastak, 2018). Due to the extremely high size of data circulating via social media, it is difficult in a disaster emergency phase to discern trustworthy and fake information on the base of an impartial monitoring system (Sutton, Palen and Shklovski, 2008).

In highly populated urban areas around the world, the use of mobile phones and the internet is well grounded (Twigg and Mosel, 2018). However, each urban context experiences different types of access to the internet or to technological devices; some social groups – such as poor, (digitally) illiterate people, people with disabilities or women – have been identified to have some disadvantage in assessing those services (Twigg and Mosel, 2018). Furthermore, in the case of a disaster emergency, some social groups may not be aware of existing early warning systems or social media aid coordination; which, similarly, results in the exclusion of some of the users. Therefore, the barrier to accessing these services can reflect in the ability to exchange information also in instances of disaster events (Twigg and Mosel, 2018).

This thesis attempts to close a research gap by investigating whether community-based response through the use of social media platforms is capable of creating inclusive circumstances for equal distribution of relief in an affected society. The case study of the 2015 floods is used to contextualize and explore this research void.

1.4. Focus of the Thesis

This thesis aims at investigating whether dynamics of social exclusion also took place in the digitally mediated community response to the 2015 Chennai floods. This research aims at investigating whether the use of social media in the (partially) remotely coordinated aid relief operations limited the differentiation – intended as differential aid distribution based on ethnic, class, gender, age groups and cast-based identity traits – of aid distribution during the emergency phase. However, when talking about identity, the discussion should be completed by including the role that urban identities play as an addition to the more classic way of perceiving individuals through their traditional identity traits (i.e.: religion, gender, caste, etc.). Indeed, the urban identity – shaped by factors such as 'connectivity, networks and 'virtual' interactions among subjects in the city – may also play a key role in explaining certain dynamics of aid request and delivery, as well as explaining certain patterns of inclusion or exclusion.

As in many big cities around the world, Chennai is expected to become increasingly vulnerable to the impact of natural hazards such as monsoon rains due to climate change, rapid urbanization and issues of water mismanagement (Roumeau et al., 2015). Disasters are likely to happen with more frequency and disaster response coordinators will increasingly need digitally (de)centralized ways of collecting data and coordinating operations. After labelling the flood response as a unique and heroic example of pride and union for the Chennaiite community, it is highly likely that social media will become an even more used tool to coordinate aid operations. This has already happened in a subsequent disaster, the 2018 Kerala

floods, when Chennai floods' volunteers helped the local volunteers to set up a social media-based disaster response (L. Subramaniam, personal communication, April 9, 2019). For these reasons, apart from making use of the advantages of social media, it is also useful to identify the potential threats that this tool and communication mean may bring. Therefore, the relevance of this study lies in analysing how issues of inclusiveness of such an open-user form of aid management as social media. Researching whether remotely coordinated aid networks create aid distribution inequalities – intended as differential aid distribution based on identity traits – also offers the opportunity to better analyze the dynamics of social capital creation during the disaster response.

Figure 3 summarizes the main research question and the six research sub-questions of this thesis:

MAIN RESEARCH QUESTION:
What is the role of social media in the 2015 Chennai floods?

RQ1. What is the role of emigrants through ICT-based co-presence in the flood response?

RQ2. What did motivate Chennaiites, emigrants and symphatizers to actively engage in the flood response?

RQ3. How did ICTs help in the use and construction of social networks during the floods?

RQ4. Was the community response to the floods inclusive?

RQ5. What are the spatial and temporal dimensions of the online and offline responses?

RQ6. How did the 2015 Chennai floods become a 'megaflood' event?

Figure 2. Scheme of the research questions and sub-questions of this thesis.

1.5. Outline of the Chapters

This thesis is composed of eight chapters, including Chapter 1 that is the Introduction which has just been presented. In the Theoretical Framework presented in **Chapter 2**, I discuss prominent theoretical approaches used for this thesis on the use of social media in disaster response. My leading question when navigating through this extensive theoretical overview is what role did Information and Communications Technologies (ICTs) play in the response to the 2015 Chennai floods. Special attention is given to the role of 'social media', as a dominant component of the ICT-based disaster response. I question the inclusiveness of ICTs – and, more specifically, social media – as both tools and platforms able to guarantee an equal and open access to those in need for help during the aftermath of the floods. A focus on actors and their practices of using ICTs enables to capture the way people reproduce and transform

relationships, construct social capital and perform forms of 'good' care – making use of them to structure the disaster response. These insights are determinant in understanding how people continually create and recreate social structures to face situation of emergency and distress.

The Methodology to this thesis is presented in **Chapter 3**, where methods used to address each of the research sub-questions are described. The four main methods are described: ethnography, Social Network Analysis (SNA), spatio-temporal analysis and content analysis. In this chapter, I also highlight some practical and ethical considerations derived from my fieldwork.

The following four chapters integrate results, analysis and discussion for each chapter. Each of these four chapters discusses a specific topic – therefore, addressing different research sub-questions – linked to the use of ICTs in the response to the 2015 Chennai floods. The three main pillars upon which these four chapters are based upon are: the online, the offline and the media. Each of these three components plays a key role in addressing the main research question of this thesis, as well as creating a thread guiding the reader along the whole length of the thesis.

Chapter 4 sets the stage to the discourse framing of the 2015 Chennai floods as a catastrophic event – also referred as 'megafloods' (Rabindranath and Ghosh, 2016). The role of media is central in this chapter. The question addressed is how Chennai became synonymous with 'megafloods'. Through an analysis of international media, formal and informal national media, and social media-based visual materials (photos), a content analysis guides to an understanding of what dynamics led media to frame the floods as disaster event.

Chapter 5 focuses on the motivations behind citizens' response to the disaster. Responding to the floods inevitably requires a vast mobilization of manpower, resources and skills. Which motivating factors and values sit behind individual and group response in helping others? This chapter illustrates how cultural, social and emotional motivations were capable of mobilizing diverse socio-economic communities. This chapter will show how, by engaging with different motivations and social obligations, the response to the 2015 Chennai floods managed to mobilize ordinary citizens, activists, celebrities, NGOs, emigrants, religious organizations both residing in Chennai and abroad. Particular attention is given to the role of the affective bonds of Chennaiite emigrants with their families living in Chennai through ICT-based co-presence.

Chapter 6 describes the modalities through which online and offline disaster response mutually facilitated one another, being also able to bridge each other's limitations. Firstly, an introduction of the uses of digital platforms contextualizes the everyday use of ICTs among Chennaiites. Given this background, the online response to the floods is further explained and analysed through the stories of digital volunteers. The dynamics of affectively motivated ICT-base co-presence are contextualized to the disaster response. Secondly, accounts from field volunteers give an overview of the coordination dynamics for rescue, relief and rehabilitation operations taking place in Chennai. This section explains how field presence was crucial to

cover gaps into the online response, such as dealing with mental healthcare of affected people and volunteers.

Chapter 7 looks at the social network formations during the period of the floods' response. A Social Network Analysis (SNA) is performed to give an overview of the extent of the diversified network that key actors built to cover different needs in the floods' aftermath. A key dilemma is investigating how ICTs helped in the construction of these social networks. Furthermore, the results of the SNA are analysed through the lenses of social capital formation. Key actors and their networks are taken as examples to analyse how different types of social capital – bonding, bridging and linking social capital – were built in the floods' period. A Spatio-Temporal analysis will further illustrate the spatial and temporal evolution of the SNA across Chennai, India and the world during three key phases: the pre-floods, the emergency phase and the post-disaster. Lastly, an evaluation of the inclusiveness of the 2015 Chennai floods community response will be assessed based on all prior analysed aspects.

Finally, **Chapter 8** compiles the most important arguments and insights of the prior four chapters into a Conclusion.

2
Theoretical Framework
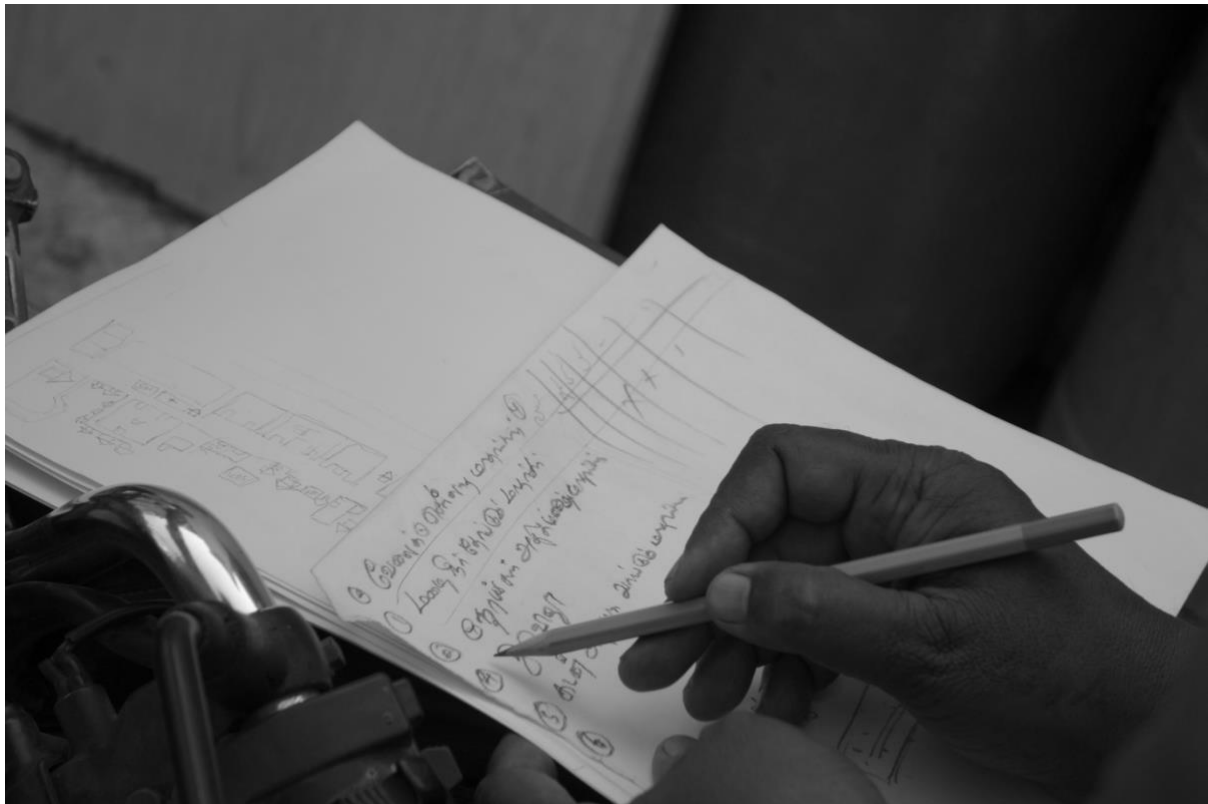
Figure 3. Vulnerability risk assessment in T. Nagar, Chennai.

Introduction to the Chapter

This theoretical chapter aims at defining the theories used to support the body of this thesis, as well as taking the reader to a theoretical journey of selected theories which engage with the topics investigated int this thesis. Section 2.1 introduces the concept of framing, an integral part of the process of labelling an event a 'disaster'; the theory of framing is also used to analyze other concepts, such as the 'heroization' of volunteers and the discrediting of governmental response to the floods. Section 2.2 discusses the broader picture of theories dealing with socio-geographical topics illustrated throughout the thesis. Theories of social capital, social network(ing), mobilities and transnational care through ICTs are used to explore different aspects of the role of social media. After this elaborated theoretical discussion, Section 2.3 filters the theories employed in this thesis in order to address the research questions explored in this thesis.

2.1. The Process of Framing

The 2015 Chennai floods initially were not proclaimed a national disaster by official or governmental authorities (Rajya, 2016). Similarly, due to failure of the power grid and mobility issues to reach offices, journalists of official media channels were not able to publish news on 2nd December; these media outlets published their first articles on the floods on 3rd December. However, a large number of citizens started to upload images and publish updates since 2nd December in social media platforms; some people even started since mid-November 2015, when heavy rains were pouring on Chennai. Through the content analysis of media frames, this study aims at understanding how the Chennai floods – first as an unofficially framed 'disaster' and, subsequently, has a declared 'calamity of severe nature' – was able to mobilize such large-scale response by public, private and civil actors.

In *Frame Analysis*, Goffman (1974) laid the foundations of the idea of framing, which described that the background and configuration of messages has an active role in shaping how people think and act upon these messages. Goffman states that cultures produce 'primary frameworks', which deliver "what would otherwise be a meaningless aspect of the scene into something that is meaningful" by establishing an analogy which helps people to make sense of information (Goffman, 1974: 21). Goffman argues that each culture generates two forms of primary frameworks: 'natural frameworks' and 'social frameworks'. *Natural frameworks* derive from tangible experiences understood "to be due totally, from start to finish, to 'natural' determinants"; in this instance, there is no agency influencing any part of the experience (Goffman, 1974: 22). As a consequence, "success or failure in regard to these events is not imaginable"; this is possible since "no negative or positive sanctions are involved" (Goffman, 1974: 22). As opposed to natural frameworks, *social frameworks* develop from the intention of "an intelligence, a live agency, the chief one being the human being" (Goffman, 1974: 22). Each primary framework developed through different degrees of organization: from systematic sets of rules (natural frameworks) to "apparent articulated shape, providing only a lore of

understanding" (social frameworks) (Goffman, 1974: 21). Despite these differences, people continuously employ these frameworks to categorize their life occurrences in order to give them meaning. These 'frames' enable individuals to "locate, perceive, identify, and label" the world surrounding them (Goffman, 1974: 21). For this reason, he defined primary frames as mental maps used to navigate the overload of information.

Despite his noticeable contribution, Goffman's theory has also shown some faults. Goffman did not provide a solid distinction between natural and social frameworks. For instance, he did not offer any explanation of how people would classify a framing when causation was wrongfully attributed to an agent, or when causation fails to be linked to 'natural' causes. Scheufele (1999) attempted to synthesize various fragmented theories on framing, including some gaps in Goffman's theory. In order to distinguish between dependent and independent variables in the framing process, he put emphasis on factors such as "social norms and values, organizational pressures and constraints, pressures of interests groups, journalistic routines and ideological or political orientation of journalists" (Scheufele, 1999: 109). Entman's (1993) study on media frames as independent variables assessed the influence of framing tools on individual audience frames. As Entman argues (1993: 55), "frames call attention to some aspects of reality while obscuring other elements, which might lead audiences to have different reactions". He considered individual frames as the result of specific media frames in the frame-setting process.

Gamson (1992) further elaborated on the individual frames from a more qualitative perspective by theorizing the connection between symbols and ideas in public discourses. He classified three ideal sorts of frame formations on the base of the group levels: personal, cultural, and integrated. The personal approach uses popular wisdom and experimental knowledge in framing issues. Differently, the cultural approach can be identified as a group discussion fed by popular wisdom and media discourse. Lastly, the integrated approach relies upon experimental knowledge, popular wisdom and media discourse to build frames in group discussions. As described in the following sub-chapter, Neuman et al. (1992) further elaborated on the approach studying individual frames as dependent variables, shifting the focus from predominantly politically relevant frames to the cognitive and emotional response of story frames on readers.

Media Framing of the Disaster

This study focuses on a flood disaster. For the purpose of the content analysis of this study, the definition of 'disaster' by McFarlane and Norris (2006: 4) is employed, where a disaster is "a potentially traumatic event that is collectively experienced, has an acute onset, and is time-delimited; disasters may be attributed to natural, technological, or human causes". McFarlane and Norris (2006) identify time-boundedness in three temporal categories: an event with a prolonged and stable threat period, an event with a time span of escalating threat or abrupt start, or an event with some days or no threat. In the context of this study, the time frame of the flood belongs to the second category: despite the building up of the floods, the event which was

actually framed in the media is the overflow of the Chembarambakkam lake and the consequent abrupt flooding of the city.

In disasters, television and print news coverage are predominantly used to raise awareness (Murthy & Longwell, 2013), as well as to encourage certain forms of donation efforts with the aim of strengthening relief missions (Adams, 1986). Differently, information posted on social media by community members often established direct links with the victims, which are mostly inscribed in traceable social networks; this establishes different dynamics of relating with the disaster, especially when journalistic coverage of the disaster is not fully operational (Murthy and Longwell, 2013). Overall, media have different functions within and for the society; from sourcing information and educating people, to emergent functions derived from the interaction of social systems with media. Media 'framing' plays a relevant role in information reports. According to Neuman et al. (1992), frames are tools which people, as well as other media, use to interpret, disclose and judge information. Robert Entman (1993: 52), defines the framing process by pointing at how "to frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation and/or treatment recommendation for the item described". The framing of information can also link to politics, calling into question social contracts and their strength (Warner, 2013). According to the theory of 'catastrophisation as a form of securitization', Warner (2013) explains how a disaster, as representation of a status of urgency, can often legitimize actions which may have large institutional and political consequences. On the other hand, this situation can also serve governments to display a scale of response ranging from total control to full abandonment; this is done in a strategic way to target specific audience and use existing opportunities from the situation.

Consequently, framing media plays a key role in building the stories that people consult via media outlets. De Vreese (2005) conceptualizes two types of frames: issue-specific frames and generic frames. The first ones, issue-specific frames, are directly linked to and employed in developing in-depth studies of specific occurrences or topics. The results of issue-specific frames are particularly detailed and difficult to generalize. Contrarily, generic frames are applied to a study which includes a broader spectrum of events, offering an overview for comparison across topics, issue and time frames (De Vreese, 2005).

For the purpose of this study, the generic frame applies to the case. Neuman et al. (1992) theory on frames is applied to investigate which frames are used in the news coverage of the 2015 Chennai flood event. This frame theory was first used to analyze several issues in the United States; Semetko & Valkenburg (2000) showed how this analytical approach included all most frequent frames present in the news. Five frames are identified by Neuman et al. (1992): the human-interest frame, the economic consequences frame, the conflict frame, the morality frame and the responsibility frame.

The *human-interest frame* links the news with an emotional perspective, enhancing the invocation of human feelings (Semetko & Valkenburg, 2000). In disaster events, this frame is often used to stimulate feelings of empathy, sadness, etc.; this allows people to take time to reflect over an event. An and Gower (2009) illustrated how the human-interest frame can have a strong impact on emotion-driven responses, as well as on raising ethical and responsibility issues.

The *economic consequences frame* described an event on the base of the economic consequences inflicted to individuals, populations or countries. An example is mentioning the financial losses (or gains) of an event; the costs of the damage, as well as for reconstruction and rehabilitation, are also accounted.

The *conflict frame* focuses its attention on conflicting and disagreeing views among individuals, social groups or organizations. Blaming another party can also be part of this frame. The use of this frame is feared to leave a negative impression on the audience, which is often fed with mistrust for the government transmitted by the media (Semetko & Valkenburg, 2000).

The *morality frame* positions the event in a moral or religious context framing. Despite less frequently found, this frame leads to a final moral positioning for the entire event, raising questions linked to individual and societal values. Religious concerns and principles are also flagged and applied to the event.

Lastly, the *responsibility frame* enhances responsibility discussions related to the event under scrutiny, as well as suggesting potential solutions to the crisis situation. Semetko & Valkenburg (2000) have shown that this frame was mostly employed in more official or sober newspapers, which tend to be less cynic or amusing for the audience. However, governmental criticism may be a drawback of this frame when repeatedly used.

In this thesis, the analysis of media frames for disaster framing will be conducted through a content analysis of images from a selection of media outlets. This investigation will partially draw on the ethnographic experience in Chennai, where local values, norms, uses as well as relational and interactional dynamics were absorbed and contextualized.

2.2. From Geographies to Mobilities

Social Capital
The study of community starts with a close analysis of geographical proximity. The physical distance between individuals is a key concept in defining different types of social ties inscribed

in communities; this is also an aspect which strongly influenced the rise of social capital theory (Larsen, Urry and Axhausen, 2006). Social capital came to explain the degree of associational or 'civic' engagement in society; it is a characteristic of social organizations – being these norms, networks, etc. – enabling collective and collaborative social action (Putnam, 1995). Coleman (1988) was primarily engaged with the theory of social capital at an individual and interpersonal scales, especially in regard to the capacity of individuals to derive personal advantage from engaging with specific social networks. According to Coleman, the access to social capital is guaranteed by being connected to other actors. Social capital is, therefore, used in the prospect and expectation that it will lead to particular gains; the structure of interpersonal relationships itself contains social capital, which facilitates actions for these actors inserted in the social structure (Coleman 1988). Additionally, Coleman clearly highlights how the expectation for some sort of compensation in this mutual exchange is grounded in the commitment that both individuals – who are inserted in the same social structure – show towards a specific network. These social structures are governed by (mostly unspoken) rules and values, which give a particular identity to that social aggregation (Portes 1998).

According to Putnam (1995: 66), social cohesion is a critical factor to guarantee 'qualities of life': health, safety and prosperity. Navarro (2002) further elaborates on this aspect, stating that social cohesion, sense of community and togetherness are essential components of a type of collective effort which itself forms part of the solution. Despite this positive conceptualization of social capital as an 'empowering' trait of social groups, Portes (1998) show how tight social networks can bring benefits, but nevertheless costs too. Apart from community strengthening, strong social networks can also express heavy social control, for instance by causing retention of innovation, loss of freedom of expression and choice. Additionally, something that is fruitful for one, can be detrimental for another. Burt (1992) adds up to the criticism, arguing that dense configurations of strong ties may for instance restrict individual mobility, as well as the opportunities lying in weaker or absent ties.

Social capital does not only explain the existing ties between individuals, but also their value. The concept of 'value' is also a heavily debated one; Lin (1999) describes how accumulation of social capital is mainly used from an instrumentalist perspective, where the investment of actors builds on expected gains. Similarly, Navarro (2002) states that the purpose of social action is economized by the investment in and accumulation of social, human and monetary capital; as a consequence of this 'enrichment', the individual or collective actors can compete better. Navarro (2002) argues that solidarity cannot be accurately be considered as just a strategy for better gains, but can be seen as a target in itself. Additionally, Putnam (2000) shows how good quality of life within a community depends upon strong and multilayered forms of social capital. Collaboration, solidarity and organized reciprocity grow a sense of togetherness, which helps in strengthening the community and making it more resourceful. According to Putnam (1995), high capital stocks equally enable collective action and cooperation through the reproduction of trust and solidarity. In this circular process, Putnam shows how communities with a higher level of cooperation and participation have also higher

social capital allowing them to keep being more cooperative. Concluding with a note of Portes (1998: 19): "as a property of communities and nations rather than individuals, social capital is simultaneously a cause and an effect".

Szreter and Woolcock (2004) have further subdivided social capital into three different types: bonding, bridging and linking. Bonding social capital illustrates the connections within a group or community which carries common attitudes, demographic features, resources and information. Bridging social capital outlines the connections between one community and another community, or between the community and an external organization, which are normally divided within the society due to social grouping (i.e.: due to race, class, religion, age, gender, etc.). Bonding capital is often referenced as a horizontal tie, since it connects actors within the same community, or social location; contrarily, bridging capital is considered a vertical tie by its means of connecting actors of different communities, or over social distances through enabling access to resources and opportunities. Lastly, linking social capital describes the norms of respect and the networks of trust in the relationship between people the community and a formal or institutional power in society.

Granovetter (1973) and Putnam (2000) show how social capital is shaped by social networks: when strong ties exist, bonding capital grants networks with emotional support; while when ties are weak, bridging capital provides needed information and different perspectives. Based on the view that the differentiation between 'bonding' and 'bridging' is simplistically constructed, Ryan (2011) suggests that it is more helpful to examine the specific relationship between the actors, their mutual trust and obligations. However, Ryan (2011) calls for further elaborating on the distinction between 'bonding' and 'bridging', since different actors show also diverse obligations and mutual trust which influences the type of interaction. Since not all social contacts are evenly useful or enable the same degree of social mobility, Ryan (2011) highlights the relevance of relative social location of actors, drawing upon the available resources within a network, as well as the degree these are readily accessible and relatively useful for the interacting actor. This approach allows to better understand the strength of connections by focusing on the resources gained from the bridging or bonding ties.

Social capital is an important asset of disaster risk management, as it plays an important role in reducing disaster risk (Dynes 2002). In the next subchapter, the theoretical discussion on social capital will be furthered for the specific topic of disaster risk management.

Social Capital in Disaster Risk Management

Cutter et al. (2003) and Park and Miller (2006) have widely explored how socio-economic and political circumstances shape vulnerabilities of communities, including their capacity to recover in the aftermath of a disaster. The availability of local resources and support groups is crucial to survive and restore lives in vulnerable communities. The importance of social capital resources and networks at the local level is also highlighted by Nakagawa and Shaw (2004), who draw on the emergency response and rehabilitation following Gujarat (India) and Kobe (Japan) earthquakes. Bankoff (2007) and Yamamura (2010) showed how the periodical

recurrence of disasters can strengthen the social capital in a community. However, it is also shown how factors such as heavy devastation, high rates of mortality and post-disaster relocation programs can threaten these bonds (Aldrich, 2012). Furthermore, while altruistic behavior is a recognized reality during, especially, the emergency phase of disasters (Drabek and McEntire, 2003), kinship-based societies – which strongly value in-group loyalty – show that 'bonding' social capital can also weaken collective action and trust, and foment social inequalities (Twigg and Mosel, 2018). Rahill et al. (2014) shows through the case study of the aftermath of Haiti's 2010 earthquake, how well-established loyalty groups detained the distributed aid in the attempt to favor their group, while causing harm to those not belonging to their kin.

From social capital, the discussion of the next subsection moves towards the theory of social networks, whose structures – together with the content of social capital – are important to better understand the social reality (Moody and Paxton, 2009).

Social Networks

Social capital, with its underlying assumption of the static nature of social ties, encounters difficulty to explain mobile and technological societies. Traditional views of a society which can be socially and geographically inscribed in defined boundaries fail to describe social shifts that technology brings along. Wellman (2001: 227) points at how:

> "We find communities in networks, not groups [...] In networked societies: boundaries are permeable, interactions are with diverse others, connections switch between multiple networks, and hierarchies can be flattened and recursive [...] Most people operate in multiple, thinly-connected, partial communities as they deal with networks of kin, neighbors, friends, workmates and organizational ties".

In *Mobilities, Networks and Geographies*, Larsen et al. (2006) discuss how the geographical delineation of networks within the defined perimeters of human settlements is increasingly becoming an outdated way of explaining community ties. There is a strong need to deconstruct the imaginary of static social networks, local cultures and established geographies. Social network theory diverges from sociological theory defining society as constituted by individuals. Despite originating from the connection between individuals, societies are formed by networks, which are in turn consisting of sets of ties (or interactions) between nodes (or individuals). According to Castells, networks are the primary components of societies. As he shows in his book 'The Network Society' (1996), historically, social networks are organizational structures that have already existed for millennia: the key factor distinguishing the network society is described by the use of ICTs. Digital communication and information enable the development and self-sustenance of networks with far less relational backgrounds as compared to traditional societies – conceived by neighborhood, family, religion, cultural upbringing, social status and political affiliation category fitting. The spatiotemporal gap expressed by distance has nowadays been vastly absorbed by technologies. The spread of

communication technologies had a remarkable impact in how social networks spread beyond neighborhoods, cities and states – basically, to non-geographical borders. People are now able to take decisions on where to move and migrate, and still being connected with their families and friends who stayed 'back home'. Despite geographical distancing building an increasingly physical divide among loved ones, an email or phone call are only a few seconds away.

Larsen et al. (2006: 262) describe how a "shift from 'little boxes' of spatially dense and socially overlapping networks to *networks* where connections are spatially dispersed and membership of one network does not necessarily overlap with that of others" is the reality of current times. This stand absorbs strong influence by Castells (1996), who claims that human society displays three recurring features; humanity is capable of 1) retaining the whole extent of information, 2) sharing information, and 3) communicating information. Based on this categorization, the 'network society' is regulated by information sharing purpose, despite once people enter the digital world, this purpose can automatically switch to being communication itself. However, the network society is not only an information society, but there is a range of cultural, political and economic factors shaping these aggregations. The space of flows is another central concept in Castells' theory; these networks are not confined to geographically delimited localities, but they are inserted in a space of flows. In contrast with space of place (geographic communities), Castells' defines spatial flows as the entirety of communications and transportations flows connecting the globally spread and increasingly mobile human networks (Castells, 1996). He highlights how these flows are not exclusively located in an 'a-temporal' and 'a-spatial' space, but mediated by those telecommunication and information infrastructures. According to Epstein (2007), behavioral responses to evolving spatial and temporal frames and changing environmental circumstances and relationships can be studied by the alteration in individuals' (or 'agents') attributes, their interaction norms and landscape characteristics. Indeed, coping with changing environmental and social conditions requires iterated communication with specific agents within ever evolving networks.

Castells (1997) reflects on how actors' identities are the outcome of meaning-giving and experiences. By communicating via digital platforms, social groups can establish their own online spaces to discuss topics which intersect all members' interests, which lastly led to the creation of a virtual community. These communities are a steppingstone in the creation of community feeling; its members are identified by each other on the simple fact of being part of that virtual community (Castells, 1996). This conceptualization of virtual communities is further explored by Tadiar's (2016) 'metropolitan archipelagos' theory in the subsection 'Metropolitan Archipelagos and Social Networking'.

The next subsection trespasses the debate on space of flows to illustrate how networking practices – which also include the role of non-human entities, such as things and ideas – allow for a variety of 'movement' forms.

The Mobilities Approach

The mobility approach goes one step further by both exploring physical and virtual ties and their mutual dependence. As argued by Larsen et al. (2006: 20), "The mobilities approach analyses the embodied making of networks, performances and practices of networking". Not only individuals, but also things and places form part of various networks and connections, which are heterogeneously situated in space and time. The theorization of the 'mobility turn' helped to describe this perceived turn of social science as a reaction to the growing significance of diverse forms of movement (Urry 2000). As an outcome, the 'new mobilities paradigm' developed by Sheller and Urry (2006) introduce an innovative frame theorizing how humans, ideas and things 'travel' by researching these embodied practices though the mobilities' lens.

Through a specific set of network tools – such as mobile phones, text messages, airplanes, websites, et cetera – it is possible to reproduce networking practices within, for instance, fragmented families, long-distance relations or virtual acquaintances. The mobilities approach claims that the number of ties that a person has is not the most influential information; differently, aspects such as 'meetingness' – or the frequency with which an individual reaches out to other individuals, through writing, talking, visiting, e-mailing, and other activities (Larsen et al., 2006: 19). Social networks are actually created and sustained by these networking practices: meeting over a coffee, attending conferences, 'WhatsApping', e-mailing, and so on. All these practices enable networks to periodically activate, especially in situations of need; contrarily, low network capital can reduce the extent of actors' activation (Larsen et al., 2006). As mentioned in the 'Social Network' susbsection, many connections among individuals and social groups are not situated in a proximate and geographically defined space. Indeed, 'imagined co-presence' is an increasingly common form of being in a place which is neither 'here' nor 'there'; it is the space through which individuals, objects, images and information travel – bringing ties into and across diverse social spaces (Chayko, 2002; Urry, 2007). It is therefore acknowledged that people's routes are 'relational, connected and embedded rather than individualized' (Larsen et al., 2006: 268).

From the embodiment of network practices across mobile actors, the next subsection steers the discussing to the dynamics leading networks to form according to specific processes of grouping.

