Digital Humanitarianism and the Geospatial Web: Emerging Modes of Mapping and the Transformation of Humanitarian Practices

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Abstract

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Over the last decade, new technologies and data sources have enabled the emergence of "digital humanitarianism". Digital humanitarianism is exemplified by web mapping initiatives such as the Humanitarian OpenStreetMap Team and Ushahidi, in which large numbers of geographically-disparate lay volunteers collaboratively produce, process, and map humanitarian data. The Humanitarian OpenStreetMap Team, for example, is an online community that collaboratively maps humanitarian crisis zones; Ushahidi is a website that collects and maps social media and SMS messages in similar contexts. While digital humanitarianism shifts the technologies and sources of data that can be engaged to respond to humanitarian crises and emergencies, it has emerged alongside hyperbolic claims of its "revolutionary" potential and "egalitarian" nature. Most digital humanitarian research remains descriptive and focuses on its constituent technologies, data, and new operational capacities.

This dissertation explores digital humanitarianism as a set of socio-technical practices and political-economic relations, showing its uneven impacts, contingent nature, and attendant struggles around knowledge incorporation and representation. It offers a critical interrogation of the deliberations and

relations that influence how formal humanitarian agencies use spatial technologies and data to frame and address problems. I theorize the ways digital humanitarianism emerges from – and in turn impacts – neoliberal reforms of the formal humanitarian and emergency management sectors.

I begin by constructing a theorization of digital humanitarianism that departs from current understandings, by foregrounding its practices, politics, and transformations. I then argue that digital humanitarianism alters how data are collected and produced, primarily focusing on crowdsourcing and social media. These new sources of data do not immediately align with existing formal-sector workflows, so in order to "tame" these data digital humanitarians negotiate new forms of data abstraction, categorization, and generalization. Next, I theorize the ways digital humanitarians produce those in need of their technologies and labor. In these efforts they usually develop new technologies first, subsequently articulating the formal sector's need for that technology. I then explain that digital humanitarianism both results from and reinforces neoliberal reforms, fostering new forms of capital accumulation through "philanthro-capitalism". This research contributes to geographic research by illuminating the representational and socio-technical processes and practices that constitute new spatial technologies, and by elucidating the perpetuation of humanitarian imaginaries in digital technologies.

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Chapter 1. DIGITAL HUMANITARIANISM: AN INTRODUCTION

In 2010 I watched the US media's coverage of new technology use in the Haiti earthquake response. Crisis mapping, social media, crowdsourcing, and SMS were all new technical developments capturing the attention of emergency managers, with astonishing amounts of data being quickly produced and analyzed by volunteers far from Haiti. A group of graduate students at Tufts University in Boston received an especially generous amount of attention, as they coded a new platform of Ushahidi – originally developed by a US-educated Kenyan for use in electoral monitoring – to visualize where relief and rescue needs were distributed around Port-au-Prince. A handful of charismatic and vocal technology entrepreneurs composed a compelling story for the rest of the world: geographic technologies were retaking their rightful position as a revolutionary force in disaster response; over a century of institutional emergency and humanitarian management workflows and practices were set to be overturned by new technologies and data, and the outcome would be egalitarian, global, and empowering.

As I watched the earthquake response unfold and heard stories of these new technologies saving lives, the events evoked both inspiration and a feeling that something was amiss. Such utopian views of technology are not uncommon among Silicon Valley entrepreneurs and proponents of the (then new and emerging) sharing economy. However, such perspectives were naïve in light of the complex histories and geographies of both Haiti and crowdsourcing digital technologies.

Additional complexity emerged in the tension between digital humanitarians' explanations of the response, and insight from formal evaluations and non-humanitarian critical voices. For instance, digital humanitarians used sensational language to characterize their contributions (e.g., Chapman 2010; Meier 2010; Suehle 2014), focusing on the amount of data produced, the speed of

production, and drawing unsubstantiated claims of "saved lives" because of technologies like Mission 4636 and Ushahidi (Meier and Munro 2010; Munro 2013b). The only formal evaluation of the projects, in contrast, showed very little formal-sector adoption, mixed (and contested) volunteer engagement with the technologies, and low overall awareness of the project (Morrow et al. 2011). Another outsider, humanitarian ICT worker Paul Currion, showed that, for various reasons, more data were produced in low-impact areas, casting doubt on the ways digital humanitarians articulated their own contributions (Currion 2010). More systematic publications sought to clarify the roles played by digital humanitarians, but left unanswered many of these questions (Crowley and Chan 2011).

Much has changed in digital humanitarianism since 2010. Digital humanitarian technologies have since been used across the world[1], in humanitarian crises, emergency management incidents, community engagement, natural resource management, and election monitoring. Interest overall has shifted away from describing new software and toward describing emergent organizational and crowdsourcing strategies (Starbird and Palen 2013; and http://vosg.us/active-vosts/; e.g., Per 2014), and hardware such as unmanned aerial vehicles and internet connectivity devices (Hyman 2014; Sandvik and Lohne 2014; Meier 2015). Digital humanitarianism has even been incorporated into some higher education curricula (Ziemke 2012). Digital humanitarianism is becoming mainstream, with National Geographic featuring the "Crisis Mapper" in its series called "The New Age of Exploration" (National Geographic 2013). This also resulted in early signs that formal humanitarian institutions may begin increasingly adopting digital humanitarianism (St. Denis, Hughes, and Palen 2012).

[1] See, for example, Ushahidi Hall of Fame (https://ushahidihalloffame.crowdmap.com/).

The rise of digital humanitarianism has occurred hand-in-hand with an increased awareness of and renewed interest in, and sense of responsibility for, humanitarian and development causes. Calhoun (2004), for instance, argues that "[i]nterventions into 'complex humanitarian emergencies' have become a central part of global society." Roy (2010) describes her classes at University of California, Berkeley, as full of enthusiastic, optimistic students who wish to affect positive change on the world. Fassin (2012) claims that the moral reasoning on which humanitarianism relies has become a central motivating force in contemporary Western societies. This widespread interest in humanitarianism increases the stakes of acceptance and efficacious operations of digital humanitarianism (Crawford and Finn 2014).

Still, despite the growing institutionalization of digital humanitarianism, and its potentially drastic impacts, little is understood about the relations between these technologies and their social, political, and economic contexts. In this dissertation I explore this juncture. I examine digital humanitarianism through critical scholarship on technology, humanitarianism, and philanthro-capitalism, showing its uneven impacts, contingent nature, and struggles around knowledge representation. I interrogate struggles around how the technologies will be engaged, to show the uneven, messy, and contested nature of digital humanitarianism – to re-politicize it and thus open it to critique. I grapple with the institutional relations between digital humanitarian communities and the network of established humanitarian institutions – what I call the "formal sector". The formal sector is comprised of state-based institutions like the US Agency for International Development and the Federal Emergency Management Agency, but also non-state entities such as the United Nations Office for the Coordination of Humanitarian Affairs, Oxfam, and the American Red Cross. I distinguish between digital humanitarians and the formal sector in order to identify

and highlight the impacts the former are having on the latter, but it becomes clear in this dissertation that the overlaps are significant and quickly-changing.

Specifically, in order to explore this complex emergent technology, my research asks:

(1) How does digital humanitarianism operate as a set of socio-technical practices for data production, processing, and representation?

(2) How do formal sector responders and digital humanitarians themselves understand the role and significance of digital humanitarianism, and how does this understanding shape their operational and response strategies?

(3) What are the implications of these socio-technical practices for the forms of knowledge that are or are not incorporated into digital humanitarianism, the relationship of digital humanitarianism to the formal humanitarian and emergency management institutions, and the priorities and rationalities of humanitarianism more broadly?

(4) What *is* digital humanitarianism, as a set of political economic practices or rationalities, and how do these practices and rationalities alter longer standing practices and rationalities of humanitarian relief?

In the following chapter, I build a conceptual framework for exploring these questions, and position my project within related critical research on spatial technologies, humanitarianism and development, and political economy. A key element of this framework is my theorization of digital humanitarianism's technologies and data as embodying social and political values, relations, and epistemologies. These technologies are never neutral (Winner 1985; Wajcman 1991; Bowker and Star 2000). Digital humanitarian technologies and data are spatial in nature, contributing an additional element of complexity to this position. For example, knowledge and experience are

always place-based (Sparke 1998; Kwan 2002), and cartographic products possess a large degree of legitimacy in decision-making situations (Elwood 2005). Similarly, humanitarian crises and emergencies reveal asymmetric discursive and material relations in their causes and the "remedies" experts prescribe to address them (Smith 2006; Klein 2007; Weizman 2012; Nair 2013). Further, I theorize digital humanitarianism as a form of neoliberalization, involving responsibilization of individuals, privatization of state roles, and entrenchment of market-based relations in governance and everyday life (Larner 2000; Harvey 2005; Piketty 2014).

In chapter 3 I explain the methods I used to explore digital humanitarian processes. I address these questions through an extended case study working with a technology policy research institute in Washington, DC. While working as a participant-observation at this institute, I was able to unpack communal knowledges and trace the relations that constitute digital humanitarianism. I was able to leverage my skills as a researcher and technologically-savvy individual to interrogate what it means to become part of the digital humanitarian community. From these activities I was also able to connect with key digital humanitarians and formal-sector actors to see how each conceives of digital humanitarianism's contributions.

In chapter 4 I provide a conceptualization of digital humanitarianism as a set of socio-technical practices around technology and data, as well as a set of shifted political-economic relationships. I theorize digital humanitarianism and its effects as shaped by the nature of the spatial technologies that constitute them, the socio-technical practices in which the technologies are deployed, and the philanthro-capitalist structures in which digital humanitarianism is situated. Here I touch on the politics and struggle around knowledge production and representation, as originating in traditional forms of humanitarian data and extending into digital humanitarian

spaces. I further describe the private sector's role in humanitarianism, which has shifted with digital humanitarianism's emergence.

In chapter 5 I show that digital humanitarianism alters how data are collected and produced, with an increased focus on crowdsourcing and social media data. The incorporation of these data sources brings it into tension with existing formal sector workflows and practices, which are ill-equipped to handle them. In order to alleviate these tensions and streamline their integration into the formal sector, digital humanitarians negotiate new forms of data abstraction, generalization, and categorization that marginalize some knowledge and experiences of crises. Further, these new data sources responsibilize individuals in disaster-struck areas, laypeople across the globe, and the formal sector itself. The first two are made responsible for producing and processing data, and the latter for using digital humanitarian technologies to "save more lives".

In chapter 6 I explore the ways digital humanitarians produce those in need of their technologies and labor. Digital humanitarians claim that both disaster-affected communities *and* the formal sector need their labor and technologies. To support these claims they engage strategic representations of disaster-related needs and actors, which justifies their interventions in humanitarian crises. In these efforts toward justification, it has been particularly effective to adopt and promote a technology-driven conception of social change, wherein digital humanitarian technologies are first developed, and the need for that technology can then be articulated. In other words, digital humanitarians actively work to produce the technological and labor needs that they then position themselves as able to satisfy.

Chapter 7 explores the political-economic contexts in which digital humanitarianism has emerged, and how digital humanitarian technologies and labor impact those contexts. Digital humanitarian technologies are seen by the formal sector to be an innovation that enables their

continued functioning within a climate of austerity, cutbacks, and neoliberal reforms. The private sector has played a key role in the technology development, enabling profit generation from humanitarian and emergency management innovations. This marriage between capitalism and philanthropy is called "philanthro-capitalism", and foreshadows further incursions of private businesses into the formal sector. Neoliberalization is unrolled in and articulated through existing political and economic contexts, and this research elucidates the ways new spatial technologies have helped make humanitarianism more capitalist.

In this dissertation I contribute one of the first empirically-grounded studies of digital humanitarianism as a multi-layered socio-technical process. I investigate its technological, representational, and data practices; its institutional logics, modalities, and relationships; and the broad political-economic structures and shifts in which it is situated and to which it contributes. Whereas most studies tend to describe new technologies and workflows, here I provide an analysis of its constitutive social, political, and economic relations. This study advances debates around digital humanitarianism beyond hyperbolic accounts of its "goodness" and beyond early economic analyses focusing on its inherent "efficiency" and "impact". Instead, it illuminates the complex and uneven deliberations around resource allocation, data interpretation, and economic rationalities.

This research extends critical GIS and early geoweb research by foregrounding the multiple representational and socio-technical practices that sustain new forms of spatial technologies and their implications. Critiques of GIS in the 1990s tended to focus on how GIS represents the world cartographically, or in terms of data objects, without accounting for its intrinsic nature as software and hardware. My research expands upon this work by focusing on the practices and deliberations that constitute technology's use and development. I show that the methods by which data are

framed, collected, and stored are critically important to the knowledge politics of spatial technologies, and these processes often precede the visual, cartographic representation of the data. Further, I show that the technological architecture of social media shape the impacts that digital humanitarianism enacts.

To studies of humanitarianism, this research offers insights into neoliberal transformations of humanitarian practices, and the evolving relationships between formal-sector and volunteer actors. Humanitarianism is currently undergoing transformations in its political-economic rationalities, becoming neoliberalized, and I examine the rise of digital humanitarianism as one of a broader set of changes. Here I show that digital humanitarianism and its close connections with philanthro-capitalism serve as a conduit for grounding neoliberal rationalities in humanitarianism. I contribute insights into the power philanthro-capitalism has to instigate political-economic shifts in humanitarianism, while reinstating assumptions about the responsibilities for providing humanitarian aid, and an economistic approach to humanitarian aid delivery.

In sum, through an analysis of digital humanitarianism's new data collection and representation practices, and private-sector rationalities, I examine the social, political, and economic transformations of humanitarianism through the advent of new digital technologies. These shifted processes unequally constitute new relations between individuals, the private sector, and the formal humanitarian sector, with uneven impacts. Specifically, digital humanitarianism shifts the ways needs are collected and represented as data in crisis zones, and signal the emergence of "philanthro-capitalism".

Chapter 2. INTERSECTIONS OF TECHNOLOGY, HUMANITARIANISM, AND NEOLIBERALISM

2.1 INTRODUCTION

Digital humanitarianism is constituted by a new set of approaches toward data collection and representation, institutionalized humanitarian practices, and philanthro-capitalism. It shifts data sources toward social media and crowdsourcing, frames the need for digital humanitarian interventions, and instigates private-sector incursions into humanitarianism. However, these aspects of the technology remain opaque in current research on digital humanitarianism, which to date has focused largely on describing the emergent technology and gauging its accuracy. These accounts frame digital humanitarianism narrowly as a software, hardware, and organizational assemblage, rather than a set of socio-technical approaches toward data and humanitarian intervention. Geographers have yet to understand the modalities through which struggles over needs and knowledge representation occur, as well as the political-economic and institutional relations in which digital humanitarianism is embedded.

I borrow from research on the critical geographies of technology, critical humanitarian studies, and political economy in order to address the above gaps. Research on the critical geographies of technology situates my digital humanitarian research within the intellectual lineage of critical and feminist GIS and the geoweb, framing my investigation of digital humanitarianism's practices and knowledge politics. I draw ideas from critical humanitarian studies to interrogate the assumptions which digital humanitarianism mobilizes in its production of those who "need" digital humanitarian interventions. That is, critical humanitarian studies encourages scholars to pay attention to the assumptions on which humanitarianism relies, and the struggles over how needs are to be framed and satisfied. Lastly, scholarship on neoliberalization says it is articulated through

institutional and geographic contexts, and that these contexts must be illuminated. As well, such research suggests that one form of neoliberalization is the marriage between philanthropy and capitalism, which explains digital humanitarianism's increasing private-sector presence.

2.2 THE STATE OF THE FIELD: DIGITAL HUMANITARIAN RESEARCH

The field of digital humanitarianism saw its watershed moment in the response to the 2010 earthquake in Haiti. Prior to that, little research had been conducted on the new technologies, data, and labor pertaining to the field, and since then, research has remained primarily descriptive and technical, positioning digital humanitarianism as a technical development rather than a transformation of socio-technical practices, social and political relations, and political-economics. This gap is juxtaposed by a large amount of literature that hyperbolizes digital humanitarianism's impact and takes it to be a straightforwardly "good" development, without nuancing or contextualizing these claims. Research going beyond these characterizations tends to focus on data accuracy and credibility (e.g., Goodchild and Glennon 2010), as well as technical prescriptions of how to enroll more actors into digital humanitarianism's milieu (Hiltz, Kushma, and Plotnick 2014; e.g., van Gorp 2014). Recently, some have suggested that much work is needed to understand digital humanitarianism as a complex socio-technical shift in humanitarian work, and digital humanitarianism's connections with the private sector. In this section I provide an overview of this research on digital humanitarianism, and identify several key gaps in this literature that my research targets.

Digital humanitarian research to date remains primarily descriptive and technical, seeking to provide a comprehensive definition of the field and its benefits to the formal sector. Such research seeks both to develop and to describe new technologies for the field (Liu and Palen 2010; Tomaszewski and MacEachren 2012; Shanley et al. 2013; Rojas and Muñoz 2014). These often

take the form of reports on recent activations (Chapman 2012a; Stottlemyre and Stottlemyre 2012) and summaries of new software/hardware packages and their usage (Wardell and Yee 2011; Meier 2012a, 2014; Lanfranchi, Mazumdar, and Ciravegna 2014; Palen et al. 2015). Within this research there are a number of instructional materials to guide usage of the technology (Capelo, Chang, and Verity 2012; Leson 2012; Waldman, Verity, and Roberts 2013).

Other digital humanitarian research has coalesced around data access and quality, without explicating what, conceptually, is meant by either of those ideas. Such analyses have argued that crowdsourced data closely matches the Euclidean location of the objects they are meant to represent, and in cases where they don't, several error-checking mechanisms have been proposed (Li and Goodchild 2010; Meier 2012c; Starbird and Palen 2012; Vieweg 2012; Al-Akkad and Raffelsberger 2014). This research seeks continuities with a particular use of traditional GIS, where data represent visible, tangible objects, and error is measurable as the difference in Euclidean coordinates of the data and its represented corollary (Burns 2014a; Herfort et al. 2014). As well, access is generally seen to be one's availability to social media or to access to digital humanitarian platforms (Easton 2014; Meier 2015), rather than the skills and knowledges necessary to communicate knowledges and needs in ways intelligible by the formal response sector (Gilbert 2010). Instead, some early research has suggested that marginalizations and uneven influences on the technologies may be systemically related to the nature of the technologies themselves (Raymond, Howarth, and Hutson 2012; Crawford and Finn 2014).

These conversations signal a shift from early hyperbolic descriptions of digital humanitarianism as egalitarian, revolutionary, and empowering (Okolloh 2009; see, for example, Heinzelman, Waters, and United States Institute of 2010; Meier 2011, 2015). Many researchers continue providing unsubstantiated claims of revolutionary impact and invoking claims to the

technology's inherent "goodness" (Letouzé 2012; Olafsson 2012; UN OCHA 2013; Meier 2015), yet others are still predominantly seeking description of the new technologies and the workflows in which they fit.

Nascent research has begun problematizing these hyperbolic claims, and moving beyond the descriptive nature of early digital humanitarian research. This has been approached primarily by exploring the complex, socially-situated, and variegated implications of these technologies (Haklay 2013; Burns 2014a, 2014b; Palmer 2014; Sandvik and Lohne 2014; Sandvik et al. 2014). Such research has suggested, for instance, that digital humanitarian data represent unequally the global North and wealthy areas of cities (Haklay 2013; Graham et al. 2014). On a pragmatic level some criticism was levelled at Ushahidi for making Mission 4636 data public in the 2010 Haiti earthquake response (Munro 2013a), and on a more theoretical level Palmer (2014) claims that Ushahidi's relationship with the private-sector – most importantly, with Google – necessitates further investigation. Further, Sandvik *et al* (2014) constructed a critical research agenda for humanitarian technology, urging new conceptualizations, understanding the politics of technological impacts on humanitarian space, and investigating how technologies impact aid distribution.

Thus, existing research indicates a need to further understand digital humanitarianism as a set of socio-technical practices around data, and examine how it shifts in the political economy of humanitarian interventions. Further, I argue it is key to understand the negotiations over how needs and knowledge are framed, collected, and represented – in a phrase, digital humanitarianism's *knowledge politics*. Addressing this gap may refocus geographers' attention on data *accuracy* instead to the processes and struggles by which needs and knowledge become encoded as data in humanitarian contexts. Mixed claims about the value of digital humanitarian technologies also

suggests the need to understand how digital humanitarians successfully communicate that the formal sector and disaster-affected communities *need* digital humanitarian contributions. Moreover, existing research leaves unanswered many questions around the political-economic conditions for digital humanitarianism, as well as the impacts it has on political-economic processes.

2.3 CRITICAL GEOGRAPHIES OF TECHNOLOGY

Contemporary critical research on spatial technologies, especially ideas from critical and feminist GIS, helps us understand the digital and technological practices of digital humanitarianism, including contentions around its development and representational strategies, its inclusions and exclusions, and its potential political-economic impacts. Several bodies of work around spatial technologies and data have theorized the social, political, and economic impacts of new technologies and data. Beginning from early work on the digital divide, geographers have shown a disparity in who has access to technologies and data, and the skills and knowledge necessary to engage with them (Lenhart and Horrigan 2003; Jackson et al. 2008; Gilbert 2010). Individuals and social groups who *do* use them often leverage these technologies to affect political change and achieve greater empowerment, with mixed results (Elwood 2005; Young and Gilmore 2014). At the same time as software, code, and data are increasingly becoming central to the everyday lived urban experience, each of these technologies shows differential levels of inclusion, exclusion, and power relations (Graham 2010; Kitchin and Dodge 2012; Kitchin 2014b). While geoweb research often relies on the assumption that visibility correlates with power, some recent work has encouraged exploring the struggles, contestations, and deliberations about the *terms on which* data come to be represented or not (Elwood and Leszczynski 2011; Burns 2014a; Young and Gilmore 2014). Visibility, as well as data capture and representational strategies, exemplify

epistemological and social relations that influence the impacts they can have on the world (Chun 2005; Sheppard 2005; Wajcman 2010). While many lines of continuity have been drawn between critical/feminist GIS and the geoweb, the latter raises new questions for researchers, in particular around the development of crowdsourcing.

Critical, participatory, and feminist geographic information science (GIS) research has shown that technologies and data reflect and constitute epistemological and social relations (Rose-Redwood 2006; Brown and Knopp 2008; Elwood 2009c; Kitchin 2014a). Geographers point to several dimensions of technology that shape its development and use. In particular, technologies and data are influenced by *where* they are developed (Rundstrom 1995; Zook 2005), *who* develops them (Kwan 2002; McLafferty 2005), and the structural and institutional needs they are designed to satisfy (Aitken and Michel 1995; Pickles 1995, 2004; Leszczynski 2012). Together, these dynamics produce different societal impacts, as well as technological affordances – what the platforms can *do*. These understandings of spatial technologies build on lessons from science and technology studies (STS) research that describes the processes by which data and technologies come to assume and reify social and power relations, worldviews, and epistemologies (Winner 1985; Pinch and Bijker 1987; Wajcman 1991; Feenberg 1999).

A wealth of research suggests uneven geographies of power and privilege in geographic technologies and data, usually analyzed through the lens of "digital divide". Uneven representation, access, and legitimacy persist at multiple scales and in multiple political arenas. Most immediately, research indicates uneven representation in both where technologies and data produced, and which places are or are not represented as data (Warf 2001; Fernandez-Maldonado 2004; Graham 2008; Graham, Hale, and Stephens 2011). At a broader level, technologies and data are produced more often in the global North, and places in the global North are more often

represented as spatial data (Howard 2007; Hands 2011). This disparity constitutes a reconceptualized digital divide which includes the (in)ability to use technologies and influence their development (Gilbert 2010; Burns 2014a). Within internet technologies, research has shown differential treatment of those who deviate from normative white, male, heterosexual identities (Hayles 1999; Nakamura 2002, 2008; Stephens 2013). This indicates social disparities in who influences the development and usage of such technologies and data.

Those able to leverage spatial technologies have been able to engage the legitimacy given cartographic artifacts, in order to affect urban development processes (McCann 2008; Elwood 2009c; Mukherjee and Ghose 2012). In the face of dominant corporate and state power, social groups and diverse actors have used maps, GIS, and spatial data to insert themselves into contestation with extant power structures (McLafferty 2005; Brown and Knopp 2008; Crampton 2009b; Mitchell and Elwood 2012; Lin 2013). However, their success in doing so is tempered by the nuances discussed above.

Increasingly scholars are showing that computer code, software, and data are becoming central to processes such as redevelopment, access and mobility, political economy, and urban governance, exacerbating the potential impacts of issues of participation, power, and privilege. Following disasters, some scholarship has claimed that code, software, and data influence the distribution of aid and, hence, processes of redevelopment (Goodchild and Glennon 2010; Li and Goodchild 2010; Zook et al. 2010). Geographers have shown that software and code are now responsible for dictating access to resources and even physical spaces of the city (Thrift and French 2002; Graham 2005; Kitchin and Dodge 2012). Patterns and forms of consumption are likewise influenced, particularly with corporate control over information exposure (Zook and Graham 2007; Graham 2008, 2010).

This literature theorizes data as socially constructed and situated, in ways that shape the form, content, inclusions and exclusions, and societal effects of these data. The *access and inclusion* of data corresponds with processes such as global political-economies. For example, Haiti's lack of digital spatial data following the 2010 earthquake can be partly explained by its marginalized position in the global economy (Zook et al. 2010; Farmer 2011). Kwan (2002) and Corbett and Keller (2005) both show that access to spatial data production processes does not necessarily lead to representation and political empowerment, as engagement with the technologies is limited by skills and usage norms. As Elwood (2002, 919) argues, some spatial technologies tend "to foster changes that are simultaneously empowering and disempowering at different scales of interaction, and for different social groups participating in community planning and problem solving."

Much research assumes that data must be visually represented – made visible – to be considered legitimate (Young and Gilmore 2014). This research envisions spatial technologies and visual representation as a public sphere through which groups may participate in public politics (Crutcher and Zook 2009; Lin 2012). For instance, legitimacy is commonly granted to mapped data, and to quantitative data in particular (Cope and Elwood 2009; Elwood and Leszczynski 2013)[2]. On the contrary, others focus on the *negotiations* around which data become visible, are kept private, or are represented in particular ways (Brown and Knopp 2008; Loader and Mercea 2011; Burns 2014a; Young and Gilmore 2014). For example, privacy and invisibility can be used strategically to protect one's "real" person while expressing other forms of sociality or political voice (boyd 2011; Elwood and Leszczynski 2011). Another reason for focusing on the negotiations around data representation is because cartographic artifacts, as data abstractions, may lose their original meaning and contexts, making the processes of representation of key importance (Burns

[2] Bowker and Star (2000, 103) also acknowledge the ways quantification impacts the policy domain: "Some numbers beat no numbers every time."

and Skupin 2013). Further, negotiations occur around how data are represented because the ways they are represented impacts how they are acted upon and the political impacts they may have (Elwood 2009c).

Thus, the ways data are represented are shaped by complex deliberations (Elwood and Leszczynski 2011; Stephens 2013), and tend to rely on dominant epistemologies (McCann 2008). More broadly, these ideas are reflective of the argument that representations of the world impact how we think of them, or, as Barnes and Duncan (1992, 3) say, "writing is constitutive, not simply reflective; new worlds are made out of old texts, and old worlds are the basis of new texts." Interrogating the deliberations which lead to data representations allows insight into the struggle behind data representations and its power to foreclose on some ways of knowing.

Research on the geospatial web – the "geoweb" – continues the focus on spatial technologies and data, borrowing much of its conceptual framework from critical, feminist, and participatory GIS (Elwood 2009a; Young and Gilmore 2014). Elwood (2010) claims, for instance, that research on the geoweb can draw parallels with critical and participatory GIS research along three axes: spatial technologies' and data's social and political construction, their 'knowledge politics', and their subjectivities and social relations. Other persistent questions across fields include concerns around data accuracy and credibility (Goodchild 2007, 2008; Poore and Wolf 2013), inclusions and exclusions (Bittner, Glasze, and Turk 2013; Haklay 2013; Stephens 2013), and knowledge claims (Sui 2008; Schuurman 2009; Elwood and Leszczynski 2013).

However, while geoweb research can borrow these principles, its attendant shifts pose new challenges to those threads, related to the expanding realm of who can produce spatial data and changes in the practices and relationships through which data are produced. The geoweb, especially digital humanitarianism, has developed alongside *crowdsourcing*, the process of

delegating small parts of large projects to vast numbers of people, in order to minimize the amount of effort each individual contributes while still accomplishing the task at hand (Howe 2006; Crampton 2009a). Laypeople are involved in complex problems and the generation of very large datasets (Benkler 2006), in a supposed democratization of data production (Ashley et al. 2009; Meier 2011), new political-economic relations of geoweb data and software (Wilson 2011; Leszczynski 2012, 2014; Thatcher 2014), and new modalities of knowledge politics (Elwood 2010; Elwood and Leszczynski 2013; Burns 2014a). The geoweb overlaps prominently with Big Data, and like the geoweb, Big Data enrolls the social processes of political economy, knowledge politics, and power relations (Barnes 2013; Crampton et al. 2013; Kitchin 2013, 2014a; Barnes and Wilson 2014; Dalton and Thatcher 2014). Yet, less is understood about the precise ways geoweb and Big Data practices and epistemologies impact the topical areas to which they are applied, with some research beginning to explore this in the context of humanitarianism and development (Burns 2014b; Taylor and Schroeder 2014). Exploring topical applications can help researchers draw relations between cases and build more robust theories of the geoweb and Big Data.

These bodies of work suggest ways of theorizing digital humanitarianism as a socio-technical phenomenon with political implications. Particularly fruitful, following the research described above, would be to theorize the social and political constitution of digital humanitarian technologies and data, including its knowledge politics; struggles around data production, collection, and representation; and its political-economic origins and impacts. Several characteristics distinguish digital humanitarianism from the geoweb and previous technologies/data: it explicitly involves data production and representation volunteered by some on behalf of others; focuses on crowdsourcing and social media; and involves overlapping public,

private, and lay actors. Importantly, digital humanitarianism is often a tool used by the global North to help "solve" problems observed in the global South; this enrolls problematic relations identified in critical development and humanitarian studies discussed in the next section, and distinguishes it from most geoweb technologies.

Extant research has shown that the political economic relations of digital technologies' creation and deployment shape their effects in the world. Many have shown that new media, web 2.0, and the geoweb are new forms of underpaid labor that, in many cases, are new sites for capital accumulation (Fuchs and Sevignani 2013; Terranova 2013; engelia besik 2014). The political economy of the geoweb, similarly, signifies a shift in state responsibilities to the private sector via this underpaid labor (Leszczynski 2012). The technology development sector as a whole is able to convert this labor into higher profit margins, and at times, entirely new markets (Wilson 2011; Thatcher 2014). All these processes impact the material relations of economy, including consumption patterns (Graham 2005; Kitchin and Dodge 2012; Thatcher 2013). The political economy of geographic technologies remains, as a whole, an under-theorized area, and existing research indicates this would be particularly fruitful.

2.4 CRITICAL HUMANITARIAN AND CRITICAL DEVELOPMENT STUDIES

Critical scholarship on humanitarianism and development offers key principles for understanding the dominant logics guiding digital humanitarianism, conceiving of it as a set of interventions and assumptions about people and places in crises. This research provides conceptual leverage to understand the action of international intervention by laypeople, as mobilized by institutional actors. Here I explore existing research on the guiding logics of humanitarianism and development primarily along three lines. The first interpolates the humanitarian subject through assumptions and geographic imaginaries, in particular around who is seen to have resources, who is seen to

need specific kinds of resources, and who has the knowledge to provide them. The second invokes a moral economy in which the "suffering Other" needs intervention. The third is the overly economistic nature of "solutions" posed to problems perceived by the global North, which has perpetuated in new forms in the current technological moment. I then draw out ways these principles extend into new technologies and data production regimes.

In this section I combine lessons from humanitarianism research with development, because they are deeply interlocked regimes of knowledge, power, and morality. Like humanitarianism, development has been conceived as situated knowledge (Said 1979; Lawson 2007; Weizman 2012) reflecting its origins in the global North (Bebbington 2000; Calhoun 2004) and as outcome of colonialism and Enlightenment (Escobar 1995; Apffel-Marglin and PRATEC 1998). Also like humanitarianism, development consists of a stark power relation between those helping and those being helped (Watts 1993; Sheppard 2002; Kleinfeld 2007; Wainwright 2008). Thus, both projects rely on a moral economy that obscure the causes of need, vulnerability, and crisis in the first instance (Illich n.d.; Blaut 1973; Smith 2006, 2008). Research on development, however, draws attention to the long-term project of "saving" those claimed to be in need (Rist 2006). Indeed, many purportedly humanitarian and crisis relief missions are increasingly beginning to "look" like development (Klein 2007; Freschi and Shaikh 2011).

Humanitarianism and development interpolate their subjects through assumptions and geographic imaginaries, in particular around who is seen to *have* resources, who is seen to *need* specific kinds of resources, and who has the knowledge to *provide* them. Such interventions entail assumptions about who has resources and who does not, and who knows how to provide those resources (Escobar 1995; Sheppard and Leitner 2010). The project of international development (for Hart (2001), "'big D' Development), for instance, is a complex of contested knowledge about

the causes and remedies for uneven development (Watts 1993; Lawson 2007; Smith 2008). Such assumptions are rooted in societal and geographic notions about what it means to be "poor" and vulnerable to crisis (Watkins 1993; O'Connor 2002; Cutter 2006; Lawson, Jarosz, and Bonds 2010), even though some such notions are contradictory to one's material lived experience (Appelbaum and Gebeloff 2012).

Humanitarianism and Development, as broad imperatives, invoke a moral economy between multiple actors. The Western humanitarian imaginary is one of the suffering Other and entails a moral responsibility to act (Fassin 2012; Reid-Henry 2013). Research into humanitarianism suggests that it is neither a simple enterprise of "saving lives" nor an unassailably "good" thing. Donini (2010, S220) argues that humanitarianism instead "propounds lofty aims that serve to hide deep contradictions, conflicting alignments and power plays, manipulations and instrumentalisations, personality cults, struggles over resources and, sometimes, shady financial transactions." Fassin (2012) argues that humanitarianism has constructed a new moral economy through which international interventions – military, religious, political-economic – are now justified with compelling force. This moral economy at times becomes a conduit for new forms of violence, as humanitarian knowledge is used to justify decreasing humanitarian aid allocations and political marginalization (Weizman 2012). Additional to these critiques of humanitarian discourses, the practical matters of distributing aid are often marked with challenges, manipulations, and foibles (Chen 2015; Knox 2015; Koenig 2015). Polman (2010) has shown that laypeople compelled to assist in humanitarian crises often deliver aid and services which are not needed, and in fact are often mobilized to favor one party in conflicts. This was particularly strong in the response to the 2010 earthquake in Haiti, where Farmer (2011) recorded a saturation of non-skilled volunteers who arrived without connections to organizations.

Attention to development's economic rationalities allows us to interrogate the work that such solutions do to buttress or challenge capitalist imperatives. Some argue that international interventions have historically been overly economistic, privileging rational choice, measures of economic growth, and implicitly working to integrate laborers into capitalist relations (Sen 1999; Hart 2001; Escobar 2005; Harvey 2009). Along these lines, Gidwani (2008) argues that these capitalist relations work both to maintain capital's fluidity and to subjugate those marginalized in the global South (see also: Glassman 2010). New forms of humanitarianism do not erase such problems, but merely present them in new ways. For instance, Roy (2010) has shown that the field of microcredit, a relatively new approach to lending financial resources to the global South, relies on the image of the entrepreneurial poor, shaping in particular women's subjectivities. Microcredit emerged as a new humanitarian/development aid delivery mechanism in the late 1990s and early 2000s, and has recently engaged new technological developments. Humanitarian technologies in this field are used to link donors more closely with beneficiaries, through media such as smartphone applications. The technologies are used to more effectively integrate microfinance recipients into global (capitalist) labor markets.

From this literature I will focus on the processes through which digital humanitarianism produces its subjects, the responsibilization of its data producers and processors, and its attendant rationalities. Doing so provides a grounded and more incisive way of investigating how digital humanitarianism transforms humanitarianism as a set of practices. This moves current scholarship beyond its early polemic argumentation that has dominated the current literature. For instance, proponents frame the societal impacts of digital humanitarianism by making hyperbolic claims about the power and democratization that may occur in "solving" societal issues such as political marginalization, humanitarian crises, and poverty (Shirky 2009, 2011; Meier 2011). Diamandis

and Kotler (2012), for instance, argue that the shrinking cost of technology combined with the rise of collaborative software, will necessarily lead to a world of "abundance"[3], a sense of optimism reflected across broad swaths of popular writing (see also: Singer 2009). More thoughtful critiques express hesitation that technologies contain inherent emancipatory/liberatory, democratic, or beneficent qualities (Toyama 2010; Letouzé 2012; Sandvik et al. 2014). In these debates, Morozov has attracted much attention for decrying the "delusion" (2012) of what he calls "technological solutionism" (2013), which he sees to be the posing of technological approaches to societal problems to the detriment of social and political analysis. Much more work, however, exists somewhere between these polarized perspectives, indicating a need for further investigation.

2.5 Neoliberalism and Philanthro-capitalism

Geographers have contributed much toward an understanding of the logics, practices, and implications of neoliberalization. Efforts to theorize neoliberalism's constitutive logics, the practices that follow from these logics, and their impacts is a key way of understanding the changing terrain of humanitarianism and emergency management. In particular, this work helps us theorize the context in which contemporary humanitarianism exists in an increasing marriage between capitalism and philanthropy. Neoliberal reforms have contributed to the development of this so-called "philanthro-capitalism" (Fridell and Konings 2013a), with the state increasingly relying on private, for-profit companies to fulfill the roles and responsibilities formerly within its purview. As for-profit businesses assume these roles and responsibilities, such as providing material resources to groups claimed to need those resources, philanthropic work has become a new site for generating profit.

[3] Of course, they leave unanswered the question of "for whom?".

This pairing has been a crucial condition for the growth of digital humanitarianism. To make sense of digital humanitarianism's emergence and political-economic impact, I leverage research on neoliberalization and philanthro-capitalism. Specifically, this research documents how neoliberalism follows a logic of austerity toward the public sector concomitant with increased roles and responsibilities for the private sector, and tends to inject market logics into everyday social practices. As well, this work shows that neoliberal reforms produce new social and technical practices such as responsibilizing – making individuals responsible for solving political-economic problems. These propositions frame my theorization of how digital humanitarianism is situated within and effects humanitarianism and emergency management.

Harvey (2005, 2) describes neoliberalism as a theory of political economy emphasizing entrepreneurialism and "strong private property rights, free markets, and free trade." It entails the injection of these free-market principles into public sector operations and policy-making, as well as everyday life (Larner 2000; Birch and Siemiatycki 2015). In this configuration, the role of the state is to provide the framework for the private sector's flourishing, to create markets where they did not previously exist, and surrender public assets for capital accumulation purposes (Peck and Tickell 2002). Beginning most prominently with the Reagan and Thatcher administrations in the United States and United Kingdom respectively, neoliberalism has now become fully entrenched in the public sector of the global North, to the degree that it is now considered "common sense" (Bourdieu and Wacquant 2001; Hall and O'Shea 2013). Recent scholarship has conceived neoliberalism less as a homogeneous, totalizing force and instead as hybrid, geographically-variegated, and articulated within existing political-economic circumstances (Brenner, Peck, and Theodore 2010; Springer 2014). This reconceptualization is sensitive to the ways in which neoliberalization takes particular forms in different social, political-economic, and spatial contexts

(Springer 2012). In other words, neoliberalization as a process "looks" quite different in different venues, geographies, and technological moments, as well as with different actors and institutional relationships involved. The goal of research, then, is to explain the forms neoliberalism takes in these contexts (Larner 2003; Peck 2006).

Neoliberalization is guided by logics emerging from the private, for-profit sector within capitalist economies. These logics are primarily driven by a reliance on free market principles (Peck 2010). One such logic is a drive for lower resource expenditure combined with higher profit margins, which is usually achieved by the "roll-back" of state functions and "rolling-out" those responsibilities to the private sector (Peck and Tickell 2002; Sparke 2006). This process fosters the notions of "the supposed naturalness of 'the market', the primacy of the competitive individual, the superiority of the private over the public" (Hall, Massey, and Rustin 2013, 9).

Neoliberalization has entailed the *responsibilization* of individuals for their own well-being and governance. That is, poverty, vulnerability to crisis, and public health problems are all represented as individual failings (Lawson, Jarosz, and Bonds 2008, 2010). At the same time, those in governance positions usually delegate solutions to these problems to the individual level: for example, the public sector might establish market-based exchanges and privately-run assistance programs for individuals, to solve these problems (Rose 1999; Sparke 2006). Further, Leszczynski (2012) notes that the neoliberalization of mapping has made individuals – via private-sector technologies – responsible for producing data in the wake of public-sector cutbacks.

Neoliberalization produces contexts in which new labor practices must emerge. Some research has shown that for humanitarian practitioners, an emerging idea is that new forms of labor are able to mitigate the harmful effects of capitalism (Ong 2007; Roy 2010). Indeed, as Peck (2002) has argued, labor must be made fluid in order to satisfy capital's need to produce excess value. In

the same vein, Brenner and Theodore (2002) argue that destructive and creative practices of neoliberalism are largely targeted at organized labor, with the intention of creating new forms of market-based economic practices; that is, neoliberal reforms are meant to produce new political-economic labor practices.

Within humanitarianism and emergency management, neoliberal reforms have resulted in a climate of austerity, an increased role of the private and non-governmental (NGO) sectors, and the incursion of neoliberal rationalities (Hyndman 2009; Essex 2013; Roberts 2014). This has had the two-fold impact of major humanitarian institutions such as USAID facing decreased budgets concomitant to an increased role of private-sector contractors in humanitarian work, in what Norris (2012) calls the "development-industrial complex". Research shows that the state takes an active role in producing the framework through which the private sector makes these encroachments (Mawdsley 2007), in what Peck and Tickell (2002, 384) characterize as "roll-out neoliberalism".

Private-sector involvement in humanitarianism and emergency management has the effect of shifting the logics and rationalities under which the formal sector operates (Essex 2013; Buffett 2014). This process incorporates and normalizes metrics borrowed from the private sector, such as "return on investment", "poorly-performing countries", and "freedom of choice" (Carbonnier 2006; Buffett 2014). Essex (2013) shows that in the formal and humanitarian sectors, this encroachment, called "enlightened capitalism", is justified in terms of increasing efficiency and lowering resource expenditure. At times the private sector is directly tapped for these purposes, as when in 2004 Oxfam began heavily recruiting to fill international program management positions with professionals from the "business world" – the "citadels of capitalism" (Pandya 2004). By looking to the for-profit sector, Oxfam suggests its program managers should be familiar with norms, practices, and approaches of the private sector. Oxfam's recruitment strategy implies more

broadly that humanitarianism should improve by adopting private-sector management and operational approaches.

The concept of "philanthro-capitalism" has been offered to explain this marriage of capitalism and philanthropy (Bishop and Green 2008; Fridell and Konings 2013a). It is, essentially, a conceptual framework used to characterize the increasing neoliberalization of philanthropy (Mitchell and Sparke forthcoming). Philanthro-capitalism has been theorized as the process of capitalists accumulating vast stocks of capital from cheap, fluid labor, producing poverty and inequality as a byproduct, and subsequently using their accumulated wealth to "solve" poverty and inequality (Jenkins 2011; Morvaridi 2012; Fridell and Konings 2013b). This cements the position of the wealthy as beneficent and prodigious, while legitimating neoliberal reforms (Jenkins 2011; Morvaridi 2012).

Philanthro-capitalism, as a new rubric of neoliberal governance, makes two claims. First, individual actions are claimed to potentially be able to ameliorate complex humanitarian problems. According to Singer (2009), individuals in the global North have a moral responsibility to contribute financial resources to "victims" of crises around the globe. Consumerist choices and corporate donations exemplify the individual actions lauded in such claims, to the degree that such actions now constitute a sizeable share of contemporary economies (Zizek 2006). Some have gone so far to say that this represents "the new face of philanthropy" (Byrne 2002), a shift lauded by the private sector itself (The Economist 2006). In a stark example of the lengths to which this assumption is prevalent, some have claimed that crisis-related death itself is the result of an individual's inaction (Singer 2009).

Second, problems arising from the circulation of capital are claimed to be solvable by further circulating capital. Even though capitalist expansion creates problems such as underdevelopment,

vulnerability to crises and disasters, and wealth and income inequality (Harvey 2005; Smith 2008; Watts 2008), philanthro-capitalism suggests capitalist expansion should be engaged to address them. In other words, the origin of the problem is posed as a solution to that very problem (Zizek 2006; The RSA 2010). Within humanitarianism, some have shown that increased reliance on market and neoliberal logics is posed as the solution to problems caused by those logics (Hyndman 2009; Adams 2013). Some have even argued that these market-based economies and neoliberal reforms necessarily enroll the non-profit sector in ways beyond their control (Hammack and Young 1993; Smith and Lipsky 1995).

Engaging research on philanthro-capitalism enables a critique of the way digital technologies serve to accumulate capital from humanitarian crises. Research shows that the private companies who produce digital technologies have long benefited from their work in disasters, military operations, and humanitarian crises (Smith 1992; Craig, Harris, and Weiner 2002); however, philanthro-capitalism is a relatively recent development that needs further exploration in its manifestation through digital technologies. In some cases this takes the form of "social entrepreneurship" (Phills, Deiglmeier, and Miller 2008), or creating "innovative" ways to solve "the world's most pressing problems" (Petroske n.d.). In other cases it has taken the form of microcredit, where recently individuals have been able to directly loan funds to people in the global South (Roy 2010). A related case is that of the sharing economy, whereby services, labor, and materials are rented/offered by individuals rather than by professionals, such as the rideshare programs Uber and Lyft or the accommodations site AirBnB (The Economist 2013). Digital humanitarian technologies are an extension of these ideas (Benkler 2006; Meier 2015).

2.6 CONCLUSION

In what follows I examine digital humanitarianism's digital and technological practices, its humanitarian practices and relations, and its political economic contexts and logics. The bodies of research discussed above offer key concepts for understanding how they work on several levels. Critical research on spatial technologies and data shows how they reflect and constitute epistemological and social relations, through access to and inclusion within technologies and data, as well as the negotiations through which data become visible (or invisible) in particular ways. These dimensions of technology and data shape their form, content, inclusions and exclusions, and societal effects.

Critical humanitarian and development research contributes to digital humanitarian theories an understanding of its interventions and assumptions about people and places in crisis zones. These literatures can be leveraged to understand three aspects of digital humanitarianism. The first is the interpolation of the humanitarian subject through assumptions and geographic imaginaries, in particular around who is seen to have resources, who is seen to need specific kinds of resources, and who has the knowledge to provide them. The second is the way it invokes a moral economy in which the "suffering Other" needs intervention and the global North possesses the knowledge necessary to end that suffering. The third is humanitarianism's and development's overly economistic nature of the "solutions" it poses to problems.

I leverage research on neoliberalization and philanthro-capitalism in order to understand the political-economic conditions for digital humanitarianism's emergence, as well as its impacts. Neoliberalism entails the withdrawal of the public sector from service provision, and establishing the framework for the private sector to assume those responsibilities. Neoliberalization privileges free-market principles, atomizing individuals from their social context, and opposing organized

labor. Individuals are made responsible for their own well-being and governance, and new forms of fluid labor emerge. Private-sector involvement in humanitarianism can be understood as "philanthro-capitalism", or the use of philanthropy toward capitalist goals. Philanthro-capitalism depoliticizes digital humanitarianism at the same time as it makes humanitarianism a new space for capital accumulation. These new spaces for capital accumulation are created in humanitarian crisis and disaster zones, as private, for-profit businesses provide technologies to the formal sector to assist in their responses, thereby generating profits from the crises.

Chapter 3. MOBILIZING THE EXTENDED CASE METHOD

This research was guided by the following research questions: (1) How does digital humanitarianism operate as a set of socio-technical practices for data production, processing, and representation? (2) How do formal sector responders and digital humanitarians themselves understand the role and significance of digital humanitarianism, and how does this understanding shape their operational and response strategies? (3) What are the implications of these socio-technical practices for the forms of knowledge that are or are not incorporated into digital humanitarianism, the relationship of digital humanitarianism to the formal sector, and the priorities and rationalities of humanitarianism more broadly? (4) What *is* digital humanitarianism, as a set of political economic practices or rationalities, and how do these practices and rationalities alter longer standing practices and rationalities of humanitarian relief? To date there is little existing theory that speaks directly to digital humanitarianism, so I address these questions through a theoretically-driven inductive study of the field.

From July, 2012 to April, 2013 I carried out an extended case study working with a technology policy research institute in Washington, DC. While working as a participant-observation at this institute, I examined communal knowledges and traced the social and institutional relations that constitute digital humanitarianism. This position made use of my skills as a researcher and writer to compose reports and policy recommendations, and my technical skills to communicate with digital humanitarians and software designers.

I used the *extended case method* (Burawoy 1998) to explore digital humanitarianism's technology, social relations, and institutional procedures. My goal was to understand how digital humanitarianism operates, the assumptions it entails, how its members conceive of their contribution, the discourses on which it relies, and its uneven impacts. Burawoy's extended case

method helps the researcher explore how large, macro-scale forces shape local contexts. It is a framework for generating theoretical propositions from ethnographic evidence, or qualitative case studies more broadly, and involves a theory-driven inductive analysis of evidence. In my case, the theoretical propositions driving my analysis are focused on how technology-related humanitarian and emergency management reforms are "localized" in digital humanitarianism, and how political-economic processes respond to this new set of technologies and data labor practices.

My particular use of the extended case method involved gathering multiple forms of evidence toward understanding digital humanitarianism, and then *extending* out to current theories of spatial technologies. This entailed isolating and interpreting unique social and political relations not explained by extant literature. For instance, current geoweb literature posits linkages between its development and political-economic reforms, yet is short on the precise mechanisms through which these reforms take place, particularly within digital humanitarianism. In other words, I engaged this particular methodology because it enables a tacking between theory and evidence, as the researcher adapts to the local context. Evidence was largely generated from being present in the digital humanitarian community, and becoming familiar with the languages, imperatives, principles, and meanings which the community normalizes, which it leverages to identify "insiders" and "outsiders." Further, I became familiar with the procedures digital humanitarians use to develop and market their technologies and labor, and the tensions this raises with broader social and political forces.

3.1 EVIDENCE AND ANALYSIS

My evidence was generated through four specific methods: (1) participant observation, (2) data archiving, (3) in-depth interviews, and (4) Federal Emergency Management Agency online training.

3.1.1 *Participant observation*

I conducted *participant observation* for this project in two venues: a 7-month internship with a prominent public policy think-tank based in Washington, DC, and participation in digital humanitarian activations and organizational meetings independently of the institution, as a member of the digital humanitarian community. These venues were closely linked: my status with the policy group gave me access to the digital humanitarian events and allowed me to speak with key digital humanitarians.

During my internship, I participated in four *workshops* and four *conferences* that helped me observe the digital humanitarian community deliberate and report on their contributions. I was most intimately involved in the Connecting Grassroots to Government for Disaster Management ("Grassroots to Government") workshop. For this workshop, I invited panelists and coordinated panels, conducted a participants poll to rank research challenges, and documented the workshop on my institution's Twitter account. Four other workshops I either helped organize or attended include: the Missing Persons Community of Interest workshop, the Volunteer & Technical Communities Summit, and the International Disasters Charter brownbag. At the International Conference of Crisis Mappers (ICCM), I observed the largest and most prominent digital humanitarian organizations reporting on new technology development, as well as provide multiple articulations of their "worth" to formal humanitarianism. This annual conference is the key crisis mapping event in which the most important members of the community meet to discuss developments in the field and strategic challenges. Three other conferences I attended include: the Mapping Science Committee of the National Academy of Sciences, Bring Your Own Data, and Geotargeted Alerts and Warnings. During each of these workshops and conferences I recorded notes and monitored social media channels for discussions of conference material, including hashtags, mentions on Twitter, and so on.

My participant-observation also included collaborating on extensive *writing projects*. In collaboration with other workers at the research institute I co-authored four documents. For the Grassroots to Government workshop I wrote a background reading document, a summative workshop report, and a report on the workshop's social media exposure. Outside the workshop I helped author a paper for the journal *Photogrammetric Engineering & Remote Sensing* that provides a sweeping overview of the field of social media in disaster management. Other participant-observation writing projects included developing a presentation which was delivered at the Council on Foreign Relations, peer-reviewing policy reports, and writing policy-related blog posts. These activities familiarized me with the conversations circulating in the digital humanitarian field, and helped me "practice" the discourses and language of the community I was studying. In writing each of these documents, the process of writing lent important insights into how the digital humanitarian community expresses itself, particularly in a policy context.

For the second component of my participant observation I worked *as* a digital humanitarian, participating in activations and organizational meetings. I participated primarily in three events. In the first, I attended a CrisisCamp weekend "hackathon" in which we developed a set of new technologies that emergency responders could use to improve their operations. This hackathon also enrolled the input of local emergency responders and students from the Massachusetts Institute of Technology's Media Lab. The second event, a Standby Task Force activation, assisted Samoan recovery efforts following a cyclone. I was involved in georeferencing social media reports in the Ushahidi platform. Third, I observed the response efforts to Superstorm Sandy in New York City. For this I toured the New York Office of Emergency Management, including their Emergency Operations Center and GIS department. I attended a community-organized relief event

in the Rockaways neighborhood, during which I met community members closely involved in the response and rebuilding efforts, and was given an informal tour of the neighborhood's damage.

3.1.2 *Digital humanitarian documentation and online databases*

I analyzed data related to digital humanitarianism, including websites, after-action reports, and working documents. These provide insights into the knowledges, discourses, and social processes that become concrete in technologies (Winner 1985; Kitchin 2014a).

These data fell within four general categories. First, websites of digital humanitarian organizations give a public-facing description of how an organization perceives its own contribution to digital humanitarianism. These organizations included collaboration groups such as the Digital Humanitarian Network; others were software development companies or websites of the formal disaster response sector.

Second, following a humanitarian intervention, disaster response, or crisis map deployment, the leading organizations normally produce an "after-action report". In these the organizations posit their successes, failures, and general "lessons learned". These reports are key moments in which knowledges and practices are institutionalized and transferred from case to case. The reports are written by organizations leading the activation, like the Digital Humanitarian Network, UN OCHA, or the American Red Cross.

Third, public digital humanitarian listserves archive all emails sent to them. The listserves of the Humanitarian OpenStreetMap Team, CrisisMappers, and CrisisCommons listservs are particularly illuminative of digital humanitarian processes, because they serve complex purposes for the digital humanitarian community. Digital humanitarians use these emails for personal announcements, to plan and announce digital humanitarian interventions, discuss controversial topics, and reiterate social relations.

Lastly, particularly during Superstorm Sandy response and rebuilding efforts, collaborative Google Drive documents were established to help coordinate digital humanitarians. Community organizations, digital humanitarians, and formal emergency management organizations all established and contributed to these documents. These documents allowed me to see multiple communities' discussions around digital humanitarians' responses, how needs would be represented and communicated to the formal sector, and how different platforms should be designed to complement others.

3.1.3 *In-depth interviews*

I interviewed key digital humanitarians, formal emergency responders, academic researchers, and community organizations who I met through my participant observation and data archival work. In these interviews I tried to understand how digital humanitarians and the formal sector conceive of digital humanitarian contributions to formal-sector work, as well as the way digital humanitarians characterize the deliberations and knowledge politics occurring in their community. I also tried to understand why particular choices were made in software, data models, and cartographic products. I sought to understand how workflows were (or were not) responding to the emergence of new data sources and digital tools. Academic researchers could speak to "bigger-picture" challenges facing digital humanitarians, as well as their own contributions to the field.