Metropolitan Archipelagos and Social Networking

By attempting to clarify what are the social grouping dynamics – as well as possible determining features for inclusion or exclusion – in the community-based disaster response efforts of the 2015 floods in such a vast urban setting as Chennai, the conceptualization of *'metropolitan archipelagos'* by Tadiar (2016) is explored here. Tadiar's theory offers a grounded perspective on how geographical dispersion of social networks can be explained in urban settings where group affiliation and kinship cannot be (fully) determined by social identity traits (i.e.: profession, income level, gender, caste, age, ethnic group, etc.) anymore. The determination of one's identity in constantly evolving in megacities like Chennai and it

leads to the gradual erosion of traditional identity schemes through the reshaping of individual identities – which importantly reflect on the group affiliation and belonging. Tadiar (2006) highlights how identity clustering is not inscribed in spatially and territorially segregated neighborhoods anymore. Modern metropolitan citizens see their identity shaped by virtual "regulatory pathways" (Tadiar, 2016: 66), which are physical characteristics defining the cultural and lifestyle of common aggregation and interaction. In the theory of 'metropolitan archipelagos', social and autonomous constituencies are created and maintained by connective technologies. The social constituencies are not fixed but, instead, they are in continuous change and include diverse as well as contrasting social strata of the society. These social constituencies are also the ideological theorization of modern communities. Tadiar takes the example of the 'flyovers' in Manila to display how such structure "were designed and built to ensure the mobility of middle and transnational-capital classes while bypassing the poor" (Truitt, 2008: 5): like bridges connecting different islands of an archipelago to bypass the underlying ocean. Tadiar (2006) draws a comparison between metropolitan archipelagos and social media – the enabling means for creating and maintaining specific social groups in contact through communicative networks inserted in "self-regulating cyberspaces" (Tadiar, 2006: 67). For this reason, mobile phones are an instrument which offers a "crucial navigational, communicative, and financial support systems of urban life" (Tadiar, 2006: 67).

After having discussed the dynamics of social grouping through the use of technological means in metropolitan contexts, as well as the impact this has on forming groups which go beyond common socio-cultural belonging, the next subchapter will expand on the topic of information and communication technologies (ICTs) in closer relations, with family and friends. In particular, the function of ICTs as a tool to enhance presence in transnational ties – where relations are physically distant – will be discussed.

Transnational Ties and ICTs

The concept of 'ICT-based co-presence' is borrowed by Baldassar et al. (2016) to delve into the multiple processes that people – in this case Chennaiite migrants – use to enhance their presence in Chennai during the floods. Their study shows how the continuous use of mobile phones and social media can reinforce and augment the exchange of emotional, economics, social and cultural recourses within transnational families and communities. The term 'transnational family' defines those 'families that live some or most of the time separated from each other, yet hold together and create something that can be seen as a feeling of collective welfare and unity, namely "familyhood", even across national borders' (Bryceson and Vuorela 2002: 18). In these distance relations, ICTs play a crucial role to expand the extent these ties across by negotiated forms of involvement.

In current ages, the daily life of transnational families cannot be seen disjointedly from their large dependence on ICTs and social media. As previously mentioned in Chapter 2.2, Castells (1996) shows how existing communication technologies sustain a diverse array of daily connections across time and space. Migration encountered a profound transformation

with the rise of transnational mechanisms of sociality in families and communities (Nedelcu, 2012). Research in the field of migration has also disproved the assumed notion that strong social ties necessitate geographical proximity (Nedelcu, 2012). The exponential growth of ICTs and social media environments has clearly demonstrated that strong relationships do not require face-to-face interactions. Nedelcu and Wyss (2016) show how geographical distance and ICT-mediated co-presence should be considered as two related aspects of modern families. The figure of the 'connected migrant' (Diminescu 2005) and the 'online migrant' (Nedelcu 2009) are shaped by contemporary social structure changes in terms of mobility and ICT-mediated presence – being both essential components in the making of 'distant' or transnational care. The theorization of 'connected presence' by Licoppe (2004) displays how the ability to bond with other individuals is the result of a diverse range of connecting and evolving practices. Elliott and Urry (2010) conceptualize the notion of 'mobile lives', which points at the modes through which individuals manage their daily mobility without inevitably giving up their connectedness with the loved ones. Through the idea of 'bounded sociality', Ling (2008) discusses how both strong ties and geographic proximity are carving the ways in which technologies are employed to nourish relations. This insight further highlights how social practices are no longer happening *in loco* – as for a geographically confined area, defined by a territorial and physical perimeter – but they are constructed by connections and distant ties.

The next subchapter dives into what technologically mediated co-presence means for the well-being of the transnational actors involved; and, in particular, for establishing standards of good care developed and enforced at the distance.

Practices of Care and ICTs

This research explores the concept of 'care' through the processes of (visible) activation of social ties in Chennaiite transnational families and communities during the 2015 floods. Transnational family ties are representative of the bonds between adult migrant children living outside Tamil Nadu (India and abroad) and their kin in Chennai. The extent of social ties activated in situation like disasters goes often beyond the demarcation of the family nucleus; most likely this include also friends, relatives, Tamil diaspora and sympathizers. For this reason, the extension to the term 'community' is motivated by the intention to include these other transnational connecting processes. Despite this inclusion, these two social structures engage with different durability and (less or more) visible care practices, which will not be addressed in this thesis.

In this study, rather than assuming a universal definition of care, 'care' is looked at as the enactment of particular practices among family members through the use of social media and ICTs. These digital tools are focal to this analysis as they are considered to be actors shaping or supporting particular care practices. The approach used in this research is anchored to the 'empirical philosophy of care', a body of research on care practices developed by Mol, Moser and Pols (2010). These researches are ingrained in material-

semiotic to describe how care is empirically taking place, and to conceptualize these mechanisms. The approach of material-semiotics has its origins in science and technology studies, where relations among people, things and technologies – often embodying the function of caregiver or care-receiver – are investigated in terms of the care practices they produce. Therefore, material semiotics helps in understanding care in terms of practice involving both human and non-human actors (Mol, Moser, Pols 2010). Acknowledged that care is possible across geographical distances, the aim of this analysis on the topic of care is understanding the transformation of care under the impact of disaster and ICTs.

The empirical philosophy of care studies focuses on the values and norms dynamically shifting within the contexts where people and things interact with each other (Pols, 2015). Indeed, values permeate everyday life, material spaces, and conventional care practices. Contrarily to care ethics – which sees researchers labelling through customary criteria the good and the bad of care practices[1] –, this empirical approach to care defines these practices after having articulated the context in which they are described. The material semiotic approach sees material spaces as ingrained in values which enhance the everyday practice of care. These values and the materiality of a practice are perceived as dynamic, allowing space for continuous evolution and adjustment to changing situations (Mol, Moser, & Pols, 2010). Despite their adjusting nature, these practices are not claimed to be flawless. They do not claim that technologies and things can answer ethical problems, but they inform how these practices can address these concerns by sculpting alternative forms of support.

As described by Raghuram (2012), care practices are embedded in specific cultural, economic and political structures; the family, the community, the state and the market are some of the examples of social structures, displaying unique traits in each and every country or region. Defining the notion of transnationality in a structure – such as in the family – needs an in-depth analysis of what 'transnational' means for the political, economic and social context of a specific country or region. This idea explains the wide differences in care arrangements across the globe, which in turn enormously shape the concept of care in migration studies (Raghuram 2012). It has been shown that differences in infrastructures of care have enormously contributes to shape the practices of care (Razavi and Staab, 2010). In transnational families, digital infrastructures play a crucial role in forging care experiences. The elder parents, their children and the digital are all actively embedded and shaped by the multiple options that ICTs and digital platform offer to respond to a wide variety of needs. Finch (1989) highlights how caregiving continues even at the distance – often at a different intensity level – with emotional, moral, practical and financial support across the whole lifetime.

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[1] Some care ethics illustrate how dynamics of care at home are better than those in hospitals (Milligan 2009), especially for elderlies (Ceci et al., 2011).

Based on the assumption that diverse shades of familiar obligations exist in each socio-economic and cultural context, Finch (1989) offered a view of how practices are enacted and negotiated under the norm of 'generalized reciprocity'. First conceptualized by Sahlins (1974), 'generalized reciprocity' refers to those systematic transactions altruistically transferred to another person on the base of an indefinite expectation of reciprocity. Finch (1989) shows how these transactions are strongly associated with family relations, since these giving mechanisms fulfil the morality of these bonds. As outlined by Baldassar, Baldock and Wilding (2007), the practices of care exchange are motivated by cultural expectations (obligations), family bonds and migration histories (negotiated commitments), and ability (capacity). The particular, often changing, combination of these factors helps to make sense of specific care practices for different individual or social groups.

2.3. Summary: Theories Used in the Thesis

Throughout this thesis, the main topic explored is the role of social media in the response to the 2015 Chennai floods. The theoretical discussion of chapter 2.1 and 2.2 will be partially used to support the main findings of this research. A summarized scheme of the theories utilized is illustrated in Table 1. Along with the theories used, this scheme gives an overview of other aspects: the research sub-questions addressed, the research method employed and the location of this theme within this thesis.

Chapter 4 ('Building the Disaster') addresses the question of how the 2015 Chennai floods become a 'megaflood' by using the framing analysis theory of Goffman (1974), the content analysis framework of Neuman et al. (1992) and Warner's (2013) theory of 'catastrophisation as a form of securitization'.

Chapter 5 ('Motivating the Flood Response') attempt to understand the motivations behind Chennaiites (both based in Chennai and abroad) to actively respond to the disaster response. The main ethnographical findings are analysed through the lenses of literature of South Indian society context, especially uncovering dynamics of social obligations with research conducted by Venkatraman (2017). The bonds between Chennaiite emigrants and their families in Chennai are explored through theories of transnational ties and the use of ICTs. Three theoretical concepts are used in this analysis: the concept of 'ICT-based co-presence' by Baldassar et al. (2016), the theory of mobile lives by Elliott and Urry (2010), and, lastly, the conceptualization of care in transnational families developed by Nedelcu and Wyss (2016).

Chapter 6 ('Organizing and Mobilizing the Disaster Response') and Chapter 7 ('Social Networks and Social Capital in the Disaster Response') address multiple questions. Understanding the role of digital volunteers and, more broadly, the role that social media played for the construction of social capital during the response is a topic discussed by a set of theories; one of the is the concept of 'network society' by Castells (1996), which contextualizes the social changes caused by the spread of digital networks. The construction and use of social capital will be analysed through Coleman's (1988) theories of social capital , the concept of 'social cohesion' by Putnam (1995), the concept of 'meetingness' by Larsen et al. (2006), and,

lastly, the distinction among bonding, bridging and linking social capital by Szreter and Woolcock (2004). A further sub-question regarding the inclusiveness of the community response to the floods will be discussed through the theory of 'metropolitan archipelagos' by Tadiar (2016). Through a Spatio-temporal Analysis (see Chapter 3.4), Chapter 7 addresses another question: the spatial and temporal dimensions of delivered aid. For this purpose, the concept of 'space flows' by Castells (1996) will be used, together with the mobilities approach as theorized by Larsen et al. (2006) and the 'new mobility paradigm' by Sheller and Urry (2006).

Table 1. Scheme of methods, research questions, theories and chapters.

Main Research Question: What is the role of social media in the response to the 2015 Chennai floods?

Method	CONTENT ANALYSIS	ETHNOGRAPHY	SOCIAL NETWORK ANALYSIS*	SPATIO-TEMPORAL ANALYSIS
Research questions	- How did the 2015 Chennai floods become a 'megaflood' event?	- What did motivate Chennaiites and emigrants to actively engage in the flood response?	- What was the role of digital and field volunteers in the response? - How did social media help in the construction and use of social capital during the response? - Was the community response to the floods inclusive?	- What were the spatial and temporal dimensions of material, information and service aid?
Theories	**Framing Disasters:** - Goffman (1974): Frame Analysis - Neuman et al. (1992): Content analysis framework - Warner (2013): Securitization	**South Indian Society:** - Venkatraman (2017): social obligations **Transnational Ties and ICTs:** - Baldassar et al. (2016): ICT-based co-presence - Elliott and Urry (2010): Mobile lives - Nedelcu and Wyss (2016): Care in transnational families	**Social Networks:** - Castells (1996): The Network Society **Social Capital:** - Coleman (1988): Social capital Putnam (1995): Social cohesion - Larsen et al. (2006): 'Meetingness' - Szreter and Woolcock (2004): Bonding, bridging and linking capital **Identity and Networking:** - Tadiar (2016): Metropolitan archipelagos	**Social Networks:** - Castells (1996): The Network Society ('space of flows') **Mobilities Approach:** - Sheller and Urry (2006): New mobility paradigm - Larsen et al. (2006): Mobilities approach
Chapters	4. Building the Disaster	5. Motivating the Flood Response	6. Organizing and Mobilizing the Disaster Response 7. Social Networks and Social Capital in the Disaster Response	7. Social Networks and Social Capital in the Disaster Response

*The results deriving from the Social Network Analysis (SNA) are both based upon interviews with key informants and the interpretation of the graphical results of the SNA.

3
The Research

Figure 4. Calendar: planning the fieldwork.

APPROACH

3.1. Actors and Practices

Actor- and agency-focused theories have put forward the perspective that social reality is not shaped by objective structures governing human behavior but, differently, individual and collective actors influencing this materiality in innovative ways. The materiality of social events is not seen as objective since it embodies different meanings and shapes on the base of each actor's point of view (Long 1997). The experience of a disaster, resource coordination, and rehabilitation processes are distinctly sensed by different actors, on the base of their stand, interest and history.

Despite it being relevant to acknowledge that the existence and operation of institutions keeps enacting its authority in the background, targeting actors and practices allows an understanding of community-based coping mechanisms. As argued by Arce (2003), people normally reproduce their society on the base of preexisting organizational models. For this reason, this study argues that an actor-oriented approach is in line with the recognition that networks and structures do not exist in the vacuum, but they are shaped by experiences and practices. Through this lens, social change is not seen as an externally imposed intervention, but as a 'natural' adaptation to a present situation. According to Arce (1997), social change is internalized by individuals and enacted through their social practices, views, needs and relationships. To comprehend individual and collective responses to situations of hazard, it is important to analyze the changes taking place within, and across, different social contexts. In line with Hilhorst's human agency approach, this analysis enables to show how individuals are not passive recipients of external conditions, but "they have the capacity to process social experience and to respond accordingly" (Hilhorst, 2004: 56).

A study of social networks and disaster response coordination necessitates methodological grounding in everyday practices (Long, 1997). Such an empirical approach enables us to investigate how digital platforms and social networks need continuous reinventing and reshaping by exchange of ideas, emotional and financial support, and practical and symbolic achievements. For this reason, it is important to return to the source of the disaster coordination mechanisms: how local actors perform their care practices – *in loco* or at the distance – and 'play out' their identities by fulfilling some of the moral and cultural obligations.

METHODS & TECHNIQUES

To engage the questions outlined so far, I rely on different methodological approaches informed by three distinct fields of inquiry – anthropology, disaster studies and science and technology studies.

This thesis is a qualitative research based on a three-month offline and online fieldwork between March and June 2019 in the city of Chennai, India. The initial stage of the research deals with familiarizing with the urban space and structures; the diverse communities, spoken languages and customs co-existing in Chennai. To come to a closer understanding of the influence of social and digital networking on the everyday lives of Chennaiites, I use an ethnographic approach. Successively, moving towards a deeper analysis of the 2015 Chennai floods, a Social Network Analysis was performed to investigate the specificities of interactions which had been mobilized during the disaster response. To broaden the overview of the activation of social ties on temporal and spatial scales, an analysis of locations and timeframes of the flood was conducted. Lastly, visual material was investigated to clarify how the 2015 floods came to be seen as a disaster; for this purpose, a content analysis of digital information sources was performed. In the next pages, a detailed methodological description clarifies the steps towards using these approaches and tools in the Chennai case study.

3.2. Ethnography

An ethnography 'involves the researcher participating, overtly or covertly, in people's daily lives for an extended period of time, watching what happens, listening to what is said, and/or asking questions through informal and formal interviews, collecting document and artifacts – in fact gathering whatever data are available to throw light on the issues that are the emerging focus of inquiry (Hammersley and Atkinson, 2007: 3).' Despite acknowledging that the duration of my fieldwork does little justice to define this study an 'ethnography', spending vast time and hanging out with locals allowed me to have a short but intense ethnographic experience. This process was shaped by living in a working women's hostel in Chennai, meeting the 'usual' and new people every day and participating in their lives. Meeting and getting to know people both in formal and informal conversations is part of building a relationship of trust and entering people's inner circles, which enabled me to grow my informants' network, as well as being able to locate stories, actions and identities with different perspectives.

The main methods used for this ethnography are participant observations, informal and unstructured interviews. As defined by De Walt and De Walt (2002: 1), participant observation is "a method in which a researcher takes part in the daily activities, rituals, interactions, and events of a group of people as one of the means of learning the explicit and tacit aspects of their life routines and their culture". Interacting with locals and key informants facilitated the trust-building process and enabled a deeper sense-making of gathered data, which in turn offered a vastness of additional information at the side of the more explicit information given through interviews. Observing and hanging out in snack and tea stalls, cinemas, temples, street

markets, busses, beach and people's homes helped me to make sense of the collected data and to the answers given by the interviewed key actors. This also allowed me to partially discern why people would highlight certain details in their story while veiling others.

Informal and unstructured interviews were conducted with a wide range of people from different socio-economic status, professional backgrounds, age, sex and urban locations. Due to my basic level of spoken Tamil, language was considered a mutual barrier limiting the extent of engagement in conversations. Most of the people I conversed with knew at least some basic English; alternatively, friends or locals translated people's words to me. I was mainly able to speak in English to men and educated women (therefore, without the need for an intermediary translator), or having basic conversations in Tamil, or speaking to non-English speaking women (occasionally also men, especially elder ones) with the help of a translating person. This may have created a certain degree of bias towards a larger number of male respondents or educated people, as it was more difficult to encounter females mastering English or having someone translating next to me.

This ethnography aims at building an overall understanding of the identity of Chennaiites; their relationship with water-related issues; their use of ICTs in everyday life; and care practices in transnational families. This ethnographic exploration enables to reply to two research sub-questions:

- *What motivated Chennaiites, emigrants and sympathizers to actively engage in the 2015 floods' response?*
- *What is the role of emigrants through ICT-based co-presence in the flood response?*

In order to investigate the distance-based social networking dynamics, I partially expanded the 'field' to include the online world, by following people on Facebook, becoming member of various Facebook pages, following some groups on Twitter and chatting on WhatsApp. For the ethnographic analysis, the choice of connecting offline and online identities enabled to understand the "(dis)continuities between the experienced realities of face-to-face and social media movement and socialities" (Postill and Pink, 2012). Indeed, while traditional in-field ethnography allows to make sense of a place, online ethnography helps to explore emergent – but nevertheless actual and widespread used – dynamics of social engagement, interactions and networking (Pink, 2009).

3.3. Social Network Analysis

While trying to contextualize the urban culture of Chennai in all its possible facets, semi-structured interviews were conducted to zoom into the topic of the 2015 flood event. Based on the data collected, the successive step is the creation of a Social Network Analysis (SNA), an analytical tool which helps to map the relationships connecting a community within a network of actors. The SNA is constituted by a number of *nodes* (or points) connected by *ties*; while nodes represent actors – both human and non-human, i.e.: digital platforms –, ties embody

social connections linking these actors. The social connections enclose a vast array of information regarding the content of these interactions.

The aim of SNA is to identify key individuals, groups within a network, or associations between individuals. This analysis can help studying how actions and exchanges performed in these relationships are translated into different societal outcomes, such as disaster response management. The SNA can help determining whether and to what extent the members of a network are linked to resource and knowledge sharing (Misra et al., 2017). This is one of the reasons why SNA can be a valuable methodological tool to study social capital creation in specific events. Indeed, this research assumes that social capital can be studied based on how human agency influence the network's features and the physical shaping of the network. Therefore, the use of SNA is aimed to:

1. Identify the key actors who were involved (actor identification);
2. Characterize the key actors based on their social groups' belonging and strength of these connections (socio-interactional dynamics).

A total of 32 respondents (19 males, 13 females) were interviewed. The interviewees comprise a large pool of respondents – social activists (4), IT professionals (2), NGO workers (6), academics (4), a celebrity (1), doctors (3), journalists (1), emigrants (3), independent volunteers (4), affected people (2), a religious organization (1) and a lawyer (1). Both snowball and purposive sampling approaches were employed; the sampling was informed by interviewees' networks, social media, news, websites and academic literature. Access to the majority of the respondents was given by Chennaiite friends, staff of the Indian Institute of Technology of Madras as well as social media platforms. Facebook, Twitter and LinkedIn allowed me to reach many informants which were not residing in Chennai or who were out of the network of my connections. The sampling of key informants allowed me to select a variety of actors from distinct social and professional backgrounds who covered a diverse spectrum of activities and localities during the floods. The interviewed informants represent the number of people who were reachable and available for an interview during my fieldwork period. Out of the 32 respondents, only 21 (15 males, 6 females) were included as 'key informants' in the social network analysis. To delineate the essential specifications for classifying a research participant as a 'key informant', Tremblay's (1989) criteria were used:

- Role within the community: high degree of exposure to a specific event;
- Knowledge: major collection of focal information;
- Willingness: strong readiness to collaborate and share information;
- Communicability: skill of communicating information in a clear manner;
- Impartiality: objective and unbiased account of information.

Data collection focused on the relevant role that each interviewee covered in preparing and coordinating the aftermath of the floods; the social networks they used to coordinate response operations; the ICTs and social network platforms they used in disaster response; their perceptions on the underlaying reasons for this mobilization; as well as the personal and material post-disaster impact that this event marked. The research sub-questions which are replied by this SNA are:

- *How did ICTs help in the use and construction of social networks during the floods?*
- *Was the community-response to the floods inclusive?*

Although the information the informants provided contains a large number of individual-specific details, similar response dynamics can be found across the social, economic or professional sphere to which they belong. Therefore, the respondents are tagged according to some relevant identity traits with the assumption of a certain level of representative they carry for their social group or organization.

Collected data were first coded with the Atlas.ti software; a deductive coding approach was adopted for developing the social network analysis of key actors involved in the flood. The categories are: 1) Actors (Social Actor and Digital Platform), 2) Coordination (Material, Information, Service), 3) Impact (Emotional Impact, Material Impact, Involvement Rationale) and Spatial-Temporal Data (Spatial Data and Temporal Data) (for details, see Appendix 2 "Codebook Social Network Analysis"). Additionally, it emerges that this is a social constructivist study by its attempt to make sense of the specific dynamics and interactions taking place in the response to this catastrophic event. Therefore, to expand the analysis of collected data to a broader interpretation of these social dynamics, a second, indictive coding process was performed using the same software Atlas.ti to explore the vast range of topics and potential patterns emerging from the interviews, which were not considered relevant yet. The categories that emerge are the following (see Appendix 3 for the related explanatory codebook):

- Social Media
- Connections
- Emigrants
- Mental Health
- Geography
- Urban Society
- Disaster Relief
- Care Practices

To plot the social network analysis of the firstly coded information, I used Social Network Visualizer (SocNetV), a free software tool specialized on the development of social network

analysis and their graphical visualization. The choice for using a software to create a social network serves the scope of the visual analysis of the SNA graph; indeed, the numerical outputs of the graph will not be taken into account. In order to include relevant details for each actor and their interactions, a series of features were predefined:

-   Direction of the Line (Tie): unidirectional bond or correspondence
-   Width of the Line (Tie): strength of the bond
-   Dash Type (Tie): type of communication (offline or online)
-   Color of the Line (Tie): type of coordination (material, information or service)
-   Color of the Point (Node): socio-professional background of the key informant (see Figures 5-7)

Due to limited functionality of the software in adding all these details to the two complete social network analyses, only direction of the arrow and width of the line are inserted. All five details were manually added in the actor-specific social network graphs in Chapter 7.2.

The inclusion of key actors' socio-professional backgrounds was also considered relevant to analyze the particularities of the network. For this reason, each individual is referenced on the base of their particular socio-professional attribute, as visually explained in the figures below:
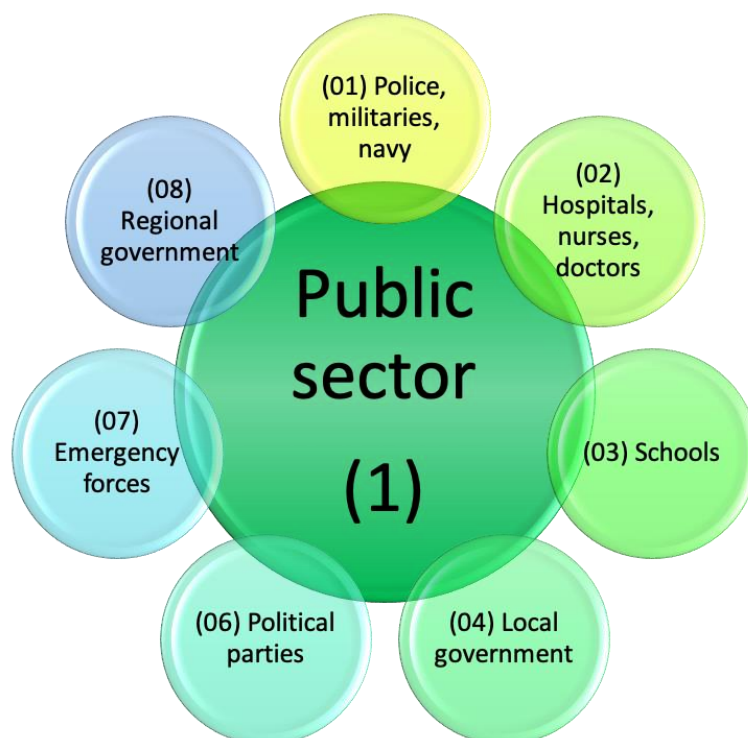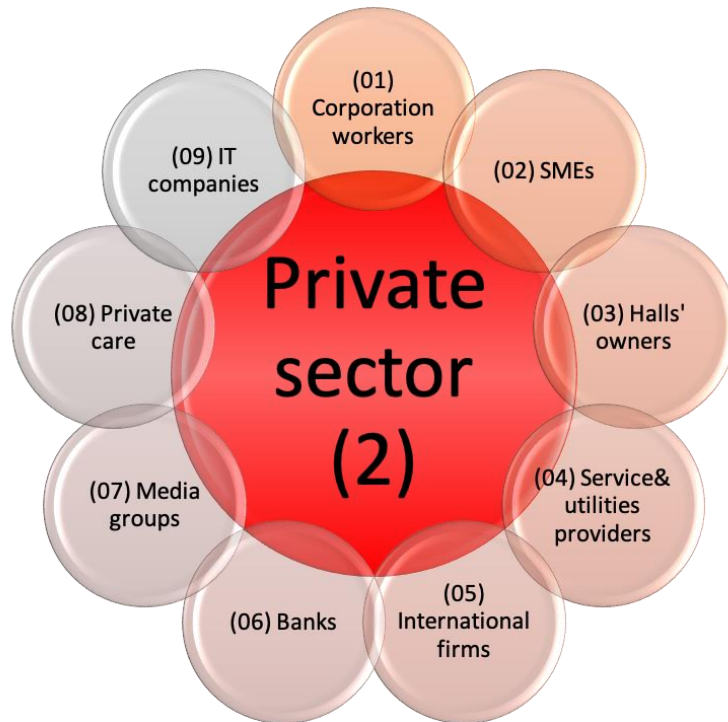

Figure 5. Public sector actors.

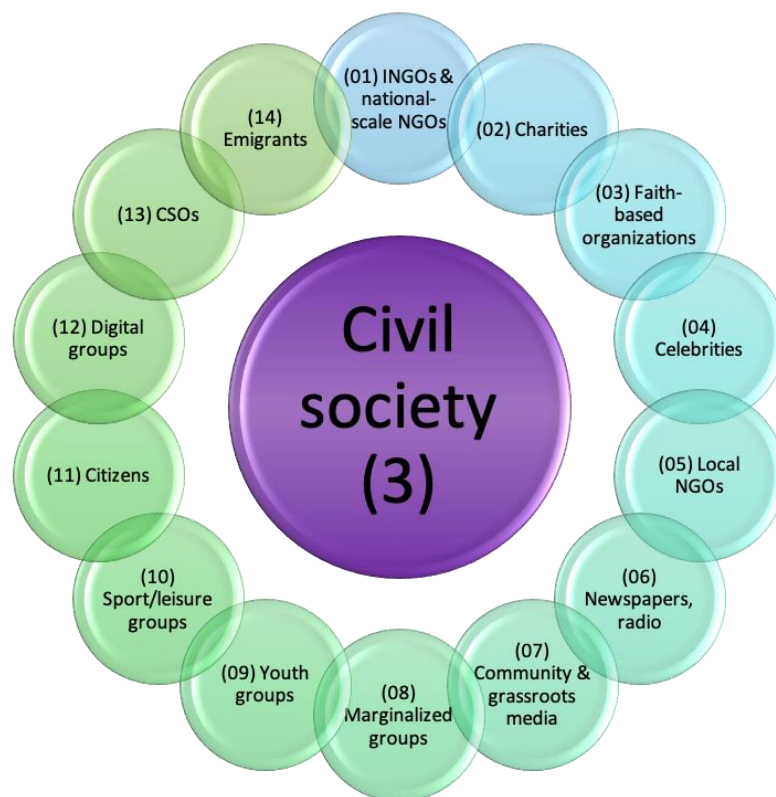**Figure 6.** Private sector actors.

Figure 7. Civil-society actors.

3.3.1. Prominence Indexes

Due to my interest in understanding different levels of ties' prominence among actors, two types of analyses were performed for the same social networks. These analyses are based on two different prominence indexes: the Betweenness Centrality Analysis and the Information-Centered Analysis. The aim of firstly distinguishing and then intersecting these two analyses is to understand whether the number of ties that an actor has also reflects on the frequency and, therefore, strength of these bonds. Intersecting these outcomes is key to clarify which are key nodes and ties in the social network of the 2015 Chennai floods. Indeed, it is relevant to mention that these two outcomes are not mutually exclusive, but they overlap to some degree due to the fact that trusted ties (therefore, strong ties) within one's network are the ones which are generally first reached.

Betweenness Centrality Analysis

The number of ties used by each actor during the floods is the key variable in the Betweenness Centrality index. Though this analysis, the concept of social capital as theorized by Coleman (1988) is focal (see chapter 2.2); the number of ties created builds the conditions for fulfilling specific tasks and gaining advantages through collaborations within or beyond one's social network. Differently from the Information-Centered analysis, the Betweenness analysis does not take into account the weight of each bond, due to the assumption that specific types of tasks can be performed also between interacting actors collaborating only once. This analysis investigates the short-term dimension of interactions during the Chennai floods.

Information-Centered Analysis

The Information-Centered analysis is used in line with the argument of Larsen et al (2006), who highlight how the number of ties that an actor has is not as relevant as their level of 'meetingness', or the frequency in which they activate their ties (see Chapter 2.2). The strength of ties is represented by the frequency through which two actors are interacting with each other to jointly fulfill a flood-related task. The frequency grading is based on a scale of 1 to 3, where 1 stands for a tie with rare interactions (mostly only one, including attempts which were only verbally materialized), 2 stands for occasional interactions, and 3 stands for solid collaborations. This analysis allows to draw some reflections in regard to ties which are likely to be reactivated – due to certain degrees of assumed trust acquired during the 2015 floods – whenever a situation serving a similar humanitarian purpose would happen.

3.3.2. Mixed Social Network Analysis

Despite social network analysis (SNA) having its roots in the social sciences, it developed into a mathematical modelling of a network as a circumstance of making the features of a network more clearly understandable and readable. However, this implies that the quantitative part of an SNA is the outcome; this part portrays a rather static and rigid overview of the network's

structure. One of the issues with these static nature and rigidity is that networks are, contrarily, very dynamic, fluid and flexible in the real world; networks evolve over time by influencing social elements (Hite, 2005). For this reason, researchers (Martinez et al., 2003) argue that combining a quantitative and qualitative SNA in the form of mixed-method approach can offer the possibility both to "map and measure network properties and to explore issues relating to the construction, reproduction, variability and dynamics of network ties, and crucially in most cases, the meaning that ties have for those involved." (Edwards, 2010). For this reason, a mixed-methods approach is adopted in this study to enhance the understanding of both processual and structural features within the network. The qualitative part of the SNA enables a deeper understanding of the content and meaning of ties – especially in the case of this study, where emergent ties are the main focus. As described by Jack (2010), qualitative methods can capture the 'insider' view of the network, which can perfectly balance and complement the 'outsider' view on networks which the quantitative SNA develops.

Based on the potential benefit that a mixed-method analytical extension can bring to the SNA by further addressing the research questions of this study, the quantitative SNA will be considered as an entry-point to assess a qualitative investigation of collected data. Firstly, the quantitative data extrapolated from the interviews is meant to offer information about the network structure. Once investigated the specific role within the network (i.e.: aid requesters, volunteers, NGO workers, social activists, etc.), the communication dynamics in the response coordination, the functions and centrality of certain actors will be explored in detail. This qualitative analysis will also be complemented with participant observation in order to assess, to a certain extent, how the network ties may still be played out in the everyday life.

Lastly, the mixed-social network analysis enables us to discern how possible affiliations of people to some social or interest groups (i.e.: religious, political, semi-political) are played out in the aid coordination of emergent volunteer groups, as compared to formal aid actors. These dynamics of connectedness and/or dependency may shed light on the ways in which emergent volunteer groups function in the diverse social fabric of Chennai. This process aims at enhancing understanding on the dynamics of creation or maintenance of social capital bonds in the phases prior, during and following the disaster emergency response.

3.4. Spatio-Temporal Analysis

Each disaster is an event shaped by a unique configuration of spatial and temporal circumstances. In this research, the analysis of temporal and spatial scales of the 2015 Chennai floods allows to expand the social network analysis, making sense of how certain interactions originated. Additionally, this analysis can further reflect on the role of certain geographies and mobilities in creating or strengthening particular ties which can have a noticeable impact on response coordination. The spatial and temporal analysis studies the degree of interaction taking place in a specific timeframe; these interactions can be tagged and localized on a map through geographical coordinates.

This analysis is conducted by mapping flood-related interactions (as described in the Social Network Analysis output) according to their temporal occurrence location. The selected timeframe is between 11th November and 16th December 2015, subdivided into three temporal stages:

- Pre-floods: 11th November – 1st December 2015
- Emergency phase: 2nd December – 6th December 2015
- Post-floods: 7th December – 16th December 2015

The geographical attributes link up with the physical location of the actors interacting in the network. The location can be as specific as the name of the road, neighborhood or city, as well as broader to tag the name of the country or continent where the actor(s) are located. In some cases, the actor can be international – like in the case of international corporations – since the key informants could not locate the place where these international decisions were taken. Similarly, digital platforms are located in the digital 'space' – a non-geographical location which still needs a physical recognition since these platforms are equally considered as actors. The aim of this analysis is to:

1. Understand the temporal sequence in the formation of social networks (temporal component);
2. Locate the geographical dispersion of the different actors (spatial component).

The gathering of these information aid to reply to this research sub-question:

- *What are the spatial-temporal dimensions of the online and offline responses to the floods?*

The output for the geo-spatial and temporal analysis was obtained using a custom programmed software (for this particular project) written in Python (version 3.6.4). For the processing of geospatial data, the package GeoPandas was used. The resulting projections are plotted in WGS84 World Geodetic System and the geo-referencing is done using the Geocoding API service provided by Google (developers platform). The insertion of data was based on the clear formulation of temporal and geographical coordinates on behalf of key respondents; whenever information showed fragmentation or weak confidence over its accuracy, the data were not included. Due to the difficulty of associating 'international actors' with a specific set of coordinates, the location of this actor on the maps is fictitious. The same equals for 'digital platforms' – an actor which *per se* has only a virtual existence. Despite this selective approach, the accuracy and completeness of this information cannot be fully ensured for various reasons; among other possibilities – and based on the assumption that key respondents were proactively engaged in disaster response –, the high degree of mobilization and interactions may have facilitated confusion and misplacement of information. Also based

on this reason, it is important to mention that this analysis does not claim to be a complete depiction of the larger scale dynamics of social networking of the whole flood event, but rather a case study limited to a number of key respondents, as well as an example of how spatial-temporal analyses can be used in this research field.

3.5. Visual Framing: Content Analysis

In the immediate aftermath of the floods, official news channels were dysfunctional and could not produce information about Chennai, both in India and abroad. Images posted on social media by citizens went viral, as they were depicting the situation on the field in real-time. This process raised awareness on the scale of the event and the extension of its damage within the city. Based on the evidence supporting the key role of images and visual posts during the 2015 event, this study claims that these first images uploaded on social media contributed to frame this event as a 'disaster' (Yadav and Rahman, 2016). Within two days from the flood event, press offices became once again operative and began to update on the Chennai situation. Despite the floods were at first depicted as a natural disaster (while lately they will partially be understood as a man-made disaster), no official declaration of calamity was publicly shared by official authorities until 9th December 2015 (Janardhanan, 2015). Based on the assumption that the Chennai floods were framed as a disaster by people – rather than official authorities, state or national government –, this visual analysis aims at investigating how these images influenced social mobilization based on how the event was framed.

Visual content analysis is a systematic, observational method used to test hypotheses about the ways through which media represent event, situations, social movements, and so on (Neuendorf, 2017). This method enables the quantification of samples of observable content classified into distinct categories, defining different areas of representation (Krippendorff, 2018). The aim of this analysis is not understanding the positioning of different media in the disaster discourse but understanding how the image of a disaster was built. For the scope of this research, the three-step content analysis developed by Elo and Kyngas (2008) is performed. The first step consists in the preparation by: 1) setting up the design, 2) defining units of analysis and, 3) sampling these units. The second step consists of: 4) coding and identifying (or vice versa, depending on the deductive or inductive nature of the analysis) the categories, or frames. The third step is reporting by 5) presenting the outcomes and, when possible, 6) comparing the outcomes to earlier studies.

The content analysis aims at measuring the differences in media framing between informal, formal, local and national digital media sources, as well as the differences in the use of frames over a short span of time. The objective of this analysis is to reply to the following research sub-question:

- *How did the 2015 Chennai floods become a 'mega-disaster' event?*

In this research, the unit of measure, or visual material, are images representing the floods' impact and which were published on defined media channels. These images are photos which people took in the field and which may contain overlaid text. The time frame of this analysis is split into five periods:

- **1st period: 16th – 23rd November 2015** - pre-event, between the first and second rain spell
- **2nd period: 24th November – 1st December 2015** - pre-event, between second rain spell and release of the Chembarambakkam Lake's water
- **3rd period: 2nd – 6th December 2015** - post-event, from the immediate aftermath of the disaster until many offices reopened
- **4th period: 7th – 14th December 2015** - post-event, national and state disaster teams are fully operative
- **5th period: 15th December 2015 – 6th January 2016** - post-event, beginning of rehabilitation and reconstruction phases

These temporal references are partially based on Anbalagan and Valliyammai's study (2016) and information provided from interviewees. From the first authors, I have made use of the idea to focus on key moments which would include pre-event, immediate aftermath and post-event. From the informants, I have used the idea of synthesizing the change in discourse in these five key periods. The 1st period was a large pre-event rain spell in the state of Tamil Nadu, but which did not directly affect Chennai; the 2nd period was the first rain spell hitting Chennai. The 3rd period is the immediate aftermath of the floods and the time most people were off from their works, and in which volunteer groups reached the largest numbers. The 4th period coincides with the time in which the government disaster response forces started to become operative, and many citizens went back to their work. And, lastly, the 5th period is a less response-oriented phase, which coincides with the peak of rehabilitation initiatives by the major volunteer groups of the 2015 Chennai floods. The classification of these five periods is mostly based on key dates identified and clustered by multiple informants, in particular J. Pradeep and V. Sridhar.

To measure the visual contents in these five periods, the sampling units employed are eight digital platforms were used: two international news providers (BCC and CNN), two formal national/state news providers (The Hindu and The Indian Express), two informal national/state news providers (Scroll.in and News Minute; here 'informal' is used with the meaning of using informal language, shorter and less substantiated news), and two community social media news (#ChennaiMicro and TNFS; two Facebook and Twitter platforms mainly organizing funds and volunteers for the disaster response).

A deductive coding approach was used to detect the most common framings in the content of the selected published images. For this scope, Neuman et al.'s (1992) frame theory was applied

to investigate which frames were used in the news coverage of the 2015 Chennai floods (see Chapter 2.1). As previously mentioned, these five generic frames are employed in this study to conduct the content analysis of formal and informal news of the floods. Each frame consists of a set of features which has been employed to highlight specific concepts through media-sourced images or texts. Table 1 summarizes the five frames, describing their function and their identification characteristics.

Table 2. Frames and frame characteristics. Adapted from Neuman et al. (1992).

Frames	Frame description	Frame elements
Human-interest frame	Frame used to enhance the emotional response of an event	These elements are portrayed or derived: - Feelings (empathy, frustration, sadness, etc.) - 'Human face' of the event (help, cooperation, etc.) - Impact on humans (injury, death, etc.) - Personal or private stories from the field
Economic consequences frame	Frame used to report the economic consequences of an event based on physical destruction	These elements are portrayed or derived: - Financial loss or gain - Expenses linked to the event
Conflict frame	Frame used to emphasize conflicting positions and disagreeing views	These elements are portrayed or derived: - Disagreement or arguments - Blaming among groups - Opposition between two or more sides
Morality frame	Frame used to highlight moral and religious reflections	These elements are portrayed or derived: - Moral message of the story - Reference to Gods - Reflection on morals and norms in the event
Responsibility frame	Frame used to point at responsibility mechanisms or potential solutions	These elements are portrayed or derived: - Critique to unfulfilled responsibility - Suggestion on problem mitigation or resolution - Blaming for event occurrence

The digital news outlets used for this content analysis write news in the English language. Despite most of the state-based media publish their news also in Tamil language, the pages used to scout for images were mostly typed in English. Focusing on articles written in English was initially not a voluntary choice, but the amount of digitally published images was predominantly linked to English-written articles. However, since the type of people employed to write articles in English feeds into a specific class of employee (i.e.: more exposed to Western journalism, tailoring news to higher socio-economic classes, not using many local and cultural references, etc.), I would have contrarily preferred using a balanced mix of English- and Tamil-written articles. This not being a viable option, I acknowledge the potential incompleteness in reaching only English-written articles within these media outlets.

3.6. Positionality, Reflexivity and Situated Knowledge of the Researcher

My position in the field can be described as the one of an 'outsider' due to the ethnic, racial, religious, linguistic and socio-cultural background. Identifying myself as a young European woman, from a Catholic-prevalent country, white-skinned with blond hair, I have often been asked in surprise what were the reasons bringing me to Chennai, to live in a working women's hostel and to be particularly interested in the 2015 Chennai floods. My positionality is influenced by the ways in which my background, prior experiences and culturally derived sensitivities help me to make sense of specific behaviors, conversations and feelings. In agreement with Haraway (1989), I believe that this fieldwork is taking me only to a partial understanding of the world I was part of – in this instance, Chennai – through an investigation of details and pictures which are put in a particular perspective which reflects my sensitivities and personal background.

Despite this initial 'outsider' positionality, in the three months I tried to fit myself into the everyday life of a Chennaiite; moving around the city as the majority of people, living where an unmarried student girl would live, practising hobbies which most people engages with (i.e.: cinema, shopping, celebrations, religious services and prayers, beach walking), as well as activities which are more practises by middle to high class people (university classes, arts practice). The sensorial-related habits added a supplementary, but nevertheless crucial, layer; 'snacking', coffee drinking, taking part in ceremonial prayers, walking hours under the heat, and so on. During the fieldwork, I paid extra attention to fitting the overall code of conducts – dressing code, verbal and expressive code, respect code, awareness on sensitive topics and taboos, et cetera – to be able to be gain more trust and commonality with people surrounding me.

Despite my being in Chennai to assess the resilience practices of locals during the floods, it might have actually been more in the respondents' interest to show that they indeed mobilized an exceptional social capital as a consequence of the absence of governmental action. Knowledge and knowledge production can shape reality, and the way I portray these stories can give meaning to certain interpretations rather than others (Hammersley and

Atkinson, 2007: 15). Contrasting the idea that there is one objective 'truth' about disaster response, I align with Schrijvers (1991 in Horst, 2003: 10) in his idea of knowledge being the product of a dialogical communication process, in which every participant, including the researcher, exerts power. This leads to the creation of many diverse and socially constructed – sometimes even conflicting – truths around response coordination actions and rationales. Furthermore, I believe that the type of intentional positionality and data sharing with some of the informants was dependent on my background (researcher, Western origins) and gender. For instance, on the base of this cultural context, the emergence of a high 'ego' stand is not significantly common when a man is talking to a woman, as compared to man speaking to a man. Furthermore, being a Western person – coming from Europe or North America – gave me a large level of accessibility to respondents with a high status, for instance celebrities or NGO's heads. On the other side, information was shared less details until it was clearer to the informant that I was familiar with the urban geographies, cultural and political background of Chennai and its population.

One of the most common complications was the limited access and interactions with people not speaking English. My inability to speak conversational Tamil constituted a barrier in communicating with a certain segment of the population who did not have enough English knowledge to sustain a conversation. This limited the access to particular respondents – especially elderlies, lower income people, women – or even create misunderstandings, both with linguistic or cultural backgrounds. The difference in culture can also complicate the extent of my understanding of specific social, political or behavioral mechanisms and details written 'between the lines', which I may not be able to intuitively pick up and make sense of. The same issue may be foreseen as with the use of body language which I may risk of misinterpreting by reading it through my own cultural lenses. The way in which I am foreseen to partially overcome this limitation is by asking to academic contacts in local research institutions to help me in explaining and interpreting specific practices.

To conclude, I managed to acquire a certain degree of 'inside-ness' by integrating with the customs of the Chennaiite society during the integration process in the Chennaiite society and urban landscape.

4
Building the Disaster

Figure 8. Social vulnerability assessment for flood events.

Introduction to the Chapter

Declaring or naming an event a 'disaster' has a decisive influence in establishing interpretations and creating specific discourses around an event (Cavelty, 2007). Newspapers, radios, TV news and other media play a primary role in constructing and enforcing certain discourses both with visual and verbal means. This chapter analyses the role of media in naming and interpreting the joint consequences of multiple events – the November monsoon rains and the release of the waters of Lake Chembarambakkam – a disaster known as the 2015 Chennai floods.

The sub-chapter 'Background on Chennai' gives an overview of the main features characterizing the urban landscape of Chennai. The next sub-chapter – 'Moving from Normalization to Catastrophisation of the Floods' – discusses the boundary between a 'normal' yearly flood event in Chennai and the 'disaster' label attributed to the 2015 floods. This chapter illustrates through interviews and observations how this line is drawn, referencing to the relevant theory on 'catastrophisation as a form of securitization' by Warner (2013).

In order to more practically describe the evolution of media discourse, the sub-chapter 'Framing the Disaster' provides a temporal development of the frames of the 2015 Chennai floods. A content analysis shows how the visual discourse of the floods evolved over a period of approximately one month during the pre- and post-phase of the disaster through images' publications on different online media outlets.

4.1. Background on Chennai

Chennai (also known as 'Madras') is a city in the south-eastern coast of India, bounded on the eastern side by the Bay of Bengal and on three remaining sides by Kanchipuram and Thiruvallur districts (see Figure 9). Chennai is the capital city of the state of Tamil Nadu as well as the most populated city of this Indian state. In 1600, Chennai was formed of scattered human settlements, each of them growing around the nucleus of a temple. The city has vastly grown and compacted into a metropolitan area, the so-called Chennai Metropolitan Area (CMA). In the last 20 years, Chennai has undergone considerable industrial growth and it is still rapidly urbanizing. The booming Information Technology (IT) and automobile sectors have been one of the major causes for substantial migration from the rural areas to urban Chennai (Tajuddin, 2018). According to population estimates of 2019, Chennai has approximately 10 million inhabitants in an area of 170.47 km2, making it the fourth largest Metropolitan City in India (Gupta and Nair, 2010; Bolder, 2019).
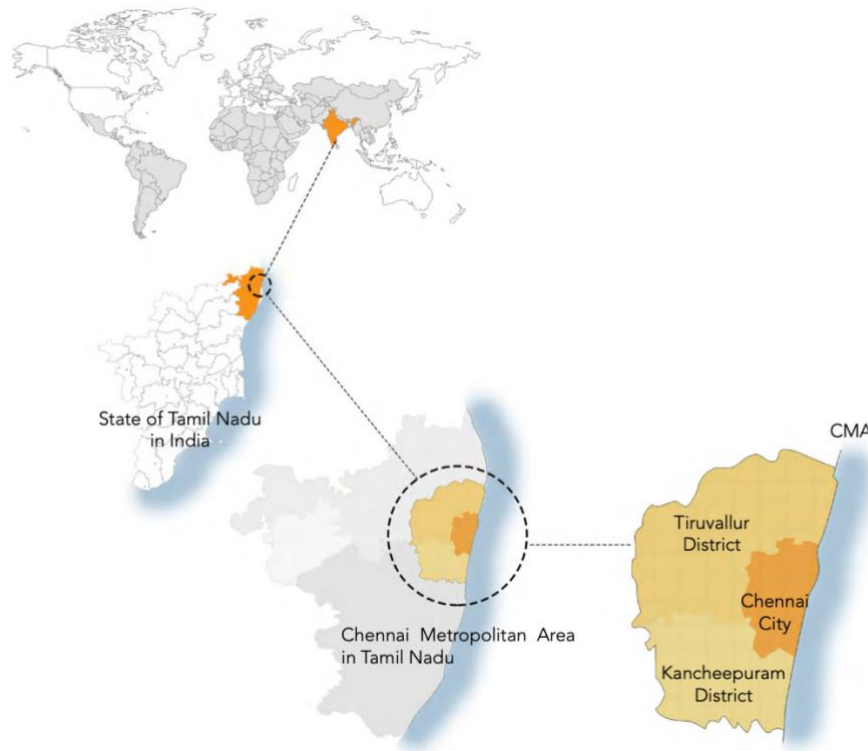
Figure 9. Geographical location in Chennai, Tamil Nadu, India (Source: Tajuddin, 2018).

The topography of Chennai is predominantly plain, with occasional hills mostly located in the south-western part of the city. Average annual rainfall is approximately 1300 mm (Gupta and Nair, 2010). Being Chennai a delta city, floods are a natural occurrence. Despite climate change having increased the risk of floods, urban development and human activities have critically aggravated Chennai's overall vulnerability to floods. Previously considered as an example of sophisticated water network, the city has grown increasingly vulnerable to any water excess as well as water scarcity periods. Indeed, Chennai's urbanization reveals clear violations of basic urban planning rules, with extensive obstruction and transformation of natural hydrological elements – lakes, ponds, marshes and floods plains – into built-up areas (Manohar and Muthaiah, 2016). It has been estimated that 90 percent of open swamps have been converted into built-up areas, with over 150,000 illegal structures (residential and institutional developments, informal settlements and industries) being built on top of riverbanks and dry channels (Esther and Devadas, 2016). This means that the natural drainage system has been severely compromised by poor urban planning.

4.2. Moving from Normalization to Catastrophisation of the Floods

"Number 1, Why are you interested in 2015 Chennai floods in particular?
Number 2, that was not a flood." (Prof. Janakarajan)

The words of Prof. Janakarajan, a respected water expert, hint at the complexity of defining the so-called '2015 Chennai floods' as an actual 'flood'. So I try to investigate what he exactly understands as being a flood.

> "The flood here in Chennai is something different from textbook definition. Here in Chennai, if my house has some stagnating water inside, that is also considered a flood. When the water is inundating a particular street, that is also a flood. So flood is a flawed concept, it is not a static concept. Stagnation of water is called water inundation. Here water inundation and flood are mistakenly used with the same meaning." (Prof. Janakarajan)

The rains that started in early November 2015, which flooded parts of the city, were additionally coupled with the (uninformed) release of the water of the Lake Chembarambakkam; this act caused the flooding of numerous sections of Chennai in the night of December 1st, 2015. Indeed, when asking people how it is to experience a flood, people tell that there is a flood every year. "In Chennai floods are an occurrence", Prof. Janakarajan tells me. In fact, floods are as normal as droughts in Chennai: people have learnt to live with (or without) water (S. Janakarajan, personal communication, April 30, 2019). Chennai has a large history of natural calamities, one of the most recent being the 2004 tsunami. During my time in Chennai, I have often read about water issues in the media and listened to talks on water politics at the tea stalls. I have observed how water scarcity takes place in the city: through the repetitive daily checking of water levels in domestic wells, the continuous refill of wells by water tankers, and the bi-weekly water distribution to low income communities.

However, I was told that the current status of Chennai, in regard to water, has enormously changed in the last few decades. Indeed, Chennai is also known as the 'city of tanks', due to its the large historic system of temple tanks, ponds, lakes and vast wetlands surrounding and expanding from the urban centre (S. Janakarajan, personal communication, April 30, 2019). Despite this system providing an incredibly reliable mechanism for water management in the past, the current pressure for water caused by the unregulated urbanization of the city, among other factors, has turned Chennai into a seasonally vulnerable place (Jain et al., 2017). Therefore, on one side of the coin, we find floods; on the other side of the coin, we find droughts.

> "In 2005, the density of population was around 15,000/km2, but now it is approximately 30,000+/km2. In 2015, it was 26,000+/km2. In the last 15 years, people have tried to settle wherever they can, wherever there is space. If it is a waterway, lake, marshland, river – they do not care. In summer everything looks beautiful, so people buy. Only when it is rain season, they get to know that it is a flood-prone area." (Prof. Janakarajan)

Chennai is depicted as an actor, drastically changing its landscape across seasons: from dry summers to harsh heat and water scarcity, and from monsoon rains to floods and dysfunctionality of the city. But only someone who has lived long enough in Chennai can tell what the hints for season changes are. Chennaiites have an overall strong sense of how different sections of the city metamorphosize into flooded streets, dry areas, hotspots for water stagnation. When the rain season starts, they know which areas will be flooded first and how long it will take for their street to be flooded (S. Janakarajan, personal communication, April 30, 2019). A clear knowledge gap can be identified in those people temporarily living in Chennai and who have not personally experienced floods and droughts. Those people – mainly coming into Chennai for working or studying purposes, and who do not generally interact with locals or do not speak Tamil – often lack basic knowledge on flood-prone areas and end up living in those areas (R. Sudhir Chella, personal communication, March 25, 2019). This knowledge gap is not only limited to the (temporary) non-local people; many Chennaiites tend to be unaware or underestimate the real risks of what they might later discovered being a dried-up marshlands and lakes, dealing with the faults of their decision only when rainy or dry seasons approach Chennai. Furthermore, as discussed by Agrawal (2005), environmental subjectivity has also a large influence in determining one's own knowledge and preference on the base of short-term interests. Not surprisingly, many affected middle-class residents – with limited geographical awareness of the ecological destruction caused by the development of the residential areas they were inhabiting – became for the first time aware of the environmental risks linked to living in those newly developed neighborhoods (Arabindoo, 2016).

However, I am still wondering: why were the 2015 floods not 'just a flood'? As any actor, residents build their own meaning of 'flood' as well as their own association of flood with perceived risk (Stedman, 2016). From his position, Prof. Janakarajan stresses the importance of clarifying that the response following the 1st December flooding of the city should be considered as a humanitarian mobilization, but not triggered by a yearly flood event. Therefore, despite the increasingly negative impact that disastrous events have in rapidly expanding urban contexts (Pelling, 2003), the words of Prof. Janakarajan – coupled with the content of many other interviews I conducted during my fieldwork – made me realize that what truly drew the line between a yearly flood and the 2015 floods is the large social mobilization in response to this event.

Indeed, what I learned from my informants is that the complexity of these floods goes beyond the scope of the (natural or man-made) disaster. As explained by Prof. Janakarajan, although the annual flooding of the two main rivers – Adyar and Cooum – has always been a 'normal' occurrence, flooding regimes and their repercussions on citizens' lives have been drastically changing. The impact of the 2015 floods has reached many more neighborhoods than the usually flood-hit areas; this stays also to indicate the larger socio-economic diversity that this event caused. As delineated by Arabindoo (2016), national television channels and online media highlighted how the hardest hit of the 2015 floods were the middle class. Rather

than considering this as a statistical reality, I take this point to highlight how media coverage – differently from yearly floods – started to depict the middle class as vulnerable: a place which is normally occupied by the lower socio-economic classes (Arabindoo, 2016).

On a high politics' level, the initial reaction of the Chief Minister at-the-time Jayalalithaa was stating that "losses are unavoidable when there's very heavy rain" (Arabindoo, 2016). The perspective quickly changed when official national positions and media started to depict the floods as unprecedented. This event changed the whole perspective from a fatalist to a catastrophist position on the 2015 rains being an unprecedented event to face (Arabindoo, 2016). This progression shows how different politically motivated sides contribute to shape the boundaries of what is 'normal' and what is 'exceptional'. Since the distinction between normality and crisis is not empirically delineated, declaring the state of exceptionality becomes a political matter (Warner, 2013). This process named 'securitization' – the construction of a situation as crisis – establishes a sense of urgency and priority created by a new ordering of power, spaces, interactions and regulations (Warner, 2013).

When dealing with situations such as natural disasters, political actors can commit the mistake of neglect; as in the case of the 2015 Chennai floods, this is described by multiple informants as an excess of abandonment in face of a large threat for humans. Indeed, many of the informants highlighted how state authorities downgraded the 2015 floods, so that the governmental disaster response forces were initially not called to respond to the situation. This systematic neglect of victims in disasters is defined by Warner (2013) as 'undersecuritisation' or a mismatched concern for a humanitarian crisis in progress. As mentioned in the Chapter 1, only some days after the 1st December 2015, the state of 'exceptionality' was officially declared. However, since the floods affected a diversified range of socio-economic classes, the upscaling of the flood event to 'disaster' was already formulated by actors operating in the field as well as media outlets. The next sub-chapter (Framing the Disaster) will further illustrate the evolution of the discourse about the 2015 Chennai floods through a visual temporal analysis on selected digital media outlets.

4.3. Framing the Disaster

The occurrence of a disaster generates uncertainty and a limited communication capacity (Houston et al., 2015). For this reason, the demand for information grows exponentially. In the case of the Chennai floods, failure of the power grid, lack of cell phone signal, and mobility issues to reach newspaper publishers' offices, gave ample space for social media and more informal news outlets to fill the gap of official news and provide an impression of what the situation was on the field (K. Valliappan, personal communication, September 22, 2019).

This sub-chapter describes the type of discourse framing adopted by each of the four types of media outlet analyzed (see Chapter 3.5) before and after the 1st December, in the time span between 16th November 2015 and 6th January 2016. This temporal research is conducted through a content analysis providing a representatively selected sample of pictures per media category and time period. Figure 11 shows the chronology of emblematic images published on

the different media outlets in the pre-flood period, until 1st December 2015. On the other hand, the disaster aftermath and post-floods are shown in Figure 12 which provides a chronology of published images from 2nd December until early January 2016. The full collection of analyzed images can be found in Appendix 4.

International media

Before 1st of December, international newspapers highlighted the high intensity of monsoon rains happening over Chennai (see Figure 11). At that stage, not only Chennai is represented and mentioned, but other areas of Tamil Nadu and Andhra Pradesh which were equally hit by torrential rains. Photos of inundated neighborhoods, people struggling in the rain, community-based help activities are the main focus (see Appendix 4). The framing of these images highlights the environmental impact of the flood, along with the consequences on human lives' disruption. There is also a subtle reference to changing climatic patterns as underlying cause of this natural event.

Figure 10. People in inundated streets (BBC, 19/11/2015).

International

State

16° Nov – 23° Nov

24° Nov – 1° Dec

National/State

Community

Figure 11. Pre-floods content analysis.