I conducted 37 semi-structured in-depth interviews in order to more fully understand individuals' perceptions of their contributions to the field, and to explore how the formal humanitarian and digital humanitarian communities function. I began by interviewing participants in the Grassroots to Government workshop, and asked them about other important individuals with whom I should speak. Access to some interviewees was granted only after I demonstrated my "belonging" in the community through active participation in the community.

In my interviewees I sought broad interests and backgrounds to identify complexity and unique knowledges. I therefore spoke with both digital humanitarians and those in the formal sector. I sought representation of diverse sectors, which included software coders, humanitarian responders, emergency managers, academic researchers, and digital humanitarian project managers. Most of my interviews were with people either in the public or non-profit sector, but I spoke with a small number in private, for-profit companies. My interviewees reflected my estimated demographic makeup of the field: balanced in terms of gender (18 males and 20 females), but primarily white and from the global North. In this dissertation, all quotes should be assumed to come from these interviews, except where noted explicitly. All names provided are pseudonyms.

3.1.4 *FEMA ICS training*

In early interviews I found that interviewees – particularly those in the formal sector – responded more positively if I could demonstrate some prerequisite knowledge of their field. Those in the formal sector often hesitated to speak with me, most often communicating a distaste for digital humanitarians who lack an understanding of formal-sector practices, workflows, and languages. Thus, as part of my research, I enrolled in the Federal Emergency Management Agency's (FEMA) free online courses that train emergency managers prior to their formal certification. After taking many of the courses (there are several dozen offered), I found that it had indeed increased my ability both to recruit interviewees and to "speak their language" in interviews. In particular, being familiar with the Incident Command System (ICS) greatly increased the quality of conversations I could then hold with those in the formal sector. For example, on several occasions, before responding to a question, the interviewee would ask me if I was familiar with the ICS. This step

was a central part of my extended case method: learning the important norms, knowledges, and languages for the community being studied.

3.2 Analysis

My inductive analysis of these data involved an iterative approach of inspecting evidence for instances of core themes and concepts, and developing theoretical insights working within and between different types of evidence (Baxter and Eyles 1997; Elwood 2009b; Herbert 2010). For example, I examined the digital documents, fieldnotes, and interview transcripts for concepts such as *need*, interactions such as *deliberation*, strategies and tactics for *marketing* digital humanitarian technologies, and other themes and categories (Knigge and Cope 2006; Strauss 1987). These mentions and others contributed insights into the "work" digital humanitarianism does as a social phenomenon.

To identify them I developed codes across all data sources, to synthesize patterns and trends inductively, using a combination of in-vivo and open coding (Snow, Morrill, and Anderson 2003; Emerson, Fretz, and Shaw 2011). For example, I coded particular phrases used by research subjects, in their own words, such as "private sector" and "community". This helped determine consistency and contradictions across multiple uses of the phrases. When open coding, I incorporated themes and categories from my conceptualization of digital humanitarianism as a socio-technical process and form of neoliberation, such as "knowledge politics", "subject formation", or "responsibilization". These were particularly useful for ideas research subjects described in colloquial terms. I executed coding in Atlas.ti because it can handle disparate data types and different kinds of digital documents.

Throughout the analysis I validated my initial interpretation and propositions by reading for internal consistency and contradictions within individual forms of evidence and by triangulating

across bodies of evidence, to support or challenge my emerging claims. For example, I determined that actors differently articulated the roles of the private sector in digital humanitarian technology development, with digital humanitarians and private-sector business owners generally espousing neoliberal assumptions and ideals. I found great contrast, on the other hand, in the ways actors described the technologies and relations that constitute "digital humanitarianism".

3.3 NAVIGATING DIGITAL HUMANITARIANISM

My analysis is shaped by various dimensions of my position and role in the specific organizations and events I studied, my background in digital humanitarianism and spatial techs, and aspects of my identity. I understand my ability to navigate the spaces of digital humanitarianism through feminist geography's concern for reflexivity (England 1994; Katz 1994). First, my power and privilege as a researcher allowed access to many spaces to which others are more limited. Particularly under the auspices of pseudonymity, key actors were willing to speak quite candidly in interviews. I was also able to be present in many physical places where digital humanitarianism is enacted, such as in workshops, emergency operations centers, and hackathons.

Second, I fit many of the common characteristics of both the digital humanitarian community and qualities considered "safe" in contemporary America. For instance, I and most the digital humanitarian community are white and from the global North. As a male, I benefited from the privilege of being taken seriously in deliberations and being given the benefit of the doubt when ignorances came through in discussions. My performance of upper-middle-class identity (e.g., wearing a business suit, being relatively clean-cut, being well-connected) ensured access to senior-level formal-sector actors.

My extended case method introduced unique challenges and tensions as I approached this project with complex and contradictory commitments. For one, participating as an "insider" with

critical perspectives forced me to negotiate my participant-observation and interviews with caution. I contributed to digital humanitarian interventions despite my reservations about the relations implied by my helping, at times overcoming those reservations only in order to complete my empirics. For example, in the process of my research I categorized many images in the digital humanitarian platform Tomnod, in order to familiarize myself with the technology – despite the fact that this platform does not communicate the end-user of my labor, and I could be quite uncomfortable with some end-users (military or intelligence in particular). These critical perspectives raised challenges in some collaborative writing projects, when I voiced opposition to the ways colleagues framed humanitarian problems, and met resistance to my re-framing of them. Even though I was institutionally affiliated with the public policy institute, I maintained some distance from them in my independent participant observation and interviews. I did this because of the tension that could be raised by my critical perspectives, and while this distancing isolated me from some who otherwise would have spoken with me, it also benefited some interviews in unexpected ways. In one interview, for instance, the interviewee all but stopped the interview when they realized the interview was for my personal research and not for the institution. In another case, however, the interviewee began by very heatedly condemning my work with the institution, before I twice interrupted to reiterate that the interview was not for the institution.

Chapter 4. TOWARD A THEORY OF POTATO PEELING: CONCEPTUALIZING DIGITAL HUMANITARIANISM

"...I don't want to find better ways to collect more information that's more inaccurate quicker, at a higher volume, right? ... I want to move from a potato peeler to a Cuisinart. But if I'm a humanitarian, the Cuisinart is scary because I have to be accountable for every potato I peel and not be accused of peeling someone else's potato or peeling a potato that shouldn't be peeled. ... And now they have something bigger than a Cuisinart - a woodchipper. And they don't have a theory of how to use it for potatoes; they've been using it for wood. Now they're dropping potatoes into it and shooting them through a thousand times faster than we can with a Cuisinart. And they can do it around the clock. ... Meanwhile, the crisis mapping community is unclear yet as to what it's doing. Are they collecting? Are they curating? Are they having a protective effect? ... So they're not clear about why they're peeling potatoes and they don't know exactly what potatoes they should be peeling, and how. Are they making mashed potatoes or what? Home fries? ... They don't know. But one should have a theory of potato peeling." (Jeremy, 2013)

4.1 INTRODUCTION

As the epigraph of this chapter indicates, the field of humanitarianism is currently seeing the emergence of a new set of practices, relationships, and political-economic relations around data production and representation. Digital humanitarianism has emerged at this nexus of social, political, and economic shifts, with implications for how needs are communicated, interpreted, and represented in crises. This shift furthers the incursion of capitalism into humanitarianism, taking the specific form of "philanthro-capitalism."

Despite its current (and growing) importance, digital humanitarianism remains under-theorized in relation to extant geoweb research. Several related terms are often used interchangeably to describe it, including: crisis mapping, social media for emergency management, and technology volunteer communities. Each of these terms, while highlighting an important aspect of digital humanitarianism, fail to connect across the terms, and each also fall short of full

conceptualization. Concomitantly, the emergence and connections between these new concepts, practices, and relationships challenge the ways technology-society relations have been conceptualized in geography research.

In this chapter I seek to answer the question of what digital humanitarianism is, and to identify important social, political, and economic shifts it entails. I first provide a conceptualization of digital humanitarianism with respect to its sociotechnical practices, institutional relationships, and political-economic relations. I do this by constructing a "map" of digital humanitarianism: a descriptive account of what it constitutes, how one engages it, and how it relates to traditional humanitarianism. Second, I characterize the shifts around socio-technical practices associated with digital humanitarianism, drawing attention to the continuities and breaks these technologies signal. Here I touch on the politics and struggle around knowledge production and representation, as originating in traditional forms of humanitarian data and extending into digital humanitarian spaces. Third, I describe how digital humanitarianism's political-economic relations differ from traditional humanitarianism, particularly around humanitarian data, labor, funding, and working rationalities.

4.2 Defining and Characterizing Digital Humanitarianism

Digital humanitarianism is the practices, technologies, and networks that enable large numbers of individuals to collaborate on humanitarian and emergency management interventions through digital technologies. These individuals can contribute from anywhere in the world, even beyond the immediate crisis zone, as long as they have an internet connection and moderate internet navigation skills. Because digital humanitarians usually make contributions around data, it is a shift in how the formal sector collects, processes, and represents needs as data. This shift coalesces

such technological developments as crowdsourcing, crisis mapping, social media monitoring, Big Data, and distributed mass collaborationTechnologies, though, are supplemented by the rise of communities and networks formed to maintain lasting relationships and an institutionalized body of knowledge about crises and digital humanitarians' interventions. . Despite the lofty claims of some digital humanitarians, these developments are rarely adopted *in place of* existing practices, rather as supplementary to existing data sources and data manipulation practices. The definition I offer here, in contrast with other terms and definitions, foregrounds digital humanitarianism's fundamentally social nature, which enables a critique of the social, political, and economic implications of these shifts.

Digital humanitarianism is constituted by a set of actors and technologies sufficiently diverse and fluctuating to have evaded comprehensive description to date. While most who characterize digital humanitarianism focus on new organizations such as the Humanitarian OpenStreetMap Team (HOT), Ushahidi, and the Digital Humanitarian Network (DHN), the concept should also include organizing strategies such as the Virtual Operations Support Team (VOST), and well-established organizations such as GISCorps and MapAction. Each of these organizations and strategies exemplify a different set of imperatives and missions. For instance, HOT members utilize a crowdsourcing platform (called the Tasking Manager) to map disaster, crisis, and development zones exclusively in OpenStreetMap. HOT has been engaged to improve geographic data coverage in crisis zones, and humanitarian institutions have at times used their outputs as basemaps for their own data. Ushahidi is both a web mapping platform and mass collaborative strategy that collects, processes, and maps social media and SMS data, often using OpenStreetMap as a base layer. The Ushahidi organization, in addition to distributing the Ushahidi software for hosting on external servers, also hosts instantiations of its platform for free, under the name

"CrowdMap." It remains unclear how Ushahidi has been – or might be – used by humanitarian institutions. Most importantly, the DHN is an overarching coordination of other diverse organizations, established by staff at United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA) in order to streamline digital humanitarian efforts, and tailor the efforts more directly to the needs of the formal humanitarian sector. In contrast to each of these organizations, the VOST working model was developed to formally enroll the labor of (usually) paid employees of emergency management institutions, directing this effort exclusively toward monitoring and maintaining social media communications. The VOST model was developed as a portable strategy for adoption across formal emergency management institutions, and has been used at various scales, including cities, counties, and regions.

Digital humanitarian organizations and models are typically comprised of loosely-coordinated individuals that are mobilized for specific crises at a time, called "activations"[4]. These mobilizations are discrete moments when digital humanitarian organizations are invited into action by a formal-sector institution, and entail another discrete moment when the activation will conclude. Activations are geared toward specific crises or goals, with detailed tasks delegated to digital humanitarians; in other words, digital humanitarians usually do not address crises in general but instead are activated for specific crises, with specific pre-determined temporal constraints and stages. There are a large number of contributors who maintain active participation through non-crisis periods, and their work is usually either related to their organizational affiliation or to their profession. That is, outside of formal activations many contributors produce the infrastructure for digital humanitarianism to operate in the future. For instance, some work to develop plans and workflows for how organizations should respond to crises; others publish reports, advocacy

[4] For more information on the official process of "activations", see the Standby Task Force's criteria for activation here: http://blog.standbytaskforce.com/about-2/activation-criteria/.

writing, and academic articles; still others work to build alliances and agreements between the formal and digital humanitarian sectors. However, large numbers of individuals usually emerge when a prominent organization such as HOT or Standby Task Force is activated by a formal-sector institution. Importantly, these individuals most often describe themselves as "digital humanitarians" – this term is far more commonly used than other terms such as "crisis mapper" or "social media monitor". Contributors are solicited on social networking sites, listserves, and during public conference talks. These and other communities included within the broadest conceptualization of digital humanitarianism are listed in Table 1.1.

Name	Founded	Focus
NetHope	2001	Coordinating around technology and new practices.
MapAction	2002	Volunteer mapping.
Sahana Software Foundation	2004; 2009	Emergency management. Separated from the Lanka Software Foundation in 2009.
Google.org	2005	Missing persons, crowdsourced data in natural disasters.
Ushahidi	2008	Crisis mapping, natural disasters.
Crisis Commons	2009	Hackathons for developing emergency management software.
International Network of Crisis Mappers	2009	Crisis mapping.
Humanitarian OpenStreetMap Team	2009	Data production for natural disasters, political crises.
Humanity Road	2010	Natural disasters.
Standby Task Force	2010	Crisis mapping, natural disasters.
Digital Humanitarian Network	2012	Coordinating various digital humanitarian groups in natural disasters and political crises.

Table 4.1. Popular digital humanitarian organizations.

There are no officially-defined or institutionalized relationships between digital humanitarianism and formal humanitarian institutions. While in some cases workers for formal institutions establish and lead digital humanitarian organizations, it is far more common for digital humanitarians to work entirely distinct from the formal sector. However, digital humanitarians actively pursue these relationships, usually through conferences, reports, and workshops. In fact,

some coordination organizations such as the Digital Humanitarian Network have been developed for the sole purpose of building these networks and relationships. Despite the persistent lack of official relationships, digital humanitarians are active in most major humanitarian and emergency responses. The formal sector will normally activate the digital humanitarian organizations, charging them with specific tasks to support the institution's relief efforts. In contrast with this approach (ideal from formal institutions' perspectives), many digital humanitarian organizations also participate in relief efforts independent of the formal sector's sanctions. For example, there was no authorized activation for the Ushahidi Haiti earthquake response, similar to the ongoing non-sanctioned activities of HOT; in fact, one member of HOT explained to me in an interview that most of HOT's activities could be understood as "developmental" rather than "humanitarian" in nature. This was because HOT, like many other organizations, is engaged with local communities for long-term projects outside crisis contexts.

Non-sanctioned activities usually stem from two dynamics. The first is the organizations' strong participatory ethic, which compels many to work in non-crisis, non-activation roles, as with HOT. To a degree, the recent Uchaguzi implementation of Ushahidi also exemplified this "exceptional" digital humanitarian intervention, insofar as efforts were collaborative between NGOs and volunteer groups, rather than through humanitarian efforts. Outside of a proper activation (but with some formal-sector funds) Ushahidi staff developed a platform for the collection and curation of election monitoring reports in order to, according to the website, "contribute to stability in Kenya by increasing transparency and accountability through active citizen participation in the electoral cycles" (Uchaguzi 2013). Second, digital humanitarians see their own contribution as being present prior to the formal sector's awareness of it. Most digital humanitarian organizations operate according to the principle that they will develop the

technologies, workflows, and reserve labor force that the formal sector later realizes they need. This assumption is usually implicit but often comes out explicitly in digital humanitarian conversations, in community deliberations, and in marketing materials. For example, at the International Conference of Crisis Mappers, most 5-minute "lightning talks" began with stories of the "rise" of Big Data, followed by claims that their new technology will help the humanitarian sector avoid being "left behind". Digital humanitarians see their contributions as existing prior to the formal sector's need of them.

Digital humanitarians engage a range of technologies to collect, produce, process, or represent data in humanitarian crises. Collecting data happens in two ways. Digital humanitarians often monitor general social media indicators (e.g., hashtags like "#Sandy" for Superstorm Sandy and "#pabloPH" for Typhoon Pablo, or key actors' accounts). Throughout my discussion I refer to this process as "harvesting" data – collecting information that was not produced with the intention of being included in a digital humanitarian platform. However, data collection can also involve accepting information sent directly to the digital humanitarian platform, when a designated hashtag is established so the public can send information directly to the Ushahidi platform, such as the "#Uchaguzi" hashtag used exclusively in Ushahidi's monitoring the 2013 Kenyan elections. Most data collection thus takes place through social media. Other technologies with which digital humanitarians engage include the Ushahidi platform, which allows large numbers of contributors to sort, validate, categorize, georeference, and represent data. They also include Skype, where planning meetings take place and short-term groups are established to coordinate the different efforts. For example, authors of new reports sometimes hold community meetings on Skype to discuss the reports' content. In an activation, short-term groups are created for the different

Ushahidi tasks like validation and georeferencing. This avoids duplication of efforts and allows more manageable discussions.

Importantly, the actors involved in digital humanitarianism should be characterized as contributors rather than volunteers. This difference is important for several reasons. First, many digital humanitarians conduct these activities as part of their careers and are therefore paid. Such individuals include employees and staff at organizations like Ushahidi, but also those digital humanitarians who work for formal institutions like the American Red Cross and UN OCHA. For these people, the term "volunteer" is quite inaccurate. As well, much digital humanitarian data is harvested without the contributors' knowledge or consent. Thus, contributors have not "volunteered" that data since it did not entail their consent. In some cases where labor is in fact volunteered with consent, such volunteers are not always properly informed of the purposes or implications of their efforts. For example, one digital humanitarian platform, Tomnod, regularly recruits crowdsourced efforts to identify objects of interest in aerial photography; users browse images of landscapes looking for objects that could potentially be of interest to responders. However, the platform lacks any explanation of the source of imagery, the purposes to which the crowdsourced efforts will be put, to which organizations the results will be provided, and which organizations requested this technology deployment. Under these conditions, labor may indeed be "volunteered" but not in ways that evoke the informed, autonomous decision-making sense of the concept. Instead, in this dissertation I utilize terms such as "contributors", "digital humanitarians", or more specific terms such as "those responsible for georeferencing social media data."

Formal-sector actors typically engage digital humanitarianism for three reasons. The first, and most common way, is to increase "situational awareness" – the institution's understanding of the general dynamics around the humanitarian emergency. Situational awareness is not generally used

to make specific operational decisions, but to inform their broader approach and the coordination between multiple actors (King 2005). In other words, for humanitarian organizations the goal of increasing situational awareness is not necessarily to distribute aid differently, to commence/halt specific activities, or to send individual response teams to particular areas; rather, situational awareness is meant to increase the information available to improve or maintain cooperation, to justify existing actions, and to understand what is happening, as they say, "on the ground." These are managerial, planning, and coordination activities, rather than "operational" activities. The formal sector currently does not predominantly use digital humanitarians to help with operational decision-making, meaning they do not respond to individual requests for help, and are unlikely to do so in the near future. This is important because it contrasts with the ways digital humanitarians market their contributions. If the formal sector does not respond to individual requests for help, as digital humanitarians often claim they do, the utility of individual reports (on Ushahidi, for instance) is called into question, particularly as many contributors produce information with the expectation that it will be addressed individually.

The formal sector is also increasingly tasking digital humanitarians with the processing of data. Data typically goes through many stages of processing in between the data producer and decision-makers' interpretations of it. Processing may include translation, georeferencing, image categorization, and sorting social media posts. For example, Ushahidi data must (1) be translated into English or some other language, (2) georeferenced using information from the data (most often this data is not already geotagged), (3) placed into an appropriate category (e.g., "public health", "security", "emergencies"), (4) placed on the map. In other digital humanitarian projects contributors are shown images and asked to rank the visible storm damage from 1 (minimal) to 5 (devastation), effectively sorting the images to construct a spatial index of storm damage.

Similarly, UN OCHA often activates the Standby Task Force in order to sort through large amounts of social media posts and identify storm damage.

Lastly, formal agencies might use digital humanitarian technologies in order to communicate to the public. This involves, for example, engaging social media as a new communications device. Such communications must go through formal public relations offices; individual offices and officers are usually not allowed to post information on social networking sites. For US government agencies, social media communication outlets are usually subject to restrictive policies and regulations, and are thus usually monitored and engaged by only limited numbers of departments. Thus, formal-sector use of digital humanitarian technologies as communication devices faces bureaucratic challenges.

4.3 TRANSFORMATIONS IN THE SOCIAL AND TECHNOLOGICAL PRACTICES AROUND HUMANITARIANISM

Digital humanitarianism entails shifts in both the social and technological practices of humanitarian interventions. The technical practices include methods for gathering and producing information, and the production of new digital spaces. It is through these digital humanitarian spaces that differentiated social practices emerge around the politics of, and struggle for, knowledge legitimacy and representation. New forms of struggle have emerged around the ways in which knowledge will be categorized and abstracted into data models, classification schemes, and "remembered" in after-action reports. Digital humanitarian practices employ diverse approaches toward data manipulation, such as categorization, abstraction, translation, and filtering. My account of these transformations builds on previous critical research on geographic technologies, suggesting unique social and political implications.

4.3.1 *Sources of information and requisite processing*

Digital humanitarians promise to deliver new sources of information for humanitarian interventions. This information comes in the form of social media, SMS, and (human or automated) data processers, and it is available whether or not humanitarian actors use it. Although the information is available, its comprehensibility and capacity to inform responses may be of question. Humanitarian actors – both digital and formal – designate information as either "actionable" or not based on the degree to which it can inform situational awareness or operational tactics.

Before reaching these decision-makers, it undergoes a series of processes to interpret and rework the data, such as language translation, categorization, abstraction[5], georeferencing, mapping, and graphical (non-map) representation. These steps are necessary because the data comes from these new sources, and must be processed in order to make it useable by the formal sector. Each step of abstraction, processing, and translation introduces struggle over control of the meaning of data – the meaning it holds, how it should be interpreted, and what responses it should therefore elicit. In addition to this politics of existing knowledge and meaning, each step of processing and abstraction potentially adds new meanings to data, as the data processor seeks to make data useful and meaningful for its intended purpose.

[5] Here I use "abstraction" to mean a shift away from data's original context. For instance, this includes labeling an image as "of interest" or not, or condensing multiple geographically-proximate reports into a summary point (for instance, in Ushahidi summary points are labeled "34" if there are 34 reports in a given area).

As an example of these processes, when a person submits an Ushahidi report, it may need to be translated into English (or another language), categorized according to the sort of information/knowledge it contains, summarized to quickly communicate the content, georeferenced, placed on a map (or purposely left off the map), and represented in a tabular format. Concretely, one can see a simple example of how digital humanitarianism abstracts data in the image classification platform established to assist Superstorm Sandy response. Several digital humanitarians associated with GISCorps developed a crowdsourcing platform using MapMill software and Civil Air Patrol aerial imagery[6]. Contributors were shown an aerial photograph and asked to click one of three colors: green to indicate little/no visible damage, yellow for medium visible damage, and red for extensive visible damage. This rudimentary form of abstraction nevertheless required three assessments: (1) How often did volunteers' classifications coincide? (2) How often did volunteers' classifications align with the 11 GISCorps "experts" consulted for the same imagery? (3) How often did these classifications align with FEMA's own assessment of damage in the area? The volunteered abstractions, then, were not taken for granted, but were instead subject to deliberation and evaluation according to particular metrics of "accuracy". In other words, even when seemingly quotidian, the steps by which data are abstracted embody the outcomes of deliberations, struggles, and politics over how data should be collected, modified, and represented. Such struggles seek to establish the ways meaning and knowledge should be conveyed through data and the different meanings that may be introduced in the process of abstraction and modification.

[6] For a more detailed description of this project, see:
http://www.giscorps.org/index.php?option=com_content&task=view&id=135&Itemid=63

4.3.2 *Digital humanitarian spaces and their knowledge politics*

Digital humanitarianism is mediated through digital technologies, and its practices produce the spaces in which it functions. It is in, around, and through these spaces that struggles around meaning and representation take place – that is, these are sites for knowledge politics. These sites are produced for engagement in digital humanitarian activities, but often continue to exist beyond their intended usage (important for case studies, best practices, and software development). When they are prolonged, they provide the frameworks and structures for future uses of those sites. A simple example is the broad range of Ushahidi deployments that remain on the internet beyond the purposes for which they were produced[7]. As well, the first Ushahidi instantiation to gain popular recognition, following the 2010 Haiti earthquake, provided the software code to be duplicated in future activations. Further, Digital humanitarian listserves are important for coordination, notification, recruiting, and publicizing. As the CrisisMappers listserve now has over 2,000 subscribers, this is an increasingly important space for organizing and strategizing digital humanitarian activities.

Most digital humanitarian interventions are coordinated and executed directly through Skype chat rooms, collaborative Google Drive documents, Ushahidi administration panels, and listserves. Listserves are used to communicate news, to recruit contributors, and to facilitate organizational decision-making (e.g., in/formal polls and solicitations for blog post comments). When a digital humanitarian organization has been activated, multiple layers of Skype chat rooms are often established: one for the organization itself (if one did not already exist), one specifically for the activation, and one for the group of micro-tasks to which a contributor has been assigned (e.g.,

[7] To illustrate this point, see a project I helped established: the "Ushahidi Hall of Fame" (http://ushahidihalloffame.crowdmap.com/).

translation, georeferencing, etc.). A Google Drive document (or other collaborative writing platform, such as Hackpad) is normally established to begin recording notes and eventually facilitate writing, editing, and publishing the summary report.

Each of these digital platforms is a space in which negotiations occur around needs, data, representations, and the path of future technology development. Digital humanitarian spaces exist prior to visual representation, and are laden with power relations, contingent social and institutional networks, and struggle over knowledge collection and representation. These are spaces in which relationships and knowledges[8] frame how humanitarian activities will take place, and how digital humanitarianism will contribute. Such relations manifest in formalized knowledges, and help communities build and market their "brands" to formal-sector institutions. The case of digital humanitarianism shows how knowledges are contested, legitimated, enacted, and made concrete in moments prior to the visual representation of data. These moments include, for instance, data models, categorization schemes, negotiations around data privacy, and "best practices". Digital humanitarianism differs from 'traditional' humanitarian data in its forms, sources, purposes, and representations, and these differences have implications for inclusions/exclusions; limits and frames for data interpretation; and possible humanitarian actions.

4.4 TRANSFORMATIONS IN THE POLITICAL-ECONOMIC AND INSTITUTIONAL RELATIONSHIPS AROUND HUMANITARIANISM

Digital humanitarianism signals a transformation in the relationships between the formal sector, its beneficiaries, and the data and aid constraints of humanitarian action, with an increased

[8] As I will show in the following chapters, these relationships and knowledges include who knows whom, as well as capital and technology sharing.

prominence of the private, for-profit sector. The transformation must be understood in relation to the broader political-economic shifts in which it is embedded and to which it contributes, namely, the privatization of humanitarianism. The transformations in political-economic and institutional relationships have shifted the motivations, evaluative metrics, and operational norms around humanitarian action such that digital humanitarianism can be seen as the innovation helping the formal humanitarian sector adjust to contexts of austerity and pressures to increase efficiency.

4.4.1 *Enrolling new actors*

Digital humanitarianism enrolls actors previously unable to contribute to humanitarian interventions. The new participants most notably include the public – laypeople with no formal training in humanitarianism or information & communications technologies (ICTs). Data sources such as social media enroll larger numbers of people into humanitarian information production processes, at times as volunteers and at others as unwitting contributors. For example, UN OCHA recently produced a map using data generated entirely in social media (see Figure 1). This data was generated in social media for diverse purposes, and was harvested by the Standby Task Force and Humanity Road. Similarly, VOSTs' regular operations involve monitoring social media channels to collect and share important information from the public, as well as distribute information to the public through social media[9].

[9] In both these cases, the data were not necessarily *volunteered*, as it enrolled laypeople's knowledges passively.