51

International

State

2° Dec – 6° Dec

7° Dec - 14° Dec

15° Dec – 6° Dec

National/State
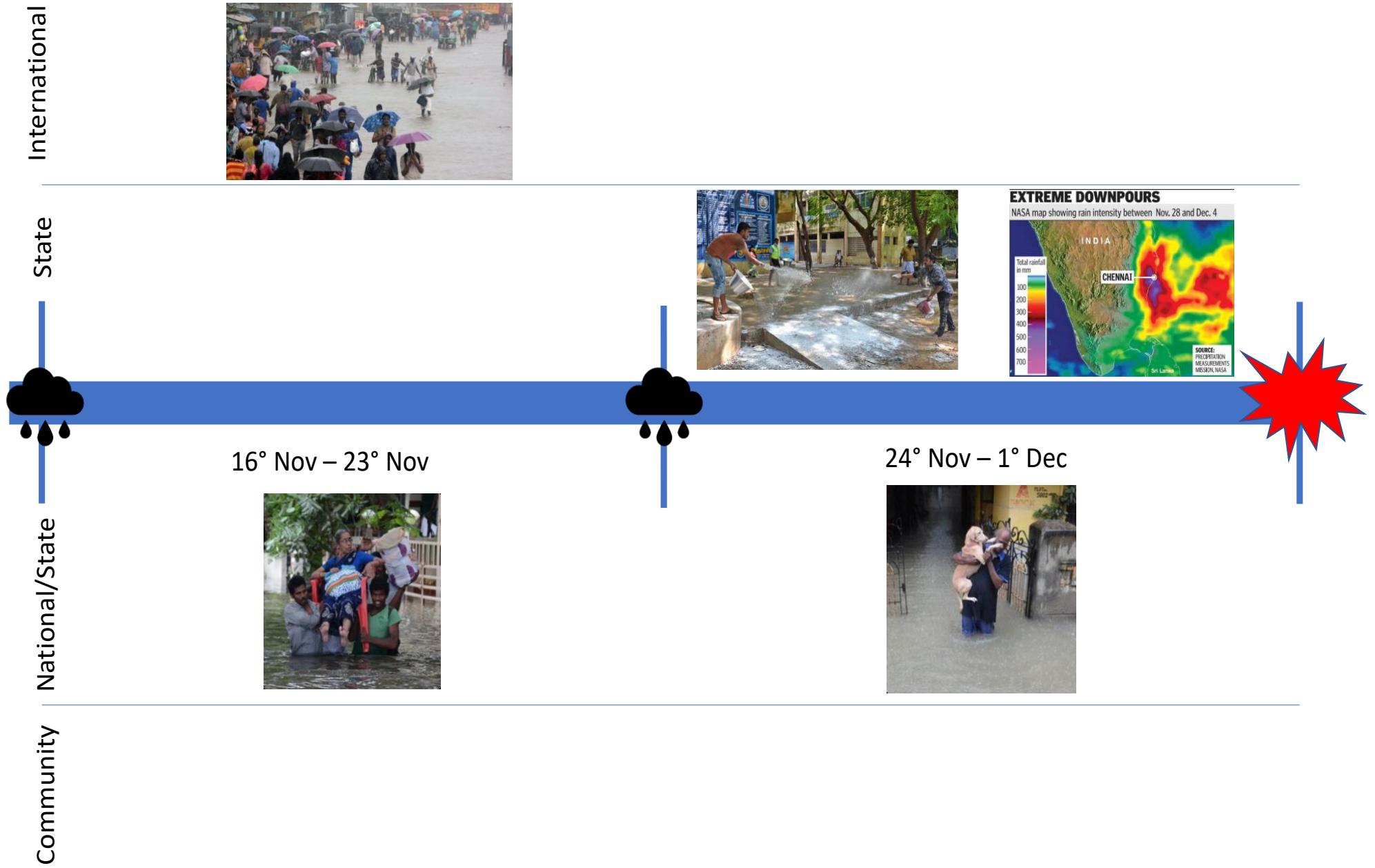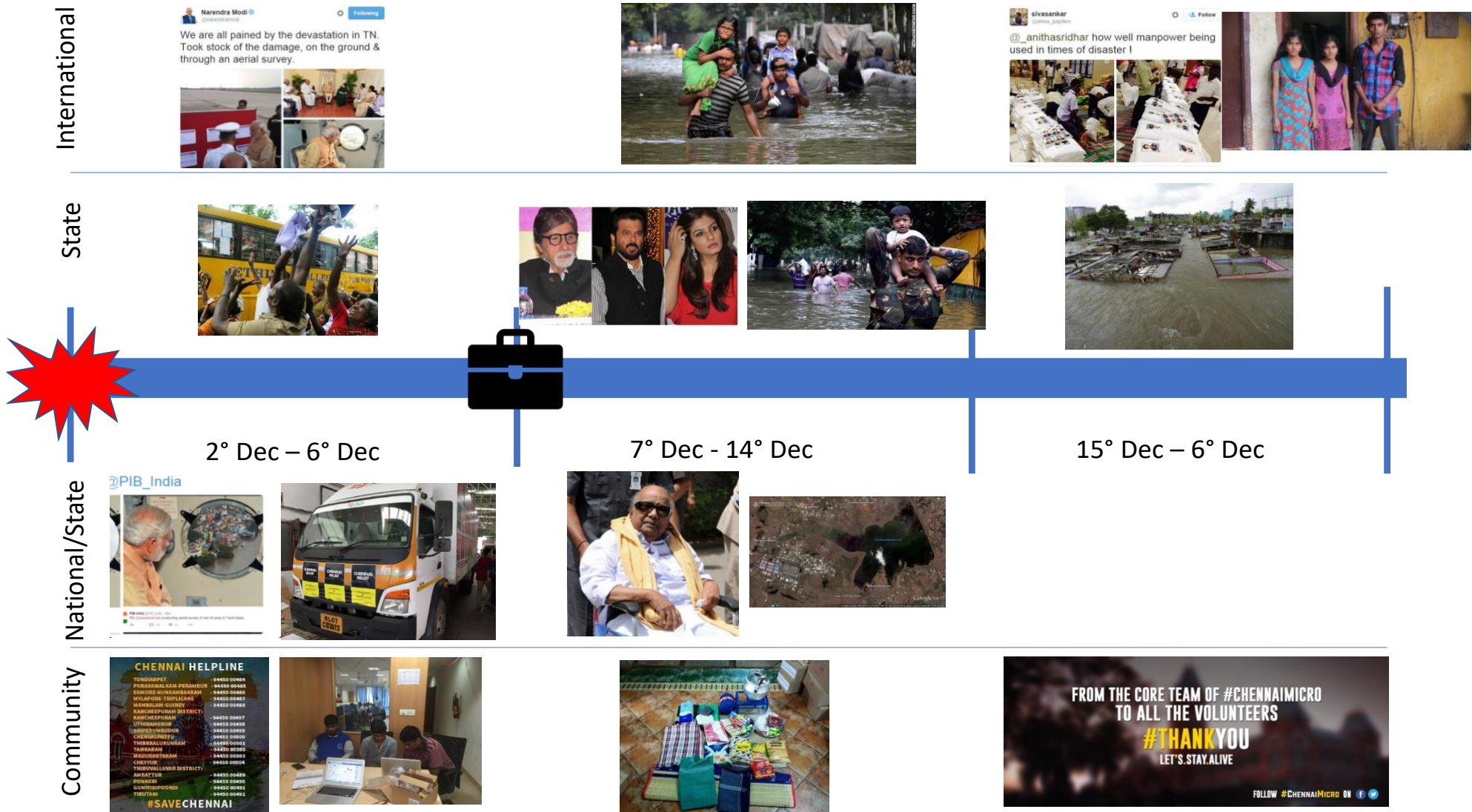
Community

Figure 12. Emergency and post-floods content analysis.

However, only after the 1st of December the framing of published images shows a drastic change in focus. From photos of flooded streets, now images showing political leaders and questioning their responsibility in the disaster response became viral. Other images show conflicting and critiquing views seeking for accountability within official disaster respondents. However, another visible framing is the one of leaders in their 'ivory tower': as shown in Figure 12, the Indian Prime Minister is photographed in the comfort of his private jet watching out the window to see a completely flooded Chennai. Additionally, other images 'speak' about the scandal of the pasting of the ruling political party' stickers on relief food packages. These particular episodes opened a whole moral discussion on the values motivating relief donations among the ruling party: were they doing it just to for recognition and attracting votes, or to honestly help their population?

In international media, the framing of photos shows a rather detached position between government and the local community; this latter one is mainly depicted as being actively managing the situation on the field. However, around 7th December, CNN showed images of governmental disaster rescue forces saving civilians in flooded areas by boat (see Figure 13).

Figure 13. Army rescuing people in the floods (CNN, 7/12/2015).

A few weeks after, personal stories of citizens who have lost their houses and families, and find themselves in vulnerable positions, are told. Photos of ordinary low-middle class families and individuals standing in front of their homes highlight how this disaster disrupted their lives; the visuals do not make permeate any feelings of desperation or anger, but only show the factual consequences.

Official National and State Media

In official national and state media, before 1st December most images depict the meteorological predictions, showing how the cyclone is going to move around Tamil Nadu in the following days. The dysfunctionality of certain services, such as the closing of schools, is another relevant

topic portrayed in the news. Nothing in particular suggests an abnormal cyclonic season, including the closure of schools – which is a yearly event according to my informants.

After the 1st December, the images shift their attention to portraying Tamil and non-Tamil celebrities (i.e.: movie stars, hockey players, singers) contributing – both materially by donations, and morally by praying for Chennai – in the response to the disaster (see Figure 14).

Figure 14. Celebrities donating for Chennai floods (The Indian Express, 2/12/2015).

Along these images, national and state governors are portrayed as active contributors in the assessment of the scale of the disaster. Some official letters are portrayed as testimony of leaders calling the Prime Minister's attention to the catastrophic event affecting Chennai and large part of Tamil Nadu. Only after the first week, the focus switches to the impact on people: national rescue forces are portrayed in their rescue missions; citizens waving their hands up in the chaotic mass of people surrounding food trucks in the hope to catch one of these food packages; children waiting for their plates to be filled. These images portray a collection of emotionally charged images, showing human vulnerability and need for external support. Lastly, photos of slums covered by water up to roof level and with no human presence suggest that low-income settlements located at the river sides have been brutally hit by the floods.

Informal National and State Media

Informal national and state media portray a flooded Chennai, where residents are rescuing less mobile people such as elderlies out of their flooded homes. After the 1st December, the increasing quantity and frequency of published images leads also to a meaningful shift into the morality and responsibility frames. The issue of political stickers stands out also in these media, where discussion on morality make people wonder what the real priorities of the state government are, after their clear absence in the first days from the disastrous event. Images raising understanding on the causes of the floods are also numerous. Google Maps photos of Chennai 10-20 years ago compared to those depicting the same localities at the present date

(December 2015) highlight how unregulated urbanization in environmentally vulnerable areas can explain the impact of this flood (see Figure 15).

Figure 15. Velachery Lake, 1970 and 2015 (Scroll.in, 6/12/2015).

Images showing the situation in relief camps are published, suggesting a safe place, out of all dangers which people are still exposed to on the streets. Lastly, a consistent number of pictures show the NDRF, the national rescue forces, in its rescuing missions, giving a feeling of protection and control of the situation on the ground.

Community Social Media News

The news circulating on community-run media uniquely portray images enhancing the emotional response to the floods. Apart from relief coordination messages and images, photos related to the broader context of the floods display the humanity coming into play during this disaster. The focus is on the strength of volunteer groups on the field and in other states: how Chennai residents, Chennai emigrants and sympathizers are contributing, everyone in their possibilities and capacities, to help affected people. In community social media news, photos are only published from 1st December night onwards. The timespan of these pictures is quite limited, consisting essentially of the first two weeks from the disaster. The only images shown after 3 or 4 weeks from the disaster are those thanking volunteers for the team effort and wanting to encourage them to 'stay alive' (see Figure 16).

Figure 16. Social media message thanking volunteers (#ChennaiMicro, 26/12/2015).

This is an attempt to motivate people to keep strong bonds and the same spirit within their volunteer teams so that they can be ready to help and contribute to the community in future possible difficult times hitting Chennai or close by areas. The message of brotherhood and empathy strongly permeates these visual testimonies portraying volunteers from Bangalore, Mumbai and surrounding states, like Kerala, who are mobilizing resources, coordinating information and helplines to support Chennai and its people. (see Figure 17).
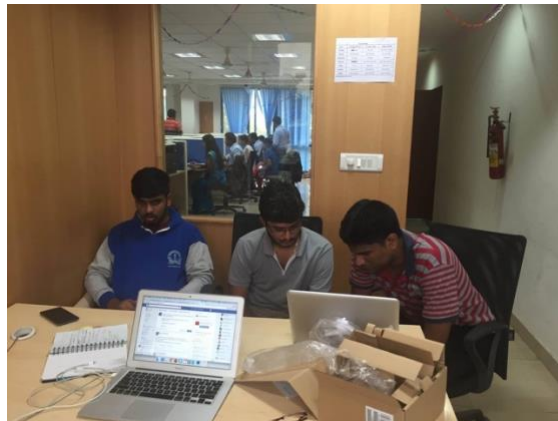
Figure 17. Digital volunteers at work in Bangalore, India (5/12/2015).

Analyzing the Frames

Each type of media category uses a diverse combination of the Neuman et al. (1992)'s frames. International media focuses on the responsibility side, trying to hypothesize how the intense torrential rains originated and hit diverse neighborhoods of Chennai; this is done by hinting at the weight that climate change played in intensifying this event. The spotlight on the environmental catastrophe expands to show the disruptions that the floods caused on human lives. Responsibility, accountability, and 'ivory tower' leadership are some visible content among published photos. These aspects show both the positive and negative sides of the response: from the positive (yet delayed) rescue operations by the official disaster forces, to the negative and morally charged discussion on the stickers pasted on food supplies.

Stories become more personal and human-centered once the emergency has ceased and the international media report on examples of disrupted lives. This is opposite to the community social media news, where personal and emotional stories are at the base of the published items. Making photos personal is one of the strategies to call out to participation, to commitment and to compassion for those who are suffering or helping the ones in need. Furthermore, these photos were also used to prove to donors how their contributions were immediately used; photos were used as an accountability documentation. This is also the time when informal volunteer groups had to take decisions: some of the organizations which played an important role decided to apply for officialization as NGO, while other groups dismantled just after the community response to the 2015 floods ended. However, apart from newly formed NGO and dismantled groups, some of these groups also decided to remain active but 'dormant', being able to quickly reactivate when other humanitarian issues rise in Chennai (S. Janakarajan, personal communication, April 30, 2019; S. Sundar, personal communication, May 6, 2019). This 'dormant' activism has grown strong in WhatsApp and Facebook groups which, since December 2015 until date, continue to serve the community with reconstruction crowdfunding, humanitarian actions, and many other forms of everyday community help (S. Sundar, personal communication, May 6, 2019).

On the other side, official national and state media portray a heavy load of emotionally charged images; however, these are employed to show human vulnerability and the need for external support. Those images focus on crowded and chaotic masses of people being in the street and 'fighting' to get some of the relief packages delivered to the affected neighborhoods. The portrayed people are mostly low-income families; this choice may be strategically played to enforce the sight of vulnerable poor people in need for help. Undoubtfully, showing such large assemblages of needy people gives a size to the amount of relief that the government has been providing to its citizen.

A diverse focus is provided by informal national and state media, which raise a blame discussion on accountability of the floods' consequences by questioning the weight of unregulated urbanization in disaster-prone areas. For the first time, blame is not 'discharged' on climate change and intensification of natural events, but on human decision-making and corrupted politics. This frame is enforced in those articles where activists and academicians have intervened to clarify what they think being the real underlying causes of these floods.

Discussion of the Chapter

This chapter has highlighted the strategic importance of declaring or naming an event a 'disaster': a term which conveniently leveraged governmental or citizens' responsibility from being part of the cause. Indeed, while many different attributes could have better explained the reasons behind this event – for instance, water mismanagement or unregulated urbanization –, the 'disaster' label was the one which could easily build on a pre-existing unsatisfaction between citizens and the role of conduct of their government. Therefore, despite the scale of

floods, the framing of 'disaster' was a convenient stratagem by media and volunteer groups to keep the situation emotionally tensed so that people could feel united and generous to help. Indeed, no serious discussion were introduced to make use of the momentum; an example would be the rapid and uncontrolled construction on disaster-prone areas to which the whole city (most citizens included) has adapted. Media strategically used an 'alarming agenda' to trigger action – by fostering strong but temporary feelings – rather than reaction towards other longer-term problems which would reinforce vulnerabilities within the city.

The catastrophization discourse was also not entirely aligned with the local media agenda. Indeed, despite the 2015 floods became an internationally famous disaster – to the point that a documentary called 'Chennai Megafloods' was broadcasted on the National Geographic channel of India – the local perspective on these floods is not as catastrophic as key informants portrayed it. When, during my fieldwork, I would discuss with local people the topic of the 2015 floods, many people could not exactly recollect any (striking) memory about this event. Indeed, it appeared that – as for mostly any yearly flood – since they had not been affected, they had never become concern nor aware about the impact experienced around the city. This is particularly the case for locals who were not connected to social media platforms such as Facebook or Twitter, where one is passively exposed to visualize any type of information shared by the network. Therefore, the catastrophization of this disaster is a mechanism which took place in the media, but which was not necessarily perceived as such within the city – especially in those neighbourhoods which were not impacted. However, since media attempted to close the information gap between Chennai and the world, the catastrophization of this event was a phenomenon which tailored specific segments of the society, among which the Chennaiite diaspora and the active social media community. Those were also the people who were actively engaged in the community-based response coordination, so there was a certain degree of (un)intentional bias in showcasing the devastating impact of these floods.

Closing Lines on the Chapter

The 2015 Chennai floods was an important disaster event because it mobilized one of the first and largest social media-based mobilizations in the history of disaster response. The peculiarity of this disaster lays in its impact: citizens from all socio-economic strata were impacted by these floods. In this event, not only low-income people, but also middle-upper classes were depicted in the media as victims of the disaster. The upscaling of the event from a flood to a 'disaster' was conceptualized and promoted by actors on the field (volunteer groups) and media outlets. Due to the initial inactivity of the state and national governments, media communicated the public dissatisfaction about this critical governmental absence. While heads of government were depicted in their 'privileged' position, Chennaiites from all classes are portrayed in their attempts to save people, animals and belongings. Media also raised issues of accountability: behind the flooded city there is an extensive history of poor urban planning, suggesting the increasingly devastating effects of new areas built on dried-up waterways.

The occurrence of this disaster created widespread concern and uncertainty. In a scenario of limited communication capacity, demand for information grew to a large extent; not only among people living in Chennai, but also due to the apprehension of Chennaiite emigrants over their families and friends in Chennai. This is why, as illustrated in the next chapter, the mobilization of the disaster response expanded well beyond the borders of Chennai.

5
Motivating the Flood Response

Figure 18. Religious offerings.

Introduction to the Chapter

Social mobilization of people was a key aspect in the 2015 flood response. Different motivations in actively engaging with the response correspond also to diverse ways of contributing; may this, for instance, be as digital volunteers, donors, field volunteers, advocates or intermediaries between people and authorities. Three main motivations can be identified: a culturally motivated involvement (Chapter 5.1), a socio-philanthropic motivation (Chapter 5.2) – which will also discuss the link among philanthropism, culture and heroism (Chapter 5.2.1) – and an emotional response (Chapter 5.3). Each of these motivations includes a diversity of contributors, varying in their age range, socio-economic group, professional profiles and skillset. This chapter will describe and analyze all three distinct motivations and contextualize them to the type of social groups they relate.

5.1. Culturally motivated Response: the Dravidian Culture

People in Chennai remember the 2015 Chennai floods, but informants often talk about this event referencing to another memorable social mobilization: the Jallikattu protest. According to Swapna – lawyer and author of a book on the Jallikattu protest –, this large-scale mobilization against the traditional Tamil practices of bull taming followed a similar creation and mobilization processes to the 2015 floods. Interestingly, this similarity raised large curiosity in how and why this happened for two such distinct events. Swapna highlights how it all comes down to a Dravidian value-driven mobilization (Sundar, 2017). Dravidian culture – which has strongly resisted the Hindi-speaking hegemony (Wyatt 2004) – is based on socially egalitarian values ensuring peaceful coexistence and respect among human diversity (Stepan et al., 2011)[2]. In the last years, these movements mobilized heterogenous masses whenever the values and ideals of Dravidian culture were perceived to be under threat by external factors. However, social mobilization in the name of defending Dravidian culture does not apply to every social issue; indeed, there is a specific focus on humanitarian issues.

> "Most of them [supporters of Dravidian culture] are believers of God and religions, and they take Tamil culture as an umbrella culture. So when they see Tamil language or Tamil culture under attack, they will act. But if there is a caste issue that is happening, they will not intervene. It must be a threat to everyone." (Swapna, lawyer)

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[2] The modern Dravidian movement is referenced to the figure of the leader Periyar, who in 1926 established a sociopolitical collective called 'Self-Respect Union' (English translation) which revolted against Brahmanical priests and the Sanskritic scriptural authority. Indeed, acceptance of Hindi language in the school system was associated to a politically and religiously way to enforce Brahmanical priesthood. Periyar attracted large masses of non-Brahmin semiliterate and poor youth who together believed in the preservation of Tamil culture and the importance of giving dignity and pride to non-Brahmin people. Periyar's efforts were then extended to a vaster number of Tamilians – mostly students – by Annadurai through his sociopolitical collective "Dravida Munnetra Kazhagam" (DMK) (Pandian, 1998).

"These movements are very parochial and very beyond patriarchy, beyond sexism. They say: our women, our girls, our community we need to protect. So it is very safe. Every age of girls come and protest, from elderlies to school children girls. They will be in danger outside, but in the protest not! It is some sort of implicit rule within the community. These movements are beyond castes, sexism, patriarchy. We have to do this, because it is heroic or good. But everything happens without violence. It is traditionally the concept of 'Aramvari', the righteous protest. It is parochial, but it does not become evil, it actually becomes very constitutional." (Swapna, lawyer)

The weight that Dravidian culture has for a large section of Chennaiites explains also how cultural acceptance of human diversity is embedded in the city culture. People of different religions have historically been open and tolerant among themselves. "We all coexist together, among Christians, Hindus and Muslims" confidently affirms Prof. Janakarajan (S. Janakarajan, personal communication, April 30, 2019). Incoming population of different ethnic backgrounds are also been generally welcomed within the society. Additionally, many Chennaiites are not originally Tamilians, so strong bonds are also evident across historical migrants of other bordering states, such as Kerala, Andhra Pradesh and Karnataka. However, this peaceful coexistence is also a peculiar trait of Chennai. Indeed, rural Tamil Nadu has less diversity-tolerant practices in terms of cultural coexistence. Overall, the broader South Indian society is still heavily dependent on kinship systems and it operates in religion- and caste-bonded group loyalties (Washbrook, 2009). Despite loyalties also find a place in Chennaiite society, social networks are more fluid in urban Chennai than in rural Tamil Nadu (Venkatraman, 2017).

"After the Chennai floods we helped in the Gaja cyclone. For that disaster, we went in the interior of Tamil Nadu. […] It was amazing on that day, we learnt very new things, by travelling on that location. In that area, people were different. Still there is a caste problem, still there is a religion problem. Still we can find a wall between upper and lower caste people. In Chennai we do not have such issue, we still have caste and religion, but we will not show that, we will still be friends. As a Muslim, I have many Hindu and Christian friends who come to my home. We do not even see these things. But over there, there is a huge caste problem, people will not be allowed to enter the street also. We never knew that. Some people said [to] me, you will be going into deep interior village, there will be too many restrictions. People will not even take your food, so please plan accordingly. What I replied to them is that they are also humans: they suffered, and they will not think in terms of caste or richness. But it was like they said." (Peer, informal NGO founder)

The strength of this culturally driven value of peaceful coexistence builds part of the basis to understand why the response to the 2015 floods – as it will be illustrated more in-depth in the

Chapters 6 and 7 – did not impose intentional selective social, cultural and economic measures to define both who could help and could be helped.

5.2. Value motivated Response: Philanthropism

Philanthropism constitutes another motivation for people to actively engage with the flood response, as donors, volunteers or campaigners. In Chennai, and South India more broadly, the philanthropic outlook is most often emphasized by personal involvement in social work; donation of school materials, clothes, blood, or covering educational fees of disadvantaged children are among the most common activities (Gerritsen, 2012). Overall, philanthropy is an established practice among middle-high class people, who from a better-off position see gaps into how certain humanitarian causes have not been taken care of by the government.

Additional to the philanthropic mobilization motivated by political absence, religion-inspired philanthropy is another well-acknowledged kind of social contribution tackling socio-economically uncovered needs within the community. One of the organizations which had a leading role among faith-based philanthropic organizations in the field of social development is the Ramakrishna Mission – which is widely spread across the world. My informant from this organization described the various roles that the organization developed over decades: one of them is disaster emergency response.

> "In all disasters we are present. We are an old organization; we are the first organization born in India who started to do relief and rehabilitation." (Swami of the Ramakrishna Mission of Mylapore, Chennai)

Explained from a Hindu perspective, philanthropy is an inherent cultural value and most commonly looked at as a social obligation. It is linked to the concept of "karma" (law of physical and moral cause and effect) and "dharma" (or sacred duty). Furthermore, giving charity or "dhan" is another key concept in Hinduism (Niumai, 2011). In the same way, philanthropic actions are also practiced in other religions like Jainism, Sikhism, Buddhism, Islam and Christianity. Another instance are Christian organizations, which generally provide social service in the field of access to health, education, as well as protection for marginalized communities (Niumai, 2011).

Apart from individuals and groups, another sort of philanthropism – or, more specifically, corporate social responsibility (CSR) – is also common practice among companies.

> "We act as bridge between cooperates and grassroot NGOs because in India we need to spend 2% of profit to corporate social responsibility. So we identify the NGOs and we go to cooperate and give project reports, saying these are the NGOs suffering, so you could help them financially." (Shyam)

Part of the population became involved into philanthropic activities through social media. These are mainly youth, who feel the urge to employ their time and energy in activities which add value to the society.

> "Most of our volunteers are young. But elder people are also there. But our country's population is young. Mostly, we get volunteers from a pool that follows us through social media. So our volunteers are educated, going to college, young people with jobs." (Doctor Subramaniam, Bhumi)

In line with Navarro (2002), this response by youth in Chennai reflects on a solidarity target in itself. The 'value' of this participation can be economized by the accumulation of human and social capitals created through active volunteering. As further explored in Chapter 6, building a sense of togetherness through collaboration has motivated young people to fully commit to this response, connecting and making use of the resourcefulness of a large variety of urban actors (Putnam, 2000).

The virtual community has also been extremely active across distances. As highlighted by Niumai (2011), Indian diaspora plays a large philanthropic role in society. These activities are mainly channeling the extended family and social networks, therefore returning to their hometowns and villages; previous disasters, such as the cyclone in Orissa (1999) and the earthquake in Gujarat (2001) are examples of this phenomenon (Anand, 2004). These activities are motivated by a mixture of reasons: kinship, concern for families, religious ideals, sense of duty by being in a better-off position abroad, and the rewarding feeling derived from doing good for those in need.

> "I was supporting many education, health and blood donation requests through Facebook. But I didn't think of creating any specific online platform till Chennai Floods." (Gnaniyar)

As further explored in Chapter 6, these well-established pre-flood networks were reactivated and played a crucial role during the 2015 floods. Social media provided an accessible platform to foster virtual philanthropic activities.

5.2.1. Philanthropism and Heroes

A mixed dynamic emerging from the intersection of a culturally driven and a socio-philanthropic response was the framing of field volunteering as an act of 'heroization on behalf of young respondents. The concept of hero can be taken from certain frames found in the Tamil movie industry.

As previously mentioned in chapter 5.1, Dravidian culture was born from a young pool of semiliterate and educated Tamilians and it has been integrating in the following generations up to now (Sundar, 2017). An important medium of the DMK was Tamil cinema. By the 1940s,

Tamil cinema became the tip symbol of entertainment in Tamil society, and most of the DMK leaders were either involved in acting in these movies or film production. This became the most used form of passing down the values at the base of the Dravidian movement, such as egalitarianism and Tamil nationalism. These actors became culture heroes and started to be identified as the true defenders of the Tamil people and Tamil culture (Pandian, 1998). Nowadays, movie culture is still a daily part of Tamil culture; no conversation, especially among youth, can happen without mentioning a key sentence taken from movies which either perfectly fit a particular situation or that want to recreate a particular feeling or reaction in the listener. Mimicking actions and posting photos while posing like your movie hero is a diffused phenomenon (Gerritsen, 2012).

Based on testimonies of informants and on a general analysis of the audio-visual material found in Chennai floods' Facebook and Twitter pages, my view is that during the 2015 floods certain dynamics resembling this movie 'heroization' attitude took place among field volunteers. The heroization of the flood respondents is motivated by the social construction of the volunteer-hero by some segments of the Chennai community of volunteers. This image is constructed by ordinary youth, who – without the pretention of *being* extraordinary – showed how their values, commitment and abilities took them to do extraordinarily good things as their cinema heroes do in movies. This framing is also enforced by a group of celebrities. Chennai Micro, one of the selected community-based social media news outlets chosen for this study, is a collaboration between three main celebrities. Through their effort in keeping the volunteer groups active even often the immediate emergency response, they have frequently built their narratives around the concept of 'hero' volunteers. Instead of calling young people 'volunteers', the Chennai Micro is an example of a group who framed the whole engagement in the relief provision as an act of 'heroism', capable of reflecting the noble actions of movie heroes for the good of the community.

Figure 19. Heroes of the Chennai Floods (Youtube, 9/12/2015).

The story told through these images is about the 'heroization' of the good actions of the field volunteers – young people who are selflessly helping the community without any distinction – under those Dravidian values that the Chennaiite culture still honors. As described by Warner (2013), there is a certain discourse of heroization and villainization in proclaiming the winners and losers of a disaster. In the case of the 2015 floods, the figure of the villain is embodied by the official authorities who responded with delay to the emergency in process, and who led morally incorrect activities (i.e.: the sticker pasting on food packages) for political ends[3].

Additionally, based on a growing interest in philanthropy – especially among young adults – this flood represented an opportunity to personally contribute to the human good in non-competitive types of collaboration. In contrast with people's everyday busy lives, stuck in their competitive struggle towards performance – volunteering for the floods gave to many people the possibility to take down the mask of social obligations and simply help whoever was in need. As mentioned by some informants, this event was for some people also a realization of the vacuity of their lifestyles and an opportunity to devote their lives to social and environmental causes. One of my informants, Doctor Subramaniam, is an example of a person who was first an eye surgeon for a private hospital and he then turned to a full-time founder and volunteer of an NGO coordinating volunteering activities for the community (D. Subramaniam, personal communication, March 23, 2019).

5.3. Emotional motivated Response: ICTs in Distant Families

Connecting emotions to disaster response is another way of becoming motivated to engage with the rescue, relief and rehabilitation activities of the post-floods. The emotion-driven response is mostly found within familiar nuclei and it is usually performed through ICTs as a consequence of economic migration on behalf of the younger generations.

In families, digital communication takes a different shape compared to interest or friends' groups. In South India, communication is overall considered a personal matter and the degree of exposure of the family on social media can be an extremely delicate topic which most often older family members dictate on the base of norms and expectations ensuring family reputation (Venkatraman, 2017). Family matters are mainly discussed through phone calls and, therefore, using a 'synchronous' type of communication. This enables one to feel this other person as if (s)he was present at the same time and place. This is especially the case with transnational families, where adult kids are moving to other parts of the country or abroad with the aim of furthering their education or getting a better-paid job.

Emigrant adult kids are 25 to 40 years old Chennaiites who generally move abroad as skilled migrants and live in the United States and Europe, but also Gulf countries, Singapore, Australia and Canada (Baas, 2009). This category of people is generally not only motivated to move abroad for gaining a higher income, but they are also looking to move away from family pressures and be able to live the dream of a Western lifestyle which has become a strong 'status

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[3] This view has been given by a large number of informants.

symbol' of modern Chennaiite society (Roohi, 2017). In order to maintain ongoing communication with their adult kids abroad, their parents (living in Chennai) get acquainted with smart phones and similar technologies through applications such as WhatsApp, Skype, FaceTime and Facebook (Ahlin, 2018). These applications are also used beyond the scope of keeping contact with their kids, but they have also a largely increasing use to communicate with extended family, friends, colleagues and interest groups. However, the primary rationale for owning a smart phone, learning how to use it for specific tasks – mainly calling, texting or sending images and videos – is motivated by their adult kids living in a different city or country (Ahlin, 2018).

Calling is a common practice, an everyday form of being present despite the distance. It is considered a concrete form of caring for each other. In order to avoid feelings of abandonment, adult kids feel it is their duty to make frequent phone calls to their parents. Failure to keep this habit going creates concern for their kids as well as igniting uncertainty over how their kids will take care of their old parents – which is a strong social obligation – across distance (Lamb, 2009). For this reason, ICTs have shaped distance-based care by making verbal communication central (Ahlin, 2018). After a few weeks living at the women's hostel, I could exactly tell at what time and for how long my roommates would speak with their parents over the phone. The frequency and duration of each call was never a 'random' practice, but it was a regular practice: a form of "tinkering", intended as a "process of caring by adapting to changing situations" performed in family relations (Pols, 2012: 166). Based on the conceptualization of "tinkering" by Mol et al. (2010), Ahlin (2018) explains how this consists in the "attentive experimenting, trying out and making adjustments in care relations to find out which practices, situations and settings are the most suitable for all those involved in a care collective". Negotiating these practices and being able to follow their regularities within a family relation is what shapes the 'good care'. When this practice of calling is not performed, parents perceive it as a form of negligence and abandonment (Baldassar et al., 2007). Not only parents, but also their adult children:

"In the last call with my parents, they told me that a very bad flood was hitting Chennai. But floods happen every year in Chennai, it was just not clear to me that it would have been of such scale. I understood this only when my parents were not replying anymore to the phone. I normally call my parents as soon as I wake up, but that day I could not contact them anymore. The normal procedure is calling my parents on their cell phone, if they are not picking up, then I will try with the landline. If this is not working, I will call on cell phone my grandparents; if this is not working too, I will call my grandparents on the landline. But nothing worked. The gravity of the flood must had really escalated." (Chandra, emigrant IT expert)

Indeed, non-performance of this 'ritual' is interpreted as an alarm bell possibly pointing at the fact that something must have happened; this usually creates lots of concern in imagining the

reasons for this communication disruption. Despite these digital bonds being commonly found within transnational families, these dynamics are effectively played out when the relationship between parents and their adult kids was already strong before their physical partition.

The core of this practice is establishing co-presence despite the distance (Baldassar et al., 2016). Key aspects of co-presencing are the persistence of emotional ties and moral, practical and financial support across distance, which I describe as 'affective care'. This is the relational bond of co-presence across distance, expressed by (emotion-driven) practices of care and shaped by different situational scenarios. Affective care is an important component of this analysis since, in the case of the floods, these bonds emerged more visibly due to a strong emotional response. As explained by Nedelcu and Wyss (2016), modern transnational families are an example of how geographical distance and ICT-mediated co-presence are pillars to new forms of family care.

For many respondents, the feeling of knowing their parents back in Chennai were in danger was lived so intensely to project them in that situation and place, despite them being thousands of kilometers away. Aggravating this emotional status was the feeling of impotence; being at the distance meant not being able to physically do anything to help. This gap was filled by active digital engagement, which gave these emigrants the possibility to be present, once again, through the use of digital platforms. As further shown in chapter 6.1, sustaining practices of affective care motivated people to 'think locally and act globally' by expanding their daily ICT-mediated care practices to a community-inclusive form of care. Therefore, while searching ways to co-presence and support their parents and siblings in Chennai, emigrants created a globally spread network to digitally co-presence and intervene in the Chennai floods response.

Discussion of the Chapter

This chapter has attempted to group a diverse range of motivating factors behind people's proactive response to contribute to the post-disaster activities into three major groups: cultural, socio-philanthropic and emotional motivations. Indeed, apart from personal motivations which may actor have for contributing to the response, I claim that there are more culturally motivated rationales pushing people to act rather than wait and watch. Despite these rationales being deeply intertwined with (intangible) cultural phenomena, these three macro divisions are what I have identified as the most 'visible' categories. This means that there can be many other ways to interpret the same response practices by linking them to diverse motivating factors. However, I acknowledge that my focus and understanding of the Chennaiite society is more centered on community and family interactions.

There are certain assumptions underlying calling the Dravidian culture a strongly motivating factor for post-disaster community mobilization. Indeed, despite Dravidian values still being actual, it is difficult to discern whether values such as equality and Tamil pride have an actual cultural derivation. Furthermore, some examples from my interviews have illustrated how the interactions between people belonging to different socio-economic classes did not always show respect for the other during the response phase. A personal story mentioned by

Chandra is the case of a fisherman coming to deliver food packages to a neighborhood completely flooded – and, therefore, only reachable by boots – and the unacceptance of these packages by a higher caste family. Similar examples were reported by Siva, who mentions how hard it was to convince volunteers to deliver relief to North Chennai due to the criminal and unsafe perception of this area. For these reasons, Dravidian culture may be seen as a weaker motivator, especially since it is difficult to tangibly confine it.

Another aspect to highlight is the concepts of heroes and villains (see Chapter 5.2.1); these two concepts are an interpretation predominantly centered around the view of who considers himself or herself (even tacitly) a hero. It is young people enforcing this vision and strategically choosing the image of the hero to put forward this concept to enable certain dynamics of individual or, as in most cases, group recognition. However, these perspectives are also politically motivated by a general sense of discontent against the government (Sundar, 2017). Therefore, as a sign of protest against those who should promptly be responding to the disaster – but did not –, some volunteer groups felt empowered to label themselves as heroes and the governmental actors as villains. However, the selection of these 'heroes' is not representatively distributed among all people who fully engaged in the response, but it is most often a strategic showcasing of certain middle-upper classes' people involvement. As explained by Vanessa (independent researcher and activist for slum dwellers' rights), the creation of heroes within the civil society is a much less 'romantic' and altruist response:

> "There were some many actors and actresses involved, Siddharth and others. And there was so much drama around their help. And that is the problem of saying civil society: this group includes so many different people. People with selfish goals also. But okay, I do not critique this. People want to do something. But not knowing and doing something causes damages that are even more dangerous than not doing anything at all. You do not know what you are doing. It was just this 'heroic' act of doing.
> […]
> There was this IAS officer [Indian Administrative Services] who was shown as this guy without the shirt, trying to carry people. Drama! News can be made or not be made on the base of who is part of the news. TV stations and social media showed were full of these 'want-to-be' people. The makers and shakers of this coordination are these affluent people. This determine the kind of response. I would say there is no community, it was a very selected one.
> […]
> Look at where these celebrities rescued? Not in the slums. Chennai floods picked up only because of social media momentum, all celebrities posting. […] And when you get relief, you make pictures. So bad. They have found ways of showcasing poverty. That is their way of capitalizing disaster. […] I appreciate

the role of CSO to step in, by I am skeptical. They did something only because the flood affected everyone, especially affluent people."

(Vanessa, independent researcher and activist for slum dwellers' rights)

Once these dynamics are analyzed without the middle-upper class lenses, the conceptualization of the hero and the villain falls apart. This also explains why the recognition and pride in such 'heroic' actions is not part of a widespread belief, but it is mainly validated within the same socio-economic groups.

Lastly, in line with the concept of 'mobile lives' by Elliott and Urry (2010), Chapter 5.3 illustrates how emigrants found a way to balance their digital volunteering commitment and their daily life in the foreign country. ICT-mediated co-presencing enabled the expansion of the already existing form of affective care practices within the familiar nucleus to a broader (community) level. However, there may be a wider spectrum of reasons motivating emigrants to digitally respond: not only the extension of this emotional response, but also nostalgy for home, the possibility of easily leading a social initiative, the chance to get recognition, mistrust for the governmental response or the fear for catastrophic outcomes in their hometown. There are many possibilities, and not all may be linked to altruist motivations, but they could also be potentially seen as window of opportunity for personal gratification. Therefore, the affective component at the base of daily ICT-mediated co-presencing practices within the familiar nucleus may be a completely different set of value compared to the emotional response to help the community.

Closing Lines on the Chapter

The large social mobilization in response to the 2015 Chennai floods included the engagement of a wide diversity of people. The reasons motivating people's active engagement were equally diverse; by using a culturally focused lens, the three main motivations discerned are cultural, philanthropic and emotional. The cultural motivation, strongly related to the foundational values of Dravidian culture, is linked to the practice of the value of equity and the respect for human diversity. The values – put under direct threat by the floods and absence of governmental response – motivated large groups of people to jointly take action. The philanthropic motivation finds its roots in the individual performance of good actions through religious offerings, but also from other forms of social obligations, such as fulfilling specific actions required to maintain a certain social status. While these social obligations and offerings involve a more senior category of people, another form of philanthropic mobilization is volunteering. For youth, being volunteers is a way to engage in socially constructive activities which also enable to perform purposeful actions. Lastly, emotional response motivated those Chennaiite emigrants who have a strong bond with their family and friends in Chennai, but who could not reach out to them. Being personally affected by this uncertainty – as well as by the personal obligation to provide 'good care' to their beloved one in Chennai – Chennaiite emigrants found a strong motivation to mobilize themselves through digital platforms.

6
Organizing and Mobilizing
the Disaster Response

Figure 20. Assessment of flooded areas in a low-income neighborhood, Chennai.

Introduction to the Chapter

The infrastructural dysfunctionality caused by the floods and the late governmental emergency intervention challenged the community to respond to the 2015 floods. The collaboration between digital and field-based volunteers built a functioning mechanism of gathering, compiling, analysing and sharing information on how to best structure the emergency response. Indeed, information was one of the crucial aspects for the response interventions, together with aid distribution and the performance of other service-based operations such as coordinating incoming donations. By merging forces, single individuals and numerous groups of volunteers were able to join forces and operationalize rescue, relief and rehabilitation on the field.

This chapter gives an overview of the response operationalization and task division performed by both digital (or online) and field (or offline) volunteers. Chapter 6.1 and its subchapters describes the needs and purpose of mobilizing an online-run community of volunteers to coordinate certain logistical aspects of the flood response. Subchapter 6.1.1 illustrates how the choice of using certain social media platforms is linked to their uses prior to the flood event. Subchapter 6.2.2 contextualizes the use of these digital platforms within the 2015 flood event, illustrating the specific needs and tasks covered by online coordination.

On the other side, Chapter 6.2 and its subchapters focused on the field response on behalf of individuals, civil society organizations and NGOs. Subchapter 6.2. describes how the 'offline' response complemented the online response as well as identifying specific needs that the online response was not able to detect; one of them, mental health, is more in-depth analysed in subchapter 6.2.2.

6.1. Mobilizing the Digital Community

In Chennai, digital platforms have integrated many people's life by extending physical presence to virtually mediated interactions happening through social media. As further explained in subchapter 6.1.1, different platforms have different uses; being able to discern what platform to use is part of local knowledge on how to best communicate specific information to others. Social media are also a space for socialization, through with it is possible to reinforce existing and newly born ties.

The widespread impact of the 2015 Chennai floods built a concrete case for the use of some of these digital platforms to promptly mobilize Chennaiites – either living in Chennai or abroad – in the coordination of the disaster response. The use of social media for emergency response raised tangible empowering opportunities especially for emigrants; a visible sense of agency was established in people having the space to act upon this disaster. As further described in subchapter 7.1.2, being present in the disaster – even 'just' digitally – meant lessening the emotional burden of broken communication (due to inability to reach out to people in Chennai) with families and friends, as well as fulfilling some of the social and emotional obligations towards old parents (see Chapter 6.3). The use of technology during the floods bridged many of the barriers built by physical absence. Furthermore, people perceived

that this response – largely based on crowd-sourced information – gave a chance to democratize information flows, enabling affected citizens to inform others about their situation and volunteers to make sense of incoming data, prioritizing response in real affected areas (C. Mohan, personal communication, April 12, 2019).

The following subchapters will first give an overview of the uses of social media in the Chennaiite society and then describe their use in the response to the 2015 floods.

6.1.1. Digital Chennai

Digital communication is a crucial part of daily life in Chennai. Each digital platform has a diverse range of uses; from circulation of news to social mobilization; from social networking with friends to family communication. All technologies have developed determined social functions and they exist in particular affective and social relationships with those utilizing them (Pols, 2009). Indeed, by closely exploring the use of technologies, it is possible to grasp what interactions they enable, as well as which norms they align with. For instance, each of the digital platforms available on mobile phones such as WhatsApp, Facebook and Twitter enable a different set of interactions.

WhatsApp currently is in widespread use across Chennaiites of diverse socio-economic groups. This platform was also widely used in the year 2015, despite access to smartphones and to convenient internet tariffs made it less popular among the poorer segment in society (Venkatraman, 2017: 45). Indeed, with the growing affordability of internet packages, middle and upper classes – mostly people working in the IT sector – were the first to fully immerge themselves in the everyday use of WhatsApp. The spectrum of functionalities that this application offers ranges from individual to group communication: SMS-like texting, sharing of visual and vocal contents, and phone calling – which is particularly convenient for overseas calls. Indeed, it can allow private communication up to chatting with unknown people within a group. A relevant difference between WhatsApp and Facebook is that the first one allows closed group formation, for which one would 'trust' those who have been added despite not everyone has physically met each other. While WhatsApp is heavily based on bonds of trust, confidentiality and selective communication, Facebook is an open platform where contents can potentially be seen by everyone.

Among WhatsApp as well as Facebook groups, it is possible to see that many groups are formed by people having common interests; indeed, interests becomes the underlying foundation of a group, in which even people who do not know each other, do not feel strangers (Venkatraman, 2017).

> "I created a group with myself and other two people whom I knew. We are all three independent socially engaged volunteers. One of the other two pulled in quite a few other people. She had NGOs connections, who in turn added other NGO people in the WhatsApp group. I did not know any of such people, but only these other two. The group enlarged and there were some 10+ NGOs taking part of the group. The group

expanded, so apart from this coordinators group, some 12 other groups emerged on the base of the tasks; like 1 WhatsApp group for collecting materials, 1 for collecting group for delivery, and so on." (Sumita, activist and philanthropist)

Defining who is inside or outside a digital media group shows a clear parallel with how society is segmented. There are some practical triggers or ideas when creating a group – from reconnecting with school friends, communicating with family members, contributing to humanitarian causes – which motivates a selective process defining inclusion and exclusion of individuals. Overall, social media grouping and communication are taken seriously, also because private contents (i.e.: photos, videos, messages, news) are generally shared in these digital chats and pages (Venkatraman, 2017).

The informal rules of what contents can be publicly posted online are set by social norms which – as in real life – are dictated by the network in which one is inserted (Venkatraman, 2017). Families controlling the published content on Facebook or WhatsApp groups ensuring the fit of certain shared contents are some of the examples of in which the expectation of social conformance is performed. Furthermore, there is an implicit expectation that those belonging to a network would keep it active, contributing by sharing contents pertinent to the group (Venkatraman, 2017).

> "The responsibility for me is that I had about half million followers on Twitter, 700 people follow me. So for me it was important to reach out to them and try to engage them. It was crucial to raise my voice and do something about it." (Chinmayi, singer)

As highlighted by Venkatraman (2017), there is a strong continuity between online and offline lives: in both cases, this continuity is strongly informed by social conformism. Due to a certain set of obligations, pressure on how to conform to certain expectations is as strong in social media as in the real world.

Social media have become a space for socialization, and they cannot only be treated as means of communication. The virtual is an integral part of everyday life and social interactions; phone calls, chats, photos are sharing equally real-world pieces of life as face-to-face interactions. The separation between the virtual and physical worlds is thinning: the virtual world encroaches on the real world, creating hybrid spatial dimension of interaction. In Chennai, individuals build their personalized routines for interacting with parents, family, friends, colleagues and other social groups. This allows to deal with different contexts, scales of sociality and degrees of privacy in shared information. This is equally present in the physical life, where one will interact in different ways based on a diverse range of people and the context.

The next subchapter will illustrate how virtually based collaborations were used to response to the 2015 Chennai floods.

6.1.2. Online Response to the Floods

Lack of complete official news in the immediate aftermath of 1st December generated a high sense of alarmism. As highlighted by Chandra – a Chennaiite emigrant living in the United States (C. Raghavan, personal communication, May 6, 2019), many Chennaiite emigrants were seeking online information which could give hints to whether the areas where their parents were residing had been affected or not. The wish to have detailed information at the neighborhood, street or even house levels, grew the need to create community-based updates (C. Raghavan, personal communication, May 6, 2019). In this context, social media played a crucial role in disseminating information from the micro-level as well as in connecting both people sharing the same locality and those living abroad and therefore geographically scattered. Indeed, through the impossibility to obtain such detailed information through official news sources, most of the Chennaiites emigrants kept themselves updated only by news and updates published by citizens in one of the many Facebook and Twitter pages. These platforms were used to share information in real time which those interested in receiving specific information (C. Raghavan, personal communication, May 6, 2019).

The possibility of volunteering at the distance had a positive psychological effect on emigrants. As mentioned by some informants, contributing to the response coordination lessened the emotional burden of fear and worry caused by the impossibility of reaching out to parents, families and friends. In line with the human agency theory of Hilhorst (2004) – which recognizes agency of individuals in the social system – these floods, as many other disasters, are a clear example of how individuals were not passive recipients of this disaster, but they used their capacity to personally process the event and find the most suitable ways to act upon the situation.

> "You see, in my WhatsApp, there are so many youth groups. If anything happens, there will be people's mobilization. WhatsApp is much more effective than Facebook. In every district they operate. The network is very strong, people have a very strong type of commitment." (Prof. Janakarajan)

This generated a widespread sense of agency among respondents, who felt happy to be able to help their families and their city in the best possible way. As highlighted by Chandra, this was the result of already existing and established communication and information technologies, which were creatively used with the aim of coordinating the response from the distance.

> "Social media were an empowering mean of communication and information sharing. This is how we also were able to share this experience. So social media is a valuable tool." (Chandra, emigrant IT expert)

The contribution of Chennaiite emigrants enabled a different and wider scale of mobilization. Not only by virtually being present but also by proactively mobilizing skills and resources, this sense of agency described by emigrants would have not reached such an impact without an essential actor: digital platforms.

There are various peculiarities of this type of intervention, particularly regarding the performed tasks, mobilized social networks, working conditions and familiarity with Chennai. The online tasks that these emigrants performed were mainly based on the type of skills and technologies in which they were already proficient, mostly based on IT expertise.

> "I am very familiar with social media, I use them very often, also to read all news. So I decided to first create a Facebook group. Then I created a Facebook messages thread, to discuss among the group what was going on. Then I created a WhatsApp group chat where we could individually call friends and volunteering people if there were updated posts being published in the group. Then we decided to centralize the information." (Chandra, emigrant IT expert)

What first started as an individual tentative to "put extra effort for the things I really care about" (Chandra), enlarged to form groups of people living the same situation of being unable to reach their families.

> "I made an Excel spreadsheet, at the beginning by myself but then we were giving turns since the information flow was getting very big. We would extract information from the posts and put them in this summarized excel spreadsheet." (Chandra, emigrant IT expert)

The IT-based remote response included also people who lived in Chennai but who were doing volunteering based on feelings of place-connection. Arun is one of these like-minded people, who studied in Chennai for many years and felt strongly motivated to contribute in some ways with his expertise to the flood response.

> "I know some people in Chennai working as NGO, they kept reaching out for help. I think after a week the government released a list of flood shelters in the city. It was in a form of spreadsheet. But there was one NGO that wanted to map all the locations, so I helped to crowdsource all those locations and prepare the data. […] It became clear the lack of usable accessible data from the government. It started from a simple map of the shelters, to enable people to report on the maps." (Arun, Bangalore-based cartographer)

Secondly, emigrants were capable of expanding the response networks to wider emigrants' and foreigners' networks. The singer Chinmayi explains how her foreign friends' network took

over her Facebook and Twitter accounts on social media when she could not have stable internet access. This was particularly relevant since she was a key celebrity involved in the response to the floods.

> "I had friends form Norway, retweeting and when the power outage was there, they took over my social media account to ask for help." (Chinmayi, singer)

The active contribution of emigrants generated also a vast amount of awareness on this disaster, which channelled financial and volunteering contributions by other Indian (mainly Tamilian) emigrants and sympathizers. Existing social networks enabled a wide range of contributions, also on behalf of large companies like Facebook.

> "At the time I was a Facebook employee here in California. Facebook has this disaster feature which, when active, asks people whether they are good. So you can mark yourself as 'survivor' of the disaster. I wrote a letter to the head department asking to activate this tool for the 2015 Chennai floods. I do not know whether that was due to my request, but the disaster feature was turned on for Chennai the following day." (Chandra, emigrant IT expert)

Furthermore, the presence of large percentage of Indian workers in countries like the United States created consistent opportunities for financial support. One of these is the yearly contribution given to social projects, or social corporate responsibility, which sponsors a set percentage of the company's income to humanitarian projects. Many Tamilians working in the United States suggested to donate their social corporate responsibility quota to registered NGO coordinating the 2015 floods response. Apart from companies, large numbers of emigrants donated money because of the worry for their families. Donating money gave the hope that, in case their loved ones were impacted by the floods, these helps could have also reached them.

The working conditions of remote volunteers became another important advantage for IT-based performed tasks. Due to the difficulty to find places with power and network signal in Chennai, remote volunteers played a crucial role in managing the information flow. Indeed, distance-based volunteers individuated gaps in field-based interventions and found ways to compensate for these by using IT skills and existing digital infrastructures. An example is the summarization and schematization of online information in crowdsourced maps showing the most affected areas (see Fig. 22) and maps with a number of other useful features, such as location of relief camos, hospitals, food requests and points of food distribution (see Fig. 23).
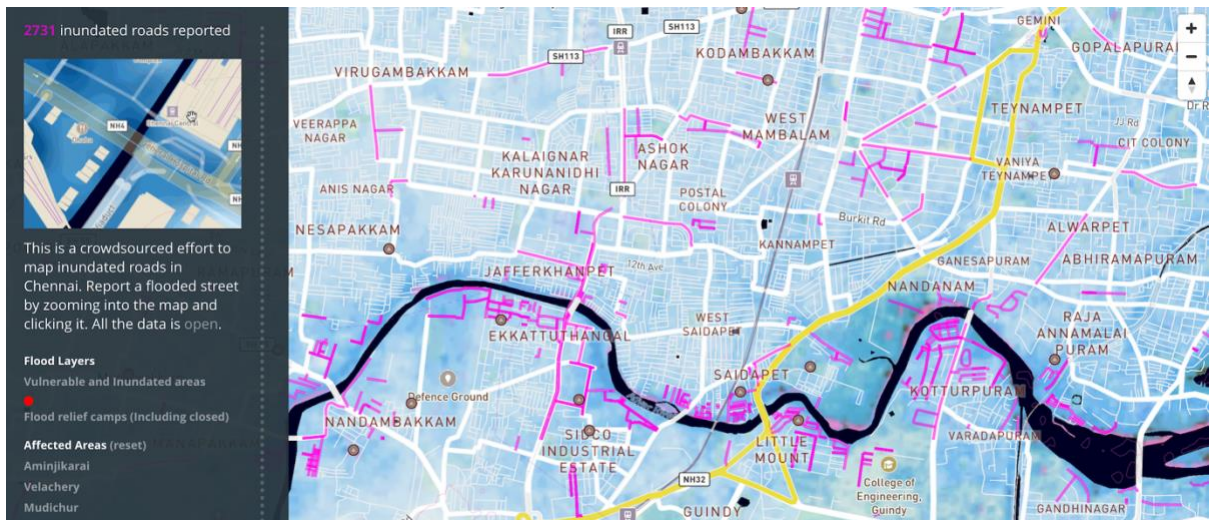
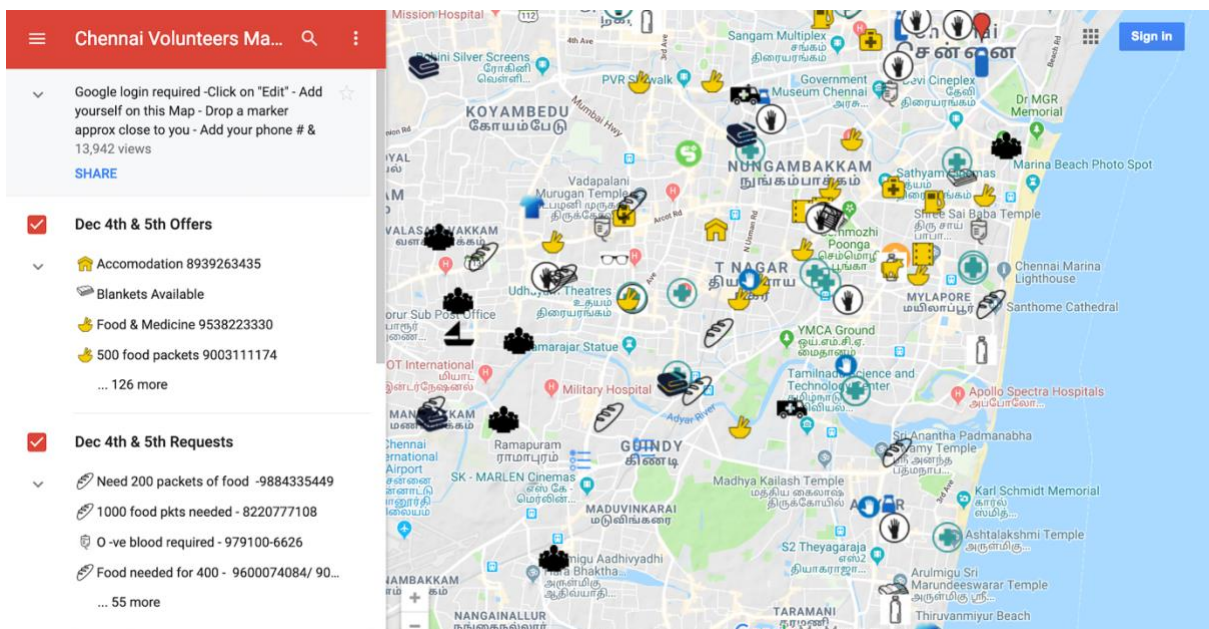**Figure 21.** Flood Map Chennai (Source: OpenStreetMap).

Figure 22. Chennai Volunteers Map (Source: Google Crisis Response).

These people were also taking over the Chennai-based online information coordination by working in time zones when it was night in Chennai. Therefore, information summaries, Excel spreadsheets and other important updates were all available as soon as volunteers in Chennai would wake up in the morning. This allowed a 24/7 response continuity, as well as the integration of different skills and internet accessibilities. This was equally important in the administration of Facebook response pages, like the one of Chandra:

> "The time zone really helped. The main operative time zones of my friends in the US were the ones of East coast, Chicago and California. But there were also people from

Singapore and in India who helped. So there were many operative time zones. We put a rotation system in place, to keep track of the updates." (Chandra, emigrant IT expert)

The systematics cleaning-up and re-organization of information had important outcomes, such as the reduction in the duplications of distributed relief materials. Sumita and other informants have not hesitated to highlight how duplication of food packages distribution became, soon after the disaster, a massive problem.

"Duplication of the deliveries was a big issue and huge learning point. Lots of food went to waste because these Facebook help requests posts were outdated or because more people were going to check requirements in the same area, and simply people had no clue they were from different groups, they just wanted food to reach them." (Sumita, activist and philanthropist)

Due to the decentralization of information, each group responding to the emergency had no possibility to exactly know about the existence of other operating groups as well as their distribution schedules. This caused many neighbourhood and streets to receive multiple food duplications, which resulted in the waste of vast amount of food – which could not be re-transported due to freshness issues – to the detriment of underserviced areas. This also highlighted another trend: the over-servicing of the most prominent neighbourhoods, inhabited mostly by middle-upper class people. Indeed, looking at those who had the possibility to post their requests on social media, it emerges that there was a pronounced majority in better-off people which was actually using these services to ask for direct help (S. Pai, personal communication, May 15, 2019).

Additionally, duplications of donated non-food items started to be sold back to needy people to make profit. This exemplifies the cynicism raised from the moment people started to have excess resources and desired 'better' materials, such as better food and some additional products.

"10-15 NGOs contacted us, saying that they needed some of the sanitary napkins. […] We said: if you need it, come and get it. You come and take a minimum amount. […] You come and show your ID card. These were still honest numbers of needed napkins. This is how we started. But there were also many incidents, people came, got napkins and started to sell them. But we could not do anything about it, we had so many other problems to take care of." (Peer, non-registered NGO founder)

Lastly, another advantage of emigrants' contribution is their knowledge of Chennai and its people. These emigrants are familiar with the geographies of the city – how neighbourhoods are scattered over the city, most flood-affected areas, potential road or bridge blockages – speak Chennai Tamil and have a cultural understanding of local people, their skills and basic

necessities. Indeed, emigrants own a great pool of information and understanding, which is a great advantage for having an idea – even far away from their hometown – of how this disaster may look like and how to best respond to it.

On the other side, Arun is the only informant describing how technologies can also 'fail' in delivering useful information:

> "Tools like this are difficult to access in these situations, if you are on the ground. Also the bandage needs to be more efficient, you cannot use a lot of data when you have a disaster. But we did not have time to think about how to optimize the network usage. The map was pretty heavy in that sense, it was probably 1 or 2 MB, which is not good for a disaster scenario." (Arun, Bangalore-based cartographer)

This happens either when they are not already embedded in existing practices or when they cannot satisfy accessibility criteria. In the case of the crowdsourced maps, weak phone signal posed an obstacle to the loading of heavy data; accessing these maps was therefore challenging within affected areas. Despite these innovative ideas for response coordination hyped after the floods, they were not significantly functional during the response phase.

6.2. Mobilizing the Field Response

While digital volunteers played a key role in compiling information and creating an overview of the situation on the field through making sense of all sorts of collected data, the field response represents the real engine of the flood response. Chapter 6.2.1 gives an overview of the complex network of volunteers-run activities which gave life to a structured, yet improvised, prototype of community-driven disaster response.

Despite the vast range of performed actions, even field volunteers had their limits; as described in Chapter 6.2.2, the feeling of loss and the overall intensity of working as field volunteers created also a heavy weight on mental health.

6.2.1. Offline Response

> "[…] But in the case of the floods, there was no contradiction. Entirely humanitarian. Not to blame anybody, not to criticize anybody, not to harm anybody. But just to help." (Prof. Janakarajan)

The overarching majority of people helping with the flood response were preparing food, collecting other material resources and distributing them. Due to the scale of this material-based response, the surplus of food and other items soon became an issue: large amount of food waste were generated because people in those areas did not need food or had it in surplus. Some field volunteers, looking at the generation of this waste, tried to think deeper into what services and information were needed to perform equally important tasks. Examples are the prevention

of airborne diseases by spreading bleaching powder or buying vaccines to avoid infections. These were harder tasks to perform – due to limited funding and the general idea of it not being an immediate 'priority' – but also to figure out how relevant and urgent they were.

> "The first days I was helping with food, like all others. But I soon noticed that people had food, there were so many trucks reaching the same locations and there was a lot of extra food because aid was not coordinated properly. Also many people received aid while they did not need it, so they told to divert aid to others. So I was looking at that would have been good doing. I thought about these diseases which could have been developed after the water would retrocede. Especially water borne diseases. From other experiences, I knew that these may have been an issue. So I contacted a friend of a friend working for WHO in Malaysia. This guy told me what to do to remove the possibility of these diseases striking. He said the idea of bleach would have worked, 99% can be removed by bleaching powder. This guy sent me guidelines of WHO on how to deal with these possible diseases, bleaching and guiding instructions." (Sai, bleaching operation leader)

In most cases, it took some young leadership to investigate and materialize these ideas. In the case of Sai, he made use of previous experiences and his connections to set up a list of guidelines and a vast network of volunteers who would go to disinfect places where water had just lowered.

The floods mobilized also many field actors who were traditionally not inscribed in humanitarian-oriented networks, but which had the resources or the skills to provide services which were not immediately performed by the authorities.

> "There was little mistrust among the community. It was no problem about going into Muslim areas, Christian areas, Dalit areas. I think the fishermen got all over. Normally they stay in the coast, they do not come out of Marina or Kovalam [two seaside locations around and outside Chennai]. But everywhere in the city there were fishermen. They were not the people monitoring, but they were rescuing who was stuck." (Swapna, lawyer)

Despite the enthusiasm in helping all people who needed help, there were areas where volunteers did not personally trust going to distribute relief materials. This caused a partial absence of volunteers from the field. For instance, the North Chennai area – typically identified as a high-crime and violence area compared to the rich southern Chennai – received much less attention (Siva, personal communication, June 1, 2019). The reason is the fear of many volunteers to venture in this area. Since large part of the volunteer response originated and was

coordinated from South Chennai, many volunteers had never even gone to North Chennai in the past, because of its negative reputation.

> "Only 50 to 60% of North Chennai was covered by bleaching operations. North Chennai is a dangerous place, this is how it is perceived. People did not want to go there." (Sai, bleaching operation leader)

This resulted in the lack of data on this area too. As Vanessa highlights, "informal networks did not have a diversity. There were networks working predominantly in some areas." This had a massive consequence in defining whether or not a neighborhood would receive relief materials.

> "Slums in South Chennai got all relief, at least the most of them – because of the mixed development. But the slums in North Chennai, not all of them got it [relief], because of the high concentration of slums in one area." (Vanessa, policy researcher for deprived urban communities)

In mixed neighborhoods (for instance Saidapet and Greenways) – where both upper-class and slum coexist in a very close vicinity – relief materials reached any social class. However, in poor or negatively depicted neighborhoods relief materials was lacking; the infrastructural conditions of the area were also worse as lesser volunteers would engage in clean-ups. As Siva (member of the Chennai Trekking Club) explained me, the water level was still high after several days, people had insufficient quantities of food and drinking water. This resulted in ignoring some areas or, alternatively, entering some of these areas with the help of the army to ensure the safety of volunteers.