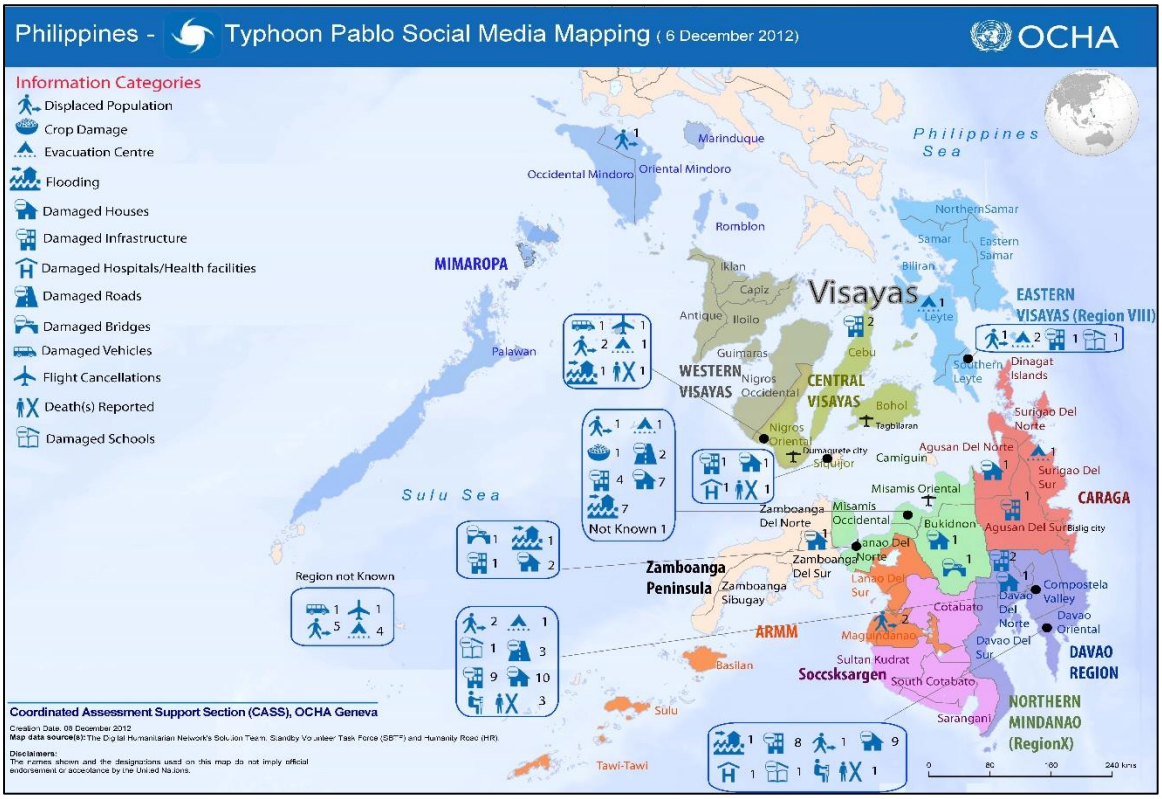


Figure 4.1. In coordinating the response to Typhoon Pablo, UN OCHA tasked the Standby Task Force and Humanity Road with collecting all relevant tweets and mapping them. Most of this data was passively harvested from Twitter.

By enrolling lay actors, digital humanitarianism extends the construction of humanitarian subjects, and these subjects' relationships with others around the globe. Laypeople who are physically separated from the site of the humanitarian crisis may now feel responsible for contributing to humanitarian interventions in ways that previously they could not. The imaginaries of who is in a crisis zone and the needs they have has expanded and gained strength through digital humanitarian technologies. At public conventions such as TED Talks, digital humanitarians regularly task those in the audience with contributing to digital humanitarianism, either explicitly asking them to contribute or by drawing the audience in to the processes by "raising awareness" that laypeople such as the audience members can contribute.

4.4.2 *Enter: private sector*

Digital humanitarianism is strongly and increasingly defined by the incursion of the private sector, based on two premises. First, humanitarianism faces advancing environments of austerity, pressures toward efficiency, market triumphalism, and threats of public-sector defunding. Geographers have identified such environments across many public-sector institutions, and situate them within the broader entrenchment of neoliberal reforms (Peck and Tickell 2002; Harvey 2005; Brenner, Peck, and Theodore 2010). The context of austerity causes the formal sector to consistently search for new avenues for saving resources and maximizing utility of existing resources. Second, private-sector actors have successfully marketed the notion that for-profit motivations lead to larger volumes of high-quality data and reliable data curation in crisis contexts. For example, Google Map Maker and Esri have both become prominent actors within the humanitarian sphere, under promises that they develop technology superior to those developed in non-private sectors (i.e., the public and non-profit sectors). Where this narrative isn't accepted hastily, such as with the American Red Cross, formal-sector agencies hold digital humanitarian datastores as *supplemental* to more traditional data.

Digital humanitarians actively welcome and embrace private-sector involvement in these new spaces, with private businesses developing their software and hardware, contributing funding, and partnering with digital humanitarian organizations. Examples of businesses involved in these aspects include Idibon, a natural language processing company that is used to automatically process social media data. Another is Infinitum Humanitarian Systems, founded by important digital humanitarian Eric Rasmussen and delivering technological infrastructure to crisis zones,

self-identifying as "a private-sector 'profit-for-purpose' business specializing in the humanitarian sciences." In these activities private sector companies contribute directly to digital humanitarianism. They also contribute indirectly, by supplying private-sector rationalities, languages, and imperatives. To this end digital humanitarians are building "best practices", adopting rationalities such as "return on investments", and other similar ideas borrowed from the private sector, and increasingly depending on the private sector to develop software and analytical tools. For example, present in most digital humanitarian after-action reports are sections on "lessons learned", a rebranding of the "best practices" notion.

4.4.3 *Digital humanitarianism as site for new capital accumulation*

The private sector is reworking humanitarianism into a site for capital accumulation through profit generation. Humanitarianism has historically been thought to exist outside the realm of accumulation, with political and ethical justifications for this segregation[10]. However, private companies have found the humanitarian sector, via digital humanitarianism, to be profitable in at least two ways. First, private companies are selling products to humanitarian workers, under discourses of "efficiency" and even a particular kind of "accountability" that only the private sector purports to be able to deliver. Major corporations – examples include Google, Microsoft, and Esri – develop software and hardware for digital humanitarianism, and market their products heavily to humanitarian and emergency management organizations. For example, at an emergency management conference I attended, a trade fair was set up for private companies to market their products. Present at the fair were 20 private companies, many of which explicitly marketed

[10] This is, however, a problematic distinction obscuring the ways humanitarianism has always in many ways colluded with capitalist expansion (Fassin 2012; Roy 2010).

crowdsourcing approaches, volunteered geographic information integration, and social media plugins. Another example can be taken from Esri's website, where they say their Humanitarian Affairs "program provides humanitarian and conservation nonprofit organizations around the world with an affordable means of acquiring ArcGIS software and services for organized volunteer efforts" (Esri ND). Notably here, the software is sold and their consumer base (of their GIS software) is expanded.

Second, becoming involved in humanitarianism is improving corporate images. Private companies are a strategy for mobilizing unquestioned and popular discourses such as "the social good" and "corporate responsibility." Digital humanitarian partnerships are meant to improve the company's image of care. Companies further benefit from the "cool factor" of digital humanitarianism, where emergent technologies are seen as world-changing, "disruptive", and as driving global improvements. As an example of this second motive, in the Google Crisis Response Team's promotional video they claim to "Do cool things that matter" and encourage their team members to do things that are "risky" because "that's what entrepreneurialism is all about" (Google ND). "It's the kind of thing that Google is good at and should be working on", they vocalize while displaying images of crowdsourced crisis maps.

Digital humanitarianism is marked by the overwhelming presence of a few large corporations, and this position has been achieved largely through aggressive capitalist maneuvers. In many cases these corporations have simply acquired smaller digital humanitarian companies and integrated those technologies into their own platforms. For example, Esri has purchased many smaller private companies that produced digital humanitarian software, while streamlining its own ArcGIS software to import OpenStreetMap and Ushahidi data. This, of course, is advantageous for the corporations as it reduces competition and allows the aggregation of a larger client base.

Other private sector incursions into humanitarianism include smaller for-profit companies developing technologies such as natural language processing software, visualization software, and aid inventory tracking hardware (RFID chips) to be used digital humanitarian projects. Perhaps the most significant boon to the private sector in digital humanitarianism has come in the form of Big Data. Companies are rushing to placate the data processing needs introduced by the emergence of social media, real-time satellite imagery, and crowdsourced data production.

Individual private-sector companies are actively using humanitarian and emergency management activities as leverage to shield themselves from a critique of their capital accumulation strategies and their incursions into the public sector. This is possible largely because these efforts are seen as inherently and incontrovertibly "good." For example, on their "Corporate Citizenship" website where they discuss their efforts to assist the formal sector, Microsoft portrays themselves as "driven by our passion to make a difference in people's everyday lives. Supporting humanitarian relief and disaster management efforts is core to our commitment to develop technology solutions, tools, and practices that can foster social and economic change" (Microsoft 2015). Similarly, TechChange is a for-profit educational website specializing in training in the use of technology for (among other application areas) emergency management. TechChange states on their website[11]: "We provide online professional development in technology and social change. Around the world, implementers in public health, emergency response, monitoring and evaluation, all struggle to solve pressing issues with limited resources." Each course TechChange offers costs individuals $495, with an optional "Diploma Track" for $995 and an "Alternative Graduate School Experience" for $4995. TechChange has reached a moderate level of success partly because it offers profit-generating training courses explicitly for "the social good". This de-politicization has

[11] https://www.techchange.org/about/

been observed in the related fields of development and social welfare programs, and is taking place in this unique form in digital humanitarianism.

4.5 Conclusion

The field of humanitarianism is currently undergoing shifts in how it collects, processes, and represents needs in the form of data. These shifts are eliciting new practices and institutional networks, as well as negotiations around needs representations and technology development. Moreover, these changes can be understood in the context of broader political-economic shifts which digital humanitarianism has emerged to partially address. In other words, digital humanitarianism consists of not just new data and software, but new social, political, and economic transformations of technology. Despite this growing importance, digital humanitarianism remains underconceptualized, and this chapter has proposed a framework for investigating the emerging field.

Chapter 5. COLLECTING DATA, TAMING DATA

"We need to recognize that all information systems are necessarily suffused with ethical and political values, modulated by local administrative procedures." Bowker and Star (2000), *Sorting Things Out: Classification and Its Consequences*

5.1 INTRODUCTION

Digital humanitarianism arises at the nexus of shifting socio-technical practices, institutional relationships, and political-economic processes. These shifts transform how data are produced and collected in humanitarian and disaster zones. The new landscape of data production and collection now entails individuals reporting their needs through social media. This shifts how the formal sector collects, interprets, and responds to needs. In the process of becoming digital, needs are subjected to a number of processes that ultimately abstract and generalize away from their original context. This is an important contradiction at the heart of digital humanitarianism: while it relies on a deluge of knowledges and need expressions, it must abstract and generalize from them in order to impact the formal sector's workflows. These processes have the additional implication of responsibilizing individuals: giving people the roles and responsibilities formerly considered to be within the state's purview, roles and responsibilities such as data production and decisions around resource allocation.

The digital humanitarian community, as well as bureaucratic formal-sector workflows and practices, frame and limit the types of needs and knowledges that can be expressed in these technologies. I call these processes "taming" needs, in the sense that digital humanitarians seek to narrow the spectrum of needs that can be expressed – and the vocabularies and instruments with which they can be expressed – in order to evidence their relevance to formal sector activities. These

relations introduce a tension between accepting laypeople's knowledges as they are understood by those individuals, and maintaining relevance to the formal sector.

5.2 SOCIAL MEDIA, FORMAL-SECTOR WORKFLOWS, AND THE PROBLEM OF NEEDS

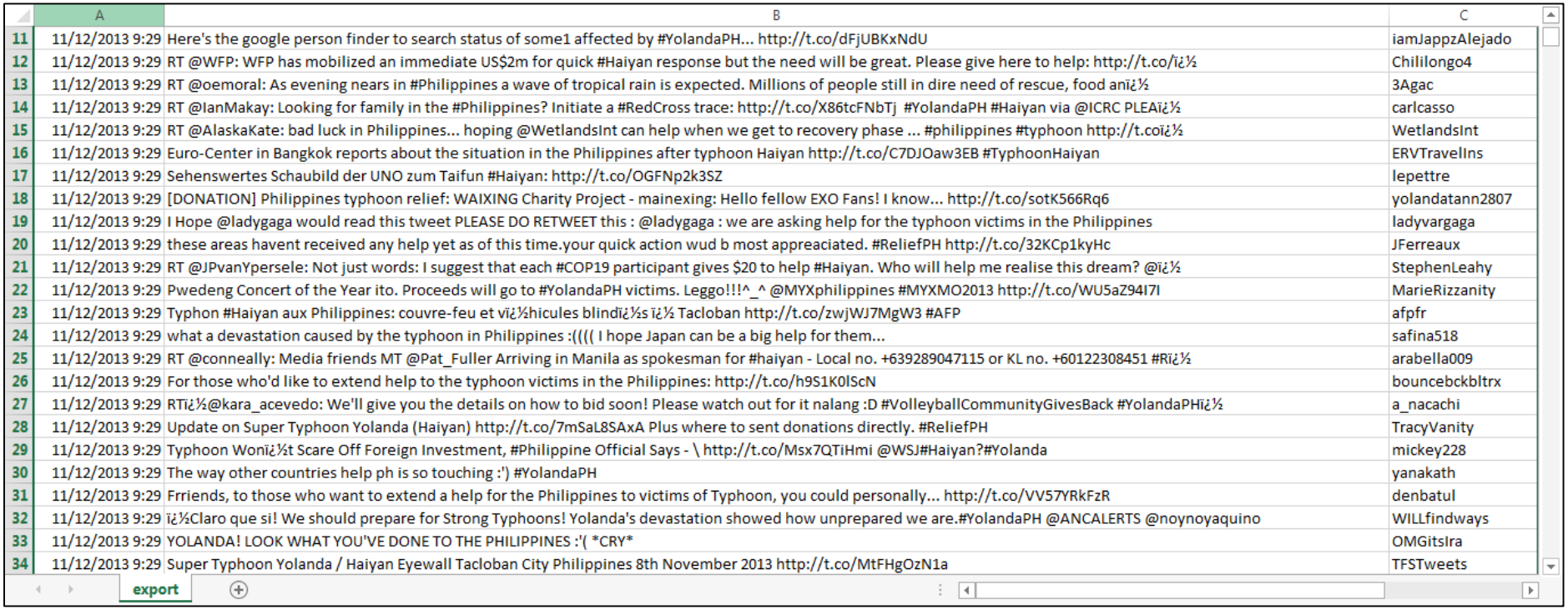
Digital humanitarianism entails new forms of data production and collection, most notably centering on the site of social media, and this signals a shift in how the formal sector interprets, prioritizes, represents, and responds to needs. In this environment, needs are the underlying social dynamic of digital humanitarian data. That is, digital humanitarian data most often capture and represent individual needs. In order to be engaged in the digital humanitarian sphere – and, digital humanitarians claim, by the formal institutions themselves – needs must be communicated as data. Social media[12] figures prominently in this sphere, as a site where needs and data are produced. This site for needs communication and data production shapes the sorts of needs can be expressed, and the ways those needs can be expressed.

Expressions of needs are central to emergency response, but expressing them through social media strips needs' contexts, and introduces interpretive complexities since these data do not easily align with existing humanitarian workflows. Social media-based needs usually relay individuals' knowledge of deficiencies in their surroundings, individuals' own lack of resources, and requests of support institutions (see Figure 5.1 and Figure 5.2.). The needs expressions shown in Figures 5.1 & 5.2 convey information related to what is needed, as well as where it is needed, and in some cases how their needs could be satisfied. These needs are diverse, in that they may include material

[12] In this chapter I use the term "social media" to refer to websites and platforms in which content is generated by users in a share-able format, rather than by the institution for display/dissemination purposes – common examples include Facebook, Twitter, FourSquare, Instagram, and Snapchat (boyd and Ellison 2008; Palen 2008; Sui and Goodchild 2011). While distinct from "crowdsourcing" in concept and practice, these can be analytically combined for the purposes of this section.

resources, psychological or interpersonal support, known deficits in one's immediate surroundings, or even requests for crowdsourced labor. In humanitarian contexts, needs are widely claimed to be stark and immediate[13] (Calhoun 2004), which accentuates the need to preserve context, meaning, and broader relationships (economic, political, etc.). Any shift in context and meaning can lead to altered interpretations of those needs and how to respond to them. By extension, such shifted response practices can have severe, unforeseen, long-lasting, and complex repercussions.

[13] Critical research on crises shows needs are more diverse than this (Smith 2006; Crawford and Finn 2014).



	A	B	C
11	11/12/2013 9:29	Here's the google person finder to search status of some1 affected by #YolandaPH... http://t.co/dFjUBKxNdU	iamJappzAlejado
12	11/12/2013 9:29	RT @WFP: WFP has mobilized an immediate US$2m for quick #Haiyan response but the need will be great. Please give here to help: http://t.co/ï¿½	ChiliIongo4
13	11/12/2013 9:29	RT @oemoral: As evening nears in #Philippines a wave of tropical rain is expected. Millions of people still in dire need of rescue, food anï¿½	3Agac
14	11/12/2013 9:29	RT @IanMakay: Looking for family in the #Philippines? Initiate a #RedCross trace: http://t.co/X86tcFNbTj #YolandaPH #Haiyan via @ICRC PLEAï¿½	carlcasso
15	11/12/2013 9:29	RT @AlaskaKate: bad luck in Philippines... hoping @WetlandsInt can help when we get to recovery phase ... #philippines #typhoon http://t.coï¿½	WetlandsInt
16	11/12/2013 9:29	Euro-Center in Bangkok reports about the situation in the Philippines after typhoon Haiyan http://t.co/C7DJOaw3EB #TyphoonHaiyan	ERVTravelIns
17	11/12/2013 9:29	Sehenswertes Schaubild der UNO zum Taifun #Haiyan: http://t.co/OGFNp2k3SZ	lepettre
18	11/12/2013 9:29	[DONATION] Philippines typhoon relief: WAIXING Charity Project - mainexing: Hello fellow EXO Fans! I know... http://t.co/sotK566Rq6	yolandatann2807
19	11/12/2013 9:29	I Hope @ladygaga would read this tweet PLEASE DO RETWEET this : @ladygaga : we are asking help for the typhoon victims in the Philippines	ladyvargaga
20	11/12/2013 9:29	these areas havent received any help yet as of this time.your quick action wud b most appreaciated. #ReliefPH http://t.co/32KCp1kyHc	JFerreaux
21	11/12/2013 9:29	RT @JPvanYpersele: Not just words: I suggest that each #COP19 participant gives $20 to help #Haiyan. Who will help me realise this dream? @ï¿½	StephenLeahy
22	11/12/2013 9:29	Pwedeng Concert of the Year ito. Proceeds will go to #YolandaPH victims. Leggo!!!^_^ @MYXphilippines #MYXMO2013 http://t.co/WU5aZ94I7I	MarieRizzanity
23	11/12/2013 9:29	Typhon #Haiyan aux Philippines: couvre-feu et vï¿½hicules blindï¿½s ï¿½ Tacloban http://t.co/zwjWJ7MgW3 #AFP	afpfr
24	11/12/2013 9:29	what a devastation caused by the typhoon in Philippines :((((I hope Japan can be a big help for them...	safina518
25	11/12/2013 9:29	RT @conneally: Media friends MT @Pat_Fuller Arriving in Manila as spokesman for #haiyan - Local no. +639289047115 or KL no. +60122308451 #Rï¿½	arabella009
26	11/12/2013 9:29	For those who'd like to extend help to the typhoon victims in the Philippines: http://t.co/h9S1K0IScN	bouncebckbltrx
27	11/12/2013 9:29	RTï¿½@kara_acevedo: We'll give you the details on how to bid soon! Please watch out for it nalang :D #VolleyballCommunityGivesBack #YolandaPHï¿½	a_nacachi
28	11/12/2013 9:29	Update on Super Typhoon Yolanda (Haiyan) http://t.co/7mSaL8SAxA Plus where to sent donations directly. #ReliefPH	TracyVanity
29	11/12/2013 9:29	Typhoon Wonï¿½t Scare Off Foreign Investment, #Philippine Official Says - \ http://t.co/Msx7QTiHmi @WSJ#Haiyan?#Yolanda	mickey228
30	11/12/2013 9:29	The way other countries help ph is so touching :') #YolandaPH	yanakath
31	11/12/2013 9:29	Frriends, to those who want to extend a help for the Philippines to victims of Typhoon, you could personally... http://t.co/VV57YRkFzR	denbatul
32	11/12/2013 9:29	ï¿½Claro que si! We should prepare for Strong Typhoons! Yolanda's devastation showed how unprepared we are.#YolandaPH @ANCALERTS @noynoyaquino	WILLfindways
33	11/12/2013 9:29	YOLANDA! LOOK WHAT YOU'VE DONE TO THE PHILIPPINES :'(*CRY*	OMGitsIra
34	11/12/2013 9:29	Super Typhoon Yolanda / Haiyan Eyewall Tacloban City Philippines 8th November 2013 http://t.co/MtFHgOzN1a	TFSTweets

export

Figure 5.1. In the aftermath of Typhoon Haiyan, digital humanitarian organizations like the Standby Task Force were asked to sort through Tweets such as these to determine if they could be of value to emergency responders.

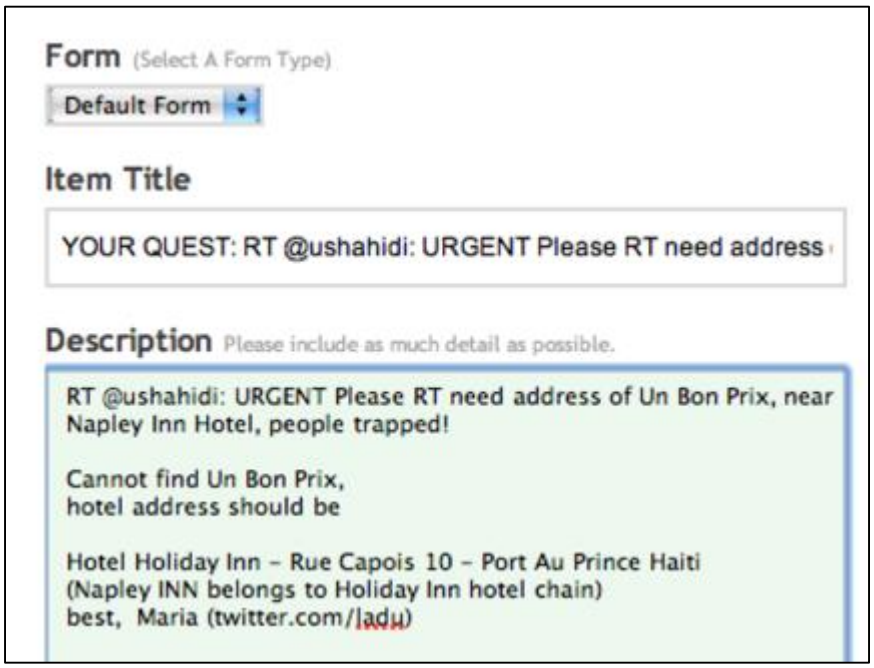


Figure 5.2. Needs communicated through Twitter were imported into the Ushahidi platform during the Ushahidi Haiti Project in 2010 (source: Meier 2010).

For example, the text in Figure 5.2 seems to request a very specific piece of information, but this is only discernable after a few moments of the viewer's interpretation: "RT" means "Retweet" on Twitter, which means making a third-party's social media post viewable by people who follow you but not the original poster – a strategy to expand the audience who views a Twitter post. As the post originated in Twitter, which limits its posts to 140 characters, the Tweet contains grammatically and syntactically-incorrect language. Deriving meaning must therefore take place somewhere outside of formal language structures, relying heavily on a users' familiarity with conventional internet communication. Still, confusion may persist around "Please RT need address", if one is to take as direct object the noun immediately following the verb "RT". Further, language is often embedded with contexts not easily encoded in computers (e.g., sarcasm, shades

of difference, hyperbole), in this case "should" might potentially mean either "expected" or normative/"proper".

Given these and other considerations, the digital humanitarian community holds mixed views about the potential of social media as a data source. Many prominent members of the digital humanitarian community claim that social media is revolutionary, a democratizing force that allows more knowledges and perspectives to be voiced and visualized (Meier 2011, 2012a). Allison, a "hacktivist" who organized many of the hackathons for digital humanitarian technology development, calls this "amplify[ing] human intent" and characterizes the paradigm as such:

> "Groups like Occupy Sandy can have the massive impact that they have because it's possible now to be distributed and be in communication with a massive amount of people. You know, instead of filing 300 people into one room in order to have a meeting about what to do next, you have online discussions and forums and new ways of building ideas and stuff like that". (Allison, 2013)

In this quote, Allison attributes to social media the virtue of enabling large numbers of people to participate in emergency response. Through social media, people are "present" when they otherwise would have been excluded. This conceptualization accentuates the democratizing potential of social media. In contrast with these idealistic notions, the community also includes much more cautious sentiments. Paul, a supplier of information to humanitarian organizations, founder of a digital humanitarian organization, and frequent speaker at digital humanitarian conferences, expressed the most common concern with regard to social media data: that information gaps lead to poor decision-making practices. By this he means that social media is always uneven – people choose not to participate, are unable to participate, or only partially participate – and this can lead to ill-informed decisions on the part of the formal sector.

Social media data production, collection, processing, and usage must fit within existing workflows if they are to be incorporated. To this end, the Virtual Operations Support Team

(VOST) concept was developed as a method of devoting multiple sources of labor to monitoring social media before, during, and immediately following emergencies. Members of VOST teams can be volunteers but are more often either shared between different levels and locales of emergency management, or "borrowed" from other departments in the same emergency operations office. A VOST "instance" is established for each emergency, and manages a local emergency management's information flows. VOSTs coordinate outside of emergencies through channels such as Skype (so they can be quickly activated in the case of an emergency) and through maintenance of labor-sharing agreements (again, so they can be quickly activated). In this sense, a VOST "instance" involves mobilizing a VOST to begin their formal work in an emergency. VOSTs monitor social media information: they publicize a designated Twitter hashtag, collect data where they deem them useful to the response efforts, and disseminate public information through social media channels. VOSTs can be understood as a strategy for formally integrating digital humanitarianism, in that they engage social media to impact emergency management practices and outcomes.