6.2.2. Mental Health

Field-based volunteers not only have to deal with providing the physical support to affected people by rescuing them, providing food and accommodation: the mental health of people was also at stake during the floods. This aspect was however neglected and only a few volunteers would realize its great importance. According to Nabiya, my informants from the Banyan (a mental health center in Chennai and surrounding townships), mental illness is generally seen as a taboo – not only in Chennai but, generally, in India. Due to this, it is still not recognized as a basic post-disaster need, often leading to even larger consequences such as post-traumatic disorders. According to some of the leaders of field volunteer groups, those who mostly needed mental support were the same volunteers. They were exposed to lots of risks and painful sights and experiences but took no time to stop. Their adrenaline and sense of responsibility to help others did not allow them to take the proper physical and mental care which they deserved after so many difficult hours of field relief. Furthermore, it was these people who offered mental health care to affected people on the field. Therefore, these volunteers were carrying a large

portion of the burden during the emergency phase – something they could not recognize actively during the emergency phase, but that stayed with them for the months afterwards.

> "Some are alive, but are they doing well? Something [engaging with mental healthcare] that us as a country or as a community should do. It is not just about physical help, but mental health is also important. This was important being in the field, because when we saw kids and mothers crying, we did not know what to do. For mental health, there should be a plan, it cannot be over a period of 5 days, but it needs to be something planned for a long-term." (Roshan, pulmonologist)

Those who received mental health support of the Banyan (the only existing mental health NGO offering counselling) were people who were already regular clients of this organization. The same NGO did some outreach for mental health counselling, but rarely people use the opportunity to ask for that help. Most of the people relied on their families to share the burden of loss and grief.

Another aspect which came to light during the disaster is that people have different ways to react to a disaster. Some may find it harder and more distressful, other can handle the situation in a more proactive way and positively respond with adrenaline-filled lucidity. Chandra gives a clear account of his experience, from which he detected that not everyone could react in the same way to the same situation even within the same family.

> "The problem is that men have a very big ego, but despite this, they are considered as the protectors of the family. But in disaster phases, their role as protector of the family is threatened, it just vanished. They cannot handle the fact that they cannot handle this situation, so they would just go around like zombies, because this incapability to do anything for their families clashes with their ego. […] The government forgot about this. But all alcohol shops were open, so they would go to drink. But mothers have the instinct to take care of their families. So they can be great at handling this situation of distress. They were so disciplined and committed. And this was the same for youngsters, they would also have lots of patience and discipline for handling this situation." (Chandra, political activist)

Possessing the mental stability and attitude to personally face the impact of the disaster enabled a more constant and ordered response. Through the same dynamics of the remote response by emigrants, the emotionally motivated sense of responsibility in helping each other during was soon transformed in a more rationale and systematized response.

Discussion of the Chapter

As mentioned in Chapter 6.1, the online response gave a sense of democratization of the collected, verified and systematized information. However, a few informants did not fully share

this view; contrarily, they put into discussion some aspects of this superficially labelled 'democratization'. Vanessa (independent researcher and activist for the rights of slum dwellers) highlights how this was a pretentious claim fell out of accountability mechanisms:

"Civil society cannot substitute [for] the government. There are issues in this digitally based response: not being part of the platform and having no voice because of your identity and who you represent. There is not much transparency and accountability on what non-state actors do. When it is something done by a state, you can always ask 'has this been performed as it is mentioned in the constitution mandate?'. And we can further question whether actions have been performed in the respect of these code of conducts."

Since volunteers were already doing something considered of complete added value – compared to a situation of late official response – they did not have any type of responsibility to take care of, neither in the conceptualization nor in the operationalization of how activities were performed. Without any sort of evaluation on their performance, it is premature to consider the information gathering and exchange as exceptionally efficient and transparent mechanisms. Since this claim is not founded on any evidence – apart from the general assumption that government information is biased and citizens act in the best of their capacities – it is somehow subjective to evaluate oneself based on perceptions rather than clear indicators.

Another point of discussion involves the frequent overestimation of digital platforms as tools able to empower people in accomplishing specific objectives. On one side, the response to the 2015 Chennai floods is a clear example of how these platforms created possibilities that would have else not have been possible to materialize with traditional field-based operations; digital platforms took up a meaningful role of facilitators and connectors. On the other side, there are many issues of accessibility which still create visible disparities among those who can or cannot afford owning a smartphone and using digitally based ICTs on a continuous base. As further explained in Chapter 7.4, connecting with resourceful help groups is also a matter of belonging to specific socio-economic groups – or, at least, having strong connections which people of these groups – which could grant access to closed WhatsApp or Facebook groups. As previously mentioned in 6.2.1, informal networks were diversified, but they mostly represented like-minded people from similar socio-economic classes. This still remains a challenge for considering digital platform equally inclusive, despite these ones undoubtfully create some inclusion possibilities in the case of open-access social media pages.

In the disaster response, it is possible to notice that the groups created on WhatsApp and Facebook are mainly composed of people having the same interests, may this be philanthropic actors, NGO workers, IT experts wanting to collaborate on the development of some digital platform. As described in Tadiar's (2016) theory of 'metropolitan archipelagos', physical characteristics contained in a group's culture and lifestyle form the rationale for people's aggregation and interaction. These social groupings are created and enforced by

digital communication, which creates possibilities even for people living far apart to be present and engaged despite the distance. These networks are important communicative and navigational systems, especially in the case of a megacity like Chennai. Despite this pattern being identified in the flood response, there is still some partial truth in stating that these groups still reflect some identity-based grouping dynamics. Indeed, while grouping may be dictated by common interests and similar lifestyle, this also hints to highlight that these people have similar interests because they are raised with these values, have lived a certain class' lifestyle and have similar views, probably due to their education. Many of these aspects confirm that these similarities are actually grounded in similar identity traits, may these be profession-based, caste-based, income level-based. But surrounding oneself with a like-minded group means also interacting with people with a similar upbringing, which may facilitate mutual understanding and collaboration, but it can also cause missing out on large aspects of the response as everyone is seeing and acting through the same lenses. Social media grouping dynamics – so, not only the possibility to actually have access to them – is a selective process which tends to still connect people with same views and identity traits. This can have implications on how the problem is seen, how strategies for disaster response are conceptualized – also in terms of knowing what people need and being closer to other social sensitivities than those predominant in the group – and how operations are carried out. The risk is to subconsciously enforce inequality in who can participate in the group and who gets helped.

Closing Lines on the Chapter

Social mobilization in response to the floods happened on two levels: online and offline. The online response, largely managed by Chennaiite emigrants in close collaboration with volunteer groups, NGOs or friends on the field, enabled the performance of time-consuming tasks which also required stable internet connection and electricity supply. Among all tasks, verifying the authenticity of information was an important contribution to diminish the frequent duplications of delivered aid often common in the first few days after the floods.

The offline response, or field response, mobilized by a variety of actors – common citizens, religious leaders, celebrities, IT professionals, NGOs, doctors – contributed to the cross-assessment of data collected through digital platforms and phone calls by online volunteers. Double-checking the representativeness of data with the real situation on the field was key to detect and potentially reach to all those in need. Indeed, this analysis suggsts how the reach out of affected people through social media was not representative of the affected population. Ownership of a smartphone, digital literacy and access to the electricity supplies were some of the factors which prevented large groups of people, especially lower income classes form engaging at the digital level. Privacy settings for establishing communication and visibility across social media impeded full inclusion of potentially affected people. Alongside the field-based assessment, field-based volunteers played a substantial role in providing informal mental health for people who needed a listener to loosen some of the burden experienced during this disaster.

7

Social Networks and Social Capital in the Disaster Response

Figure 23. Volunteers of Chennai Trekking Club (CTC) during rescue phase of 2015 Chennai floods.

Introduction to the Chapter

Flows of information kept digital and field volunteers connected in shaping up smaller and larger response groups. From key actors creating digital tools to collect information and collect funds, to those who started field-based initiatives to provide basic needs and services: a wide web of actors embodies what is called the '2015 Chennai flood response'. This chapter aims at giving an overview of the connections among actors, clarifying who key actors are, what function they played and what connections were crucial for delivering certain types of aid.

Subchapter 7.1 'Information Flows and Key Actors' will illustrate through a Social Network Analysis the information flows among the interviewed actors and their network in the disaster response. This subchapter provides a complete overview of all response-related actors the informants were connected to, as well as developing two different analyses of the network based on actor centredness and betweenness. Subchapter 7.1.1 '(De-)Centralizing Information' focuses on the dynamics used by key actors to gradually make their response efforts more efficient. The subchapter aims at contextualizing through an analysis of different situations, when and why actors decided to move from a decentralized information system to a centralized one and vice versa.

Subchapter 7.2 'Social capital' zooms into the results of the Social Network Analysis to selectively choose examples of actors who have been creating social capital during the period of the disaster response. Each subchapter of 'Social Capital' specifically focuses on one type of social capital creation and usage, being those bonding, bridging and linking social capital.

Subchapter 7.3 'Localizing Social Network and Social Capital' aims at investigating the global spatial distribution of key actors (both digital and field based) during three temporal dimensions: the pre-floods, emergency phase and rehabilitation phase. This investigation is built on a set of visual representations resulting from the Spatio-Temporal Analysis.

Lastly, Subchapter 7.4 'Dynamics of Inclusion and Exclusion' deals with the issue of inclusiveness in the participation as volunteers both in the digital and field-based response to the floods. This subchapter will also analyse what circumstances enabled people in need to get access to the rescue, relief and rehabilitation activities performed by non-governmental actors involved in the flood response.

7.1. Information Flows and Key Actors

Social networks are key in grasping how the response to the 2015 floods shaped up. Both through real-life and virtual interactions, informants were empowered by the network they built up in order to proactively perform all possible disaster response tasks. The Social Network Analysis shows what these networks look like, in the attempt to highlight key components enabling the provision of certain information, material or service flow among actors. Figure 24 shows the results of the Betweenness Centrality Analysis (a complete numbered list of the actors included in the SNA can be found in Appendix 1).
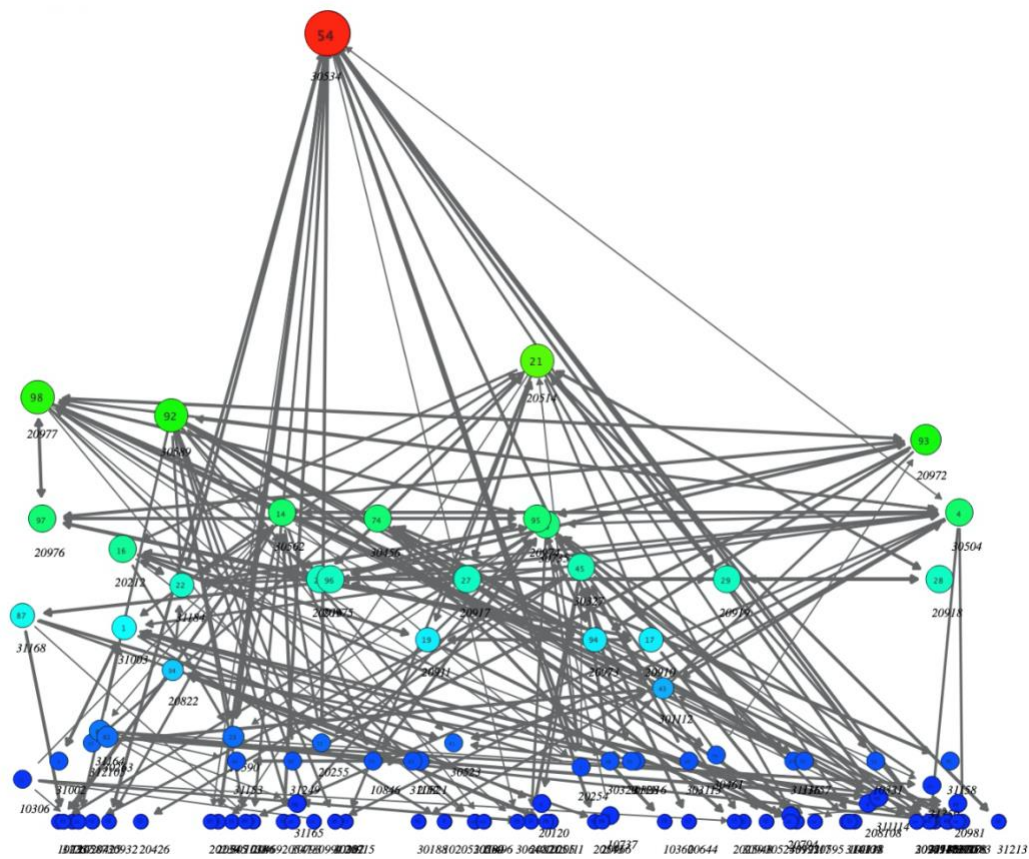
Figure 24. Betweenness Centrality Social Network Analysis of interviewed informants.

Figure 24 illustrates the 'hierarchy' of actors with the largest number of ties at the top of the pyramid. Through this Betweenness Centrality analysis it is possible to notice that the head coordinators of each volunteer group built also the largest number of ties. These people were neither necessarily well-connected – in terms of the size and strength of their social networks – nor well-known before (apart from 54 and 92, two well-known NGOs). However, they were highly visible on social media and, therefore, sparked a lot of attention to the point that people flooded them with a great number of messages on social media. This is, for instance, the case of Chandra and Gnaniyar, two Chennaiites/Tamilian emigrants residing abroad. They both reacted to the floods by creating a Facebook page which would collect requests for help and facilitate clarity of how to prioritize various interventions on the field.
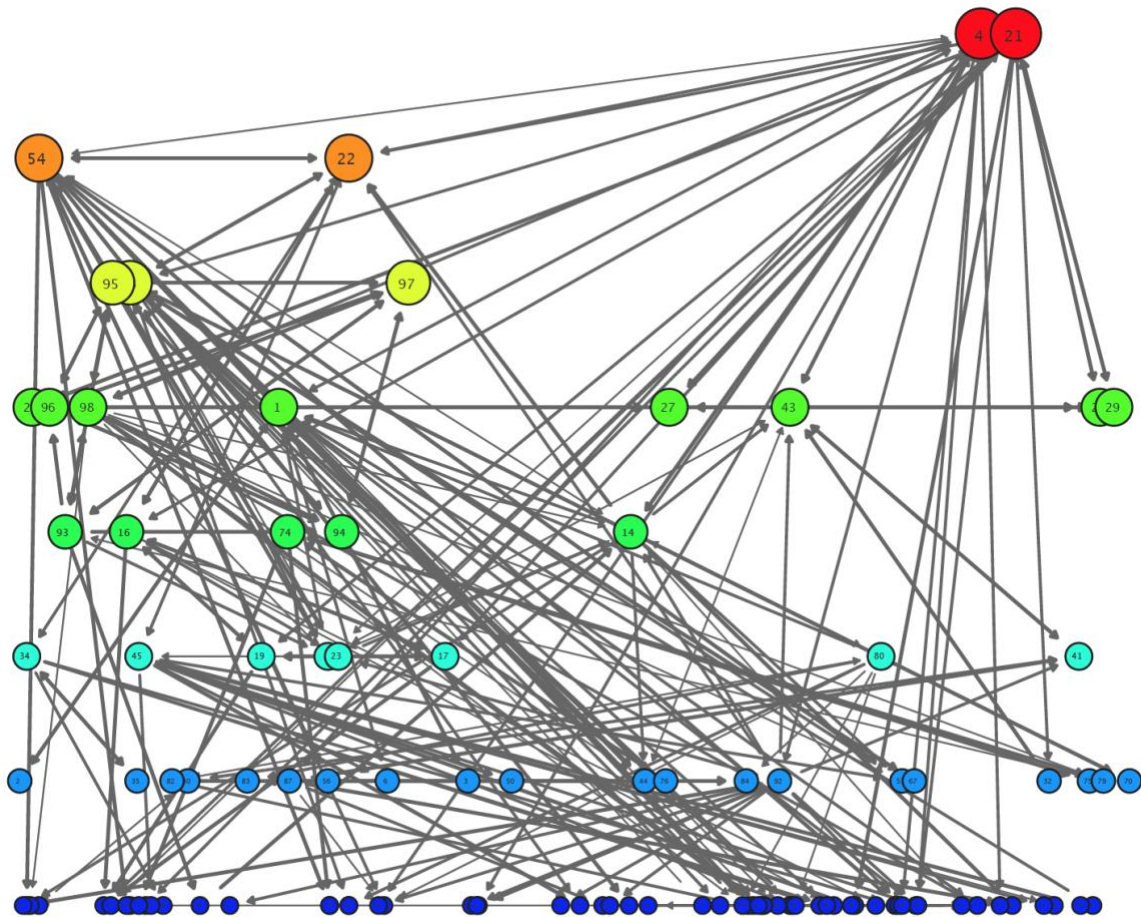
Figure 25. Information-Centered Social Network Analysis of interviewed informants.

From Figure 25, it is possible to observe that actors who are engaged in these strong connections are mostly well-known NGOs. Among the actors with the strongest bonds, only two (66 and 98) are not NGOs; however, the latter is the head of citizen-based disaster group who, operating in a similar way as official NGOs, later on decided to register this group as an NGO. The other actor is a weather forecaster who has become a Tamil hero during the floods; by providing highly accurate weather forecast information on his Facebook page, he gained great trust within the whole digital Tamil community and, in turn, people were contacting him for any type of weather-related information (J. Pradeep, personal communication, April 25, 2019).

On a second level of information-centeredness prominence, other well-known organizations appear; however, these are not linked to humanitarian purposes; an example is a popular hiking club. Due to multiple sport-related skills, certifications and rescue experience of the group, this organization played a key role in the rescue and rehabilitation in particularly challenging sections of the city. For these special skills, this club also became a crucial actor within the network.

Therefore, from the Information-Centered analysis emerges that strong ties are present among these actors who were already well-connected before the 2015 floods. The actors who are engaged in these strong ties are mainly NGOs who are already executing social work in Chennai and who have built strong networks with similar Indian and foreign NGOs as well as with governmental department pertinent to their work.

7.1.1 (De-)Centralizing Information

Despite a diverse range of actors starting to operate in a decentralized manner, diverse volunteer groups soon realized that to have more impact within the group, they would have to operate in a more systematic and organized way.

> "We decided to centralize the information. Although the decentralized system worked very well because you could get very detailed information (street based), the messages were too many, so there was a clear need to rearrange all incoming information into one organized spreadsheet. Otherwise, information would have just been too dispersed." (Chandra, emigrant IT expert)

From that moment on, each of these groups had a defined cluster of coordinators who were splitting tasks, overviewing the fulfillment of tasks, connecting with other actors for a range of different purposes. Therefore, from a decentralized network structure, once groups were starting to shape up with a stable amount of coordinating people, the network turned into centralized management of information. Therefore, Figure 25 (Betweenness Centrality SNA) shows that there are clusters linked by ties between groups. It is useful to remind that a large section of these interviewed informants had a leading role in coordinating the flood response. This conclusion is limited to dynamics of social networking among key response coordinator. By accounting for this aspect, it can be concluded that informants were operating in an organic way with mostly pre-existing strong connections, while entering in contact with new actors – for the majority, in a less strong and long-lasting types of engagement.

It is relevant to highlight that there has not been any documented active presence of neither the central government nor the government disaster response forces in social media communication for emergency coordination. This absence made a significant mark in the way response was coordinated. Despite citizen groups and organizations having a highly proficient network for sourcing resources, the government has a much higher capacity to mobilize large-scale resources. While citizen groups have contributed to an active mobilization of material, information and services, the central government has the potential of mobilizing the same resources at a macro-scale; for instance, rescue vehicles and emergency hospitalization.

7.2. Social Capital

"[M]ajor disasters exhibit stunning complexity as existing groups and organizations restructure to meet disaster demands, new groups and organizations emerge, and both existing and new entities become parts of broader social networks of collective action." (Kreps and Bosworth, 2007: 299)

Elaborating on this in Putnam's (1995) words, high capital stocks made it possible for cooperation and collective action to build trust and solidarity within the community. Insights into the practices adopted by a community to respond a disaster can be extracted from an exploration into the concept of social capital. In the case of the 2015 Chennai floods, analysing the construction of social capital highlights how networks and norms facilitated (or obstacle) collective action in the response coordination to the floods. The concept of social capital is used in this analysis to document an extensive range of interactions and actions, happening among an heterogenous pool of actors. The aim of this analysis is clarifying whether the occurrence of a disaster strengthens the social capital of a community (Bankoff, 2007).

This subchapter digs into the smaller details of the large SNA picture by zooming into actor specific SNAs which facilitate the understanding of networking dynamics between a key actor and its network. Each of the three selected cases analyses one form of social capital, which – based on the subdivision by Szreter and Woolcock (2004) – are bonding, bridging and linking social capital. Figure 27 shows the legend of the actor-specific SNA which will be presented in the subchapters 7.2.1 (Bonding Social Capital), 7.2.2 (Bridging Social Capital) and 7.2.3 (Linking Social Capital). All attributes figuring in these SNAs can be read as follows:

Table 3. Legend of Social Network Analysis performed in subchapters 7.2.1, 7.2.2 and 7.2.3.

7.2.1. Bonding Social Capital

An example of bonding social capital is given through Chandra's social network illustrated in Figure 26. He is a Chennaiite emigrant, an IT specialist residing in the United States and working for Facebook in 2015. He is also the creator of the group #ChennaiFloodsUpdates, a Facebook group which was collecting, summarizing and verifying help requests and helping field volunteers to decide on the amount of materials needed and the priority locations where to intervene.
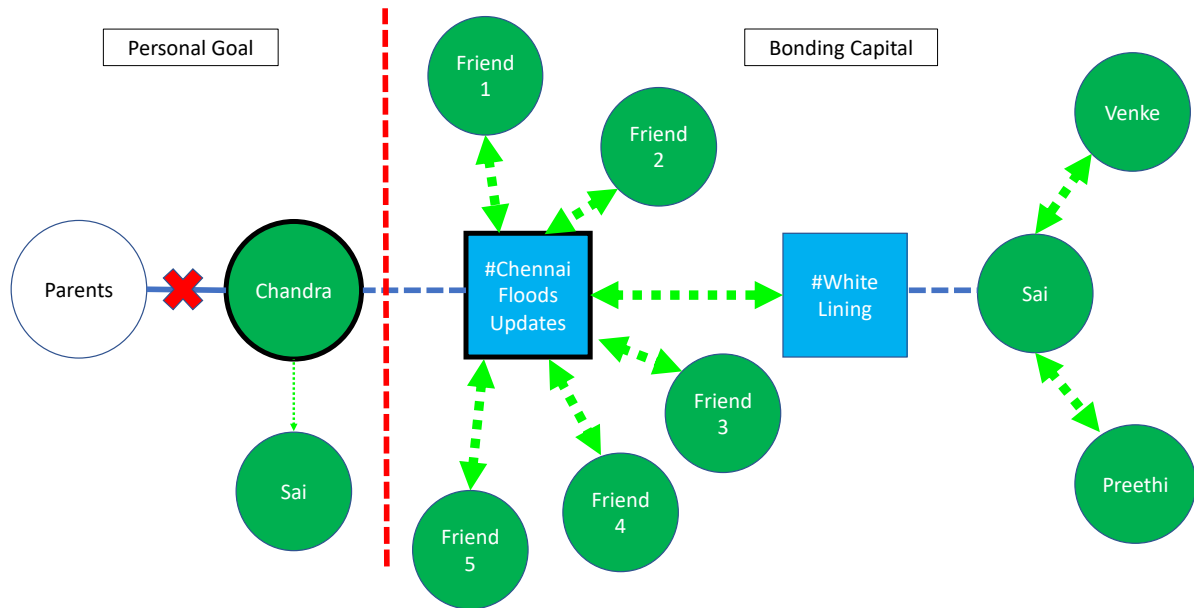

Figure 26. Example of bonding social capital in the social network analysis of the 2015 Chennai floods.

Chandra entered into this response management role due to the inability to contact his parents. His rationale for "doing something about it" was the emotionally charged uncertainty of what was happening. This led him to contact over Facebook, among other people he does not know, Sai – the team leader of the bleaching operations. Chandra reconnected with him and his mission after he created his Facebook group, with the help of other Chennaiites living abroad. Most of these Chennaiites were his school friends, and they were all scattered around the United States, Singapore and Mumbai. Only 2nd, 3rd and 4th order connections – not represented in this graph – enabled the group to extent to Chennai-based people. However, the core information management group was mostly comprising Chandra and his friends, who did not live in Chennai. This platform then connected with Sai's #WhiteLining Facebook page, which was joined by Preethi and Venke – two IT-expert Chennaiites working in Delhi and Mumbai – who contacted Sai over Facebook to request how they could help his bleaching work. Overall, four years after the floods, the whole group is closely connected and they contributed again, both as a group and as individuals, to other humanitarian-oriented initiatives.

The socio-economic composition of digital groups reflects a clear degree of homogeneity within groups. Emigrant-based groups, like the one formed by Chandra, consist of friends and like-minded people who are the 2_{nd}-3_{rd} order of connection. This matches also with the real-life societal fragmentation: despite a wide variety of connections are daily performed, strong and constant ties are created and enacted only with certain people – who are regularly belonging to a similar socio-economic background. This substantiates also a point made by Larsen et al. (2006), which states that the number of ties is not as relevant as the frequency of these contacts. Chandra's social network is a clear example: the strengthening of these relations through frequent interactions among a limited amount of people originated – and still preserves all its qualities based on repeated follow up engagements in humanitarian causes as an operating group – a strong digital response team.

The type of engagement that Chandra established with Sai can be connected to Coleman's (1988) statement when thinking about social capital as a tool utilized with the expectation that the favor given will lead to particular gains. In this context, Chandra's offer to be fully engaged in digital volunteering and collaborating with Sai and the rest of his team was motivated by the hope that the benefit derived by this collaboration could potentially also have a positive impact on Chandra's parents, whom he could not reach since a few days after the flood.

7.2.2. Bridging Social Capital

During the 2015 floods, the accessibility of information on social media enabled users from different ages, socio-economic groups, professions, interest groups and locations to connect. Twitter and open-access Facebook pages contributed to the increase of bridging and linking social capital. One of these examples of bridging capital is presented by the Facebook page of #ChennaiRains, a non-registered NGO born during the floods' response. This page was created by Gnaniyar, a Tamilian emigrant living in Saudi Arabia, and it is field coordinated by his relative Peer, who lives in Chennai. As shown from the detailed information of the social network analysis of the #ChennaiRains shown in Figure 27, the digital presence, integrated with the field-based relief coordination, facilitated the establishment of a wide array of bonds with diverse groups.
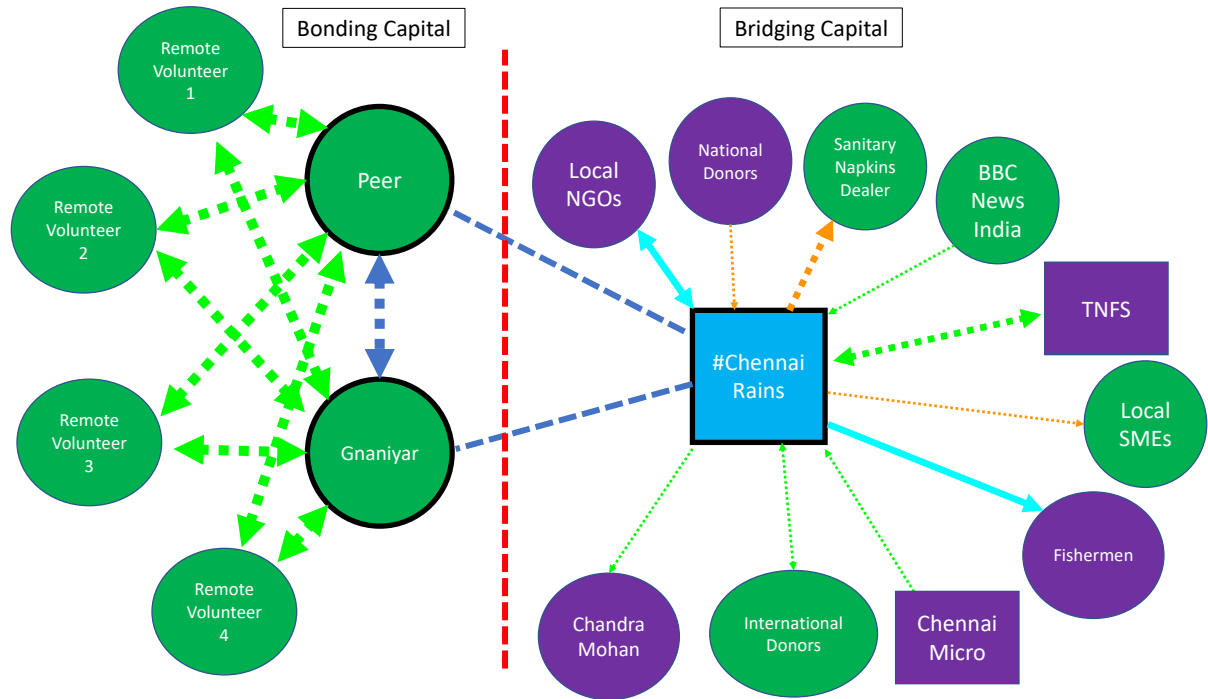
Figure 27. Example of bridging social capital in the social network analysis of the 2015 Chennai floods.

As highlighted in this illustration, fishermen, journalists, celebrities (through their digital platform) and other groups entered in different grades of collaboration with the #ChennaiRains people. This platform is an instance showing some of the reasons behind the need of bridging groups, skills and resources. For example, fishermen were a crucial partner: with their boats, they helped the group to rescue people and deliver goods to those who were unreachable by walk. Journalists were another important collaborator since they made visible at a large scale how sanitary napkins – which were one of the most procured items by the group – were an essential item to distribute. This functioned as a connector to link the group to ChennaiMicro, an NGO funded by a few celebrities, who also helped in this distribution mission. Therefore, the social network of #ChennaiRains can be seen as an emblematic example of bridging capital as it clearly bridges a heterogeneous group of people which would have not otherwise had a motivation to meet and bond. All these 'bridges' – excluding the ones with fishermen and the local NGOs – were built through virtual communication in digital platforms. Due to the high level of social mobility of the founders of #ChennaiRains – particularly Gnaniyar, as a Chennaiite emigrant with a vast network across Saudi Arabia and Tamil Nadu – the group was able to attract highly resourceful actors, such as celebrities and international donors, who could provide readily accessible resources (Ryan, 2011).

Since large part of the relief materials were transported from neighboring cities such as Bangalore, bridging social capital emerged in the social network of many informants dealing with national donors. Due to road blockages on the only highway connecting Bangalore to Chennai, all trucks and vans carrying food and other aid from NGOs and citizen groups to

Chennai were diverted to stations were the political party in power would paste their party's logo stickers before distributing these relief kits to affected people. In order to avoid materials being forcefully diverted into politically advertised aid, the bonds between donors and recipients – either built over social media platforms or from interest groups – were crucial to ensure trusted delivery channels in Chennai. For this reason, the 'bridges' between NGOs, volunteer groups, donors, migrants, distributors and other actors built relations of trust among diverse groups with a common mission.