Stacy is a team leader of a VOST and important figure in the evolution of VOSTs. She has training in the formal emergency management sector but contributes as a civilian volunteer outside a formal institution. She pointed out that even within the relatively narrow confines of a VOST's purposes, there are "philosophical differences" about the precise role VOSTs as a whole should fulfill, particularly in relation to public acknowledgement of their efforts:

> "[One original VOST team leader] very much was in the camp of believing that we should be invisible publicly. In other words, that they would be developing behind the public incident management team … but not directly engaging with the public in any way. … [M]y belief was that that was not the way to go for [my VOST]. And that since we were relying on volunteer effort, that we needed to give this team some sort of acknowledgement, and … we were … to engage with the public directly with our own identity as [the local] VOST … within the control system - the Incident Command System." (Stacy 2013)

By insisting that VOST efforts (the data collected, the information published, and the emergency management practices) fit within the Incident Command System (ICS), Stacy is setting limits around the kinds of needs that can be collected and satisfied using VOSTs. For Stacy, a VOST must collect information and needs in emergencies, but only as they pertain to the improvement of emergency management within the ICS framework. Kevin is another interviewee central to establishing and developing the VOST concept, who, unlike Stacy, is employed in the formal sector as a municipal emergency manager. Kevin proposes a framework for understanding the utility of social media information which departs from the rigidity of ICS applicability, yet is structured according to "actionability":

> "…[I]t's [about] figuring out processes and tools that can be utilized and engrained into how we do business to be able to manage that flood of information. … [Emergency managers are] always doing something else - we're mediating or planning an exercise or whatever else and we need to … [gauge] whether it's something that's actionable or something else. There's a variety of sources, it's just a matter of having some system that allows you to consume it, triage it, and either act or let it sit." (Kevin, 2013) [emphasis mine]

In other words, Kevin says that his work load and disparate responsibilities inhibit his ability to incorporate social media smoothly into his information stores. He accepts the importance of doing so, but currently it appears to be an additional responsibility rather than simply a supplemental information flow. In order to compensate for the perceived additional time requirement, Kevin intends to quickly determine if information fits the popular conceptualization of "actionability." These sentiments are echoed by another formal-sector emergency responder working for a federal response agency, Jordan, who was an "early adopter" of the VOST model:

> "[W]here we're a little not sure where this fits in, in the crowdsourcing sense, [is in] being able to take information from the public and use it for operational decisions - that's different. How do you feel about things? What are you concerned about? The issues we need to address when we talk to the public, that's one thing. But for them to provide us, in a crowdsourcing way, with operational information is the area I'm still struggling with. … But the perception of the danger - the operational issue of, "where is the fire?" - I don't think we're at a point where we can ask the public to pin on a map

> where they think the fire is, because we're going to get a lot of noise in there." (Jordan, 2013) [emphasis mine]

For Jordan, social media data are riddled with information that is not useful for improving emergency response. Here, information is considered useful if it clearly and unambiguously fits within the formal sector workflows. The VOST model has not yet developed ways of sifting through the data to discard the extraneous information in order to distill what is "operational". Information not deemed "operational" should instead be considered "noise" and disregarded, either by ignoring or by filtering it out. In this, Jordan implicitly concludes similarly to Kevin, that non-actionable information should be disregarded (Kevin: "let it sit").

Digital humanitarians often accept the notion that social media communicates needs, but they are also often ambivalent about its utility to the formal sector. In evaluating this utility (or "actionability" for Kevin and "operational" for Jordan), decision-making practices operationalize a system of exclusion whereby very important pieces of information may be disregarded. The ambivalence toward data utility necessitates establishing procedures to exclude many personal needs and knowledges. In the "Connecting Grassroots to Government" digital humanitarian workshop at the Woodrow Wilson International Center for Scholars in Washington, DC, Laurie Van Leuven stated:

> "I sometimes show a … Flickr photograph that I came across that shows a tree leaning on power lines, and the description was so vivid of, this is the worst damage in our neighborhood from Hurricane Irene. It happened on this date at this time, on Broadway and 30th between 31st and you know, XYZ Street, and the shot was taken at this time showing these power lines.
>
> Now, we obviously see that the public has the capability. … Have we built a mechanism that we can make sure that that arrives to us in some manner that then we can use it as actionable information, as information that is valuable? While there's all sorts of different information accumulating rapidly that might have to do with emotional issues, or feelings of empathy or sympathy, which are very valid and appropriate uses for social media because it has to do with active coping mechanisms, but we in emergency management need to filter those out and listen specifically to actionable pieces of content." (Laurie Van Leuven, (WoodrowWilsonCenter 2012e)) [emphasis mine]

For Van Leuven, Youtube and Flickr-mediated needs may or may not be useful for emergency managers. She understands that the data represent needs, regardless of the utility emergency managers may ascribe to them. As needs, according to Jeremy's quote above, context, meaning, and relationships are necessary to preserve – despite being of dubious use to emergency managers. Rather than advocating for this preservation, Van Leuven promotes discarding emotions, empathy, and sympathy. This is not due to their status as non-needs, but rather because these types of needs cannot be incorporated into the formal sector's workflows and datastores. "Value" is here attributed to this limited conception of "actionability," isolating needs and knowledge that form a significant component of one's experience of a crisis or emergency.

These preceding quotes suggest most importantly that social media data production, collection, processing, and usage must fit within existing workflows if they are to be incorporated. This thought was reflected broadly across my interviews with the formal response sector. These workflows are comprised of both formal structures such as the ICS and informal tendencies and habits like resistance to new technology[14]. These emergency managers claim social media data cannot fundamentally reformulate emergency management information practices (in contrast with many digital humanitarians' promises).

This discussion illuminates an important contradiction: digital humanitarianism relies on a deluge of laypeople's personal knowledge, but when communicated through social media, digital humanitarians must abstract from and simplify that information in order to make the data usable by formal institutions. By abstracting and condensing from those knowledges, context and meaning are transformed. Jeremy, a human rights lawyer near the center of digital humanitarian debates, described one potential implication of this contradiction as:

[14] For instance, "There's some dinosaurs out there in emergency management land … that resist technology at all turns." (Kevin, 2013)

> "Taxonomically distort[ing] the data through categorization. … Categorization is forcing a level of pre-judgment that prevents the data from telling its own story. … You never, ever want to append or amend a primary source that's digitally collected. Because when you do that, you don't know what its significance is." (Jeremy, 2013)

The meaning and context of social media data shifts when processed. Processing digital humanitarian data is necessary, but introduces the complications of language discussed earlier. Importantly, Jeremy argues that processed data confers on them the lens of the person who processes it, because they filter it through a level of "pre-judgment" unique to that individual. Thus, digital humanitarianism abstracts and condenses from knowledges and needs to make their contribution usable, but in so doing, this information loses the qualities that made it unique in the first instance. Abstraction is even sometimes a legal prerequisite for institutional use of social media data. For example, US emergency management policies regarding publicly-identifiable information prescribe a minimum level of abstraction in order to protect the privacy of individual contributors[15].

Many emergency responders are concerned that the public expects social media-based needs to be addressed individually, and this concern magnifies uncertainty around how these needs should be incorporated. Members of the public are increasingly communicating needs directly to responders with the expectation that they will be addressed individually – the analogy made by many was a "911 call", where each call receives direct and immediate attention. In emergency management terms this would mostly fall within the operational level, where data are collected with the goal of directing resources and attention to relieve individual needs. Instead, responders have worked to retain and utilize social media at exclusively the situational awareness level, where data are gathered in order to understand general patterns and trends rather than to directly influence

[15] Office of Management and Budget Memorandum M-07-16, http://www.whitehouse.gov/sites/default/files/omb/memoranda/fy2007/m07-16.pdf

resource allocation. In this, responders' expectations misalign with the public's expectations. At the "Grassroots to Government" workshop, Alex Howard, Government 2.0 Washington Correspondent for O'Reilly Media, said:

> "…expectations have shifted, and the expectation in many cases is that people will be listening when the citizen asks for help on these networks. There was a Red Cross study a couple years ago … [that] found that a majority of people when they post an update and say I'm in need, something has happened to me, expect help within an hour." (Alex Howard, (WoodrowWilsonCenter 2012a))

Howard continued by explaining that this study caused much surprise in the emergency management field. The public expects the formal sector to engage social media as if it were an emergency request service, yet emergency managers were at the time unaware of this, and are unable to accommodate this expectation. This results in uncertainty about how, exactly, the formal sector should engage social media, in the context of limited resources, a standard set of capabilities, and public expectations. This uncertainty was expressed at least two other times at the same workshop:

> "The other concern that I have is if we create a forum for people to tell us they feel threatened or in danger, do we have an obligation to respond? We don't do wildland fire that way. … We have a larger 30,000 foot view of where we need to respond and how much exposure we're going to -- danger we're going to put firefighters in in order to accomplish a certain objective. We don't -- we're not like a structured fire department where we run to your house and put out the fire, it doesn't work that way."(Kris Eriksen, (WoodrowWilsonCenter 2012b))

Along the same lines, Charles Werner, Fire Chief of Charlottesville, VA, is well-known in the emergency management community for his department's use of social media during emergencies. He sees the potential of this development but does not think the public is well-informed of how their needs expressed in social media may be engaged. At the "Connecting Grassroots to Government" workshop, he said first,

> "We have the opportunity of the next generation 911 that's being developed, … we're trying to make sure that we address the preparation for – and deal with – social media." (Charles Werner, (WoodrowWilsonCenter 2012a))

Later he expressed a bit more caution:

> "…we have to be careful that people think immediately they can use a text message to create a 911 call … to places that aren't ready to deal with it, because if they believe an emergency response request has been made and it hasn't, then somebody's life is in danger."(Charles Werner, (WoodrowWilsonCenter 2012a))

These quotes illustrate the tension involved in aligning the public's expectations with formal-sector practices and workflows. The ways in which the public uses social media to express needs and information do not immediately parallel the formal sector's established practices around data collection and resource distribution. Uncertainty abounds for both the public and responders. Emergency responders typically work from Erikson's "30,000 foot view" of situational awareness, which contrasts with the public's expectation of operational decisions elicited by individual social media posts. At the current moment this politics ultimately sides with the formal sector, as their workflows continue to favor the established norms. Many other interviewees from the formal sector expressed the challenges associated with shifting their well-established workflows: they acknowledged that their workflows *can* change, but that doing so takes much time and effort.

This tension between the public's expectations around social media-based needs and the formal sector's structures of response can be understood through Fraser's (1988) discussion of the politics of needs. For Fraser, needs are framed, categorized, and communicated as "political," "domestic," "economic," "social," and so on, yet not all needs are recognized as matters of public concern. For instance, an expression of need may be relegated as "personal" – relating only to an individual – and thus not be a need of legitimate social and public concern. Struggles over this boundary constitute the politics of needs to which Fraser refers, and are contingent upon histories, geographies, and popular deliberations. Needs may "break out" from one zone to another, to

become issues of public concern when articulated differently. For instance, in disaster relief a "personal" need for counseling can gain social importance if framed as a structural problem, in borrowing from "social" or "economic" vocabularies and articulations. Only by this process of "breaking out" can personal needs become "subject to legitimate state intervention" (1988, 297). The state recognizes certain broader needs as "legitimate" for its interventions.

We see a politics of need being negotiated in the "filtering out" of needs that are enclaved as "personal" in digital humanitarian processes. In these processes, *social* needs are called "actionable" and *personal* needs "noise". For Van Leuven, who says emergency managers need to disregard "emotional issues, or feelings of empathy or sympathy," and others, who rely on a similar conception of "actionability," social media data should normatively ignore *personal* needs and knowledges. This is despite the fact that emergencies disrupt social, relational, and institutional connections such as friends and family support networks, access to social services, and collective trauma that are the root of such personal needs. Van Leuven, though, admits the status of these expressions as needs, but thinks someone other than emergency managers should address them, precisely because they are *personal* needs.

Such categorization is contingent on how those needs are expressed. When expressed through social media needs defy easy categorization as either "social"/"actionable" or "personal"/"noise" because they borrow from a plurality of framings, vocabularies, and deliberation technologies that don't fit existing expectations and practices of the formal sector. This plurality explains the formal response community's difficulty accepting social media as actionable information.

Formal responders are deliberating how to adapt their workflows to bring private, personal expressions of need – expressed through social media – into their own practices. This represents on the one hand their efforts to confront the current confusion around social media-based needs,

and on the other hand the expectations of users of social media. If disaster-affected communities expect direct responses to their social media-based needs, the formal response community is unclear on their obligation to respond. Of course, the digital humanitarian community is active in these debates, in part as a mechanism of self-sustainability. By reproducing clear boundaries around "actionable" social media-based needs, they ensure their future relevance to the formal response community. Both nascent processes have yet to make a sizeable impact on formal-sector workflows, but are growing.

5.3 TAMING DIGITAL NEEDS

Influential individuals within the digital humanitarian community, and rigid bureaucratic workflows within the formal sector, limit the types of data – of knowledges and needs – that can be collected, stored, and addressed in digital humanitarian projects. Because digital humanitarians are unable to instigate formal-sector changes, they must prove their utility to formal-sector operations, doing so through delivering a distilled set of social media data. In order to filter out "extraneous" data, digital humanitarians enact a plethora of methods to simplify, abstract, condense, and reduce from original data. These processes are what I call the "taming" of digital humanitarian knowledges. The act of taming this information constitutes the mechanism which excludes some knowledges from digital humanitarian projects, and establishes the terms on which other knowledges are included. At the same time, taming knowledges is the primary way digital humanitarians and the formal sector address incongruences produced when needs and knowledges are communicated through social media.

The digital humanitarian community self-identifies as an informal community and set of organizations often comprised of volunteers and laypeople[16]. Most importantly, the digital humanitarian community has worked to maintain its status as independent from – yet slated to revolutionize – formal humanitarian organizations. To be sure, many individuals in the community have ties with the formal sector, but this work is considered independent from their ties with the formal sector. Without institutionalized relations with formal humanitarian organizations, however, they have little power on their own to instigate formal-sector adaptation. Frustrated with the lack of adoption of digital humanitarian technologies, the digital humanitarian community often bemoan their lack of agency in this regard. Speaking about his early experiences in a new research position, Robert, a leading figure in the digital humanitarian community, expressed this frustration couched in terms of "awareness":

> "The main impact we have had for the past 6 months is raising awareness that something called 'advanced computing' does exist, … [and has] direct applicability to the humanitarian, development, and journalism space. Most of the talks I give now, when I interact with humanitarians, and I tell them that, 'Here's what's possible,' their eyes light up - for them it's science fiction. … But we need more people to create those bridges - to let others know, 'Look, this has all been possible for years. Why are we the last ones to adopt this technology?' We're awareness-raising and creating possibilities." (Robert, 2013)

In this quote Robert carefully maintains distance from the formal sector, but claims a direct contribution to the latter. Enduring gaps between digital humanitarians and the formal sector frustrate digital humanitarians, as they seek stronger ties and connections without becoming entirely integrated.

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[16] See, for example, the Standby Task Force "About" page (http://blog.standbytaskforce.com/about-2/): "In the aftermath of some of the recent disasters we have witnessed an increasing number of informal actors, largely volunteer based, entering the field of crisis mapping for humanitarian response. The development of ICTs has opened unprecedented space for engagement to a variety of individuals and groups, regardless of their physical location and affiliation to traditional responders."

Because of their limited agency to instigate formal-sector changes, digital humanitarian technologies and practices must fit into extant formal-sector rules, procedures, hierarchies, and workflows. These include, for example, the Incident Command System (ICS), which determines the standard coordination of processes, information, efforts, and personnel for the US-based emergency management sector[17]; and the United Nations cluster system, a way of organizing and coordinating different humanitarian efforts by topic (e.g., education, health, logistics)[18]. These frameworks and procedures shape the ways in which command, decision-making, and coordination occur, and are informed by "best practices," academic research, and post-emergency evaluations. In the case of the ICS (and others), they are also sites where the digital humanitarian community contests the rigidity of the formal response sector. In interviews members of the digital humanitarian community expressed frustration with what they perceive as the slow, unnecessarily bureaucratic nature of emergency response and humanitarianism, which they argue hinder the adoption of "disruptive" technologies.

In practice, the existence of these institutional rules and systems means that for any given activation, digital humanitarians must prove how their operations will follow these structures. Jeremy, a human rights lawyer, has doubts about how the "crisis mapping community" can contribute in this way:

> "Meanwhile, the crisis mapping community is unclear yet as to what it's doing. Are they collecting? Are they curating? Are they having a protective effect? Are they facilitating response? Are they facilitating documentation? Are they facilitating in an unintentional way governmental situational awareness?" (Jeremy, 2013)

[17] See the Federal Emergency Management Agency's description of the ICS (http://www.fema.gov/incident-command-system) for more information.
[18] See the UN Office for the Coordination of Humanitarian Affairs chart of the different clusters (http://www.unocha.org/what-we-do/coordination-tools/cluster-coordination) for more information.

Jeremy points to specific roles and functions within which organizations and individuals must fit in order to impact the operations of formal humanitarian and emergency management organizations. There are clear rules and principles that govern each of these positions, and such structures have developed in order to streamline efforts and maximize each contributor's impact. If digital humanitarians do not occupy a precise role within this framework, they could potentially confuse the operation as a whole.

Jennifer, an independent consultant to a regional formal emergency management agency, expressed this doubt: "I think that's probably true, that crisis mappers don't understand emergency management." Throughout our interview, Jennifer expressed her frustrations with "crisis mappers," who she sees as amateur technology developers who want to contribute to something "good" without knowing how. In fact, our interview initiated quite roughly, as her initial goal was to chastise (in her terms) my field and inform me that crisis mapping harms emergency management more than it helps.

Thomas, a high-level staff member of FEMA, considered the likelihood that the disconnect between digital humanitarians and the formal response sector might be linked to a lack of direction and leadership from the formal sector:

> "[T]hese communities need to get their priorities of what they're working on from enlightened emergency management communities. They shouldn't just, like, 'Let's just start mapping!' … But I think we should be thinking more about helping our technology volunteers prioritize what they do and why they're doing it. … [T]here should be more integrated planning of using these technology volunteer groups."(Thomas, 2013)

Thomas here begins from the argument that digital humanitarians currently do not adopt their workflows and goals from the formal sector. This constitutes a disjuncture between the two, and results in the scattershot approach decried by Jeremy and Jennifer. Thomas differs from the others in arguing the formal sector is partly responsible for the enduring disconnect, and could contribute more to incorporating digital humanitarians.

When digital humanitarian projects are independently conducted outside the realm of formal responders' sanctions, they are typically either ignored or taken merely as evidence of public reactions. In the latter case, such data emerge unmediated from the public and generally follow relaxed submission guidelines, only loosely following an overarching topical focus. Because of these qualities and the fact that the data are produced outside formal sanctions and delegation, such data are usually ignored. For instance, Hannah, an employee of the New York Office of Emergency Management and occasional participant in digital humanitarian projects, explained to me on a tour of the Emergency Operations Center (EOC) that despite having observed over 40 Ushahidi instantiations during Superstorm Sandy in 2012, the EOC did not use a single Ushahidi platform for data/information collection, and in fact monitored social media only to get the "pulse" of the emergency. The "pulse," in this case, referred to the EOC's building situational awareness using Geofeedia and ESRI software. Taking this "pulse" is not meant to directly impact decision-making practices, but rather to provide the broadest-level understanding of general citizen sentiments. These extant processes, frameworks, and decision-making practices, to which digital humanitarians must adhere, contribute to asymmetrical power relations between the formal sector and the digital humanitarian community.

The formal sector rejects digital humanitarianism for being random and unsystematic, so digital humanitarians have responded with multiple efforts to ensure they are storing legitimate, valuable data. They have created their own data governance practices that further the process of "taming" data. Digital humanitarian actors set boundaries around the kinds of information that will be captured and stored as data in their platforms. For example, they may only store data deemed "useful."[19] In a public blog post, Patrick Meier considers many empirical studies of how "useful"

[19] Other synonymous terms used often include "value," "utility," "worth," and "usability."

Twitter data ("Tweets") have been in various crises and emergencies (Meier 2012b). Leaving unaddressed the question of how utility is framed and the knowledges (potentially actionable by another definition) that are marginalized from such framings, Meier suggests discarding tens of millions of tweets not deemed "informative, … relevant, actionable and timely disaster information." This blog post, after having been posted to the CrisisMappers listserv, spawned at least eleven responses (a high number of responses for this listserv) regarding what constitutes "value" in digital humanitarian social media (CrisisMappers 2012). Likewise leaving to one side the question of how utility is framed, Sarah Vieweg's (2012) dissertation work classified tweets into three categories to determine their utility for situational awareness: "Off-topic," "On-topic, irrelevant to situational awareness," and "On-topic, relevant to situational awareness." The latter, which served as the focus for the research project, was defined as "tweets [that] are relevant to situational awareness; they contain information that provides tactical, actionable information that can aid people in making decisions, advise others on how to obtain specific information from various sources, or offer immediate post-impact help to those impacted by the mass emergency." These framings of "relevant" and "utility" seem to hearken back to the formal sector's established practices, rules, and procedures, without critically examining the information potentially omitted in such framings. That is, digital humanitarians filter data purportedly to make it usable by humanitarian actors, and in the process of doing so, necessarily exclude some needs and knowledges. Such accounts, and the multiple studies used as supporting evidence (Sinnappan, Farrell, and Stewart 2010; Guskin and Hitlin 2012; e.g., Kongthon et al. 2012), fail to interrogate the tensions between reliance on large datasets and key members determining which information has "utility."

Another dimension of "trust" influences the needs digital humanitarian leaders will consider relevant. In most cases digital needs must be either reported by "trusted" sources or verified by them to be included within the purview of digital humanitarianism. Consistently across interviews, digital humanitarians expressed the need to weight incoming information in terms of the trust placed in those individuals. If needs were being expressed or validated by trusted sources, those needs should be considered "legitimate." Trust itself is difficult to establish, as most interviewees said this takes years of relationship-building prior to an emergency or crisis.

Beyond these dimensions of utility and trust, digital humanitarians introduce *moments of closure* on the forms of needs that can be collected. Digital humanitarianism is most essentially a set of socio-technical practices, and decisions (e.g., about which needs to acknowledge) that become inscribed in software and data models. These decision-making practices – moments when some knowledges are written out of digital humanitarian platforms – are made more permanent by the software and code that underlie digital humanitarian platforms.

The digital humanitarian community bounds the ways in which their technologies will be engaged, and thus used in the future. These bounds result from struggles around epistemologies, knowledges captured, "best practices," and so on, and comprise these "moments of closure". For example, Humanitarian OpenStreetMap Team (HOT) members regularly deliberate what forms of data should be included in their data model; such deliberations often foreclose on non-Cartesian ways of knowing the world, and thus on non-Cartesian ways of expressing need. For example, in April 2012, a new HOT member began discussion on the HOT listserv regarding potentially supplementing the existing HOT data model with hazards information (Henriod 2012a). The member noted that while hazards information is quite useful for emergency and humanitarian managers, this form of data cannot be collected and stored within the HOT data model. Initial

resistance to this idea was largely based on two premises: that the data model should only include objects visible on the ground, and collectable by a layperson (Chapman 2012b). The original poster noted in response to the first premise that local people often have specialized knowledge of their areas, in particular of phenomena that may not be visible on the ground, such as in oral histories of natural disasters (Henriod 2012b). Another member disputed that hazards information can't be collected by laypeople, arguing that this premise excludes communal knowledge and memory (i.e., "'There's a minor landslide on this foothill almost every year' or 'My father told me that once there has been a massive flood that destroyed 10 houses'''(Henriod 2012b)) and is therefore contradictory to HOT's democratic goals (Lovell 2012). Over the course of several emails, it was eventually decided not to include hazards information, and instead, these data were added to a fork (duplicate) of the HOT data model (Burns 2014a).

This moment of closure implicates not only the ways information is represented, but also the ways those technologies may be leveraged in the future. Representations frame and make claims about people and places, and therefore some ways of knowing people and places are privileged in such decisions, and others marginalized. How places and people can be represented – that is, the sorts of representations that are available for digital humanitarians to leverage – is directly impacted by these moments of closure. In other words, the technological closure on particular ways of knowing could potentially frame the ways in which local disaster- and crisis-affected communities use the technologies. In digital humanitarianism, non-Cartesian knowledge, such as spatial memories, communal knowledge, and emotional geographies are often excluded from digital humanitarian platform representations.

These moments of closure collude, conflict, and come into tension with established practices and workflows extended there from the formal sector. Kevin, who works as a formal emergency

manager and is utilizing and developing digital humanitarian practices and technologies, puts forth two ideas pertinent to understanding control and power in digital humanitarian sources of needs:

> "We've been using the same threat-themed hashtags in [my state] for 3 years. … So, … [we] let people know that if it's about fire it's #WAFire; if it's about weather in general it's #WAWX … [I]f somebody posts something that doesn't make sense, I'll ping them back, clarify, and then they'll clarify, and then we've got this dialogue going, and then I can steer them into a better way to provide better information. Whether it's, "Put a timestamp on that," or, "Give me a milemarker on the highway" or whatever. But I would do that if they were calling me at dispatch, too…" (Kevin, 2013)[20]

Here, Kevin acknowledges intentionally directing users of social media into expressions of need (and knowledge) that conform to emergency management protocols. Rather than digital humanitarian practices enabling more ways of legitimately expressing need, digital humanitarian data must adhere to existing workflows and practices, and the way of getting there is through "taming" digital needs. In the quote above, Kevin says he works to reduce the number of ways people can express their knowledge: timestamps and milemarkers are among the many pieces of relevant information needed that may not be expressed in an individual's social media post. In contrast with the dominant perceptions of social media – that they enable individual expressions of need on people's own terms – Kevin conceptualizes social media as a technological extension of the "older" technology of telephone dispatch. As such, social media forms of need data do not – or should not, for Kevin – enable the users to express needs in more flexible, personal, or individualistic terms than what was previously possible.

Synthesizing from these examples draws out an important principle. While digital humanitarians promote their community as inclusive of laypeople's efforts and knowledges, those lay efforts and knowledges are subject to hierarchies of influence and to fitting within the formal sector's established workflows. Digital humanitarian technologies are promoted based on their

[20] The hashtags in this quote have been changed to protect the identity of the interviewee.

ability to enroll laypeople's efforts rather than rely on the hierarchical and bureaucratic formal sector; a substitution of the "expert" from the formal sector to the layperson. In contrast, I have shown here that within needs and knowledge are "tamed" through several mechanisms, including moments of closure, evaluation of "trust", and fit within existing workflows and practices. Needs must be subjected to these processes in order to abstract and generalize to a form deemed "usable" by the formal humanitarian sector. Still, there are few demonstrable cases when the formal sector used digital humanitarian technologies and data to directly inform their decision-making practices. Digital humanitarianism perpetuates an unequal landscape where needs expressions are politicized, deliberated, and marginalized.

5.4 RESPONSIBILIZING THE DIGITAL HUMANITARIAN LANDSCAPE

In this chapter I have shown that digital humanitarianism involves expressions of needs in digital forms in social media, and that these expressions do not fit within existing formal workflows so they are "tamed" to fit. These processes have the additional implication of making individuals *responsible* for humanitarian collaboration, for need expression, and for those affected by disasters. Responsibilization is a process central to shifting relations between the state and governed citizens (Rose 1999), comprised of making individuals responsible for their own self-governance, and accepting the responsibility for roles and duties formerly provided by the state. Responsibilization is unfolding in the reconfigured humanitarian aid delivery, and digital humanitarianism is a primary vehicle for this shift. In this final section I explore the three layers of responsibilizing that occur in digital humanitarianism: digital humanitarian collaborators responsible for producing and processing information, disaster-affected people responsible for expressing their needs, and digital humanitarians responsible for conducting humanitarian work.

The individual collaborator on digital humanitarian projects is now responsible for producing and processing information from their (usually) remote location. This collaborator is generally a layperson, sometimes with skills such as computer programming or hacking, "geolocation," non-profit management, or collaborative leadership. This person is not necessarily associated with a formal-sector institution: laypeople can now collaborate on humanitarian projects to "save lives." Digital humanitarianism channels our current humanitarian moment with suggestions to the effect of, "Since we can help, we should" (Calhoun 2004). Such responsibilization, while most strongly directed toward those already actively participating, also stretch to the general public, urging them to get involved.

This responsibilization introduces two limitations. First, the knowledge of a crisis one can possess from remote locations is of a different sort than those one might possess by being more proximate to it. The kinds of personal, contextual, and situated knowledges of those in disaster-affected areas are unknowable to remote observers, and in transmission would be internalized and understood in different terms. In other words, there is a gap between what a local individual might know and what a digital humanitarian can know. Digital humanitarian technologies have been developed to circumvent this discrepancy: these usually entail processing limited forms of data and in limited ways. For example, HOT members may trace satellite imagery, and the SBTF often simply categorizes tweets and images. In the first case individuals process standardized data that are absent need expressions, and the second involves simply abstracting from original data sources. However, individuals in direct experience of crises express needs in highly personal ways unknowable to remote volunteers.

Second, contributors are limited by the institutional frameworks around digital humanitarian activations. Upon activation, the activating agency (e.g., the UN) provides a list of specific goals

and requests of the digital humanitarian organization (Capelo, Chang, and Verity 2012). Digital humanitarian "products," so to speak, must be able to be integrated into formal operations and must satisfy the activating body's specific demands or requests. This means that contributors are unable to contribute in the ways they see fit, or in ways that do not directly address these requests. Lay actors are mobilized through responsibilizing forms, but are mobilized into particular structures and constraints.

With digital humanitarianism, disaster-affected individuals and those in disaster-affected areas are also made responsible for expressing their needs and knowledges. A large portion of digital humanitarian data comes from social media sources, comprised of individual expressions of need in the form of Tweets, Instagram photos, and other social media posts. Without this stream of data, digital humanitarianism would not be able to function. As discussed above, these expressions are highly governed and tamed, but people must first produce the data to be considered in digital humanitarian technologies and outputs. These people are expected to express their needs as data, but more importantly, in ways that the digital humanitarian community and formal response institutions will recognize as legitimate, actionable, and informative.

This responsibilization produces multiple inequalities and exclusions. First, expressing individual needs for digital humanitarians requires a technological infrastructure that has often been disrupted or compromised in crisis zones. One study has shown that SMS messages in the Haiti earthquake relief left large areas of the city under-represented (Currion 2010); and in an interview, Quinn, a local community leader in the Rockaway Peninsula of New York City, told me that large swaths of her neighborhood were entirely cut off from communication channels to the rest of the city in the aftermath of Superstorm Sandy. SMS reception is far more resilient than internet, power, and computer access, but is much more limited in its technological affordances.

Likewise, security concerns in many crisis-affected areas have led to lack of participation by locally-situated individuals (Jasmine, personal interview).

Second, potential contributors must possess the technical skills to express needs digitally. With the advent of digital humanitarianism, this means they must be at minimum able to SMS, but also to SMS in ways that will be interpretable by the digital humanitarian community. For more advanced expressions of needs, such as mapping a need in Ushahidi, a much more substantial skillset is required, and contributing to OpenStreetMap even more. HOT is involved in building community groups around OpenStreetMap, but in crises members of these groups may subject to similar pressures as their broader community.

Third, crisis-affected people are limited by the languages, vocabularies, and representations they are able to leverage effectively. How needs are communicated determines whether or not they will be considered the purview of state intervention. These articulations may help move needs from private/domestic concerns to concerns of the public, when they are granted "legitimacy" for the purposes of humanitarian intervention, or when humanitarian workers deem those needs "actionable." In other words, the responsibilization of disaster-affected individuals presumes ability to express needs equally well and appropriately; instead, these individuals are faced with choosing between multiple ways of expressing needs, and some individuals are less able to communicate those needs in ways that increase the likelihood of their being addressed.

Beyond the remote contributors and those near the crisis, the digital humanitarian community itself is in incipient stages of being responsibilized. The digital humanitarian community is being made responsible for conducting humanitarianism which was previously the responsibility of formal sector institutions[21]. That is, non-state, loosely coordinated groups of volunteers are slowly,

[21] To be sure, the digital humanitarian community eagerly encourages this responsibilization. This is likely due to a number of factors, including publicity for new "disruptive" technologies, personal

but increasingly becoming actors responding to humanitarian crisis needs. At this early point, digital humanitarian activities largely consist of scattered, disjointed projects, but continuity is increasing and disparate organizations are strengthening their networking efforts. Organizations such as the Digital Humanitarian Network, the Commons Lab of the Wilson Center, and the International Network of Crisis Mappers have contributed to these efforts and have begun bridging the gap to the formal sector. For instance, the Commons Lab has supported several policy-related publications intending to bring digital humanitarianism more closely into the workflows of formal emergency management agencies (Crowley and Chan 2011; Robson 2012; Burns and Shanley 2013; Goolsby 2013; Reidenberg et al. 2013). The Digital Humanitarian Network has established more direct connections between the two communities, and has now coordinated the deployment of digital humanitarians to at least four formal-sector projects[22]. Under these conditions digital humanitarians are unlikely to uproot the traditional humanitarian institutions, but are projected to factor more heavily into humanitarian workflows.

As before, several concerns are raised by this transformation. First, digital humanitarian organizations are limited by their ability to address the needs of the formal sector. The former cannot, for instance, directly transform humanitarianism. Their influence will increase or decrease in relation to the ways in which they are able to meet the needs of the formal sector. This integration raises many other technical, security, policy, and operational concerns. For instance, many concerns have been raised about the security of data in digital humanitarian platforms and how data security breaches may have put crisis-affected communities at even greater risk (Meier 2013; Martin, personal interview). Further, many policy concerns have been raised regarding missing

fulfillment in having done something "good," and idealism toward the revolutionary potential of digital humanitarian technologies.

[22] See: http://digitalhumanitarians.com/program-status/inactive

persons data, as it is collected, processed, and observed by digital humanitarians (Reidenberg et al. 2013), as well as personally-identifiable information and privacy/surveillance (Burns 2012).

Recognizing these differential processes of responsibilization is important because they draw attention to the ways in which inequalities are (re)produced in digital humanitarianism, a field which prides itself on being democratic and egalitarian. These inequalities should be seen as social, discursive, and political, yet having material implications for individuals' well-being. Here I considered how inequalities stem from the different ways in which people are able to satisfy their new "responsibilities."

5.5 Conclusion

In this chapter I have shown that digital humanitarianism introduces new forms of data production and processing in humanitarian and disaster zones, mostly through the site of social media. Digital humanitarian data represents needs, but these digital needs do not fit within existing formal-sector workflows. This form of data has thus emerged hand-in-hand with the processes of "taming" digital needs – categorizing, translating, and abstracting from original data sources. Through the deliberations around taming – how the data should be categorized, for instance – digital humanitarians hope to make data legible and actionable for the formal sector, which for the most part is uncertain as to how social media needs should be addressed. Thus, taming is one way of many that digital humanitarians work to make their work valuable to the formal sector, and taming occurs mostly by digital humanitarians rather than by formal-sector actors. While the rise of digital humanitarianism is usually credited to the deluge of data – that is, needs and knowledge – produced through social media, these data must be "tamed" in order to be engaged by the formal sector. Through taming and "moments of closure", the digital humanitarian community, as well as rigid

institutional practices, structure the kinds of information that can be included in the technologies, as well as the ways in which the technologies can be engaged. The new forms of data production and processing effectively responsibilize, meaning they result in shifted responsibilities from the state to non-state actors.

Chapter 6. WHO NEEDS DIGITAL HUMANITARIANISM? AND WHY?

"[T]he politics of needs [comprises] three … moments. The first is the struggle to establish or deny the political status of a given need, that is, the struggle to validate the need as a matter of legitimate political concern or to enclave it as a nonpolitical matter. The second is the struggle over the interpretation of the need, the struggle for the power to define it and, so, to determine what would satisfy it. The third moment is the struggle over the satisfaction of the need, that is, the struggle to secure or withhold provision." Nancy Fraser (1988), "Talking about Needs"

6.1 INTRODUCTION

In the text above, Fraser underscores the politics involved in framing, defining, situating, and interpreting – in a word, *representing* – needs. Those with needs and those able to address them are involved in a struggle for how those needs are admitted into public discussions. This struggle, in turn, depends upon certain ways of expressing, explaining, and justifying those needs as, at times, valid for intervention by particular parties (e.g., the state). Whether needs will be satisfied, and the ways in which they will be satisfied, depends on these struggles over representation. In other words, as Christy, one of the most prominent digital humanitarians told me in an interview, "the way you *represent* data impacts how you *make decisions* based on it." That is, the ways digital humanitarians represent needs will impact how the formal sector will respond to them.

Here I use "represented" to mean the qualities, characteristics, origins, and epistemologies that are captured in the practices of collecting, processing, and storing needs as data. In other words, when needs are collected, processed, and stored, these artifacts to a degree reflect the social, political, and economic conditions and relations in which they emerged. Thus, in this discussion processes of representation extend beyond the visual or cartographic display of data.

In this chapter I examine how needs are represented in the new digital humanitarian landscape. My argument proceeds by looking first at *who* digital humanitarians construe as needing their labor and technologies. I argue that these targets are both those affected by humanitarian crises and formal-sector institutions, who digital humanitarians argue "need" the innovation they are generating. Next, I argue that those needing digital humanitarianism are produced and represented in particular ways to justify digital humanitarian interventions both within and outside of specific conflicts.

6.2 WHO NEEDS DIGITAL HUMANITARIANISM?

The most important condition driving the rise of digital humanitarianism is its production and framing of individuals and institutions with needs. Digital humanitarianism must actively construct the subjects who "need" digital humanitarian intervention – and what those needs are – in order to justify its efforts. Representations of these individuals and institutions occur in the practices of need collection, processing, visual display, and interpretation. In order to justify digital humanitarian intervention, these articulations must be produced for every context and activation, both before the crisis and during the activation. These framings of needs produce those with the needs, but also the notion that digital humanitarianism can – and therefore should – satisfy those needs. Digital humanitarianism produces two kinds of beneficiaries: those affected by humanitarian crises, and formal institutions. Digital humanitarians distinguish between these two because doing so allows them to devise targeted strategies for extending digital humanitarians' reach of influence and for justifying their intervention(s).

6.2.1 *Who needs digital humanitarianism? Affected individuals*

Affected individuals and individuals in affected places are framed as needing digital humanitarianism at conferences and workshops, in Skype chat rooms, and in promotional materials. The digital humanitarian community expects these people to use their technologies either to contribute information or to help process and visualize others' information. In these scenarios, affected individuals and those in affected areas need digital humanitarian technologies in order to express their needs and document their knowledge. Digital humanitarians articulate these needs through notions of identity, belonging, and responsibility, ultimately enabling them to enroll this additional labor in their work. For example, Map Kibera[23], established in 2009 by two US-based digital humanitarians, sought to provide a platform for Nairobi's slum residents to produce open geographic data about Kibera by mapping it in OpenStreetMap. Map Kibera "makes Kibera's needs visible" by "empower[ing]" (Tavaana n.d. n.p.) residents to map "data, news reports, and … information about themselves and their community, and to use that information for action" (Map Kibera and Voice of Kibera 2010, 19). Note that even though the originators acknowledge a large non-governmental organization presence in Kibera, the platform was marketed in terms of Kibera residents' responsibility to others in the area, which could be satisfied using digital humanitarian technologies. In this case, digital humanitarians frame the Map Kibera project, subsequently producing the individuals who need the map technology. Through this framing, Map Kibera was able to attract locally-based labor towards generating large amounts of data[24].

[23] See: http://mapkibera.org/

[24] Importantly, the project initially faced some skepticism from Kiberans, possibly because the initiative did not originate locally (Tavaana n.d.). Locals were indeed the "main challenge the project faced".

Both digital humanitarians and formal humanitarian agencies articulate crisis-affected individuals and communities as in need of digital humanitarianism. To date, UN OCHA has been the organization most involved in digital humanitarianism, with US Agency for International Development (USAID), American Red Cross, and FEMA also involved in varying capacities. Formal humanitarian agencies produce subjects of digital humanitarianism in similar ways to the subjects of traditional humanitarianism. David, a senior level manager at a humanitarian agency and active digital humanitarian, described this process in terms familiar to him as a formal humanitarian worker. He explained Humanitarian OpenStreetMap Team (HOT) contributions to the formal UN cluster system, when HOT is activated to map a particular area:

> So they're actually getting datasets that can be shared - they're what we call fundamental operational datasets. So you can see… all the water points that are known about in Mali. Here's all the schools that are in Mali. …[Y]ou had all those little schools and if there happened to be a flood in Mali, … you would know, "OK, well, this area is flooding. Here's where all the schools are, and those are probably going to become shelter points. And that means all of this many number of kids are going to be out of school." So, you know, you start to have this data which can help you do analysis at the time of a crisis as well. Helps you do better-- better preparedness, better response, and so on. (David, 2013) [emphasis mine]

Here, David explains that organizations within particular humanitarian clusters[25] often tabulate the needs of a set of people (i.e., neighborhood, village, city, region, etc.), and he enlists digital humanitarians to lay the groundwork for these needs assessments. Digital humanitarians and the data they produce are the intermediary between formal-sector institutions and the people they assist. Further, these data are required for humanitarian operations to take place, framing needs to guide assistance. Without digital humanitarians listing the needs of those near crises, the humanitarian project's quality, speed, and efficiency would be compromised and the help would

[25] The UN cluster system, as described in Chapter 5, is the division of humanitarian labor by application area. For instance, health (e.g., World Health Organization), education (e.g., United Nations Children's Fund), and food security (e.g., World Food Program) are three prominent clusters. The clusters are all coordinated through UN OCHA.

be delayed. Thus, crisis-affected people and people in affected areas here are represented as needing digital humanitarianism in order to justify those interventions.

Some in the formal sector admit that this approach has limits, however. Peter, an information manager at a division of the Red Cross, offered to me one of these limits (and a crucial provocation to digital humanitarianism):

> "And I would … say, 'well, who was using [digital humanitarian data]?' And you'd probably see, if you had a user map, it would probably be everyone with the Internet in those areas, and no one else. And that's the danger for us. We're trying to work with the most vulnerable communities in most cases, and they by definition might be economically disenfranchised and not have - or care about - the Internet."(Peter, 2013)

Peter here points to three limitations to representing people as needing specifically digital humanitarianism. First, he asks for whom these representations are produced – in whose interest? The three challenges identified by Peter suggest that digital humanitarian technologies are only able to produce a limited characterization of its beneficiaries. First, he questions the ultimate purpose for the creation of digital humanitarian data. For Peter it is unclear if representing individuals and communities as needing digital humanitarianism serves the interest of those who have been affected. Second, Peter doubts the fairness and utility of representing crisis-affected people through digital humanitarian technologies, when access to those technologies will be disrupted in crisis-affected areas. Those affected by a crisis will necessarily be represented in a limited fashion by virtue of disrupted communications channels. Third, Peter implies that both digital and formal humanitarians assume that crisis-affected people desire to communicate through digital technologies. This assumption would clearly not encompass those who wish to communicate through other channels.

6.2.2 *Who needs digital humanitarianism? Formal institutions*

Digital humanitarianism is most intent on representing formal institutions or the entire sector as needing digital humanitarianism. Even though digital humanitarians mention "saving lives" and helping "those on the ground," disaster-affected communities are largely not the intended end-users of needs representations. More often, digital humanitarians are concerned with improving on established practices.

Digital humanitarian projects are commonly established, funded, and commenced without a formal institution expressing a need for that project. The formal humanitarians often have not expressed a need for either the platform itself or the resulting data. Peter expressed frustration with the disconnect between digital humanitarian projects and the needs of formal-sector institutions, as evidenced at the International Conference of Crisis Mappers (ICCM):

> "I was pretty disappointed by this year's Crisis Mappers. A good level of lack of awareness of how we're going to apply things, seemed to be a taboo question to ask. We saw any number of cool-looking Big Data shit and no-- very few answers to, 'And this is being used by X, or this is being used by Y.'" (Peter, 2013)

This frustration was echoed by David, at a UN agency, has perhaps a more nuanced understanding of this problem:

> "[T]here's not too many people that I know of that are using some of the more modern crisis mapping tools like the Ushahidis or the Google Crisis Maps … [for] their decision factors. And that's partly the platforms, it's partly the people who aren't familiar with the technology, it's partly with how the information is served for the purpose of the decision-makers. ... [I]f … I'm driving, you know, down side streets and bumpy roads in the back of an SUV, I can't have somebody tell me, 'All this information's on a map.' And on the map I have to go and click on all these dots, and zoom in and keep clicking, clicking, clicking to try and find out things that are relevant for me." (David, 2013)

Here, David is critical of digital humanitarians' lack of understanding of the formal humanitarian sector, but also what he perceives as their single-minded drive toward online mapping technologies. Neither of these benefits his decision-making practices. He advocates for digital humanitarianism, yet bemoans the disconnect between his needs as a formal responder and the

technologies digital humanitarians produce. Other formal responders at UN OCHA have picked up on this notion, publishing "Guidance for Collaborating with Formal Humanitarian Organizations" (Waldman, Verity, and Roberts 2013), a training manual of sorts to educate digital humanitarians on the needs of the formal response sector[26]. The preceding quotes suggest digital humanitarians develop technologies prior to the expressed need for them. Neither formal institutions nor the sector as a whole have solicited the specific technologies that exist today.

Digital humanitarian technologies have emerged with this disconnect. The technologies are "entrepreneurial" in the sense that funding often comes from the private sector, presentation and style often outweigh content and functionality, and the technologies are young and marketed heavily across multiple venues. For example, at 2013's ICCM several such technologies were showcased in brief, 5-minute "lightning talks": mFieldWork[27], iHub Research[28], CaerusGEO[29], and GeoPoll[30]. The ICCM itself can be characterized as "entrepreneurial", since its funding comes largely from the private sector, it is a relatively young network heavily marketed across multiple venues, and style often trumps content. This entrepreneurialism contributes to the disconnect by prioritizing the proliferation of their technologies rather than the improvement of formal-sector efficacy.

This disconnect induces digital humanitarians to articulate the formal sector as needing their technologies and labor, by invoking the notion that technology drives social change. Digital humanitarians frame the formal sector as having needs that they can satisfy by developing

[26] Notably, the key author on this document, Andrej Verity, also co-published a report educating in the other direction, "Guidance for Collaborating with Volunteer & Technical Communities" (Capelo, Chang, and Verity 2012).
[27] See: http://youtu.be/I9Nmvw5C320
[28] See: http://youtu.be/7xlw9IO_b0Q
[29] See: http://youtu.be/d-40uoTyltA
[30] See: http://youtu.be/LzakHbQIUaU

appropriate technologies. This understanding of technology-driven social change is exemplified at many moments in digital humanitarianism, commonly by assuming that social problems arise and perpetuate from the lack of a technology to solve them. For a clear example of this conception of technology, take an email exchange on the CrisisMappers listserve. Terra Friedrichs initiated a conversation:

> "Building a tool without a committed user base, that has expressed real interest in such a tool, is a waste of time. In other words, 'thinking' that a user base exists is not like 'having' a user base. So like, for example, assuming that users will enter good data onsite at disaster relief locations without actually having these users ahead of time, who have committed to enter the data and to guide the development of the tool is 'engineering focused.' Rather than 'user focused'.
>
> … What we, as technologists do too often, is we think in terms of what we can do, what tools we can build. We, too often, don't get involved in the actual operation and then think of what tools we can use 'to get the job done.'" (Terra, public email, 3/21/2013)

Patrick Meier responded, "Going by your logic, Ushahidi (amongst other tools) would not exist: there was no committed user base in January 2008. So it was a waste of time to launch the platform" (Meier, public email, 3/21/2013). Meier suggests that Ushahidi is an unquestionable good that serendipitously met the unknown needs of the humanitarian community. Formal humanitarians realized their need after being given the technology. David Foster also provided a response, in which he speculated that humanitarians' resistance to adopting some technologies amounts to:

> "Human nature. … You can lead a horse to water, but you can not make it drink.
>
> Change is difficult. Ever [sic] transforming technology is change times ten. For those at the end of the pipe having to deal with consequences of disaster first hand change is not easily accepted. Many tools are provided by those with good intentions, but lack grounded insight = understanding the perspective, capabilities and limitations of the end user. This leads to 'shiny object exhaustion'; end users being bombarded with tools that are great but just don't fit their requirements."(David Foster, public email, 3/21/2013)

To synthesize, for many digital humanitarians, technology develops first, and this creates the need for that very technology. For them, technology drives social and institutional change. In this case,

digital humanitarians' imperative is to first develop the platform, and then formal agencies will realize they need it. By extension, the activity of developing digital technologies is what produces the need for digital humanitarianism. This carries with it the assumption that the programmers possess the resources, and the formal agencies lack life-saving technologies. This sort of technological determinism has been criticized for disregarding social impacts on technology. This email chain suggests that digital humanitarians leverage commonplace understandings of technology (a sort of lay determinism, where technology develops and then people begin to adopt them naturally and organically) in order to represent the formal sector as needing them. In other words, at the ICCM cutting-edge technologies are showcased in order to show humanitarian organizations the ways they should be collecting, processing, and visually representing data.

The process of articulating whether and how the formal sector needs digital humanitarianism is contested. Individual actors play a role in this, shaped by their personal and professional imperatives. Such actors see one of their roles as curating the plethora of platforms, in order to deliver to formal institutions what they need. This process of "gatekeeping" takes many different forms. At times it is self-conscious, as when digital humanitarian Christy claimed that the unchecked proliferation of over 40 unused crisis maps in the wake of Superstorm Sandy was because she traveled outside the country during the storm, and was therefore unable to personally coordinate and curate the maps. In most cases, she said, she personally removes redundant platforms and coordinates across multiple efforts. At other times gatekeeping elicits political contention, as when Christy explicitly denigrated a key digital humanitarian as "imperialist," meaning, for her, that this person opens and closes community-wide conversations at will, uses digital humanitarian organizations' names as personal brands, and wields a disproportionate amount of influence over the field. In yet other times, gatekeeping has material institutional

consequences. Rachel, a key leader of a prominent digital humanitarian organization that is now defunct, told me that routing her emergent organization's funding through a formal institution (for bureaucratic reasons) was the most significant factor in the disbanding of her organization.

Gatekeeping generates uneven influence in the representation of the formal sector. In contrast with popular descriptions of digital humanitarianism, which orient around egalitarianism, democracy, and deliberation, digital humanitarianism is instead an unequal terrain due to gatekeeping. Individuals gatekeep in order to secure their own influence on the field and derive personal gains from its use; similarly, gatekeeping marginalizes some emergent groups. Examining the processes of gatekeeping casts light on the hierarchies underlying representations institutions as in need of digital humanitarianism, and can provide insights into why institutions become represented in the specific ways they are.

Formal-sector institutions also claim to need digital humanitarianism, but in very different terms: most often for volunteered labor, in the form of crowdsourcing. They express these needs (through talks, publications, etc.) in ways that borrow from digital humanitarian articulations, but reify them in ways with more direct significance for the formal sector. With increased formal-sector attention paid to crowdsourcing, formal institutions recruit volunteers to whom they may delegate labor. This process is unfolding in parallel to the imperative to accomplish more with fewer resources, and the drive for efficiency and speed, often justified by claims to "saving lives".

A clear example of this is a 2012 project in which USAID used Data.gov, a federal government-generated platform for hosting spatial data, to crowdsource the geolocation of approximately 100,000 credit recipients. The Development Credit Authority, an agency under USAID, issued loans to "underserved sectors and entrepreneurs in developing countries" (Roberts, Grosser, and Swartley 2012, 4). In this case, according to the official project report, "USAID's

Development Credit Authority did not have the time or resources to go through 100,000 records for the purpose of geolocating the data"(Roberts, Grosser, and Swartley 2012, 8). They communicated widely their need for volunteered, unpaid labor[31].

In this case the formal institution agreed that it "needs" digital humanitarianism, but on very different terms than the needs articulated by digital humanitarians. Digital humanitarians originally articulated a need when marketing their crowdsourcing tools and organizing workshops, conferences, publications, and the popular press. USAID, in this case, agreed that it "needed" digital humanitarianism, but re-articulated these needs in ways that localized it to their own work – geocoding credit recipients – and gave it meaning that was germane for their own institutional practices, workflows, and goals.

6.3 WHY DO THEY NEED IT? JUSTIFYING DIGITAL HUMANITARIAN INTERVENTIONS

Digital humanitarians represent people and their needs in particular ways to justify and legitimate their activities. Digital humanitarians actively work to assure the formal sector that they and their activities are legitimate in humanitarian projects. Here, I argue that digital humanitarians justify their interventions differently in discrete activations versus ongoing non-crisis work. In the former, needs are framed as stark, immediate, and *requiring* digital humanitarianism, and decisions that are made become recorded concretely in post-activation documentation for future legitimations.

[31] Note that government use of unpaid labor is regulated by the Office of Management and Budget, and requires all volunteers to acknowledge: (1)They understand they have no employment relationship with the government agency; (2) they understand and affirm that they will receive no compensation; and (3) they waive any and all claims against the government agency with respect to the services being provided (Roberts, Grosser, and Swartley 2012).

In the latter, digital humanitarians argue that they will become necessary at some future point, and publicize past "success stories". The technologies leveraged for these purposes shape the strategies and tactics digital humanitarians use to represent needs. Subjects are represented in ways that allow the technology to capture them as data, and this in turn influences the ways digital humanitarians legitimate their activities.

6.3.1 *Why do they need it? Justifying work within activations*

For each individual activation digital humanitarians deploy technologies to represent and interpret needs to position themselves as able to satisfy those needs. These technologies enable coordination of multiple contributors across diverse skillsets and tasks, updating members on progress made, and recording "lessons learned" for evaluation and after-action reviews. For the projects in which I acted as a participant-observer, nearly all coordination was conducted through dedicated Skype chat rooms[32]. However, these private rooms convey activation information only to participants and not the rest of the digital humanitarian community, so for broader impact leaders of individual projects use listserves, public Google Drive documents, and personal or organizational blogs. Most organizations use these technologies to justify their actions; however, the Humanitarian OpenStreetMap Team, the SBTF, CrisisMappers, and Crisis Commons all have their own dedicated listserves that function as a proxy for the community as a whole.

[32] My interviewee Martin (an early figure in the digital humanitarian community and owner of a private digital humanitarian software development company) told me that the SBTF use of Skype chat rooms combined with the volunteer and layperson approach to labor resulted in at least one case of infiltration by suspicious parties in a recent sensitive political crisis. This security breach put contributors at great risk, and as a result of this breach, the SBTF leadership decided not to operate in future "political" crises.

The technological repositories are extended past these "ends" of activations for three reasons: in order to cement the idea that people needed that activation, to transmit knowledges to future activations, and to acquire broad communal acceptance of specific documents. First, digital humanitarians use these documents to show that people needed their intervention; the documents serve as a reminder. Commonly, such post-activation spaces will foreground the activating institution and the specific tasks with which digital humanitarians were charged. Take, for example, the opening paragraphs of three activation summaries permanently available online – the first two taken from the Standby Task Force and one from a staff members of UN OCHA actively promoting digital humanitarianism:

> On December 12th, 2011, Robert Colombo Llimona … contacted the SBTF, OSM and GISCorps to request support on a project related to the public health system in Libya. The purpose of the project was to get a final Health Facility Registry GIS layer for Libya… This was to be the starting point for providing a crucial service to the local community … which would benefit the entire community and citizens. (standbytaskforce 2012b)

And:

> On Monday, July 2nd, the Digital Humanitarian Network (DHNetwork) received a request for activation from UN OCHA's Coordinated Assessment Support Section. OCHA is responsible for … develop[ing] … information products when a crisis hits. These products … [help] guide the delivery of goods and services during the first weeks of an emergency. The deployment aimed to collect secondary data to include in the materials used in conducting these initial analyses for South Sudan. The data would be provided as a starting point for further data collection to an OCHA assessment team visiting South Sudan. (standbytaskforce 2012a)

From digital humanitarian advocates employed by UN OCHA:

> On 1 March 2011, OCHA called a meeting with several major Volunteer & Technical Community (V&TC) entities and began collaborating in our responses to Libya. Over the course of March, our collaboration included the Libya Crisis Map production, 3W collection, Baseline Indicators collection, and Japan C.O.D. data collection and consolidation. On 15- June, OCHA convened a wash-up meeting with these V&TCs to discuss these two responses. (Verity 2011)

The UN OCHA review continued to outline "key lessons learned," "recommendations," and described 10 "communities of interest" established at the coordination "wash-up" meeting, based on these post-activation online spaces.

These excerpts display the ways digital humanitarian legitimation becomes solidified in post-crisis documentation. Above, we see the core pieces of information communicated after the activation has ended. These include the key actors, often reminding readers that the activation was requested by a formal-sector entity; the specific tasks to which digital humanitarians were put (in other words, why they were needed); and the "value-added" of the activation (in other words, how those needs were met). In using listserves and other technologies, digital humanitarians tend to focus more on the latter, which later serves as promotional and marketing material.