7.2.3. Linking Social Capital

Linking social capital also found its place in the 2015 floods. An instance is detected in the social network of Chandra, a Chennai-based anti-corruption activist and filmmaker, who actively took part in the field response (see Figure 28). Despite Chandra lived for many years in the United States, he had a well-established and wide social network due to the anti-corruption movement he and some colleagues lead since before the floods.
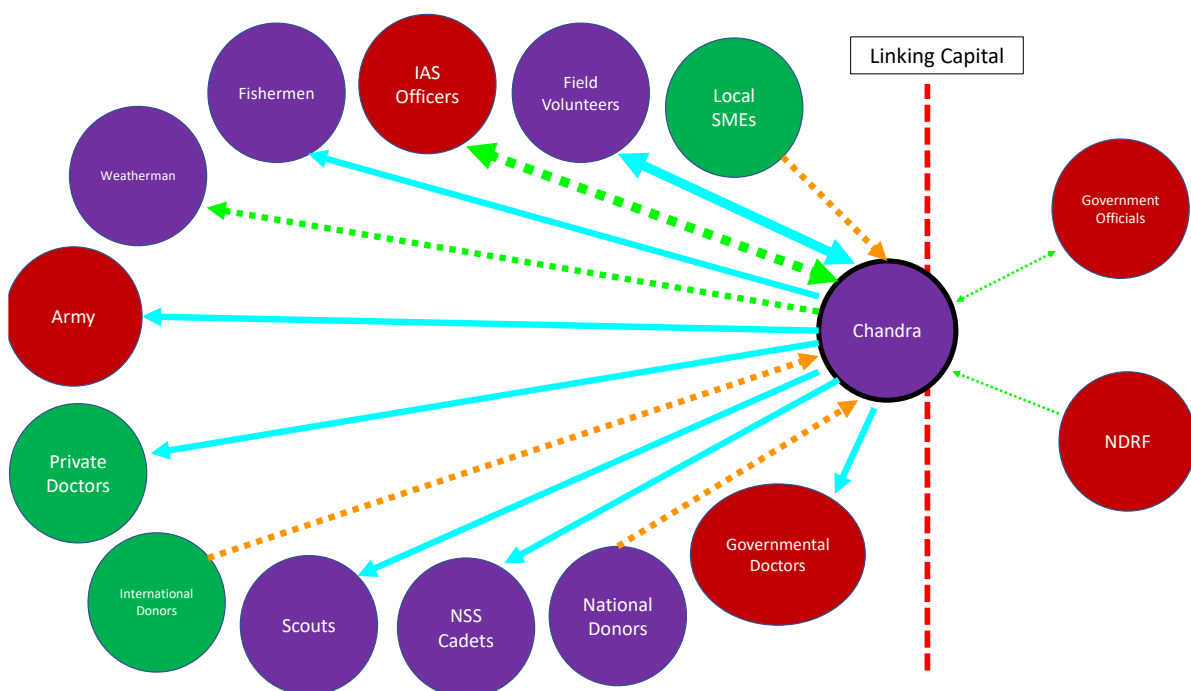

Figure 28. Example of linking social capital in the social network analysis of the 2015 Chennai floods.

As shown in the above figure, Chandra's social network highlights the strong linking power that he built between a 'bridged' collection of heterogenous actors and the authorities. Indeed, Chandra can be seen as a focal point for establishing a level of communication between informal field-operated response and the official disaster response forces. Despite the relationship with governmental officials and the NDRF being rather weak and tense, this bond was essential to linking collected information from low response capacity people (i.e.: small

informal groups of volunteers and groups of professionals) to high response capacity people, such as the NDRF. From his position, Chandra was capable to inform governmental authorities about how they could further proceed with the response. This transfer of information is especially important because the government had not collected significant amount of information during the first days after the floods, when the official disaster emergency forces were not operative yet.

Linking social capital can be evidently spotted in the instances in which core coordinators needed logistical help by fishermen, or when one of the religious foundations needed individuated railway porters, scavengers and autorickshaw (also called 'tuk-tuk' in other Asian countries) drivers as fundamental helpers in the disaster response. However, these types of collaboration did not properly turn into long-term engagements calling for a proper reflection of social capital building. Differently, these interactions were merely a 'one-shot' type of connections. This means that the similar types of collaboration may flourish again in a hypothetical future disaster response, however that would highly likely still be a non-structural occasion-based engagement.

Governmental authorities and the NDRF were not operating through social media during the floods. The absence of these powerful actors in the digital world is key, not only to the determining linking role of Chandra, but also to the dynamics of exclusion of those not accounted for in the informal community-based groups. Additionally, the lack of engagement on social media, could also strengthen uncertainty and lower situational awareness among Chennaiites (Silver and Matthews, 2016). Their presence may have also facilitated the whole help request verification mechanism and the reliability of posted information on social media.

7.3. Localizing Social Network and Social Capital

A critical dimension to be considered when analyzing the social capital constructed during a disaster is the duration of the interactions among the actors inserted in the social network. The temporal span in which cooperation takes place is a crucial dimension to understand the potential durability – and re-usability – of these bonds in the future. Indeed, assessing the time span in which these interactions are performed is a useful indicator to assess the strength of these relations. The temporal dimension can also disclose an array of different information regarding the motivation as well as the resource availability (not only meant as material resources, but also professional resources such as skills) that one can contribute to in different stages of an event.

Consequently, a Spatio-Temporal Analysis is performed (see Figures 31-33) to show the spatial dispersion of the response network during three different temporal phases of the disaster: the pre-floods, the emergency phase and the post-floods (see the methodological chapter 3.4). Three distinct categories of aid – material, information and service aid (as described in the Codebook of Appendix 2) – are analysed for the three stages of the disaster. Since international cooperation was an essential part of the 2015 floods' response, this Spatio-Temporal Analysis explores the intersection between geography and temporality of

interactions. Assessing the geographical location of actors and the existing – and persisting – ties over time helps in describing the degree and modalities through which remote collaborations can be useful to cover response-related tasks. In this way, this analysis reflects on the role that certain geographies and mobilities played when creating or strengthening specific relations during the response coordination. The collection of these information can help to identify what relations are consolidated enough – and for what purposes – in order to better respond to future events.
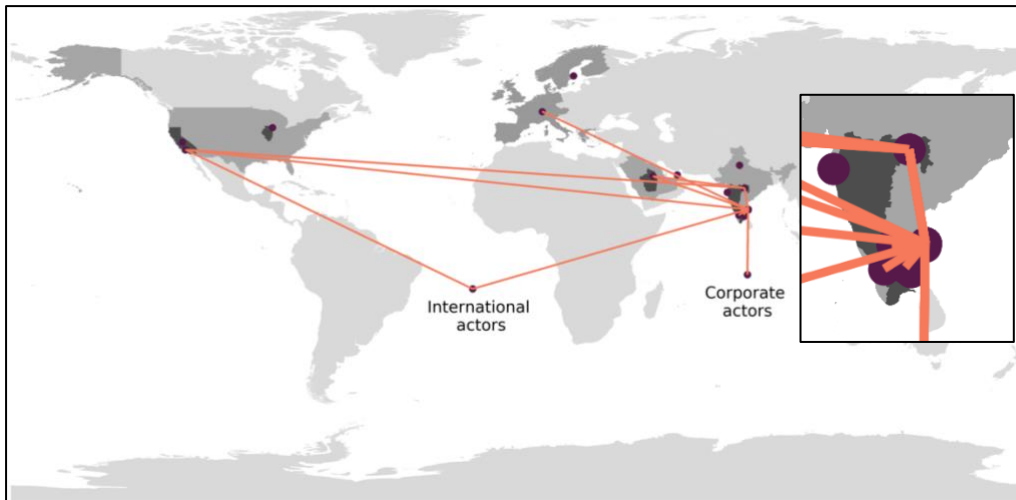
Material Aid

The Spatio-Temporal Analysis below (Figure 29) shows the spatial dispersion of the network dealing with provision of material goods to flood-affected people.

Pre-floods
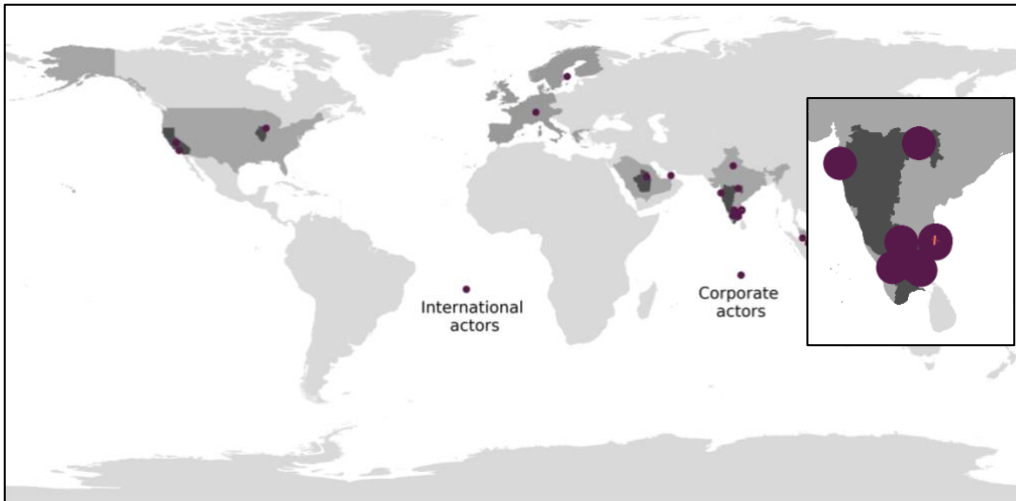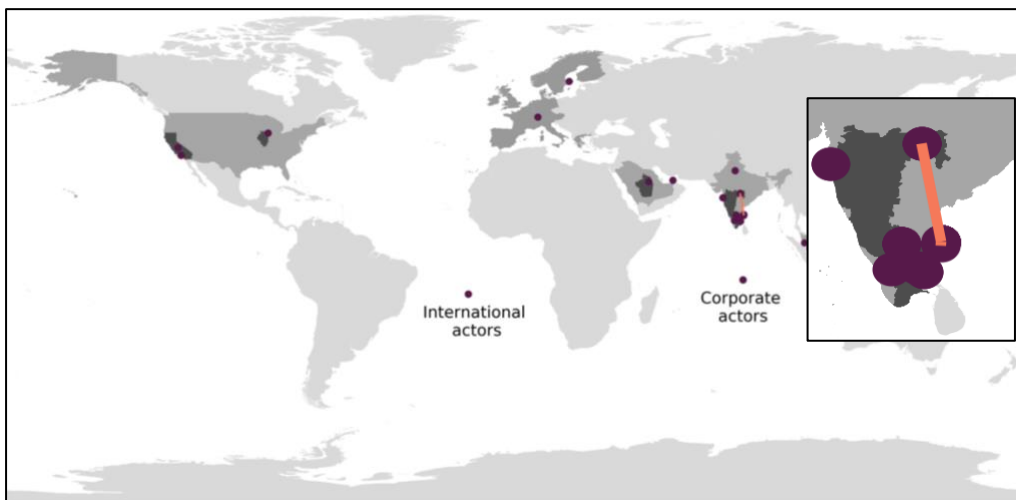

Emergency Phase

Post-floods

Figure 29. Spatio-Temporal Analysis for material aid.

In the pre-floods, material aid was only provided through a few philanthropists as a donation to people affected by the monsoon rains of November 2015. This flow of material aid was a personal effort of a few to cover some needs of people who had their homes flooded and needed some essentials, such as dry clothes.

During the emergency phase, the size and geographical distribution of the network sees its outmost peak, with a high degree of internationalization of the response. Despite material aid may be conceived as a local effort, donations of food and other essentials come by truck by many different Indian cities, especially the nearby Bangalore. Emigrants living in the USA, international NGOs and companies across the world donated money to Chennai-based trusted individuals, volunteer groups, religious organizations and NGOs. The mobilization of corporate actors was particularly successful thanks to the network mobilization of celebrities and internationally exposed figures (i.e.: a world-record swimmer who currently manages a Chennai-based NGO).

In the post-floods, material relief is still provided by people donating essentials and transporting it from other Indian cities to Chennai. Furthermore, part of the surplus relief delivered to Chennaiite NGOs and volunteer groups was re-routed to nearby villages which had also been affected by the floods. An example is the NGO The Banyan which, because it had an additional location in the coastal village of Kovalam (35 km South of Chennai), could supply the surplus aid materials collected by the #ChennaiRains groups to the affected people of this town.
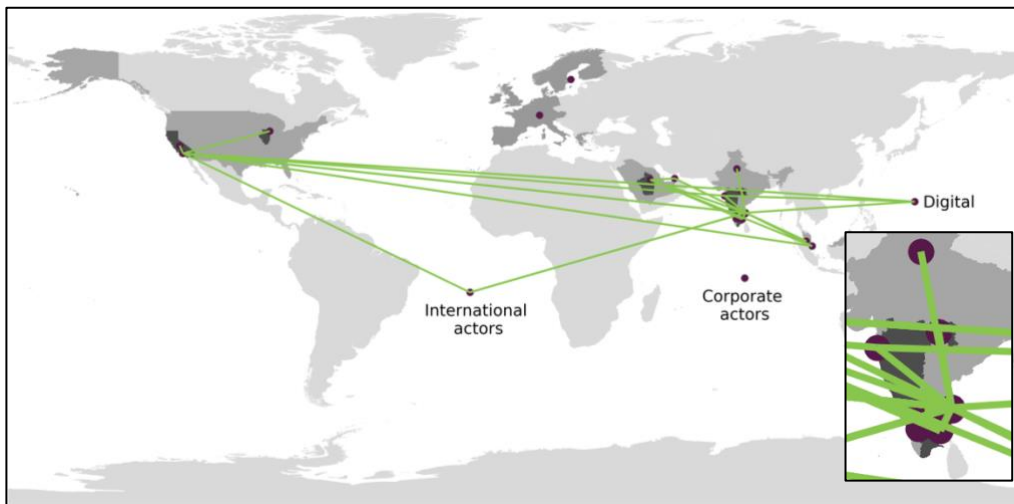
Information Aid

The Spatio-Temporal Analysis below (Figure 30) shows the spatial dispersion of the network dealing with the information exchange, compiling and provision of aid.

Pre-floods
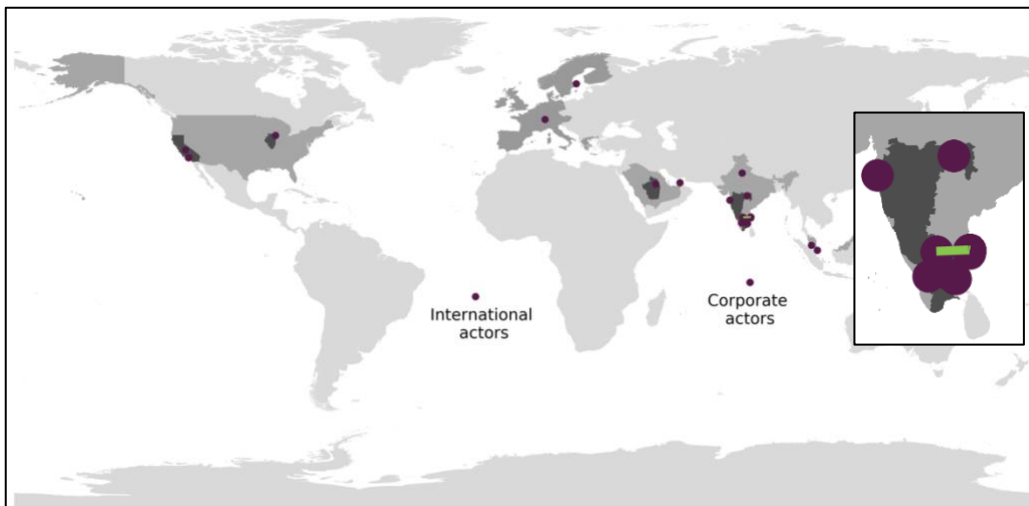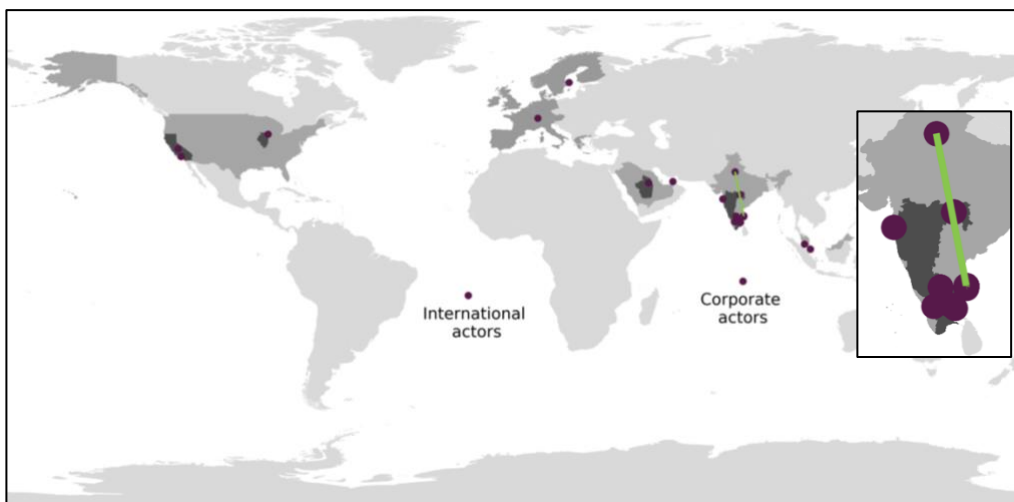

Emergency Phase

Post-floods

Figure 30. Spatio-Temporal Analysis for information aid.

In the pre-floods, information exchange functioned mainly as a connecting tool among Chennai-based NGOs and some local socially engaged people. Due to the severity of the rains, these NGOs mobilized their Facebook network asking for help from Bangalore-based IT professionals to map the government shelters where people affected by the rains could temporarily relocate.

In the aftermath of the floods, the network expanded to a numerous amount of international locations – especially the USA, Malaysia and the Gulf countries – where emigrant Chennaites were creating and managing Facebook pages to first gather information from the field, systematizing it and verifying it, and then centralizing it into a few Facebook pages and Excel spreadsheets. The interactions were also strong with other Indian cities – like Bangalore, Delhi and Mumbai –, where other Chennaiite emigrants and Tamilians were functioning as helplines to affected people, and were communicating these requests to the volunteers on the field. These remote volunteers were also mapping the location of help requests and safe places. Additionally, digital platforms also functioned as a self-standing key actor in this period. These platforms enabled to both build new interactions among physical individuals and provide an overview of the situation from compiled field information.

In the post-floods, information exchanges are mainly rooted towards building accountability proofs of non-formally recognized NGOs for those who had donated money and materials. Structuring reports with receipts, photos, maps and other information was one of the main activities performed to show how donated resources had been used and distributed amongst the affected population by field volunteers. Since field volunteers still had their priorities set on material and service-based relief operations; information-related tasks were performed by digital volunteers mostly based within India.
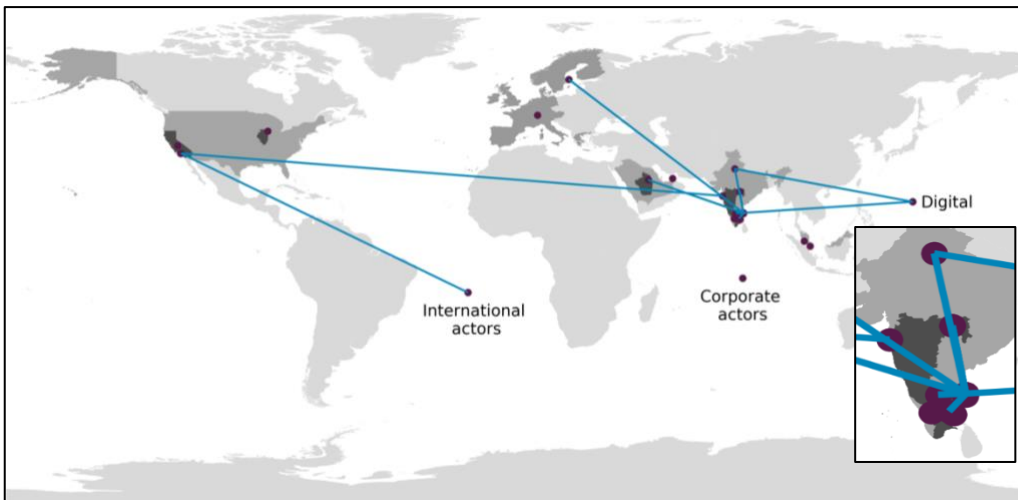
Service Aid

The Spatio-Temporal Analysis below (Figure 31) shows the spatial dispersion of the network dealing with the coordination of human resource activities related to the floods.

Pre-floods
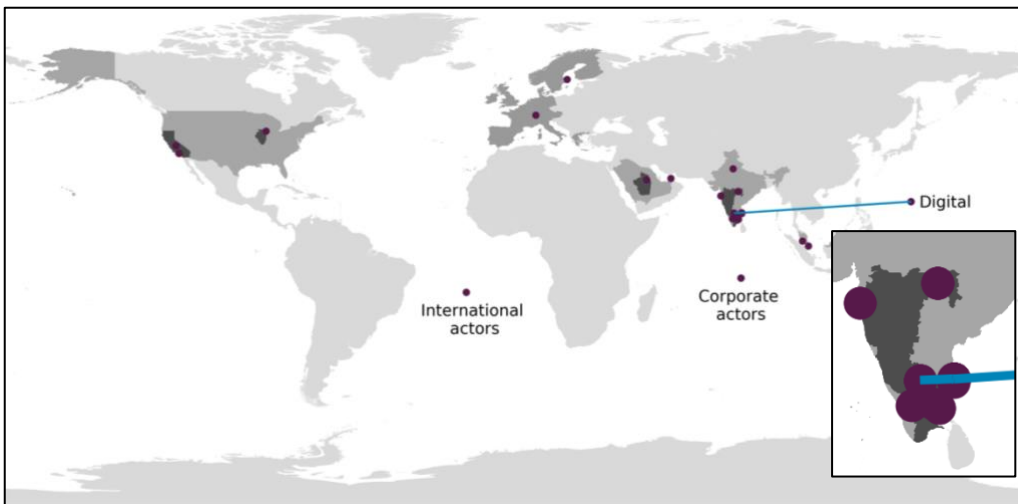
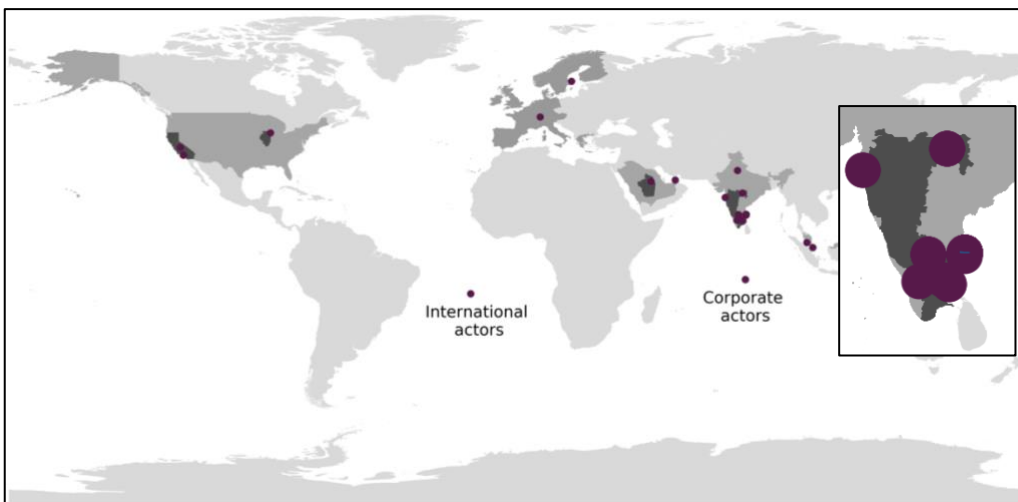
Emergency Phase

Post-floods

Figure 31. Spatio-Temporal Analysis for service aid.

Before the floods, service-based relief was operated within Chennai with the help of digital platforms, such as WhatsApp and Facebook. Digital platforms played a key actor to initially connect like-minded people in engaging with a pre-disaster relief commitment; this is especially the case for the connecting role of WhatsApp, which created more personal types of connection among activists, philanthropists and NGOs. These connections were then consolidated once the complete flooding of the city took place on the night of 1st December 2015.

During the emergency phase, the network expanded to include a variety of international actors. The international effort mostly consisted of Chennaiite emigrants helping local NGOs to fundraise; this support was crucial to expand the network to international donors. On the field, service-based aid consisted mainly of offer to volunteer for NGOs but also for informally organized relief groups. One of these organizations, the Chennai Trekking Club provided the only non-governmentally organized rescue service, while many doctors installed improvised first-aid medical camps in diverse areas of the city.

In the post-flood period, the network wears considerably thin; interactions consisted solely of rehabilitation efforts to restore the conditions for schools to reopen in view of the proximate Indian secondary school examinations. Since government schools accepted in-kind donations to restart their teaching activities, some socially engaged people and NGOs actively operated these rehabilitation operations within Chennai and surrounding affected areas.

To summarize, it can be concluded that the emergency phase is the most interconnected time phase of the floods, when not only local and national actors intervene, but also a wide range of international actors. Among the international actors, the omnipresence of Chennaiite emigrants explains their role both as engaged actors and intermediaries between field volunteers and donors, corporations and additional digital volunteers.

7.4. Dynamics of Inclusion and Exclusion

Diverse social grouping dynamics took place during the response to the floods. These had a direct impact on how the community-organized response built the conditions for inclusion or exclusion of different people. Tadiar's (2016) conceptualization of 'metropolitan archipelagos' helps to explain how the peculiar dynamics of 'geographical' dispersion of these social networks do not reflect traditional group affiliation. While in the aforementioned case of the Gaja cyclone the response coordination dynamics were linked to strong socio-economic affiliations and kinship of rural Tamil Nadu, in Chennai identity clustering is not inscribed in territorially and spatially segregated neighborhoods – as clearly illustrated in the Spatio-Temporal Analysis (see Chapter 7.3).

The identity and social networking of the 2015 floods is strongly shaped by virtual "regulatory pathways" (Tadiar, 2016: 66), or physical features defining socio-cultural common aggregation and interaction. As shown in the social network analyses, clustering is mostly derived by humanitarian action: this sees fishermen, virtual entities such as the 'Weatherman',

emigrants, activists and NGOs establishing the most solid bonds. The social constituencies of these networks are in continuous change and they include heterogenous social strata. Social media functioned as key actors in connecting these actors which, otherwise, would have not the capacity to connect at such an extent and speed.

However, one of the limitations of social media, as an information management tool in disaster response, is its incapacity to ensure maximum reach beyond the digital. This aspect is particularly evident in platforms such as WhatsApp, but also Facebook – where the free flow of information can be interrupted by the creation of private groups. The only social media which was found to be more inclusive is Twitter, since its users can all participate in the network, both in an active way – by following users, liking, retweeting and responding to tweets – or passively – by just reading various tweets. Therefore, despite social media offered significant advantages for communication, the fact that these 'groups', 'NGOs', 'associations' are defined and slowly established, creates conditions for both inclusion and exclusion. Indeed, while field-based coordination was more interactive and diverse, the response on social media did not allow all that diversity.

Unequal access to digital platforms in the flood-affected areas was a major issue for low economic classes. According to some informants, those who personally requested relief materials on social media platforms were only a part of the people who were badly affected by the impact of the floods. Indeed, many of most affected neighborhoods had no access, neither to internet connection nor to electricity grids and therefore they were unable to digitally reach out to volunteer groups. For these neighborhoods, the only ways to receive aid were either hoping that volunteers may presume that these areas may be badly affected – through some basic local knowledge of flood impacts within Chennai – or that information about the status of their neighborhood would be indirectly passed on to some volunteer groups by relatives or friends unable to contact people living in these areas. For these reasons, a certain degree of inequality exists in the limited possibility to directly access digital platforms which, in the case of the 2015 floods, were centralizing large part of the disaster response coordination.

The inequality in accessing digital response channels is not exclusively confined to the functioning of electricity and internet connection, but also in another basic aspect: the ownership of a smartphone. The divide between who owns or does not own a smartphone is most often motivated by the economic affordability of having and maintaining one of these devices. As reported by Madianou (2015), digital inequality often matches with socio-economic disparity, reinforcing dynamics of exclusion or late response for low income classes.

> "For affluent people, they could give their exact coordinates and information due to social media. People called to ask for relief, but the poorest have no access to these phones and services. Especially those stuck on the rooftop, like in the areas of Semanchery and Perumbakkam. And there was no current." (Vanessa, policy researcher for deprived urban communities)

Despite smart phones increasingly being owned by lower socio-economic classes, their use and technological literacy are still unequally distributed among socio-economic classes (Arivanandan, 2013). The socio-economic composition of digital groups reflects a clear degree of homogeneity within groups. The NGO group is limited to these organizations, the emigrant-based groups consist of friends and like-minded people who are the 2_{nd}-3_{rd} wave of connection, displaying high degree of class homogeneity. This matches also with the real-life societal fragmentation in Chennai: despite a wide variety of daily performed connections, strong and constant ties are created and enacted only with certain people – who are regularly belonging to a similar socio-economic background. Therefore, social media does not seem to bridge the traditional identity traits' divide. The digital mostly serves to reinforce the bonding social capital, but it has a weaker impact at the bridging level – since the large amount of 'bridges' between individuals and groups is predominantly constituted by weak and short-term relations. In line with Twigg and Mosel (2018), this dynamic can be explained by the persistence of a certain degree of kinship still installed in the Chennaiite society, which – by strongly valuing in-group loyalty – shows that 'bonding' social capital without equally strong bridging capital can weaken collective trust and reproduce social inequalities. As reported by Vanessa, this resulted, for example, in the exclusion of slum dwellers in the digitally crafted disaster response. For this reason, the presence of field-based volunteers was essential to account for those who were not digitally present.

Discussion of the Chapter

As highlighted through the Spatio-Temporal Analysis, the geographical dispersion of the actors contributed not only to a local, but also to a national and international growth of the network. The peculiarity of how these interactions are worldwide-spread and, in large scale, digitally performed had a determining impact on the dynamics of inclusion and exclusion of whom contributed to the response. For instance, middle to large national and international companies were more easily reached through these digital networks than local businesses. Therefore, both the actors included in the network and the way in which the relief was distributed are deeply shaped by the complex network displayed in the Spatio-Temporal Analysis.

The spatial scale of the network also reflects the diversity of activities performed; from leveraging field volunteers from collecting information via digital platforms, to expanding the network of donors to Indian and foreign corporations, companies, friends and sympathizers; from establishing location-based collaborations to deliver more efficiently material relief, to re-routing surplus relief materials to other affected areas nearby Chennai. However, as theorized by Ryan (2011), since social contacts are neither equally useful nor have comparable degrees of social mobility, the geographic location only becomes a complete indicator when also the relative social location of actors is inserted in the equation.

For this reason, although some geographies may have been depicted in the maps as an 'emergency-only' type of interaction, the readiness and availability of resources within a

network also stand out. While some interactions may be displayed as short-lasting, this should not be necessarily translated into a short durability of these relations. Indeed, some of these relations may have played a key role in shortly performable tasks (i.e.: providing funds or functioning as a temporal helpline), but the ties may be based on strong loyalties building on well-established bonding social capital. Considering all these aspects gives a more nuanced perspective on how to interpret the spatial distribution of bonds in relation to their temporal persistence during the 2015 Chennai floods.

Closing Lines on the Chapter

Social capital displayed a consistent growth in the immediate aftermath of the floods; not only within the borders of Chennai, but also across a variety of international networks. Bonding, bridging and linking social capital saw an increase in the number of bonds and in the frequency of interaction among different actors involved in the response. Despite all three forms of social capital increased, bonds were mostly strengthened among those people who already knew each other, or who had common connections. Despite some of forms of bridging capital enabled the creation of strong ties, durable relations were rarely maintained among people of different socio-economic groups once the emergency phase terminated.