Second, the legitimation strategies in "lessons learned," after-action reports, and evaluations are engaged to stabilize a particular communal memory. In other words, these spaces and the representations contained within them are used to legitimize particular narratives of the activation – and de-legitimize others. Martin, an early figure in the digital humanitarian community and owner of a private digital humanitarian software development company, discussed with me the multiple competing narratives around the Haiti earthquake digital humanitarian response and how in-print publications have marginalized those voices. Some of the dissent Martin characterized is reflected in many publications and ongoing conversations, including Munro's (2013a, 2013b) publications and in the comments section of a contentious blog post by Patrick Meier (2013). Post-activation spaces are meant to suppress such dissentions, but in some contexts narrative competitions persist.

Third, digital humanitarians secure their *documents'* legitimacy by strategically engaging these technologies for peer review. In this way they try to govern knowledge production

"scientifically", in the sense that peer review increases accountability and allows disagreements to be voiced before official publication. At the same time, it introduces some gatekeeping around communal knowledge-making. For example, while writing reports for my research institution, an important digital humanitarian insisted I have one particular person review the reports before publication, as that individual had been known to publish trenchant critiques of articles that had not been sent to him personally for review. Additionally, we had 18 other members of the digital humanitarian community review each of our publications. Similarly, reports are often uploaded to Google Docs for community comments and editing. This approach has been taken by Kate Chapman in a report on HOT's activities in Indonesia (Chapman 2012c), the Digital Humanitarian Network on a guide for collaborating with the formal humanitarian sector (Waldman, Verity, and Roberts 2013b, 2013a), and my policy research institution for a report I authored.

6.3.2 *Why do they need it? Justifying work outside of activations*

The digital humanitarian community is constantly at work, even outside of crises and activations. After activations have ended, digital humanitarians continue producing data and marketing their perceived contributions to humanitarian and emergency response. However, they use different strategies to legitimate this sort of work, because it does not address the needs as they've been communicated in activations. For non-activation contexts, digital humanitarians assert that the people and institutions that digital humanitarians *still* need them, to satisfy needs that are *not* immediate, stark, and stated explicitly. This work also seeks to coalesce diverse actors into a more cohesive community.

These ongoing needs outside of activations are articulated in at least two venues. The first is in workshops, conferences, and gatherings such as those I attended as a representative of my public policy research institute employer. The largest and perhaps most important is the International Conference of Crisis Mappers (ICCM), an annual conference that consists of workshops, focus groups, coordinating meetings, a trade fair (heavily attended by representatives of the private sector), and a series of lightning talks. At the 2012 ICCM in Washington, DC, SwiftRiver, the Humanitarian OpenStreetMap Team, Ushahidi, and Esri all held workshops to train attendees in the latest technological developments. Lightning talks were given by academic researchers, private-sector technology developers, and digital humanitarian organizations. The Digital Humanitarian Network had its first coordination meeting[33] with many of the digital humanitarian organizations, including the Standby Task Force, Humanity Road, and the Woodrow Wilson Center. Lawyer Ed Robson released a Woodrow Wilson Center-sponsored report on legal liability laws as they apply to digital humanitarianism, and provided extensive legal guidance to digital humanitarian groups in attendance[34]. Geeks Without Bounds coordinated with Random Hacks of Kindness to host a 2-day hackathon, where individuals coded a piece of software that could improve technology use in humanitarian crises.

During this conference ongoing needs were represented by framing the formal sector as needing digital humanitarian services rather than by demonstrating actual uptake. They would showcase a new technology and its capabilities, couching the importance of that technology in terms of a historical teleology, instead of explaining how the technology has been used in a crisis

[33] This meeting was closed-door, which stands at odds with digital humanitarians' marketing of their community as democratic and egalitarian.

[34] Pascal Schuback, a founding member of Crisis Commons, attended and was given legal guidance regarding that organization. Anahi Iacucci, a founding member of the Standby Task Force, was also in attendance. Notably, it was largely due to this meeting that the Standby Task Force moved to become a formal non-profit organization, rather than a loosely-coordinated group of volunteers.

(see Figure 6.1 for an example of this "hype"). For example, these conference-goers asserted that people *still* need digital humanitarianism because current technologies are unable to cope with the emergence of Big Data – and would inevitably need to in future crises. Many lightning talks began with the speaker tracing a historical lineage narrative, where contemporary data production technologies (e.g., Twitter) produce datasets too large for past data processing technologies to manage. Missing from these narratives were accounts of how the formal sector was already using such digital humanitarian technologies. After the ICCM, Jim, who manages a formal humanitarian organization's information center, confirmed my observation:

> "There's no proof that it [digital humanitarian technology] is doing anything. I don't mean to be pugnacious, but that's the reality. At this year's conference Patrick [Meier] mentioned that when he got up for the keynote. He mentioned that we're still really thin on evidence. We need to start building more evidence."(Jim, 2013)

Thus, digital humanitarians forego systematic evidence, instead drawing attention to a narrative wherein data production is exponentially increasing and their labor and technologies will be needed in the next inevitable crisis. Ongoing work is directed at smoothing the eventual adoption process, as in the case of policy and liability research, and at ensuring that adoption through coordination meetings and asserting the formal sector will need them.

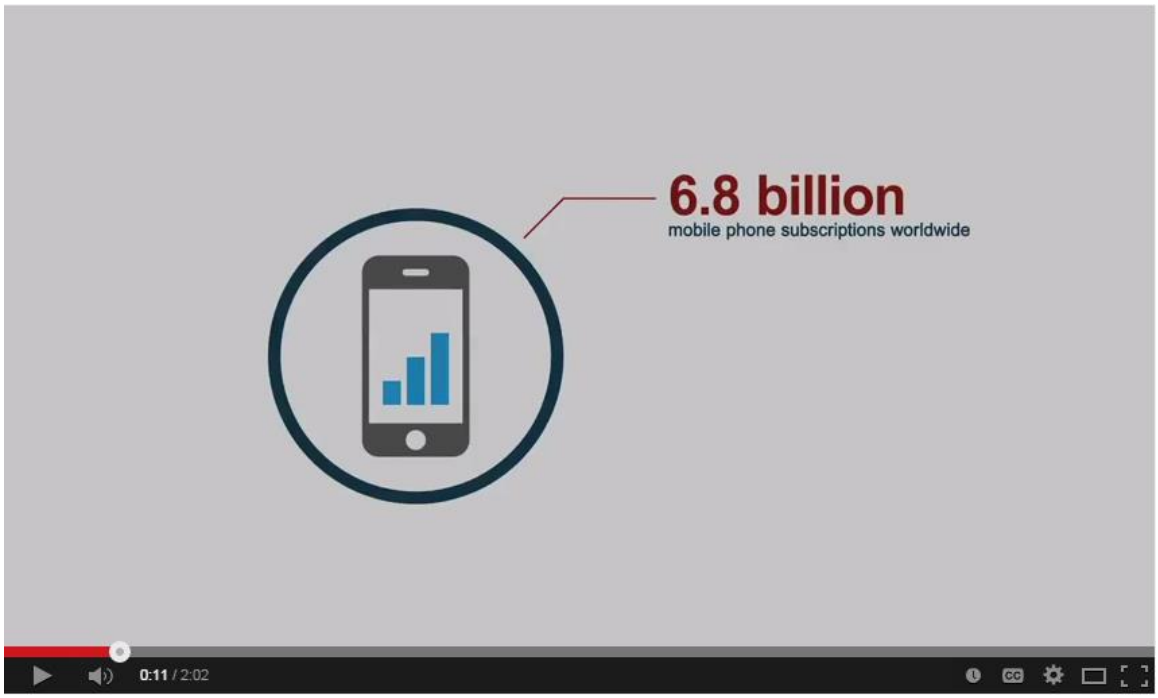

Figure 6.1. "We are in the middle of a digital revolution… [we need to make] sure that people in the most remote areas of the world have access to the same information as technology that we praise in other parts of the world," trumpets The World Disasters Report 2013, produced by the IFRC & RCS (http://www.ifrc.org/wdr2013).

The second venue in which digital humanitarians represent ongoing need for their innovation and services outside of activations is the popular press. This constitutes much of the digital humanitarian work occurring outside activations, and they justify this work as promotional material to increase their eventual adoption into the formal sector. Since the Haiti earthquake response in 2010, digital humanitarians have enjoyed substantial attention in the popular press (BBC News 2010; Hesse 2010; Meraji 2011; Talbot 2011; Rivera 2012). Patrick Meier in particular has asserted the ongoing need for digital humanitarianism in National Geographic Magazine (National Geographic 2013), numerous "TED Talks"[35], authoring a widely-publicized

[35] See, for example: "TEDxKC -- Patrick Meier -- Changing The World, One Map At A Time" (http://www.youtube.com/watch?v=pVCC2CB281M); and "Patrick Meier at TEDxSendai (English)" (http://www.youtube.com/watch?v=iwyO9hw6A6M).

book (Meier 2015), and at other technology-oriented conventions[36]. In these venues, digital humanitarians often recount the story of Haiti, in order to construct the notion of affected individuals needing them, and then move through recent disasters to chart changes (most often, in these situations, framed as "progress") of the field since then. Simultaneously, they claim the formal sector needs them through, as above, tales of increased data production and shifted "data landscapes."

An important dimension of these efforts is the assumptions they make about people and needs, as they seek to bolster the field's legitimacy. Most framings assume that a disaster inherently means digital humanitarianism is needed. Take, for example, "From Libya to Japan, a Web-reporting platform called Ushahidi has helped human rights workers and others document and make sense of fast-moving crises" (Talbot 2011); or:

> "Haiti started it all. A month later there was an earthquake in Chile. Then the floods in Pakistan that summer. Russian fires in July. Floods in Brisbane in January. A major earthquake in Christchurch, New Zealand, that February. Election crisis maps in Egypt, in Tunisia. And the UN asked us to launch a crisis map for Libya". (National Geographic (2013))

These quotes assume that a particular suite of technologies and labor (digital humanitarianism) is what humanitarian managers and affected people in crisis zones need. The same suite of technologies is assumed to be applicable independent of geographic or historic context. This disregards the causes of humanitarian crises in favor of the universal applicability of digital humanitarian technologies and labor.

Digital humanitarian framings also commonly assume the existence of a helpless humanitarian crisis "victim" whose life depends on digital humanitarian intervention. For example,

[36] See, for example, "Where 2.0 2011, Patrick Meier 'The Future of Crisis Mapping for Disaster Response'" (http://www.youtube.com/watch?v=M_NguESRZ4g).

"the map likely saved hundreds of lives" (National Geographic 2013)[37]; or "…thanks to this map – using this map – every hour of every day they were able to save hundreds of lives" (TEDxTalks 2011). Of course, the formal humanitarian sector is also implicated in these constructions: "Ushahidi kept Kenyans current on vital information and provided invaluable assistance to those providing relief" (Ushahidi 2009); and:

> "'Haiti showed everyone that it is going to be crucial to adopt and use these technologies to make humanitarian work better, faster and more efficient,' said Adele Waugaman, senior director of a technology partnership between the United Nations and Vodafone foundations focused on aid and development programs". (Lohr 2011)

The community's widespread publicizing of activations invokes two social developments: networks of affective or "contribution" economies, and the current humanitarian moment described by Roy (2010) and Calhoun (2004). In the outlets discussed above, digital humanitarians invoke inspiring, heartwarming stories that are meant to encourage new members/laborers. That digital humanitarians approach the task in this way suggests a general feeling of cosmopolitan responsibility rooted in a global citizenry, as elucidated by Roy and Calhoun. The ways they construct needs and those who have them directly impact how they request laypeople's help.

6.4 Conclusion

In this chapter I have shown that digital humanitarians focus their efforts on representing people in crisis zones, and the formal sector, as needing digital humanitarian interventions. They mobilize a technology-driven conception in which technologies are developed and then actors are subsequently shown to *need* those very technologies. Needs are represented in particular ways to justify and legitimate their activities. Digital humanitarians must justify their interventions in

[37] This was also repeated in a TEDxKC talk: "…using free and open-source software – not from Silicon Valley, but from Africa – in order to save hundreds of lives in Haiti…" (TEDxTalks 2011, 4:15)

specific activations, but continue these efforts in between crises. Together, these all constitute socio-technical shifts in representations and legitimation strategies, which work hand-in-hand within digital humanitarianism.

Chapter 7. "LET THE PRIVATE SECTOR TAKE CARE OF THIS": THE INCURSION OF PRIVATE SECTOR RATIONALITIES INTO HUMANITARIANISM

7.1 INTRODUCTION

The current moment is characterized by the incursion of capitalism into humanitarianism. The roles, rationalities, and imperatives of humanitarianism are being reconfigured to align more closely with those of the private, for-profit sector. Digital humanitarianism plays a significant role in this reconfiguration. My argument proceeds along three lines. First, for the public sector, digital humanitarianism is the "innovation" that allows continued operation in the context of increased drive for efficiency, austerity, and decreased expenditures. This "innovation" constitutes a new wave of neoliberalization of humanitarian aid, in a three-fold process: (1) the private-sector assumes roles and responsibilities previously within the state's purview, (2) the public sector increasingly operates under the logics and rationalities of the private sector, (3) this is facilitated by the dual "roll-back" and "roll-out" of state functions. Second, private sector involvement has furthered an incursion of the languages, rationalities, and motivations of for-profit business. This process in digital humanitarianism is situated within broader humanitarian trends toward private-sector logics. Third, for digital humanitarianism, the new role of the private sector takes the form of philanthro-capitalism, wherein private businesses and their philanthropic/charitable extensions generate profit through developing the technologies used in digital humanitarian operations. Importantly, by relying on unquestioned assumptions about the inherent "good" of philanthropy and humanitarianism, this private sector involvement is depoliticized, meaning it obscures tradeoffs and consequences of digital humanitarianism and removes it from the realm of legitimate critique.

7.2 ENABLING NEW FORMS OF CAPITAL ACCUMULATION THROUGH PRIVATE SECTOR INNOVATION

Digital humanitarianism has emerged alongside increased formal-sector trends toward austerity, increased efficiency, and decreased expenditures. The formal sector looks to digital humanitarianism to navigate this context, introducing new forms of neoliberalization of humanitarian aid. This neoliberalization can be understood through Peck and Tickell's (2002) description of neoliberalism's dual roll-back and roll-out processes, in which the state withdraws from former roles and responsibilities while simultaneously laying the foundations for private-sector incursions.

7.2.1 *Roll-back: digital humanitarianism for cutbacks, austerity, efficiency, and innovation*

For the formal humanitarian sector, digital humanitarianism is an innovation that allows continued operations in the context of precarious formal funding sources. Here I use "innovation" to mean the new techniques, approaches, technologies, or procedures that reconfigure how the public sector relates to the private sector. Under new regimes of private-sector rationalities and cutbacks, those who manage humanitarian aid are increasingly feeling pressure to more "efficiently" allocate their (labor, funding, technology) resources and to spend their resources more "wisely." Lauren, who works for USAID and prior to our interview had recently conducted a digital humanitarian crowdsourcing project, characterized this pressure:

> [W]ithout crowdsourcing we didn't have the resources or the time to [process data] ourselves, so that's why we really needed to rely on the public. And I think having crowdsourcing as an option for government agencies, especially in this financial time when you see sequestration happening and people having to do more with less, that we have no choice but to rely on and really engage the public that wants to work with us, and wants to volunteer their time to do projects. (Lauren, 2013)

As Lauren points out, this process is emblematic of broader public-sector trends toward austerity and retrenchment[38]. According to Lauren (in a sentiment reflected broadly across my interviews with the public sector), the "public" constitutes a pool of reserve labor that can be mobilized via digital humanitarianism, in order to meet increasing pressures for decreased resource expenditure.

This drive toward efficiency often means that in the near term resources must be lost as the formal sector changes its long-term strategies and operations. In other words, digital humanitarianism elicits new practices and workflow modifications, and the formal sector's long-term improvements cause short-term waste. As David, a formal humanitarian information manager who is active in the Digital Humanitarian Network, told me:

> There wasn't time and resources to work on [Digital Humanitarian Network] kind of things. … But I'm allowed to bring in interns. So, … I brought in 2 interns. Now, as soon as I bring in interns I can task them on what I want. … So I tasked them on doing Digital Humanitarian Network and other things. Now, guess what? Then I have to manage them. So I'm allowed to dedicate time to manage interns. So that's how I actually get a little bit of time to work on these things. … You gotta find creative ways to enable change. (David, 2013)

For David, digital humanitarianism is an innovation which will presumably enable long-term increases in efficiency, and is therefore a goal worthy of pursuit. However, in order to make these improvements, David must innovate. He tasks lower-paid employees (often, interns at David's organization are unpaid altogether), thus minimizing the resources lost in the shuffle toward digital humanitarian integration. In the end, digital humanitarianism serves as the innovation that allows the public sector to continue operating in the context of increased pressures toward efficiency and lowered expenditures. This innovation further involves developing, articulating, and rolling out new institutional relationships. Nate, a public health information manager who builds emergency planning partnerships, described to me the work behind these new innovations:

[38] This overall context and logic of austerity and cutbacks has lodged itself within humanitarianism despite overall increased funding for humanitarian organizations over the last decade (Stoianova 2013; Swithern 2014).

> I think that from a government perspective there's no real one easy [digital humanitarian] interface for government to go to and think about: if and how they want to start doing this, here's the steps you need to take. And so one thing I've thought about … is trying to lay out a lot of those bureaucratic processes and justify why this is good. ... So I think for a lot of government, that's one of the first steps: "here's what you need to do, here are some of the tools you should consider using." (Nate, 2013)

Nate's interview continued mostly in this vein, working with the assumption that digital humanitarianism is an improvement in efficiency, and is therefore a worthy goal to pursue. In the same way that David has modified his workflow with the goal of long-term improvements to efficiency (via digital humanitarianism), Nate has identified several impediments in networks and relationships that need to be adapted for digital humanitarian adoption. Digital humanitarianism here does not immediately and inevitably result in improvements in workflow and practices; however, these may be seen if the public sector and digital humanitarian communities effectively promote and adopt what David calls "creative ways to enable change". Nate has begun building the connections necessary for the adoption of digital humanitarianism. For the public sector, then, innovative practices can lead to continued operation within the current context of pressure to expend fewer resources.

Digital humanitarians actively promote the message that their mass collaboration tools immediately improve efficiency, presenting this narrative in most of their interactions with the public and with the formal sector. Jasmine, a leader of one of the largest digital humanitarian communities, gave me a comprehensive depiction of this narrative. Asked what benefits her organization gives humanitarian agencies, she said:

> Well, part of it is just pure manpower. … If we can get 200 people working on a deployment, that's 200 people that are working across timezones… So, say we're working with OCHA in Geneva, … when Geneva is asleep and everybody else is still working away, by the time that they wake up they see that a massive amount of work has been done overnight. And it gives them a sort of 24/7 workforce …
>
> Also, … most of the people within our network … are in a variety of these humanitarian organizations. There are a lot of people from the UN on our team. … And we have a lot of people who … do GIS for a living. … [That's] not something that a lot of

> organizations would typically have in-house, is a breadth of really strong technical people that can work across time zones, that can constantly be, you know, feeding information in.
>
> **RB:** So it allows a greater amount of work to be done in a shorter periods of time, in a way?
>
> Yeah, exactly. So, for example, we did something for USAID, and everyone in USAID said, "Oh, you know, this is going to take 4 or 5 days. It's a lot of data." They provided poverty levels in one of the countries. "It's going to take 4 or 5 days, so let's structure it that way." We had that done in about 12 hours. No one could imagine we could get that much data processed. But when you're working with this number of people - we've done it before, we know what we're looking for - it moves pretty quick. (Jasmine, 2013)

This account stands at odds with the two previous quotes. David and Nate note the new practices and institutional changes necessary to adopt digital humanitarianism, whereas Jasmine relies on a notion of immediate improvement. Jasmine, in her attempts to market digital humanitarianism as the innovation needed by the public sector, offers idealistic descriptions of the technologies and communities. In all three cases, the interviewees have identified digital humanitarianism as an innovation that allows humanitarian agencies to resolve their broader drive toward efficiency.

Notable in this discussion is the ways in which interviewees claim the formal humanitarian sector is able to employ both technical labor and around-the-clock labor for no operational cost[39]. Digital humanitarianism enrolls unpaid labor in often quite precarious and problematic geographic contexts – such as the global South and in humanitarian crises – yet few concerns have been raised. Martin, a leading digital humanitarian who owns a private digital humanitarian business, mentioned unpaid labor in a personal interview, but only in order to question whether it would have been more cost-effective for UN OCHA to pay a limited number of local Libyan workers in a recent activation rather than establish a digital humanitarian project. Conversations regarding the political-economics of digital humanitarianism currently revolve more around maximizing efficiency than around the ethics of relying on unpaid laborers of the global South.

[39] I say "operational" because planning, communication, and follow-up all consume resources.

The emergence of Big Data exacerbates these private-sector incursions via digital humanitarian technologies, by intertwining technical power limitations with technical expertise and time pressures. The growth of Big Data is often referred in claims that the private sector must provide the technologies capable of managing and analyzing such datasets. For Martin's private-sector company, which specializes in natural language processing, Martin explained that the greatest benefit lies in its ability to process language data "at scale". That is, traditional computation tools may allow processing small and limited numbers of files, but in larger activations formal humanitarian organizations should purchase his company's software to enable the processing of large amounts of language-related data. In this case, Martin leverages the notion that the public sector has a need – to more efficiently process large amounts of language-related data – and that his business can satisfy that need while generating a profit for the business. Put differently, the private sector is "there" to step in and accommodate the broader political-economic shifts.

Digital humanitarianism serves as a mechanism through which the private-sector enters into humanitarianism. Private-sector businesses have been making inroads into digital humanitarianism in venues such as the International Conference of Crisis Mappers (ICCM), the 2012 Connecting Grassroots to Government workshop, and other public policy workshops. Indeed, as many others have noted, humanitarianism more broadly is increasingly operating under neoliberalized rationalities (Escobar 2005; Hyndman 2009; Polman 2010). For digital humanitarianism, the private sector enters directly by developing the tools, technologies, and data sharing agreements for such encroachment, and indirectly through prioritizing logics such as profit and efficiency. All this is in order to enable new forms of capital accumulation through private-sector innovations.

7.2.2 *Roll-out: Government-provided openings for the private sector in digital humanitarianism*

In the United States, federal-level policies and programs are being "rolled out" (Peck and Tickell 2002) that enable an infusion of private-sector logics into humanitarianism through digital humanitarianism. While existing policies are, certainly, being re-written and adapted for the new technological milieu ((ISIMC), (NISSC), and (W20SWG) 2009; 2010a, OMB 2010b; Fugate 2011), more important is the launching of entire programs at the federal level. While working at the public policy institute I observed internal discussions of new programs, and spoke with policymakers, federal agencies, and those working to bridge the gaps between the public and private sectors. Here I briefly mention four contexts in which the state "rolls out" new programs and initiatives in order to make the space through which private sector actors become involved in digital humanitarianism.

First, the Open Government Initiative, started in 2009 by President Barack Obama, and the resulting proliferation of "open innovation," have been key motivators for formal adoption of digital humanitarianism. "Open innovation" in this context refers to increasing "transparency" of government operations; that is, communicating more clearly and more thoroughly the federal policy and decision-making processes[40]. During my work at the public policy research institute, colleagues wrote quite a lot on how policymakers can adapt policies for open innovation and related programs, arguing in particular that the private sector can develop the technologies necessary to increase transparency and data and technology sharing agreements.

[40] Of course, this refers only to some such policy and decision-making processes. In practice, any transparency has been highly focused on particular areas, and obscured further in others.

Second, and similarly, the federal government is increasingly promoting "agile development" – a growing approach to software programming where managers delegate small tasks among large numbers of software developers, to be integrated as a whole after components have completed. My colleagues at the research institute were actively involved in this development, having published a report advocating for the more widespread use of "agile development". The private sector holds a key role in agile development, and as federal agencies adopt agile development for digital humanitarian software, this is likely to reinforce the centrality of public-private partnerships.

Third, various federal agencies are increasingly looking to citizen science as a way of attracting crowdsourced labor; citizen science technologies and approaches have strong overlaps with digital humanitarianism. On behalf of the research institute I attended various citizen science conferences and meetings[41]. At these conferences technologies were displayed that harvested data produced by laypeople – or tasked them with producing it – in order to increase situational awareness, allow people to "microreport" events in crises, or facilitate voluntarily documentation of their hobbies if such data could be of use to federal policy.

Fourth, a final example of such federal policies I observed while working at the research institute relates to "crowdfunding," which in this case can be described as using donation sites to fund new science, activist, art, and technology development projects. Federal agencies are increasingly looking to crowdfunding projects as a method to generate interest in public-sector projects. The institute tasked me to research the prospect of this technology suite for federal-level projects. Importantly for this context is the shift in responsibility that such platforms entail;

[41] For example: Bring Your Own Data; private meetings with Jake Weltzin of the USA National Phenology Network, representatives of ASPR Fusion Cell, and Rebecca French of the Environmental Protection Agency's Office of Research and Development; and a telephone interview with Adrien Treuille of FoldIt and EteRNA.

responsibility to fund science, activist, art, and technology is shifted from formal actors (e.g., the state or public schools) to individuals.

7.3 THE LANGUAGE, RATIONALITIES, AND LOGICS OF PRIVATE-SECTOR DIGITAL HUMANITARIANISM

The public sector looks to digital humanitarianism as an innovation for navigating current political-economic shifts and pressures. The private sector's involvement in digital humanitarianism leads to the increasing adoption and normalization of private-sector logics in humanitarianism, rationalities such as profit imperatives and drives toward efficiency. This section identifies the ways humanitarianism is increasingly adopting these private-sector rationalities through their use of digital humanitarian technologies.

7.3.1 *Idealizing private-sector models*

Private sector logics, rationalities, and languages in digital humanitarianism are reorienting formal humanitarianism. This is a large-scale transformation observed in humanitarianism broadly, but digital humanitarianism plays a key role. Through appeals to efficiency, speed, accuracy, impact, and investments, digital humanitarians market their offerings: the individualistic "consumers" of humanitarian information are, according to digital humanitarian discourses, delivered more appropriate information more quickly, using fewer financial resources.

To take two examples, at the 2012 International Conference of Crisis Mappers, Patrick Meier prioritized the development of, in his words, a "Match.com-style app for crisis mappers," which would more efficiently link information seekers with information providers. Along the same lines, at a recent New York City public meeting introducing the new "Open Government" initiative, the

panel chair praised Senior Deputy Mayor Stephen Goldsmith for being "focused on creating a New York City government that is smaller, more efficient, and cost-effective using technology to better serve the public" (NYC Digital N.D.)[42].

Both these cases reveal private-sector rationalities extending into crisis response. In the first case, Patrick Meier names a private company as an ideal model to emulate because of its efficiency. In the second case the New York City government explicitly promotes technology use for neoliberal political-economic shifts. This can be seen in the valorizing "smaller" government working toward "cost-effective" – akin to profit-maximization – governance. These discourses, in other contexts, have been central to the privatization of public-sector duties and provisions. Here, they exemplify these shifts toward private-sector rationalities, using technology as a means to achieve those imperatives.

Discourses of the limitations of non-profit-driven software and hardware development also pave the way for the private sector. In a personal interview, Martin, a leading digital humanitarian who started his own private digital humanitarian business, neatly typified this argument. He argued that in a software development context, a not-for-profit model leads to poorly-designed, buggy, and ultimately dangerous software. He used examples of several software flaws, including data retention issues in Ushahidi, identified several bugs in popular crisis mapping platforms, and explained them as due to the software's development by the non-profit sector. He continued: if the software had been developed by private companies with a stake in that software's success and reliability, the software would be more stable, more accountable, and ultimately be a better product. This perception was reiterated by private-sector representatives at many points in the

[42] Rachel Sterne was cited in my interview with Harper – a digital humanitarian working for the city's GIS department – as being a "digital evangelist" credited with largely coordinating the different digital responses to Superstorm Sandy.

Connecting Grassroots to Government workshop. George, a digital humanitarian employed by a Department of Defense research unit, spent much of our interview discussing the multiple private-sector partnerships the Department of Defense has established to supply technologies and software.

Martin articulated a link between profit imperatives and accountability, such that only those individuals (or businesses) financially susceptible will develop software, hardware, and workflows that are worthy of humanitarian work. This construction – of the private sector being the superior technology development field – is reflected in multiple venues, including the Connecting Grassroots to Government workshop mentioned above. Notably, this stands in contrast with many of the discussions around citizen science, crowdsourcing, and open-source software. Nevertheless, through this construction the private sector can justify its incursions into the digital humanitarian space.

7.3.2 *Grounding private-sector rationalities: marketing, branding, saving lives*

Digital humanitarianism accepts and internalizes private-sector rationalities such as profit-maximization and efficiency prioritizing, and rearticulates them and in ways particular to its own context. Rearticulating these rationalities within digital humanitarianism propels them to more strongly serve as the innovation that allows humanitarianism to operate in the context of increasingly precarious funding sources. In other words, private-sector rationalities are not simply "dropped" into place in digital humanitarianism, but instead are reworked and adapted for this particular case. In particular, digital humanitarianism operationalizes the following rationalities: (1) "marketing" one's "brand," (2) "efficiency," and (3) connecting "saving lives" with humanitarian organizations' "bottom lines."

First, "branding" a particular piece of software, collaboration approach, or data store is central to digital humanitarianism's emergence narrative. Some specific brands have become

commonplace for digital humanitarians as they try to increase their appeal to formal humanitarianism. One brand that has been adopted by the digital humanitarian community is that of "crisis mappers." Martin explained to me in a personal interview that "'crisis mapping' isn't a real thing; it's just kind of a brand name" a prominent digital humanitarian gave himself – "Director of Crisis Mapping" – while working with Ushahidi in the mid-2000s. That the term has come to be the accepted parlance by many in the digital humanitarian community was a source of irritation for Martin, because it has been in many ways taken up as the brand of the entire digital humanitarian community

The process of branding functions as a logic through which digital humanitarians see the opportunity to increase their value to formal humanitarians. In an early, very important document, Crowley and Chan (2011) devote a section to describing the relationship between digital humanitarian branding and trust:

> In most communities, newcomers must earn the trust of veterans; it is not automatically granted. … Trust is part of brand. (2011, 38)

This is followed by an excerpted quote from Nigel Snoad, who works as Product Manager at Google.org and is a key figure in the development of digital humanitarianism:

> If there's a brand that has trust and recognition across the humanitarian community, then it has a chance of being worked with…. So I think one of the problems working with the volunteer technical community is identifying, building the trusted focal points and the trusted network. Really it's about building that brand… (Snoad, in Crowley and Chan 2011, 38)

In these quotes, trust hinges on this notion of brand rather than the more traditional formulation, where trust hinges on reputation. Brand, here, is different from reputation, in that a brand is marketable, commercial, and potentially profitable. It also resonates with digital humanitarian practices, in which brands – individual organizations' names and software offerings – become the subjects of TED Talks and other mass-media evangelism. According to these quotes, digital

humanitarians need to cultivate a sort of name recognition and expectation of service that one would normally associate with consumer dynamics in the private sector. Branding entails lessons and principles from private-sector rationalities, but are being rearticulated in ways that resonate with digital humanitarianism.

Second, the digital humanitarian community adopts and perpetuates neoliberal logics through the notion of increased "efficiency." For digital humanitarians this term means both decreasing the resources spent on information collection, and having a greater impact from the same amount of spent resources. Lauren, an employee of USAID who collaborated on a recent digital humanitarian project, said that the efficiency gains from using crowdsourcing in her project were large enough for her to advocate its expanded use in banking sectors, United Nations work broadly, and across the board of US government agencies. Similarly, for Jim, another employee of USAID and active digital humanitarian, the limited availability of resources has encouraged him to look more closely at digital humanitarianism. Asked what considerations led him to use Data.gov for a recent project rather than a service such as the crowdsourcing platform CrowdFlower, Jim said:

> One was cost - we didn't have a lot of money. I do remember being surprised at how cheap it would have been to get it done on Amazon.com or with Amazon on Mechanical Turk. And ultimately we were really attracted to the idea of SamaSource because it's using people - like, women in India doing the crowdsourcing and getting paid a certain amount of money for every record and stuff like that. So we kind of liked some of those narratives. (Jim, 2013)

Jim and Lauren were able to justify launching pilot projects – and in Lauren's case, justify exporting those workflows to other industries – by invoking the idea of saving resources. Lauren rearticulated "efficiency" to situate digital humanitarianism's similarities with other industries. In order to take her lessons on crowdsourcing to other industries, Lauren implies that similar efficiency gains would be seen elsewhere. On the other hand, Jim's decision was influenced by the private sector's crowdsourcing capacities: Amazon's Mechanical Turk software appealed to

Jim's need to expend fewer financial resources in his project. As before, when Lauren speculated that the public sector will increasingly need digital humanitarianism, here she utilizes their conceptualization of "efficiency".

Predictably, for many digital humanitarians, Big Data is a "new" source of efficiency. In a personal interview, Robert, a key member in the digital humanitarian community, said that Big Data will improve both speed and resource usage:

> There were 250 million people affected by disasters in 2010 alone. Since then, going up to 2013, there have been an additional 1 billion new mobile phone subscriptions since Haiti. So the probability that a community has access to cell phones and mobile technologies and digital technologies and gets affected is increasing very sharply. These communities now are the source of Big Data. And it's that source of Big Data that we need to find ways to filter, leverage, and visualize in various ways including crisis mapping - it's real-time situational awareness. (Robert, 2013)

In this quote, efficiency improvements are again rearticulated to a particularly digital humanitarian context. Robert does not simply invoke lower resource expenditure, but works to connect technological language with operational language of the formal humanitarian sector. As was widespread at the International Conference of Crisis Mappers, Robert here relies on implicit assumptions about what must be done – and by whom – given sensationalist claims of technological proliferation. This specific technological lexicon lends itself well to concurrent trends in private-sector data mining and visualization software, but is articulated in order to connect with extant humanitarian workflows (i.e., "situational awareness").

Third, digital humanitarians have internalized and rearticulated private-sector logics through the notion that saving lives is each formal humanitarian organization's singular logic. That is, humanitarians should shift their technological practices if there are compelling claims that it would "save lives", with no necessary qualifications. In this way, the notion of saving lives functions similarly to the private-sector business logic of a company's profit – the net income. Saving lives has thus become the dominant figure that overshadows other potential logics guiding

humanitarianism[43]. This figure comes to be particularly important in projects of evaluation – determining the impact of, for instance, digital humanitarian involvement in a humanitarian intervention. Bartel Van de Walle, Associate Professor at Tilburg University, founder of ISCRAM, and prominent digital humanitarian, echoed the importance of "saving lives" in a passing comment at the Connecting Grassroots to Government workshop: "…you know, in the end it's about how many people have you saved, right? So, that's a fairly easy metric" (WoodrowWilsonCenter 2012c). For those involved in evangelizing digital humanitarianism "saving lives" is a centerpiece of their narratives. Sarah, an important digital humanitarian, spoke for the formal response sector when she told me that "How do we save lives?" is the most important question they ask in their operations. Similarly, the imperative of saving lives figures heavily in most popular press coverage of digital humanitarianism[44].

Further, as a caveat to their very important report, UN OCHA (2013, 7) states: "The report acknowledges that there are serious concerns, in particular a relative lack of empirical evaluation of the new techniques presented. Many anecdotes suggest that these innovations have saved lives, but there is little quantitative assessment, almost no baseline data and insufficient systematic learning." They thus acknowledge that "saving lives" has played a large role in the field's development, even without substantial evidence. This indicates that the number of people who would have otherwise died is less important than the discursive weight "saving lives" carries. Even

[43] Such alternative logics could include, for instance, social justice, political-economic equality, and interpersonal networks with friends and family, all of which are impacted by emergencies and humanitarian crises.

[44] See, for example, "MicroMappers: Microtasking for Disaster Response" (http://irevolution.net/2013/09/18/micromappers/), "Digital Humanitarians: Patrick Meier at TEDxTraverseCity" (http://youtu.be/eUGRziSDbY4), or "An Open Letter to the Good People at Benetech" (http://irevolution.net/2011/04/18/open-letter-benetech/).

without widely accepted empirical evidence, digital humanitarians have rearticulated neoliberal rationalities analogous to the private sector's "bottom line" through the notion of "saving lives."

Importantly, this shift toward business rationalities and language is stronger in digital humanitarianism than in traditional humanitarianism. Conferences, meetings, and workshops, tend to rely on flashy entrepreneurialism rather than substantive evidence; key figures pose solutions, rather than frame problems; and seemingly more attention paid to aesthetically-pleasing user interfaces than to case studies. At the ICCM one feels like they are potential customers watching a sales pitch.

7.4 Depoliticizing Digital humanitarianism

Private-sector incursions into humanitarianism via digital technologies take the particular form of philanthro-capitalism. Philanthro-capitalism in this context refers to private-sector companies intervening in humanitarianism ultimately as a means of further accumulating capital. It appeals to contemporary economic ideology – generally that of neoliberalism – as well as the shibboleth of "the good," and digital humanitarianism's innovative nature. These factors depoliticize digital humanitarianism, setting its tradeoffs and consequences outside the realm of legitimate critique. For example, critiques of digital humanitarian technologies and communities can be dismissed immediately because they are deemed to be fundamentally "good," to make economic "sense," and to be consistently improving through innovation.

In recent years private businesses have begun investing heavily in charity and philanthropy, often incorporating these missions directly into their product marketing. Taking examples such as Toms Shoes (where for each pair of shoes purchased, the company will donate another pair to needy communities around the world) and Starbucks's Ethos Water Fund (where for each bottle of water purchased, $0.05 is donated to support water-stressed countries), Zizek posits that "charity

is no longer an idiosyncrasy of some good guys here and there, but the basic constituent of our economy" (The RSA 2010). This "enlightened capitalism" (Essex 2013, 152), as formal humanitarian (and development) sectors know it, places the private sector as an important actor in humanitarian interventions (Stoianova 2013). In this new configuration the private sector is a source of financial support, humanitarian project management, and services provision. Although most have interpreted this phenomenon as increased attention to corporate responsibility (Byrne 2002; The Economist 2006), Zizek (2006) views the development with more caution, arguing that this philanthropy instead has become integrated as a crucial strategy for capital accumulation (see also: Adams 2013; Buffett 2014). The emergence of this "philanthro-capitalism" has emerged alongside a resurgent popular interest in humanitarian intervention (Calhoun 2004; Roy 2010; Weizman 2012). This moment in humanitarianism prioritizes economic and operational efficiency, often invoking the private sector to reach that goal.

For example, at the "Connecting Grassroots to Government" workshop at the Woodrow Wilson Center in September, 2012, Eric Rasmussen – CEO of the private business Infinitum Humanitarian Systems and adjunct Associate Professor of Medicine at University of Washington – stated:

> Robert Kirkpatrick, who's now at the U.N. Global Pulse program, used to be at Microsoft. And he used to argue that -- in these discussions, please let the private sector take care of this. We will address this problem for you, we will take the research, we will commercialize it, and we'll sell it back to you for cheap. Everybody will be happy. (Eric Rasmussen (WoodrowWilsonCenter 2012f))

Rob Munro, founder and CEO of private-sector company Idibon, followed this up immediately:

> …I'll second what Eric Rasmussen said about letting the private sector take care of this. Natural language processing and machine learning is just kind of that level of complexity beyond what you would get in most very good engineers who are working with NGOs. It's something that you want to give to the private sector. (Rob Munro (WoodrowWilsonCenter 2012f))

In these two quotes one can see that private-sector involvement is seen to "make sense" by appealing to saving resources, as well as relying on notions of what the public sector is able to deliver. Both Rasmussen and Munro own private businesses that stand to benefit from the shift they encourage here. By "letting the private sector take care of" digital humanitarian technology development, Rasmussen and Munro both are likely to see financial gain. However, according to Munro, the outcome will consist of higher-quality technologies. That is, private sector companies become involved in humanitarianism because it ultimately – in their conception – leads to a greater "good", while at the same time generating new sites for capital accumulation. Private-sector incursion constructs a depoliticized philanthro-capitalism wherein businesses generate profits directly through their philanthropic involvement in digital humanitarianism. To do so, humanitarianism shifts to align itself more closely with private sector rationalities, including liberalized market logics, decreasing public dependence on the formal/public sector, and adopting the techniques and language (e.g., investments, profit, "best practices") of the private sector.

Digital humanitarianism is a practice of philanthro-capitalism. It is "depoliticized" – meaning, its tradeoffs and consequences are placed outside the realm of legitimate critique – for at least three reasons. The first is that digital humanitarianism, as philanthro-capitalist practice, invokes the ideological commitments of the contemporary neoliberal milieu. This includes the notion that the public sector should serve economic functions in areas where the private sector is known to fail; capital accumulation is the normative economic status, and the exception is the public sector (Peck and Tickell 2002). Digital humanitarians and the broader public implicitly invoke this "new planetary vulgate" (Bourdieu and Wacquant 2001) when welcoming private sector involvement in digital humanitarianism. Digital humanitarianism thus runs parallel to the dominant political-economic discourses of "good practice." For instance, at the Connecting Grassroots to Government

workshop, David Kaufman, a senior-level administrator at FEMA, conveyed the degree to which these practices are firmly entrenched in formal humanitarian imaginaries:

> Right, so take feeding people. Government doesn't feed people in this country, even in …, like military and prisons and school systems, we still contract almost all that out. … So we have private sector representation inside our [disaster] operation center now, started with the retail sector, the big box stores, and now the financial services sector. … [W]hat we care about is the ability to see in real time how Target and Walmart and Home Depot and others are, what are their logistics movements alongside our logistics movements? So that we aren't setting up shop, you know, in the same places that they're open for business, that we're putting our efforts in places where there's a gap, and vice versa. (David Kaufman (WoodrowWilsonCenter 2012d))

Kaufman here naturalizes the private sector's prioritization in emergency response. According to his statement, if the private sector is operating in a particular space, the formal response community should be removed. Using the analogy of "feeding people," Kaufman claims that the public sector is far less involved in state operations than most people assume, and that it is balanced in its current state. Rather than critiquing or demonstrating the political-economic negotiations behind this privileging of the private sector, Kaufman accepts its current status and implies it is the only possible structure. Naturalizing in this way takes tradeoffs and consequences as necessary costs to be paid in a perfect political-economic organization. Kaufman further naturalizes the role of the volunteer and nonprofit sectors, again removing responsibility from the public sector and laying the groundwork for a role of digital humanitarians.

The second mechanism through which philanthro-capitalism depoliticizes digital humanitarianism is in invoking commonplace conceptions of, as many expressed to me in personal interviews, "the good" (Kathleen, personal interview; Rachel, personal interview; Donna, personal interview; Robert, personal interview). That is, digital humanitarians view humanitarian practices as beyond the realm of critique because they are unequivocally and purely "good" things to do. On the contrary, critiquing digital humanitarianism is often seen to be useless at best (by, according to some, not contributing to applied practices) and perverse at worst. By extension, private sector

businesses are guarded from critique by participating in these "good" practices that exemplify "caring" standpoints on global issues[45]. Remaining unanswered by the businesses and by academic research is the question of why the private sector would involve itself in philanthropy, particularly around development and humanitarianism. A prominent reason for doing so is that such activities not only provide new spaces for capital accumulation, but they also bolster companies' "images" and thus rely on an affective economy. By exuding a "caring," cosmopolitan corporate persona, these companies are able to persuade consumers to purchase their products, while cultivating in the consumers feelings of altruism and global citizenry. Consumption here appends an affective stimulus onto an exchange, such that consumers purchase not only a commodity but also an affective experience.

Third, digital humanitarianism is depoliticized because it is seen as an innovation that improves humanitarian response. Digital humanitarians have successfully marketed their work as innovative and potentially revolutionary, a trope taken on by some in the formal humanitarian sector itself. Because digital humanitarianism is seen as an innovation (with the aforementioned discursive work "innovation" entails), it is seen to be beyond the realm of critique. While such "innovations" most often occur outside the context of an emergency, emergency imaginaries influence the ways people conceptualize critique in relation to innovation. To explain, Scarry (2011) argues that, despite high levels of thinking that happen in emergencies, emergencies are seen to necessitate postponing thinking in favor of acting/doing.

Philanthro-capitalism within digital humanitarianism produces inequalities as a by-product of the different logics through which privatized humanitarianism operates. Capitalist enterprises are

[45] In other words, paradoxically, digital humanitarian philanthro-capitalism is depoliticized in the process of private businesses deciding on a particular political standpoint. These companies manage the depoliticizing because the standpoints are always popular and avoid highly contentious topics.

driven by the imperative to accumulate capital, which privileges logics such as speed, production/consumption, competition, and privatization of public assets (Harvey 1982). Publicly-traded companies are accountable to shareholders to increase profit. In contrast, humanitarianism's primary motive is claimed to be the decreasing of suffering (Weizman 2012). Weizman and Manfredi (2013) argue that this motivation privileges "saving lives," human rights, and mitigating violence. Private-sector incursion into digital humanitarianism shifts imperatives from decreasing suffering to accumulating capital, constituting a new form of neoliberalized humanitarianism.

7.5 Conclusion

In this chapter I have shown how humanitarianism is becoming increasingly capitalist through digital humanitarianism. Digital humanitarian technologies and labor are seen as the innovation that enables the formal sector to continue operating in a context of increased pressure to work more efficiently and "do more with less." This context reflects broader public-sector trends toward austerity, and precarious sources of funding. The private sector is increasingly participating in humanitarianism via new digital technologies, and private businesses provide not only the technologies for digital humanitarianism, but also the logics and rationalities under which the new configuration works. These logics, rationalities, and languages include, for instance, efficiency, profit, "best practices", "return on investments", and the "bottom line." The private sector is able to make these incursions because of the way digital humanitarianism is seen to be a "good" and by invoking the contemporary neoliberal economic climate. In this way, the digital humanitarianism is depoliticized and not subject to critique.

Here I have identified early signs of transformations toward private-sector logics and rationalities in humanitarianism. These transformations are likely to cultivate inequalities that have been observed in related fields where similar processes are unfolding, such as education,

healthcare, and poverty policy. In these fields researchers have noted shifted subjectivities vis-à-vis the provision of services and the state more broadly, increased burden on those "dependent" on those services as they shoulder more of the fiscal burden at the withdrawal of state resources, and increasing levels of unequal service provision. These shifts, in short, have been shown to impact resources distribution, a development that in the future may be observed in humanitarianism.

Chapter 8. CONCLUSION

In this research I explored the transformations of humanitarianism occurring through the emergence of new digital spatial technologies. Specifically, I sought to understand how digital humanitarianism impacts humanitarian aid allocation; how these technologies and data represent problems, places, and people; what "crisis mapping" means and entails for responders; and the political-economic shifts in which digital humanitarianism is situated. My research has elucidated how needs are collected as data, and then processed and represented by distant volunteers, a process that I argue has two important effects: digital humanitarianism shifts how needs as data are *collected*; and it shifts how needs and knowledges are *represented*. These transformations are part of the *innovations* in humanitarian practice that further its neoliberalization and usher in new forms of philanthro-capitalism.

First, using social media data, digital humanitarians are not able to contribute in the ways that they would like, so they must *tame* the needs expressed in social media platforms. "Taming data" is the process of abstracting, categorizing, rephrasing, and omitting data, moving away from the source, to make it fit the forms and content expected by formal responders. The specific ways in which data are tamed depend on negotiations within the digital humanitarian community. These negotiations question whether and how knowledge and needs should be included within their platforms, and whether these data make their contributions useful to the formal sector. The metric of "actionability" – how well the data fits within formal-sector workflows as currently constructed – is an important mechanism for taming data. Data not deemed "actionable" are typically discarded from digital humanitarian projects. The new source of data responsibilizes individuals, claiming that all are able to – and therefore, normatively, *should* – contribute to digital humanitarian projects. Disaster-affected communities and those in disaster-affected places are also made

responsible for producing data about their communities and environments. The digital humanitarian community likewise is made responsible for contributing labor and data to humanitarian and emergency management operations.

Second, digital humanitarians represent people and their needs in ways that allow them to claim that the formal sector needs their contributions. Digital humanitarians claim two groups need them: those in disaster-affected areas, and the formal sector. Disaster-affected communities and those in disaster-affected areas need them in order to "save lives" and make their needs visible to responders. The formal sector needs them, they claim, because formal-sector workflows and bureaucracies are inefficient and slow at collecting needs and gathering situational awareness. These claims must be made differently within and outside of immediate crises. Overall, however, it is common to adopt a lay technological-determinism to advocate for their technologies' adoption. This means that digital humanitarians develop new technologies without the expressed need for them, and then use the existence of that technology to claim that the formal sector needs it. In other words, digital humanitarians first develop technologies and then claim that the formal sector needs those technologies. This legitimates their work both within and outside of activations.

Third, digital humanitarianism signals a new form of neoliberalization, signifying the marriage between philanthropy and capitalism. Humanitarianism has for the past several decades become embroiled in a climate of austerity, with the threat of cutbacks, closures, and increased pressures to work more efficiently. Digital humanitarian technologies have been welcomed as an innovation that allows the continued functioning in this context. Such labor is usually unpaid and enrolls workers from across time zones with diverse expertise. The private, for-profit sector has made inroads into humanitarianism through digital humanitarian technologies. This has had a two-fold effect: the private sector is developing the technologies necessary for digital humanitarian

activations, and is supplying new logics and rationalities that shift the ways humanitarian interventions are conceived and implemented. For example, digital humanitarians have marketed their technologies with claims that they increase efficiency, help responders make better-informed decisions, and enable them to "do more with less". An important result of this private-sector incursion is the rise of philanthro-capitalism, wherein humanitarianism and emergency management become new sites for capital accumulation, and these fields thus become more capitalist.

This project makes a number of empirical and theoretical contributions. It is one of the first empirically-grounded investigations of digital humanitarianism as a multi-layered socio-technical process. In contrast to the focus of much existing research on digital humanitarian data's accuracy and technical specifications, I pay attention to digital humanitarianism's data and technology *practices*, its institutional *logics and relationships*, and the *political-economic contexts* in which it is situated. This pushes this body of work beyond hyperbolic accounts of its inherent "goodness" and beyond early simplistic accounts of its inherent efficiency. I argue that digital humanitarianism, because of its social, political, and economic dynamics, works to exclude many ways of knowing, at the same time as it produces new humanitarian figures in need of digital humanitarian intervention, and contributes to the neoliberalization of humanitarianism.

This research pushes forward debates in geoweb and spatial technology research by illuminating the representational and socio-technical processes and practices that constitute new spatial technologies. I argue here that the processes through which data are framed, collected, stored, and represented are sites of contestation and struggle, sites for knowledge politics prior to the cartographic artifact. My research finds that such negotiations occur in many ways, including through database designs, classification schemes, and the ways in which data will be systematically

abstracted from their context. Each of these produce schemas that perpetuate into future activations through "lessons learned" documents and communal knowledge production, such as reports and policy recommendations. In other words, knowledge politics undergo moments when future uses of technology and data are constrained by past experiences and by previous deliberations.

I extend geoweb literature's focus on the accuracy of crowdsourced data and the capabilities of individuals to examine the broader inter-institutional and cross-sector relationships that constitute geoweb data collection processes. I suggest that rather than thinking about crowdsourcing as the product of individual agents, we should understand these data creation moments as flowing from broader shifts in how institutions and sectors relate to and influence each other. Such institutional and sectoral divisions that are being reworked, and instigating new crowdsourcing practices, include those between formal/informal emergency management; paid/volunteer contributors; and government/for-profit/non-profit actors. This pushes geoweb debates beyond the expert/amateur binary that was mobilized in early efforts to understand the geoweb.

My research responds to Sandvik *et al*'s (2014) call for critical research on digital humanitarianism. They point out that humanitarian managers usually conceive of technology as a neutral tool that leads to improved decision-making practices. In contrast, Sandvik *et al* argue that humanitarian technologies' development and usage are saturated with politics – social and political norms, values, and relations. Sandvik *et al* call for further exploration of these politics in order to understand how new technology usage and adoption impact humanitarianism. My research delivers insights into these politics. In doing so, it pushes forward recent perspectives that digital humanitarianism may entail uneven adoption and impact, that it may perpetuate social biases, and that its labor practices bear scrutiny. I argue here that the social, political, and economic impacts

of digital humanitarianism can be understood through critical and feminist GIS, critical humanitarian and development studies, and neoliberalization.

To studies of humanitarianism and development, I offer insights into neoliberal transformations of humanitarianism and its evolving institutional relationships. Digital humanitarianism and its alliances with philanthro-capitalism serve to further the encroachment of the private sector in humanitarianism, ultimately making it operate under capitalist rationalities and imperatives. I argue that philanthro-capitalism de-politicizes digital humanitarianism in humanitarian practices, and because of this, enables its neoliberalization. These contributions answer Peck's (2006) and Brenner & Theodore's (2002) call to further explore the institutional and social contexts through which "actually-existing neoliberalization" is articulated.

I have shown that current transformations in humanitarianism via digital humanitarian technologies perpetuate the assumptions and figures on which humanitarianism relies. Such assumptions include framing some people and groups as possessing resources, others in need of those resources, and the knowledge required to deliver them. These figures – those who have resources and those who need them – persist in digital humanitarianism. Contributing to debates about the improvements of humanitarianism through new digital technologies, I offer evidence that well-known inequalities and exclusions of humanitarianism are reproduced in digital humanitarianism through knowledge politics and political-economic shifts. These inequalities and exclusions now include access to decision-making practices which influence how and what types of aid are allocated via digital humanitarian technologies. Digital humanitarianism marginalizes some knowledges from their contexts and from responders, and contributes to the privatization of humanitarianism. This underscores the importance of critiques from critical humanitarian and development studies.

My dissertation suggests several next steps in addressing the social and political transformations of technology. With regard to digital humanitarianism, questions remain about the forms its use and implications take at various scales. My dissertation explores the phenomenon as a whole, but important insights may be garnered from exploring its use in scale-specific contexts. For instance, what urban politics emerge when local community organizations use digital humanitarian technologies to influence city policies? What sorts of contestations and marginalizations result when a state produces and maintains digital humanitarian technologies for use with its own population? What relationships exist between their uses across scales? Given the asymmetrical power relations inherent to humanitarianism, it would also be important to investigate whether the dynamics shown here refract differently with different actors – for instance, when an activation takes place in the global North, or spans global North/South divisions.

Regarding spatial technologies more broadly, further research is needed to develop new conceptions of data "accuracy" in the geoweb. My research indicates that social media data represent individual and communal knowledge. Such knowledge, including memory, personal and geographically-constrained events, and communal knowledge, can easily elude easy representation in Cartesian geometry. Geographers may productively reconceptualize accuracy such that it does not discount these situated, interpersonal, and non-Cartesian knowledges.

Digital humanitarianism is closely linked with Big Data, with some documentation merging them for the purpose of analysis (UN OCHA 2013; Crawford and Finn 2014). As such, my research suggests further questions for critical investigations of Big Data. Future research on Big Data may also seek to understand it as a socio-technical process, and borrow from similar bodies of research to understand its implications. Along the lines proposed by Graham and Shelton (2013), future research should consider the implications of those "left out" of Big Data; this project suggests such

a question can impact the ways Big Data is engaged for humanitarian intervention. Here I explain the ways digital humanitarianism shifts relationships between public and private institutions and sectors, yet there remains the question of whether similar results would emerge from investigation into Big Data specifically. This research suggests data can be usefully seen as social practice with political-economic impacts; future research could explore the implications of this principle in Big Data's deployment.

Finally, my research suggests geographers should turn a critical eye beyond cartographic representations and into software, hardware, and data models. Possibly borrowing from software studies and science & technology studies, geographers can provide an understanding of geographic processes by looking at how geographic knowledges are captured and encoded at the software and data model level. This would expand current geographic scholarship that looks at code, to illuminate the processes through which knowledge is subjected in order to become "data".

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