Dynamics of inclusion and exclusion were performed by networking dynamics navigating among socio-economically similar contacts; either connecting though a system of 2_{nd}-3_{rd}-4_{th} degree of connections or by teaming up with like-minded people often disclosed the homogeneity of these networks. Keeping homogeneity in volunteer groups meant also reaching out through social media platforms to similar people as those couple more visible reach shared contents. This illustrates a potentially negative trend for reaching out to all affected areas of the city. Therefore, despite unintentionally, the community-based disaster response largely run by the use of social media still enforced some exclusion dynamics which impeded full inclusiveness in distributed aid to affected people.

8
Conclusions

Figure 32. Reading the news.

Conclusions to the Thesis

The response to the 2015 Chennai floods features the importance of social connections in a disaster context. For Chennaiites, connections are a trusted guarantee in joint collaboration where a situation urges the support of a network. In these floods, both strong and weak connections shaped one of the largest social mobilization in response to a disaster. Among these networks, a range of reasons motivated people to become active volunteers in response to the floods; three types of motivations were discerned: a cultural, a social and an emotional motivation. While some volunteers decided to be fully engaged in field response after seeing their city being under threat, other Chennaiites decided to donate money and resources to fulfil social obligations through philanthropic actions which could benefit the affected people. On the other hand, emigrants who could not reach their parents showed an emotional rational to act. This bond of affective care motivated emigrants to become digital volunteers and help in the disaster coordination from a distance. Despite the variety of motivations, what mattered was people's commitment to carve out for oneself the best skills for the good of the community. Trust in these social connections constitutes the foundation of this disaster response. On top of connections, three main components were integral to the development of this disaster response: media, online and offline responses.

Media played a crucial role in framing the event as a disaster; not in hydrological terms, but in socio-cultural terms. The reason behind the 2015 floods being a catastrophic event – and not 'another' yearly flood – is motivated by the impact of this event: every socio-economic group was affected and was seeking for help. For the first time, media portrayed the middle-upper classes as vulnerable subjects and victims of this disaster. The high degree of national and international visibility of this flood derives also from the lack of clear information on the situation in Chennai in the immediate aftermath of the event. In order to close this information gap, Chennaiites and emigrants mobilized a vast amount of data to reconstruct the situation and to cooperate for the establishment of various response coordination teams. Furthermore, media – and especially social media news – had the possibility to point their finger at the government for their absence on the disaster scene during the first days after the floods. This situation gave a clear position of advantage and credibility to the community, which used this opportunity to build a new frame of the floods, where volunteers were the 'heroes' and the government the 'villains' of this disaster response. In this process of hero framing, strong traits of Tamil movie culture emerged; the spotlighting of heroes served the purpose of showing people the good actions that young Chennaiites were capable of doing for the well-being of the community. This links also to the role of online and offline volunteers in shaping the dynamics of the disaster response.

Online volunteers played a key role in supporting the field response in a dysfunctional city. By collecting, verifying and systematizing incoming help requests, digital volunteers served as informants to field volunteers; they could give clear indications on how to structure the relief

operations. These online volunteers are mainly Chennaiite emigrants – raised in Chennai and moved as economic migrants in other Indian or international cities – with solid IT skills and who have knowledge of the language, city, culture and geography of the city. Being local facilitated the motivation, speed and confidence in either starting digitally based platforms for data collection or joining one of the informal response groups by offering IT-based support. Digital platforms became an empowering tool able to give agency to even geographically distant people which could then become an indispensable part of the response. The use of technology during the floods bridged many of the barriers defining physical absence; photos, videos and continuous online presence limited the feeling of distance by making the disaster close to everyone in the ways it was represented in media and social media platforms.

However, there is a contradiction in this sense of empowerment offered by social media. Indeed, empowerment was only a circumstance for some people, mainly belonging to middle-upper classes and having a good knowledge of the use of ICTs. Ownership of a smart phone, access to telephonic signal and to electricity, and digital literacy are some of the more visible requirements which made access and participation to digital platforms limited. From a socio-economic perspective, social media – as actors – were mostly able to connect people who, despite living miles away or even in different continents, in fact belonged to similar social groups as in normal circumstances. The administrators of social media groups and the nucleus of volunteers engaged with large NGOs are instances of these homogenous grouping dynamics. When accounting also for the restrictions that social media platforms' settings impose on both the inclusion (i.e.: WhatsApp) and exposure (i.e.: Facebook and Twitter) of people to shared contents, exclusion became an issue also for fulfilling an ideal complete coverage of affected people by the community-based response. For these reasons, the response coordination through social media enabled as an elitist cooperation. Without the engagement of field volunteers in doing a critical reading of digitally gathered information and their venturing into unreported (affected) areas, the digital response risked marginalizing the lower socio-economic classes.

For this reason, the offline – or field-based – response represented a key component to ensure a more comprehensive inclusion and a realistic prioritization of emergency response operations. Area-by-area field assessments gave a broader perspective of the impact of the floods. From these assessments, important information about the consequences of the floods on different peoples could be extracted; indeed, even people living relatively close to each other, were differently exposed to the impact of the floods. Another function – more passive, but nevertheless crucial – of field volunteers was their presence: having a trusted network of people in Chennai physically present in the area was key to enable relief materials transported from other Indian cities to safely reach Chennai. Due to road blockages enforced by political parties, many donations were labelled as governmental relief and strategically re-routed to neighborhoods of convenience. Lastly, field volunteers were also key in offering mental health support to affected people who lost their relatives, belongings and sources of livelihoods.

However, even field volunteers had their limits; stressors such as time, difficulty in moving around a disrupted city, and unstable telephonic network interrupting the fluency of communication were only a few of the difficulties faced. This illustrates how the absence of governmental disaster response forces, with their higher capacity of mobilizing resources, sets another limitation in the goal of building an inclusive emergency response.

In line with Bankoff (2007), the case study of Chennai suggests how the occurrence of a disaster can strengthen the social capital within a community. As elaborated in Chapter 7.2, bonding, bridging and linking social capital visibly grew during the emergency response; however, the strength and duration of these bonds varied across the different forms of social capital. Overall, the disaster increased social capital among similar socio-economic groups (bonding social capital), but it was less formalized and long-lasting among diverse classes and hierarchical levels (bridging and linking social capitals). The Spatio-Temporal Analysis illustrates how the extensive geographical spread – along with the multitude and variety of interactions – built temporary forms of social capital. However, once the emergency phase was over, the network retrocedes to predominantly include pre-existing active ties. This suggests how the availability of resources sought needed a much more extensive and international network – which also helped to build social capital –, while the pre-floods and rehabilitation phases kept alive only those already consolidated networks with strong bonding capital.

These dynamics reflect also the way information was collected and managed during different phases of the disaster. While pre-floods report the engagement of already connected actors, the emergency phase sees the extension of the network to a wider spectrum of actors: affected people, 2_{nd}-3_{rd}-4_{th} degree connections, donors, celebrities, companies and other actors belonging to the civil society, public and private sectors. Therefore, during the first week after the floods a large pool of incoming information was collected in a decentralized way. This decentralization had the power to make the community-based response inclusive to any level of received information; data could be as detailed as to the street or even house level. However, issues of mismanagement of resources arose once a large amount of volunteer groups started to simultaneously operate in the same areas. The problem of duplication of relief materials was contained by the verification of incoming requests and the systematic merging of information into Excel spreadsheets and Facebook pages which became used by more volunteer groups. The merging of some volunteer groups for coordinating the delivery of specific types of aid was also one of the solutions. As a consequence, the centralization of information became a natural step in attempting to optimize resources' distribution and volunteers' time, ensuring that instances of duplication of relief materials would diminish. Once people started to consolidate their response teams, information was then centralised by a network which already had created a strong bonding social capital.

From the outcomes of this thesis, it emerges that further research on the role of digital media in disasters should be conducted on a variety of salient topics. One of them is the collaboration

between state and non-state actors in jointly collaborating in a disaster response through the use of social media. One of the examples worth exploring in an Indian context are the 2018 Kerala floods, where the experiences and tools used by the Chennai volunteers were integrated to the operationalization of a hybrid governmental and community-based disaster response. The second topic is the role of emigrants in disaster response, which can further investigate the ways in which emigrants have been actively engaged in other disasters through the use of social media platforms. Lastly, researching the motivation behind people's mobilization in digital disaster response can be an attractive topic for NGOs and aid organizations which aim at learning how to best engage with digital volunteers during disaster response.

From a methodological point of view, future research should explore ways of integrating qualitative and quantitative methods to study the complexity of interacting cultural, political, social and economic factors linked to the use of social media for disaster response. This thesis attempts to integrate various methods to research the links among local society, emigrant society and disaster-related networks; however, more experimentation should be conducted to explore dynamic and relatively new topics such as the digital world.

To conclude, the 2015 Chennai floods suggests how creating general emotional, cultural and social insecurity in the society can generate a vast mobilization of people. Due to the digital and field-based interconnectedness of Chennaiites, informal collaborations enabled rapid mobilization of resources and people. Social media were a key actor, both enabling a large-scale response through centralized information and the smaller-scale coverage by decentralized information. Despite problems of inclusiveness and the only partial coverage of affected people, the use of social media on both scales conceived a 'new' mechanism for disaster response. As extensively claimed by informants: "Humanity saved Chennai"; strengthening the community with a massive collective effort undoubtfully enabled Chennai to save and help people affected from the impact of the floods. Digital volunteers were key actors in the 2015 Chennai floods and the tasks they performed facilitated and complemented the work of field volunteers. However, since the community alone has not the full capacity to respond to such devastating disasters, response to future disasters should ensure collaboration between the community and official disaster response forces for full-scale supervision and mobilization of material capital and human resources.

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APPENDIX 1
List of Actors of the Social Network Analysis

Number	ID	Name actor	Location
1	31002	CTC - Siva	Chennai, India
2	31003	CTC Bangalore	Bangalore
3	311116	Volunteers CTC	Chennai, India
4	30504	Local NGOs	Chennai, India
5	31171	Fishermen	Chennai, India
6	20120	Corporation workers	Chennai, India
7	20254	Donors (international)	International
8	208108	Doctors	Chennai, India
9	10205	Hospitals	Chennai, India
10	10306	IIT DMC	IIT Madras, Chennai
11	30207	EFI	Thiruvanmiyur, Chennai, India
12	10108	Navy	Chennai, India
13	20821	Private doctors	Chennai, India
14	30562	Bhumi	Alwarpet, Chennai, India
15	30948	NSS cadets	Chennai, India
16	20212	Sai (bleaching)	Chennai, India
17	20910	Venke	New Delhi, India
18	31297	# Silver Linings	Digital
19	20911	Preethi	Mumbai, India
20	30509	WHO Malaysia	Kuala Lumpur, Malaysia
21	20514	Chandra	Los Angeles, USA
22	31184	Volunteers (field)	Chennai, India
23	10590	Government officials	Chennai, India
24	314109	Chennaiite emigrants	International
25	31213	# Chennai Floods Updates	Chennai, India
26	20916	Friend 1 Chandra	Mumbai, India
27	20917	Friend 2 Chandra	Chicago, USA
28	20918	Friend 3 Chandra	California, USA
29	20919	Friend 4 Chandra	Singapore
30	31185	Volunteers (remote)	International
31	31184	Volunteers (field)	Chennai, India
32	20915	Facebook	Los Angeles, USA
33	307103	# News on Twitter/FB	Digital
34	20822	Roshan Santosham	Egmore, Chennai
35	20821	Private doctors	Chennai, India
36	102110	Nurses	Chennai, India
37	205111	Pharmaceutical industries	India
38	306104	# Radio	Digital
39	10233	Governmental doctors	Chennai, India

40	20981	Arun Ganesh (MAPBOX)	Bangalore, India
41	30523	The Banyan	Mogappair, Chennai, India
42	20794	The Hindu Tamil	Triplicane, Chennai, India
43	301112	AID India	Royapettah, Chennai, India
44	311114	Donors (national citizens)	India
45	30327	Sri Ramakrishna Math foundation	Mylapore, Chennai, India
46	30330	Muslim organization	Chennai, India
47	30524	RSS foundation	Chetpet, Chennai, India
48	30329	Ramakrishna foundations USA	USA
49	303113	Ramakrishna foundations Europe	Europe
50	30328	Ramakrishna foundations India	India
51	20425	Railways porters	Chennai, India
52	20426	Auto drivers	Chennai, India
53	20255	Donors (SMEs)	Chennai, India
54	30534	Agni foundation	Agni Foundation, Chennai
55	30932	College volunteers	Chennai, India
56	10331	Agni Science College	Agni College of Technology, Chennai
57	20644	Bank IDFC	India
58	30640	Big FM	Chennai, India
59	20541	Companies	India
60	20542	PEPSICO	India
61	20543	Global logistics	India
62	20545	Ford	India
63	20239	Satyam cinemas	Chennai, India
64	10138	Police	Chennai, India
65	20469	Airline	India
66	30735	Weatherman	Chennai, India
67	31136	Followers weatherman	Chennai, India
68	31165	Online weather forecasters	Chennai, India
69	31350	Chandra Mohan	Chennai, India
70	10846	IAS officers	Bangalore, India
71	10737	NDRF	Chennai, India
72	101115	Army	Chennai, India
73	30947	Scouts	Chennai, India
74	30456	Chinmayi	Chennai, India
75	31157	Chinmayi's fans	India
76	31158	Foreign friend Chinmayi	Sweden
77	20259	Logistic company concert	Bangalore, India
78	10360	Chennai Micro	Chennai, India
79	30461	RJ Balaji	Chennai, India
80	31164	Sridhar	Mylapore, Chennai, India
81	31267	# Chennai Rain Relief	Chennai, India

82	30263	Rotary Club	Chennai, India
83	31152	Bangalore woman	Bangalore, India
84	31153	Father Bangalore woman	Bangalore, India
85	10370	Headmasters schools	Chennai, India
86	20966	IT company Chennai	Chennai, India
87	31168	Sumita	Chennai, India
88	30583	Chennai Volunteers	Chennai, India
89	10386	Social work students	Chennai, India
90	10382	Colleges	Chennai, India
91	30188	INGOs	International
92	30589	Bhoomika Trust	Royapettah, Chennai, india
93	20972	Gnaniyar	Riyadh, Saudi Arabia
94	20973	Remote volunteer 1	Singapore
95	20974	Remote volunteer 2	Dubai
96	20975	Remote volunteer 3	Tanjore, India
97	20976	Remote volunteer 4	Tanjore, India
98	20977	Shadiq	Chennai, India
99	31249	# Chennai Rains	Riyadh, Saudi Arabia
100	31278	# TNFS	Chennai, India
101	20779	BBC News India	New Delhi, India
102	20280	Sanitary napkin dealer	Coimbatore, India
103	10587	GCC	Chennai, India
104	30595	The Banyan Kovalam	Kovalam, India
105	30991	DYFI (Democratic Youth Federation India)	Chennai, India
106	30992	SFI (student federation India)	Chennai, India
107	30793	Nityanand Jayaraman	Chennai, India
108	10496	Metereological department	Nungambakkam, Chennai, India

APPENDIX 2
Codebook Social Network Analysis

Code Name	Meaning	Definition	Examples	Additional Information
COORDINATION	Category	Coordination is the mutually agreed linking of activities among two or more groups (Quarantelli, 1988). In this analysis, coordination includes rescue, relief and rehabilitation activities performed during and after the event.		Category deductively defined
Material	Sub-code	Material resources provided during and after the event	Food packages, clothes donations	
Information	Sub-code	Gathered and shared information regarding the impact of the event on humans and built environment, related activities and concerns	"50 meals needed in T Nagar", help requests verification	
Services	Sub-code	Human resources employed for the coordination of activities	Manpower, first aid, fundraising, rescue, school rebuilding	
CONNECTOR	Category	A person or tool which create connections with other subjects.		Category deductively defined
Social actor	Sub-code	Individuals, group of people with common affiliation, socio-economic categories	Doctors, NGO	
Digital platform	Sub-code	Technological platforms linking different individuals, groups and/or organizations	Facebook page, Telegram group, WhatsApp group	
INDIVIDUAL IMPACT	Category	Consequences that the event had on the personal life of each individual, group and/or organization		Category deductively defined
Emotional impact	Sub-code	Emotional involvement which motivated specific actions during or after the event	Sadness, worry, anger	
Material impact	Sub-code	Damage and loss caused to personal belonging by the event	Property damage, loss of family members	
Involvement rationale	Sub-code	Reasons to be proactively taking part in the event coordination	Community help	

DISASTER FRAMING	Category	"To frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation and/or treatment recommendation for the item described" (Entman, 1993, p. 52)		Category deductively defined
Formal news	Sub-code	Information and updates which are published in official information sources and spread via official communication channels	Official newspapers, government announcements,	
Informal news	Sub-code	Information and updates spread via social media platforms	News circulating via social media, word-of-mouth news	
Opinions	Sub-code	Personal judgement of events, subjects or themes related to the event	Government response delay	
SPATIO-TEMPORAL INFORMATION	Dimension	Information on the spatial and temporal dimensions of the interactions during the floods' operations		Category deductively defined
Spatial data	Sub-code	Geographically located information	Ashok Nagar, California, Bangalore	
Temporal data	Sub-code	Temporally located information	1st December 2015, one week later, "after the water retroceded"	

APPENDIX 3
Codebook Key Informants' Interviews Themes

Code Name	Meaning	Definition	Examples	Additional Information
Social Media	Code	Technological platforms linking different individuals, groups and/or organizations	Facebook, WhatsApp, digital platforms	Code inductively defined
Connections	Code	Relationships between individuals and other individuals, or group of people	Friends, sympathizers, family, friend of a friend	Code inductively defined
Emigrants	Code	Person who was either born or brought up in a place, and who is now an economic migrant in a different city or a foreign country	"I am from Chennai but working in the USA"	Code inductively defined
Mental Health	Code	Status of the emotional, psychological and social well-being of an individual or group of people	Burden, dependency, post-traumatic syndrome	Code inductively defined
Geography	Code	The social, economic and cultural features which define the relational and interactional dynamics between people and the specific natural or built-up area where they live	Mixed neighborhoods, flood-prone areas	Code inductively defined
Urban Society	Code	Lifestyles and interaction dynamics common to an urban population	Dravidian values, movie culture	Code inductively defined
Disaster Relief	Code	Aid provided to the victims of the disaster in order to alleviate their suffering	Food package distribution, rescue operations, aid trucks	Code inductively defined
Care Practices	Code	Practices acting forms of good care in an intimate relation, i.e. between kids and parents	Phone calls, visiting home, spending time together	Code inductively defined

APPENDIX 4
Repository Photos of Content Analysis

International Media: CNN

December 7, 2015

International Media: BBC

December 2, 2015

December 4, 2015

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Modi leaving Chennai

sivasankar
@shiva_papillon

⚙ 👤 Follow

@_anithasridhar how well manpower being used in times of disaster !

Shirish Kunder ✓
@ShirishKunder

⚙ 👤 Follow

The reason Amma took so much time to make an appearance is because they were building this helicopter around her.

December 7, 2015

December 16, 2015

December 19, 2015

Formal National/State Media: The Hindu

November 25, 2015

November 26, 2015

November 28, 2015
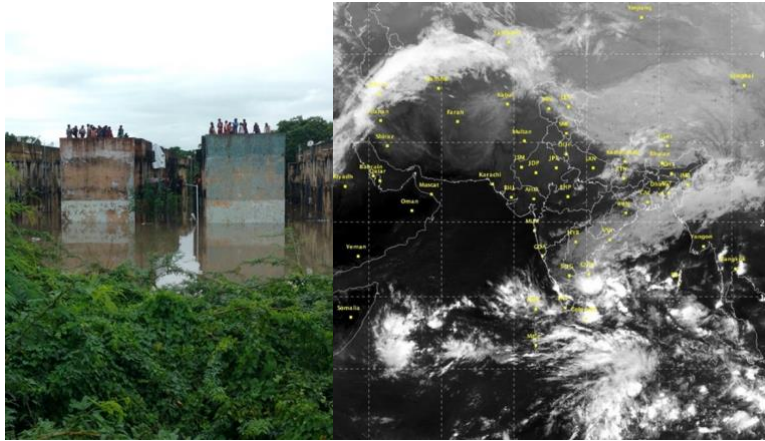
December 2, 2015

December 3, 2015

December 4, 2015

December 6, 2015

December 18, 2015   December 31, 2015

Formal National/State News: The Indian Express

December 1, 2015
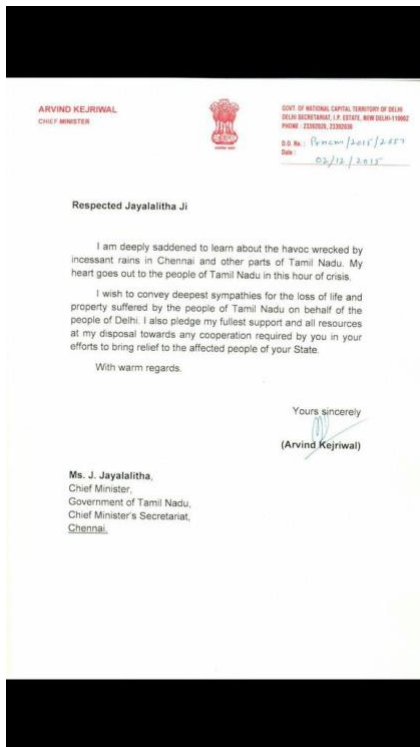
December 2, 2015
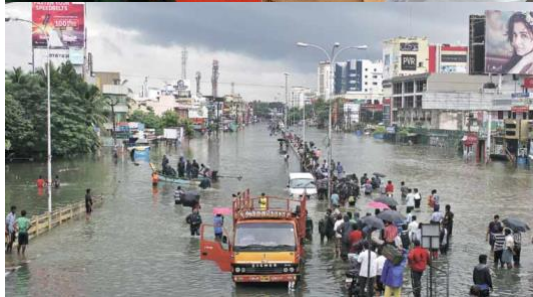
December 3, 2015

December 4, 2015

December 6, 2015

December 7, 2015   December 8, 2015

December 11, 2015   December 15, 2015

Informal national/state news: Scroll.in

November 16, 2015

November 17, 2015

November 18, 2015

November 24, 2015

December 1, 2015

December 2, 2015

December 3, 2015

December 5, 2015

December 6, 2015

143
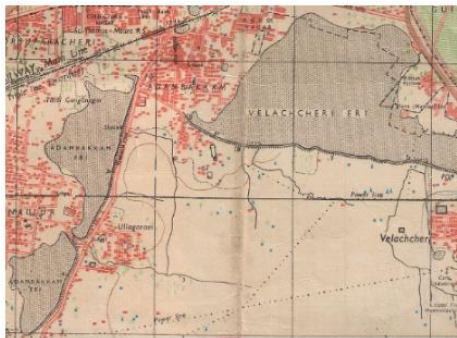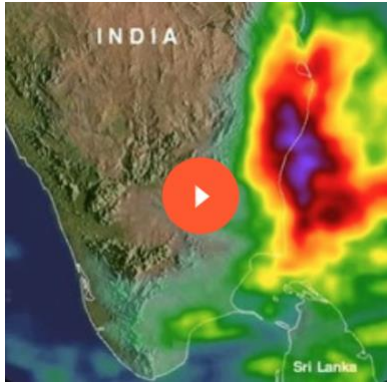
December 7, 2015

December 8, 2015

December 11, 2015

Informal national/state news: News Minute

December 2, 2015

December 3, 2015

December 4, 2015

December 5, 2015

December 6, 2015

December 7, 2015

December 8, 2015

148

December 9, 2015

December 10, 2015

December 17, 2015

Community social media news: #ChennaiMicro

December 3, 2015

December 6, 2015

December 25, 2015
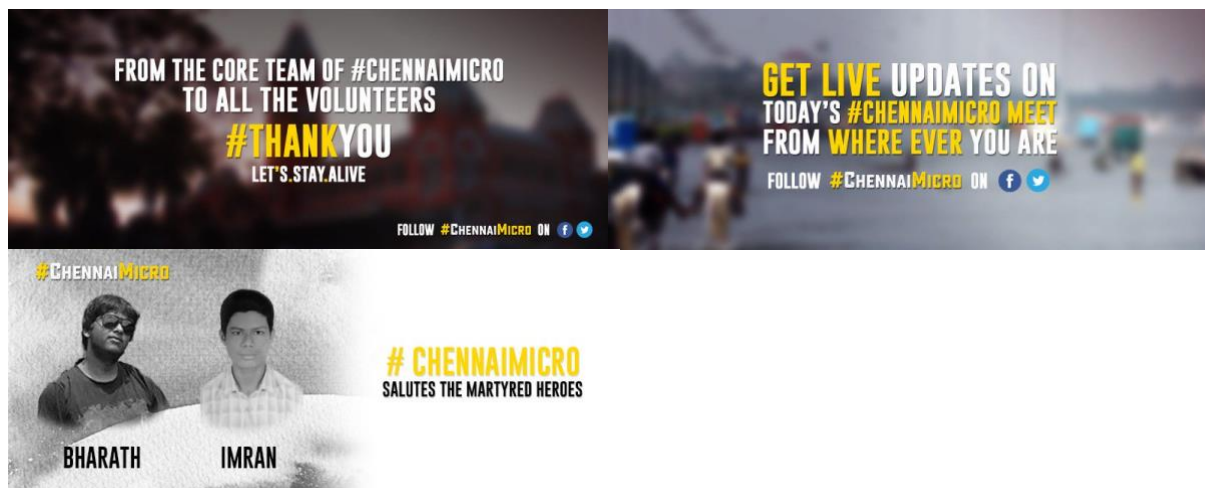
December 26, 2015

Community social media news: TNFS

December 1, 2015

December 5, 2015

December 6, 2015

December 7, 2015

APPENDIX 5
Semi-structured guiding questions

Brief introduction about yourself (as for Nov/Dec 2015)
> Full name:
> Age range:
> Profession:
> Affiliation to any (social/cultural/volunteer/etc) organization:
> Hometown (if not Chennai):
> Area where you live:

General questions:
- Were you or your family directly affected by the floods?
- When did you realize the scale of the Chennai floods?
- If not personally, through which means did you get to know about the floods' scale and consequences?
- Were you involved in the relief, rescue and/or rehabilitation for the 2015 Chennai floods?
- From which day to which day did you contribute?
- Did you contribute digitally or also on the field?
- Why was such commitment important for you?

Specific questions (depending on the key informant)

For Facebook page creators:
- How did you come up with the idea of setting up a Facebook page?
- Have you ever initiated an online platform for humanitarian purposes before the time of the Chennai floods?
- What was the initial purpose of this Facebook page?
- Did people start to use the page for other purposes?
- How did you avoid the misuse of this page and avoid people publishing fake news?

- Which tasks were you doing for this platform?
- Who did you thought of contacting to co-manage the platform? Were the other volunteers all located in Chennai?
- Were some people of the Admin group helping also on the field?
- Did you receive proposals for collaboration by NGOs, government authorities, volunteer groups, etc.? What did you tell them?
- Did you try to ask NGOs, government authorities, volunteer groups, etc. for collaboration? Why?
- Were you sharing your posts on other Facebook platforms? Which ones?

- How many people were working online for managing the Facebook page?

- How many people were using your platform to operate on the field?
- Were you able to get useful information on the flood situation through official media?
- What was your personal reward for such effort?
- Which were the difficulties of coordinating this page from distance?
- Which were the advantages of helping from the distance?

For WhatsApp group creators:
- How did you come up with the idea of setting up a WhatsApp group?
- Have you ever initiated such a platform for humanitarian purposes before the time of the Chennai floods?
- What was the initial purpose of this WhatsApp page?
- Did people start to use the platform for other purposes?
- How were the communication and interaction dynamics between the people in the group?

- Were you doing any specific task for this platform?
- Who did you thought of contacting to co-manage the platform? Were the other volunteers all located in Chennai?
- Were some people of the Admin group helping also on the field?
- Did you receive proposals for collaboration by NGOs, government authorities, volunteer groups, etc.? What did you tell them?
- Did you try to ask NGOs, government authorities, volunteer groups, etc. for collaboration? Why?
- Were you sharing your gathered information also on other platforms? Which ones?

- Were you able to get useful information on the flood situation through official media?
- How many people were in the WhatsApp group?
- How many people were using your platform to operate on the field?
- What was your personal reward for such effort?
- Which were the difficulties and advantages of coordinating this platform?

For digital mapping crowdsource platform creators:
- How did you come up with the idea of creating a crowdsourced mapping platform?
- Have you ever initiated such a platform for humanitarian purposes before the time of the Chennai floods?
- What was the initial purpose of this platform?
- Which people did you envision would use it?
- Did people start to use the platform for other purposes?

- Which information did you allow people to add?
- Which information would have been relevant to be displayed (but it was not)?
- Who did you thought of contacting to co-manage the platform? Were the other volunteers from Chennai?

- Were some people of the Admin group helping also on the field?
- Did you receive proposals for collaboration by NGOs, government authorities, volunteer groups, etc.? What did you tell them?
- Did you try to ask NGOs, government authorities, volunteer groups, etc. for collaboration? Why?
- Were you sharing your gathered information also on other platforms? Which ones?

- Were you able to get useful information on the flood situation through official media?
- How many people did crowdsource information on the map?
- Did people use your platform to operate on the field?
- What was your personal reward for such effort?
- Which were the difficulties and advantages of coordinating this platform?

For leading field volunteers:
- What was your role during the floods?
- Who did you collaborate with?
- In which areas did you operate?
- How did you choose these areas?
- How were you gathering information on the field?
- Which platforms did you use to be updated on the overall city's situation?
- Were you able to get useful information on the flood situation through official media?
- How did you communicate with others?
- Did you have power and signal on your phone? If not, how did you manage this?

For medical camp creators and healthcare volunteers:
- What was your role during the floods?
- Who did you collaborate with?
- In which areas did you set up medical camps?
- Which type of help were you able to give in the medical camps?
- Was mental health an issue? Especially for whom?
- Could you or other groups provide mental and psychological support?

- Did you have sufficient resources?
- Was there any suppliers to help you?
- How did you manage the electricity issue?
- How did you choose these areas for medical camps?
- Which platforms did you use to be updated on the overall city's situation?
- Were you able to get useful information on the flood situation through official media?
- How did you communicate with others?
- What was the situation with city hospitals during the floods?
- Was there any major difference between public and private hospitals?
- Were all sections of the society covered by first aid? If not, which sections were harder to reach and why?

- Which were some of the challenges in providing medical aid?

For official newspapers' journalists:
- Was the publishing of news possible during the floods? If not, why and in which days?
- How did you deal with the electricity problem on the workplace?

- Are your newspaper's news also available on social media? Are paper and online news written in different ways?
- Is it only published in Tamil language or also English? In the floods, which was the language of communication, and why?
- Which kind of readers are reached by online news as compared to printed news? (in terms of age, social class, educational background, gender, etc.)

- From which sources did you collect data from the field?
- Did you also use crowdsourced information from social media updates?
- Which were the main difficulties in this process?
- Did you receive any critique for the news you published? Why?
- In the context of Tamil Nadu/Chennai, are published news filtered for political purposes?

- What is the role of official newspaper news in disaster settings?
- Which news channels had the largest reach during the floods?
- Were there many fakes news or anger reactions reported in the web?
- Were you communicating with some of the relief/rescue actors of the floods (i.e.: NGOs, activists, the so-called 'Weather Man', celebrities, government authorities, etc.)? Please specify their (affiliation) name if possible.

Opinion questions:
- Which role did the government pay in this flood?
- Who have been the most productive small-scale help during the floods?
- Who and what was essential for helping you in your volunteering tasks?
- What were the advantages and disadvantages of having a decentralized system to gather information?
- Is Chennai and its people resilient?
- Why such community-driven emergency effort happened in Chennai?
- Are there some socio-cultural values which enabled this communal effort?
- What do you think are some needed steps in making disaster rescue and relief operations more effective?